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DEPARTMENT OF ENERGY
Environmental Management Los Alamos Field Office (EM-LA)
Los Alamos, New Mexico 87544

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Hazardous Waste
Bureau

SEP 27 2018

Mr. John E. Kieling
Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Dear Mr. Kieling:

Subject: Submittal of the Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area

Enclosed please find two hard copies with electronic files of the Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area. This investigation report evaluates the nature and extent of contamination and potential human health and ecological risks for 21 solid waste management units (SWMUs) and areas of concern (AOCs) in the Upper Los Alamos Canyon Aggregate Area at Los Alamos National Laboratory. Three additional sites are included in this report but are not evaluated for nature and extent and risk because sampling could not be performed. The SWMUs and AOCs addressed in this report are located in former Technical Area 00 (TA-00), former TA-01, TA-03, former TA-32, TA-43, and TA-61. The Phase II investigation was implemented in 2012, and based on the results, additional sampling and/or remediation was deemed necessary. This additional work was performed from 2013 through 2017. This report is being submitted to fulfill Fiscal Year 2018 Milestone 11 in Appendix B of the 2016 Compliance Order on Consent (Consent Order).

Pursuant to Section XXIII.C of the Consent Order, a pre-submission review meeting was held with Newport News Nuclear BWXT – Los Alamos, LLC, and the New Mexico Environment Department on September 20, 2018, to discuss the investigation results and recommendations for the 24 sites.

If you have any questions, please contact Kent Rich at (505) 551-2962 (kent.rich@em-la.doe.gov) or Cheryl Rodriguez at (505) 665-5330 (cheryl.rodriguez@em.doe.gov).

Sincerely,

Arturo Q. Duran
Designated Agency Manager
Environmental Management
Los Alamos Field Office

Enclosures:
1. Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area (EM2018-0040)

cc (letter with enclosure[s]):
K. Rich, N3B
C. Rodriguez, EM-LA

cc (letter with electronic enclosure[s]):
L. King, EPA Region 6, Dallas, TX
S. Yanicak, NMED
emla.docs@em.doe.gov
N3B Records
Public Reading Room (EPRR)
PRS Database

cc (letter emailed without enclosure[s]):
B. Bowlby, N3B
E. Evered, N3B
J. Legare, N3B
F. Lockhart, N3B
N. Lombardo, N3B
A. Duran, EM-LA
D. Nickless, EM-LA
D. Rhodes, EM-LA

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September 2018
EM2018-0040

Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area

N3B Los Alamos

EM2018-0040

Phase II Investigation Report for Upper Los Alamos Canyon Aggregate Area

September 2018

Responsible program director:

Erich Evered	[signature]	Program Director	RCRA Remediation Program	9/21/18
Printed Name	Signature	Title	Organization	Date

Responsible N3B representative:

Joseph A. Legare	[signature] for J.A. Legare	Program Manager	N3B Environmental Remediation Program	9/21/18
Printed Name	Signature	Title	Organization	Date

Responsible DOE-EM-LA representative:

Arturo Q. Duran	[signature]	Designated Agency Manager	Office of Quality and Regulatory Compliance	9/25/18
Printed Name	Signature	Title	Organization	Date

EXECUTIVE SUMMARY

This Phase II investigation report evaluates the nature and extent of contamination and potential human health and ecological risks for 21 solid waste management units (SWMUs) and areas of concern (AOCs) in the Upper Los Alamos Canyon Aggregate Area at Los Alamos National Laboratory (LANL or the Laboratory). Three additional sites are included in this report but are not evaluated for nature and extent and risk because sampling could not be performed, and there are no data. The SWMUs and AOCs addressed in this report are located in Former Technical Area 00 (TA-00), former TA-01, TA-03, former TA-32, TA-43, and TA-61. These sites were initially investigated in 2008, and the investigation results were documented in the Upper Los Alamos Canyon Aggregate Area investigation report, submitted by the U.S. Department of Energy (DOE) and Los Alamos National Security, LLC (LANS) to the New Mexico Environment Department (NMED) in 2010. The investigation report concluded that additional sampling to define the extent of contamination was needed, and additional sampling requirements were documented in the approved Phase II investigation work plan for Upper Los Alamos Canyon Aggregate Area, submitted by DOE and LANS to NMED in October 2010. The Phase II investigation work plan was implemented in 2012, and based on the results, additional sampling and/or remediation was deemed necessary. Additional sampling and remediation was performed from 2013 through 2017.

After the Phase II work plan had been approved, NMED and DOE entered into a framework agreement for the realignment of environmental priorities at the Laboratory. Under the framework agreement, NMED and DOE agreed to review characterization efforts undertaken to date pursuant to the Compliance Order on Consent (Consent Order) to identify those sites where the nature and extent of contamination have been adequately characterized. Pursuant to the framework agreement, the Laboratory reviewed its data evaluation process with respect to U.S. Environmental Protection Agency (EPA) guidance and the framework agreement principles and concluded that this process could be revised to more efficiently complete site characterization, while providing full protection of human health and the environment. Specifically, the process for evaluating data to define extent of contamination was revised to provide a greater emphasis on risk reduction, consistent with EPA guidance. The framework agreement also provided the flexibility to continue investigation activities until investigation objectives had been met rather than submitting intermediate reports and work plans for additional work.

The revised process was used to reevaluate the 2008 data, as well as the Phase II data. Based on the evaluation of investigation results using the revised process, the extent of contamination has been defined (or a determination has been made that no further sampling for extent is warranted) at 21 sites. Three sites could not be sampled because they are beneath structures and inaccessible and therefore were not evaluated. Human health and ecological risk assessments were performed for the 21 sites with data.

Based on the results of data evaluations presented in this investigation report, the DOE Environmental Management Los Alamos Field Office and Newport News Nuclear BWXT – Los Alamos, LLC (N3B) recommend the following:

- Corrective action complete without controls is recommended for 14 sites for which extent is defined and which pose no potential unacceptable human health risk under the residential scenario and no unacceptable ecological risk.
- Corrective action complete with controls is recommended for seven sites for which extent is defined and which pose no potential unacceptable human health risk under the industrial scenario and no unacceptable ecological risk.
- Sampling is recommended for three sites when structures above the sites are no longer present.

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1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility located in north-central New Mexico, approximately 60 mi northeast of Albuquerque and 20 mi northwest of Santa Fe. The Laboratory site covers 39 mi^2 of the Pajarito Plateau, which consists of a series of fingerlike mesas separated by deep canyons containing perennial and intermittent streams running from west to east. Mesa tops range in elevation from approximately 6200 to 7800 ft above sea level.

The Laboratory has been a participant in a national effort by the U.S. Department of Energy (DOE) to clean up sites and facilities formerly involved in weapons research and development. The goal of this effort is to ensure past operations do not threaten human or environmental health and safety in and around Los Alamos County, New Mexico. To achieve this goal, the Laboratory has investigated sites potentially contaminated by past Laboratory operations.

This investigation report addresses sites in Technical Area 00 (TA-00), former TA-01, TA-03, former TA-32, TA-43, and TA-61 within the Upper Los Alamos Canyon Aggregate Area (Figure 1.0-1). These sites are potentially contaminated with hazardous chemicals and radionuclides. The New Mexico Environment Department (NMED), pursuant to the New Mexico Hazardous Waste Act, regulates cleanup of hazardous wastes and hazardous constituents. DOE regulates cleanup of radioactive contamination, pursuant to DOE Order 5400.5, “Radiation Protection of the Public and the Environment”; DOE Order 435.1, “Radioactive Waste Management”; and DOE Order 458.1, “Administrative Change 3, Radiation Protection of the Public and the Environment.” Information on radioactive materials and radionuclides, including the results of sampling and analysis of radioactive constituents, is voluntarily provided to NMED in accordance with DOE policy.

1.1 General Site Information

The Upper Los Alamos Canyon Aggregate Area, shown on Plate 1, consists of 115 sites, 54 of which were previously investigated and/or remediated and were approved for no further action (LANL 2006, 091915). Those 54 sites were not proposed for further investigation or other activities in the April 2006 investigation work plan (LANL 2006, 091916). The remaining 61 sites were evaluated in the investigation work plan (LANL 2006, 091916). Of these 61 sites, 47 sites (2 in TA-00, 32 in former TA-01, 4 in TA-03, 5 in former TA-32, 1 in TA-41, 2 in TA-43, and 1 in TA-61) underwent sampling in 2008–2009 and investigation results were reported in the approved investigation report for Upper Los Alamos Canyon Aggregate Area (LANL 2010, 108528; NMED 2010, 109195). Deferred action was proposed and approved by NMED for 8 sites (LANL 2006, 091916; NMED 2006, 095460). No sampling was proposed and approved by NMED for 6 sites (LANL 2006, 091916; NMED 2006, 095460). Further sampling for extent of contamination and/or removal of contaminated soil was proposed for 28 of these sites in the approved Phase II investigation work plan for Upper Los Alamos Canyon Aggregate Area (LANL 2010, 110860; NMED 2011, 111674). Phase II sampling was initiated in 2012, and subsequent follow-on investigation and cleanup was performed from 2013 through 2017. Several sites were addressed in separate reports to expedite completion to property development; some of these sites were split into two or three new solid waste management units (SWMUs) or areas of concern (AOCs) in order to expedite this process. The remaining 23 sites, plus 1 site identified after the Phase II investigation work plan (LANL 2010, 110860) was approved, are addressed in this Phase II investigation report. Table 1.1-1 lists the 24 sites, with a brief description and a list of previous investigations.

TA-00 includes all Laboratory-related operations and sites outside former or current Laboratory boundaries. These sites are geographically separated and scattered across the Pajarito Plateau in the northern part of Los Alamos County and in adjacent Santa Fe County. The TA-00 sites that are included in Upper Los Alamos Canyon Aggregate Area are located in Los Alamos Canyon and the Los Alamos townsite.

Former TA-01 was the Laboratory's first technical area. Beginning in 1943, it housed the Laboratory administration, theoretical divisions, plutonium chemistry, and physics research. Between 1943 and 1945, much of the theoretical, experimental, and production work in developing the atomic bomb took place at former TA-01. From 1946 to 1965, these activities had been moved elsewhere in the Laboratory and the site underwent decontamination and decommissioning (D&D) in 1966. The site of former TA-01 lies within the current townsite of Los Alamos, on the north and south sides of Trinity Drive surrounding Ashley Pond. The properties are owned privately, by Los Alamos County, and by DOE.

TA-03 is located on South Mesa between Los Alamos Canyon to the north and Twomile Canyon to the south, and is the Laboratory's main technical area. It contains most of the Laboratory's administrative buildings and public and corporate access facilities. In addition, TA-03 houses several Laboratory activities such as experimental sciences, special nuclear materials, theoretical/computations, and physical support operations.

Former TA-32 was a small medical research facility consisting of three laboratories, an office building, a warehouse, and a valve house. Work at the site included biological research involving radionuclides. The site of former TA-32 is located within the current townsite of Los Alamos, approximately 400 ft east of Knecht Street and 400 ft south of Trinity Drive. Various Los Alamos County buildings and operations now occupy the area on the mesa top, and DOE owns the land below the mesa top.

TA-43 is located on East Mesa next to the Los Alamos Medical Center (LAMC). In the past, TA-43 was used for industrial hygiene research; currently, it is used for biomedical research.

TA-61 is located on Sigma Mesa, which is bounded by Los Alamos Canyon on the north and Sandia Canyon on the south. It includes physical support and infrastructure facilities, such as a municipal sanitary landfill, Los Alamos County's Eco Station trash and recycling facility, sewer pump stations, general storage sheds, and general warehouse storage for maintenance activities performed throughout the Laboratory.

1.2 Purpose of Investigation

The objective of the investigation was to collect samples to define the nature and the lateral and vertical extent of contamination for the 24 SWMUs and AOCs located at TA-00, former TA-01, TA-03, former TA-32, TA-43, and TA-61. An additional objective is to determine whether contamination at any of the sites poses a potential unacceptable risk to human health or the environment. This report presents details and results of the investigation activities conducted within the Upper Los Alamos Canyon Aggregate Area and presents recommendations at each site.

1.3 Document Organization

This investigation report is organized as 14 sections, including this introduction, with multiple supporting appendixes. Section 2 presents site background information, including operational history, historical releases, and summaries of previous investigations for each technical area. Section 3 presents the scope of activities performed during the investigation. Section 4 describes current regulatory criteria for human health screening levels, ecological screening levels, and cleanup standards. Section 5 describes the process for reviewing data to identify chemicals of potential concern and to evaluate nature and extent of contamination. Sections 6 through 11 present the results of field investigations, site contamination, determination of nature and extent, and summaries of human health and ecological risk screening assessments for each site at TA-00, former TA-01, TA-03, former TA-32, TA-43, and TA-61, respectively. Section 12 presents the conclusions of the investigations. Section 13 presents recommendations for each site. Section 14 includes a list of references cited and a list of map data sources for all figures and plates.

Appendixes include acronyms, a metric conversion table, and definitions of data qualifiers (Appendix A); field methods (Appendix B); investigation-derived waste (IDW) management (Appendix C); analytical program descriptions and summaries of data quality (Appendix D); analytical suites and results and analytical reports (Appendix E); box plots and statistical analyses (Appendix F); and risk screening assessments (Appendix G).

2.0 AGGREGATE AREA SITE CONDITIONS

2.1 Surface Conditions

2.1.1 Soils

Soils on the Pajarito Plateau were initially mapped and described by Nyhan et al. (1978, 005702). The soils on the slopes between the mesa tops and canyon floors have been mapped as mostly steep rock outcrops consisting of approximately 90% bedrock outcrop and patches of shallow, weakly developed colluvial soils. South-facing canyon walls are generally steep and usually have shallow soils in limited, isolated patches between rock outcrops. In contrast, the north-facing canyon walls generally have more extensive areas of shallow dark-colored soils under thicker forest vegetation. The canyon floors generally contain poorly developed, deep, well-drained soils on floodplain terraces or small alluvial fans (Nyhan et al. 1978, 005702).

The soils on the mesa top in the Upper Los Alamos Canyon Aggregate Area generally belong to either the Carjo or Pogna soil series (Nyhan et al. 1978, 005702). Carjo soils consist of moderately deep, well-drained, and moderately developed soils with an A-B-C horizon sequence. Soil textures can range from clay loams to fine, sandy loams. The Pogna soils consist of shallow, well-drained, and weakly developed soils with an A-C horizon sequence. The soil texture of Pogna soil is usually fine sandy loam. The parent material of these soils may range from Bandelier Tuff to sequences of alluvium/colluvium interstratified with moderately developed to well-developed buried soils.

A majority of the natural mesa-top surface soil has been altered by anthropogenic activities. Excavation and fill, paved roads, parking lots, parks, landscaped yards, and buildings have changed the natural soil landscape considerably.

2.1.2 Surface Water

The Rio Grande is the primary river in north-central New Mexico. All surface-water drainage and groundwater discharge from the plateau ultimately arrive at the Rio Grande. Most surface water in the Los Alamos area occurs as ephemeral, intermittent, or interrupted streams in canyons cut into the Pajarito Plateau. Springs on the flanks of the Jemez Mountains, west of the Laboratory’s western boundary, supply flow to the upper reaches of Cañon de Valle and to Guaje, Los Alamos, Pajarito, and Water canyons (Purtymun 1975, 011787; Stoker 1993, 056021). These springs discharge water perched in the Bandelier Tuff and Tschicoma Formation at rates from 2 to 135 gal./min (Abeele et al. 1981, 006273). The volume of flow from the springs maintains natural perennial reaches of varying lengths in each of the canyons.

Perennial flow occurs in the upper reaches of Los Alamos Canyon (west of the Los Alamos Reservoir). Typically, the overflow of water from the reservoir during spring snowmelt results in nearly continuous surface-water flow between the western Laboratory boundary and TA-02 for several weeks to several months each year (LANL 1995, 050290). Surface water in Los Alamos Canyon rarely flows across the entire length of the Laboratory. Most often, surface waters are depleted by infiltration into canyon alluvium, creating saturated zones of seasonally variable extent (LANL 1995, 50290).

The mesa-top portion of former TA-01 is now a commercially developed area. No natural surface water is present at this site. Ashley Pond is a closed water body maintained as a Los Alamos County beautification project. During summer thunderstorms and spring snowmelt, runoff flows from the mesa top down the hillsides and into the ephemeral stream in Los Alamos Canyon. Surface runoff from the former TA-01 mesa top enters Los Alamos Canyon by way of several primary drainages. Laboratory studies have indicated that relatively little surface water has infiltrated into the underlying tuff at former TA-01 because of low infiltration and high evaporation rates (LANL 1992, 43454, pp. 3-6, 3-7).

2.1.3 Land Use

Currently, former TA-01 is a residential, commercial, and industrial-use area made up of private, Los Alamos County, and DOE lands. It includes both mesa-top and canyon-wall areas. The mesa-top portion of former TA-01 is situated outside the Laboratory's boundary, includes a portion of the Los Alamos townsite, and is located on the north and south sides of Trinity Drive. The mesa-top area of former TA-01 is owned by Los Alamos County and private parties. The wall and floor of Los Alamos Canyon in former TA-01, including areas designated as TA-00, lie within the Laboratory's boundary and are owned by DOE.

TA-03 comprises the core operational and administrative complex of the Laboratory. It is highly developed with numerous office and Laboratory buildings, parking facilities, roads, and other paved areas. Most of TA-03 is located on the mesa top south of Los Alamos Canyon, but limited portions extend into the canyons. The canyon areas of TA-03 are less developed but are within Laboratory boundaries.

Former TA-32 is located within the Los Alamos townsite south of Trinity Drive and extends southward onto the north slope of Los Alamos Canyon. The mesa-top portion is a developed area that includes commercial properties and facilities owned by Los Alamos County. This area is almost entirely paved or covered by buildings. The canyon-slope area is undeveloped and largely unusable because of the steepness of the slope.

TA-43 is on the mesa top adjacent to Diamond Drive in the Los Alamos townsite and includes active Laboratory facilities (Bioscience [B] Division's Health Research Laboratory [HRL]) and the site of LAMC. The area is highly developed and is mostly covered by buildings and pavement. Immediately south of the facilities is the steep north slope of Los Alamos Canyon.

TA-61 is located on the mesa top between Los Alamos Canyon to the north and Sandia Canyon to the south. The major facility in the area is the Los Alamos County landfill on the south side of East Jemez Road and adjacent to Sandia Canyon. The remainder of the area, consisting of the narrow mesa top adjacent to East Jemez Road, is undeveloped.

Property transfer of land from DOE to Los Alamos County and private parties began in 1976. Since then, former TA-01 has been regraded and recontoured and has undergone significant coverage from backfill and construction. These activities have greatly altered the landscape, and few exposed areas of native soil or tuff are evident on the mesa top. No remnant evidence of former TA-01 Laboratory structures exists in the area. The Los Alamos Community Center (formerly the Laboratory Communication Center), located east of Ashley Pond, is the only building remaining from TA-01.

2.2 Subsurface Conditions

2.2.1 Anticipated Stratigraphic Units

The stratigraphy of the Upper Los Alamos Canyon Aggregate Area is summarized in this section. Additional information on the geologic setting of the area and information on the Pajarito Plateau can be found in the Environmental Restoration Project installation work plan (LANL 2000, 066802), the TA-01 operable unit work plan (LANL 1992, 43454), and the "Hydrogeologic Workplan" (LANL 1998, 059599).

The bedrock at or near the surface of the mesa top is the Bandelier Tuff. There are approximately 1250 ft of volcanic and sedimentary materials between any potential contaminant-bearing units at the mesa surface and the regional aquifer. The stratigraphy of the upper rock units (tuff) can be observed directly in excellent exposures of outcrops on canyon walls and slopes to the south of TA-01. The descriptions begin with the oldest (deepest) outcrops and proceed to the youngest (topmost). The stratigraphic units that may be encountered during investigation of the Upper Los Alamos Canyon Aggregate Area are described briefly in the following sections.

The Bandelier Tuff

The Bandelier Tuff consists of the Otowi and Tshirege members, which are stratigraphically separated in many places by the tephras and volcaniclastic sediments of the Cerro Toledo interval. The Bandelier Tuff was emplaced during cataclysmic eruptions of the Valles Caldera between 1.61 and 1.22 million years ago. The tuff is composed of pumice, minor rock fragments, and crystals supported in an ashy matrix. It is a prominent cliff-forming unit because of its generally strong consolidation (Broxton and Reneau 1995, 049726).

Otowi Member. Griggs and Hem (1964, 092516), Smith and Bailey (1966, 021584), Bailey et al. (1969, 021498), and Smith et al. (1970, 009752) describe the nature and extent of the Otowi Member. It consists of moderately consolidated (indurated), porous, and nonwelded vitric tuff (ignimbrite) that forms gentle colluvium-covered slopes along the base of canyon walls. The Otowi ignimbrites contain light gray to orange pumice that is supported in a white to tan ash matrix (Broxton et al. 1995, 050121; Broxton et al. 1995, 050119; Goff 1995, 049682). The ash matrix consists of glass shards, broken pumice, crystal fragments, and fragments of perlite.

The Guaje Pumice Bed occurs at the base of the Otowi Member, making a significant and extensive marker horizon. The Guaje Pumice Bed (Bailey et al. 1969, 021498; Self et al. 1986, 021579) contains well-sorted pumice fragments whose mean size varies between 0.8 and 1.6 in. Its thickness averages approximately 28 ft below most of the plateau, with local areas of thickening and thinning. Its distinctive white color and texture make it easily identifiable in borehole cuttings and core, and it is an important marker bed for the base of the Bandelier Tuff.

Tephras and Volcaniclastic Sediments of the Cerro Toledo Interval. The Cerro Toledo interval is an informal name given to a sequence of volcaniclastic sediments and tephras of mixed provenance that separates the Otowi and Tshirege members of the Bandelier Tuff (Broxton et al. 1995, 050121; Broxton and Reneau 1995, 049726; Goff 1995, 049682). Although it is located between the two members of the Bandelier Tuff, it is not considered part of that formation (Bailey et al. 1969, 021498). Outcrops of the Cerro Toledo interval generally occur wherever the top of the Otowi Member appears in Los Alamos Canyon and in canyons to the north. The unit contains primary volcanic deposits described by Smith et al. (1970, 009752), as well as reworked volcaniclastic sediments. The occurrence of the Cerro Toledo interval is widespread; however, its thickness varies, ranging between several feet and more than 100 ft.

The predominant rock types in the Cerro Toledo interval are rhyolitic tuffaceous sediments and tephras (Heiken et al. 1986, 048638; Stix et al. 1988, 049680; Broxton et al. 1995, 050121; Goff 1995, 049682). The tuffaceous sediments are the reworked equivalents of Cerro Toledo rhyolite tephra. Oxidation and clay-rich horizons indicate that at least two periods of soil development occurred within the Cerro Toledo deposits. Because these soils are rich in clay, they may act as barriers to the movement of vadose zone moisture. Some of the deposits contain both crystal-poor and crystal-rich varieties of pumice. The pumice deposits tend to form porous and permeable horizons within the Cerro Toledo interval, and locally, they may provide important pathways for moisture transport in the vadose zone. A subordinate lithology within the Cerro Toledo interval includes clast-supported gravel, cobble, and boulder deposits derived from the Tschicoma Formation (Broxton et al. 1995, 050121; Goff 1995, 049682; Broxton and Reneau 1996, 055429).

Tshirege Member. The Tshirege Member is the upper member of the Bandelier Tuff and is the most widely exposed bedrock unit of the Pajarito Plateau (Griggs and Hem 1964, 092516; Smith and Bailey 1966, 021584; Bailey et al. 1969, 021498; Smith et al. 1970, 009752). Emplacement of this unit occurred during eruptions of the Valles Caldera approximately 1.2 million years ago (Izett and Obradovich 1994, 048817; Spell et al. 1996, 055542). The Tshirege Member is a multiple-flow, ash-and-pumice sheet that forms the prominent cliffs in most of the canyons on the Pajarito Plateau. It is a chemical cooling unit whose physical properties vary vertically and laterally. The consolidation in this member is largely from compaction and welding at high temperatures after the tuff was emplaced. Its light brown, orange-brown, purplish, and white cliffs have numerous, mostly vertical fractures that may extend from several feet up to several tens of feet. The Tshirege Member includes thin but distinctive layers of bedded, sand-sized particles called surge deposits that demark separate flow units within the tuff. The Tshirege Member is generally over 200 ft thick.

The Tshirege Member differs from the Otowi Member most notably in its generally greater degree of welding and compaction. Time breaks between the successive emplacement of flow units caused the tuff to cool as several distinct cooling units. For this reason, the Tshirege Member consists of at least four cooling subunits that display variable physical properties vertically and horizontally (Smith and Bailey 1966, 021584; Crowe et al. 1978, 005720; Broxton et al. 1995, 050121). The welding and crystallization variability in the Tshirege Member produces recognizable vertical variations in its properties, such as density, porosity, hardness, composition, color, and surface-weathering patterns. The subunits are mappable based on a combination of hydrologic properties and lithologic characteristics.

Broxton et al. (1995, 050121) provide extensive descriptions of the Tshirege Member cooling units. The following paragraphs describe, in ascending order, subunits of the Tshirege Member.

The Tsankawi Pumice Bed forms the base of the Tshirege Member. Where exposed, it is commonly 20 to 30 in. thick. This pumice-fall deposit contains moderately well-sorted pumice lapilli (diameters reaching about 2.5 in.) in a crystal-rich matrix. Several thin ash beds are interbedded with the pumice-fall deposits.

Subunit Qbt 1g is the lowermost tuff subunit of the Tshirege Member. It consists of porous, nonwelded, and poorly sorted ash-flow tuffs. This unit is poorly indurated but nonetheless forms steep cliffs because of a resistant bench near the top of the unit; the bench forms a harder, protective cap over the softer underlying tuffs. A thin (4 to 10 in.), pumice-poor surge deposit commonly occurs at the base of this unit.

Subunit Qbt 1v forms alternating clifflike and sloping outcrops composed of porous, nonwelded, crystallized tuffs. The base of this unit is a thin, horizontal zone of preferential weathering that marks the abrupt transition from glassy tuffs below (in Unit Qbt 1g) to the crystallized tuffs above. This feature forms a widespread marker horizon (locally termed the vapor-phase notch) throughout the Pajarito Plateau, which is readily visible in canyon walls in parts of Los Alamos Canyon. The lower part of Qbt 1v is orange-brown, resistant to weathering, and has distinctive columnar (vertical) joints; hence, the term "colonnade tuff" is appropriate for its description. A distinctive white band of alternating cliff- and slope-forming tuffs overlies the colonnade tuff. The tuffs of Qbt 1v are commonly nonwelded (pumices and shards retain their initial equant shapes) and have an open, porous structure.

Subunit Qbt 2 forms a distinctive, medium-brown, vertical cliff that stands out in marked contrast to the slope-forming, lighter-colored tuffs above and below. It displays the greatest degree of welding in the Tshirege Member. A series of surge beds commonly marks its base. It typically has low porosity and permeability relative to the other units of the Tshirege Member.

Subunit Qbt 3 is a nonwelded to partially welded, vapor-phase altered tuff, which forms the upper cliffs in Los Alamos Canyon. Its base consists of a purple-gray, unconsolidated, porous, and crystal-rich nonwelded tuff that forms a broad, gently sloping bench developed on top of Qbt 2. Abundant fractures extend through the upper units of the Bandelier Tuff, including the Tshirege Unit 3 ignimbrite. The origin of the fractures has not been fully determined, but the most probable cause is brittle failure of the tuff caused by cooling contraction soon after initial emplacement (Vaniman 1991, 009995.1; Wohletz 1995, 054404).

2.2.2 Hydrogeology

The hydrogeology of the Pajarito Plateau is generally separable in terms of mesas and canyons forming the plateau. Mesas are generally devoid of water, both on the surface and within the rock forming the mesa. Canyons range from wet to relatively dry; the wettest canyons contain continuous streams and contain perennial groundwater in the canyon-bottom alluvium. Dry canyons have only occasional streamflow and may lack alluvial groundwater. Intermediate perched groundwater has been found at certain locations on the plateau at depths ranging between 100 and 400 ft (30 and 122 m). The regional aquifer is found at depths of about 600 to 1200 ft (180 to 360 m).

The hydrogeologic conceptual model shows that under natural conditions, relatively small volumes of water move beneath mesa tops because of low rainfall, high evaporation, and efficient water use by vegetation. Atmospheric evaporation may extend deeper into mesas, further inhibiting downward flow.

2.2.2.1 Groundwater

In the Los Alamos area, groundwater occurs as (1) water in shallow alluvium in some of the larger canyons, (2) intermediate perched groundwater (a perched groundwater body lies above a less permeable layer and is separated from the underlying aquifer by an unsaturated zone), and (3) the regional aquifer of the Los Alamos area. Numerous wells have been installed over the past several decades at the Laboratory and in the surrounding area to investigate the presence of groundwater in these zones and to monitor groundwater quality.

The Laboratory formulated a comprehensive groundwater protection plan (LANL 1995, 050124) for an enhanced set of characterization and monitoring activities. The "Hydrogeologic Workplan" (LANL 1998, 059599) details the implementation of extensive groundwater characterization across the Pajarito Plateau within an area potentially affected by past and present Laboratory operations.

Alluvial Groundwater

Intermittent and ephemeral streamflows in the canyons of the Pajarito Plateau have deposited alluvium that can be as thick as 100 ft. The alluvium in canyons of the Jemez Mountains is generally composed of sands, gravels, pebbles, cobbles, and boulders derived from the Tschicoma Formation and Bandelier Tuff. The alluvium in canyons on the plateau is comparatively finer grained, consisting of clays, silts, sands, and gravels derived from the Bandelier Tuff.

In contrast to the underlying volcanic tuff and sediments, alluvium is relatively permeable. Ephemeral runoff in some canyons infiltrates the alluvium until downward movement is impeded by the less permeable tuff and sediments, which results in the buildup of a shallow alluvial groundwater body. Depletion by evapotranspiration and movement into the underlying rocks limit the horizontal and vertical extent of the alluvial water (Purtymun et al. 1977, 011846). The limited saturated thickness and extent of the alluvial groundwater preclude its use as a viable source of water for municipal and industrial needs. Lateral flow of the alluvial perched groundwater is in an easterly, downcanyon direction.

Two saturated zones are known to exist in the alluvium of Los Alamos Canyon. The first is in the upper part of Los Alamos Canyon and extends eastward from the Los Alamos Reservoir to the vicinity of observation well LAO-4.5, west of NM 4. The second is in the lower part of Los Alamos Canyon and extends from Basalt Spring to the Rio Grande. In middle and upper Los Alamos Canyon, the saturated thickness in the alluvium varies seasonally from a few feet in the winter months to 25 ft in the spring and summer months when recharge is the greatest (LANL 1994, 052951.71).

Intermediate Perched Water

Two intermediate perched zones (between the alluvial water and the regional aquifer), one beneath the other, have been encountered in Los Alamos Canyon between TA-02 and the confluence with DP Canyon. The upper intermediate perched zone occurs within the Guaje Pumice Bed. This zone was encountered in boreholes LADP-3 (at 325 ft) and LAOI(A)-1.1 (at 295 ft) (Broxton et al. 1995, 050119; Longmire et al. 1996, 054168). The saturated thickness of this zone decreases from west to east, ranging between 22 ft at LAOI(A)-1.1 and 5 ft at LADP-3. A deeper intermediate perched zone was encountered in LAOI(A)-1.1 in the Puye Formation at approximately 317 ft. However, no deeper intermediate perched zone was found at LADP-3 in the approximately 19 ft of the Puye Formation that was penetrated. Although no perched aquifers are known to exist in the immediate vicinity of TA-01, a perched aquifer has been located at an intermediate depth (325 ft below Los Alamos Canyon) in drill hole LADP-3 at TA-21, approximately 2 mi (3 km) east of the site (Broxton et al. 1995, 050119; Longmire et al. 1996, 054168).

Regional Aquifer

The regional aquifer of the Los Alamos area is the only aquifer capable of a large-scale municipal water supply (Purtymun 1984, 006513). The surface of the regional aquifer rises westward from the Rio Grande within the Santa Fe Group into the lower part of the Puye Formation beneath the central and western part of the Pajarito Plateau. The depths to groundwater below the mesa tops range between about 1200 ft along the western margin of the plateau and about 600 ft at the eastern margin. Figure 8 in the "2005 General Facility Information" report (LANL 2005, 091139) shows the location of wells and generalized water-level contours on top of the regional aquifer. The regional aquifer is typically separated from the alluvial groundwater and intermediate perched zone groundwater by 350 to 620 ft of tuff, basalt, and sediments (LANL 1993, 023249).

The regional aquifer beneath East Mesa is at an elevation of approximately 6000 ft in the sediments of the Puye and Totavi formations. At mesa-top sites of the Upper Los Alamos Canyon Aggregate Area, the surface is separated from the regional aquifer by an unsaturated zone that is 1000 to 1300 ft thick.

The direction of groundwater flow in the regional aquifer is to the east-southeast toward the Rio Grande. The velocity of groundwater flow ranges from about 20 to 250 ft/yr (LANL 1998, 058841, pp. 2–7). Details of depths to the regional aquifer, flow directions and rates, and well locations are presented in various Laboratory documents (Purtymun 1995, 045344; LANL 1997, 055622; LANL 2000, 066802).

2.2.2.2 Vadose Zone

The unsaturated zone from the mesa surface to the top of the regional aquifer is referred to as the vadose zone. The source of moisture for the vadose zone is precipitation, but much of it runs off, evaporates, or is absorbed by plants. The subsurface vertical movement of water is influenced by properties and conditions of the materials that make up the vadose zone.

Although water moves slowly through the unsaturated tuff matrix, it can move relatively rapidly through fractures if nearly saturated conditions exist (Hollis et al. 1997, 063131). Fractures may provide conduits for fluid flow but probably only in discrete, disconnected intervals of the subsurface. Because they are open to the passage of both air and water, fractures can have both wetting and drying effects, depending on the relative abundance of water in the fractures and in the tuff matrix.

As a rule, the Bandelier Tuff is very dry and does not readily transmit moisture. Most of the pore spaces in the tuff are of capillary size and have a strong tendency to hold water against gravity by surface-tension forces. Vegetation is very effective at removing moisture near the surface. During the summer rainy season when rainfall is highest, near-surface moisture content is variable because of higher rates of evaporation and of transpiration by vegetation, which flourishes during this time.

The various units of the Bandelier Tuff tend to have relatively high porosities. Porosity ranges between 30% and 60% by volume, generally decreasing for more highly welded tuff. Permeability varies for each cooling unit of the Bandelier Tuff. The moisture content of native tuff is low, generally less than 5% by volume throughout the profile (Kearl et al. 1986, 015368; Purtymun and Stoker 1990, 007508).

3.0 SCOPE OF ACTIVITIES

The following sections describe the scope of activities conducted during the Phase II investigation of the Upper Los Alamos Aggregate Area. Appendix B describes the methods and procedures used in completing the scope.

3.1 Scope of Activities

The scope of the Phase II investigation is described in the approved Phase II investigation work plan for Upper Los Alamos Canyon Aggregate Area (LANL 2010, 110860; NMED 2010, 111674). Field work was initiated in 2012. Based on the results of the initial field activities, nature and extent of contamination was not defined at all sites and additional cleanup was required at some sites. This additional work was implemented through 2017 and results are presented in this Phase II investigation report.

Samples were analyzed for all or a subset of the following: target analyte list (TAL) metals, cyanide (total), nitrate, perchlorate, explosive compounds, polychlorinated biphenyls (PCBs), semivolatile organic compounds (SVOCs), volatile organic compounds (VOCs), dioxins/furans, americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium.

3.2 Field Activities

3.2.1 Geodetic Survey

Geodetic surveys were conducted at TA-00, former TA-01, TA-03, former TA-32, TA-43, and TA-61 in accordance with Standard Operating Procedure (SOP) 5028, “Coordinating and Evaluating Geodetic Surveys.” A Trimble global positioning system (GPS) 5700 was used to mark the coordinates of all the planned sampling locations identified in the Phase II work plan (LANL 2010, 110860). Horizontal accuracy of the Trimble GPS 5700 was within 0.1 ft. During sampling, if the planned location was offset because of surface or subsurface obstruction, the relocated sampling location was surveyed. The surveyed coordinates for all sampling locations are presented in Table 3.1-1.

3.2.2 Geophysical Survey

No geophysical surveys were performed during the investigation.

3.2.3 Excavation

Excavation was performed at SWMUs 01-001(d3), 01-001(g), 32-002(b2), and 61-007 during the Phase II investigation activities. A total of 70 yd^3 of plutonium-contaminated soil was removed from SWMU 01-001(d3), 43 yd^3 of plutonium-contaminated soil from SWMU 01-001(g), 158 yd^3 of PCB-contaminated soil from SWMU 32-002(b2), and 220 yd^3 of PCB-contaminated soil from SWMU 61-007. In addition, approximately 2880 yd^3 of PCB-contaminated soil was removed from SWMU 01-001(f) during an interim measure and confirmation sampling results are evaluated in this report.

Excavation was completed using a standard track-mounted excavator, mini-excavator, and spider excavator. Excavation areas were backfilled with clean fill material obtained from an off-site source. All affected surfaces were restored to approximate original grade and condition.

3.2.4 Collection of Soil, Fill, Tuff, and Sediment Samples

Samples were collected according to the Phase II work plan (LANL 2010, 110860). Appendix B presents deviations from the work plan.

Surface and shallow subsurface samples were collected using a stainless-steel hand auger in accordance with SOP-06.10, “Hand Auger and Thin-Wall Tube Sampler.” A stainless-steel scoop and bowl were used to transfer samples to sterile sample collection jars or bags for transport to the Sample Management Office (SMO). Samples were shipped from the SMO to off-site contract analytical laboratories for analysis.

In areas where the hand auger met refusal or sampling depths were too great, subsurface samples were collected using a hollow-stem auger drill rig with a stainless-steel core barrel to retrieve material from the advancing hole in accordance with SOP-06.26, “Core Barrel Sampling for Subsurface Earth Materials.” Core material was transferred to a stainless-steel bowl and broken into smaller pieces using a stainless-steel spoon if necessary to transfer the material to sterile sample collection jars or bags for transport to the SMO. Samples for VOC analysis were collected before any other samples and before the core material was broken into smaller pieces for containerization.

Details of the methods used for collecting, packaging, documenting, and transporting samples are provided in Appendix B.

Quality assurance/quality control (QA/QC) samples included field duplicate samples collected in accordance with SOP-5059, “Field Quality Control Samples.” Field duplicate samples were collected at a minimum rate of 1 per 10 investigation samples. Rinsate blanks were also collected at a minimum rate of 1 per 10 investigation samples to confirm decontamination of sampling equipment. Field trip blank samples were collected in conjunction with investigation samples to be analyzed for VOCs, at a minimum rate of 1 per day when VOC samples were being collected.

3.2.5 Field Screening of Samples Collected

All samples were screened in the field for VOCs and for radioactivity. Samples collected by hand methods (hand auger or spade and scoop) were screened in the collection bowl or sample container after the sample was collected. Cores collected by split-spoon core barrel were screened immediately upon opening the core barrel. Screening results were recorded on the corresponding sample collection log (SCL)/chain-of-custody (COC) forms at the time of sample collection.

Each sample was field-screened for VOCs using a MiniRAE 2000 (or equivalent) photoionization detector (PID) with 11.7-eV lamp. The PID was subject to bench calibration yearly by the vendor and field calibrated daily by field personnel using a standard source of 100 ppm isobutylene. All daily calibration procedures for the MiniRAE 2000 PID met the manufacturer's specifications for standard reference gas calibration and the requirements of SOP-5006, "Control of Measuring and Test Equipment." The rated detection limit for the MiniRAE 2000 is 0.2 ppm.

Each sample was also field screened for gross alpha and beta/gamma radiation using an Eberline E-600. Radiological field screening of all samples was conducted by Laboratory radiological control technicians (RCTs) using appropriately calibrated instruments. Field calibration checks of radiological instruments were performed and documented by the RCTs. All calibration checks performed met the requirements of SOP-5006.

3.2.6 Equipment Decontamination

All sampling equipment was decontaminated before each sample was collected to avoid cross-contamination of samples. Equipment was also decontaminated before moving to another sampling location. Residual material adhering to the equipment was removed using dry decontamination methods, in accordance with SOP-5061, "Field Decontamination of Equipment." All parts of the equipment were thoroughly cleaned with Fantastik and clean paper towels. To verify the effectiveness of equipment decontamination, equipment rinsate blanks were collected from the sampling equipment at a frequency of 1 rinsate blank for every 10 investigation samples and analyzed for TAL metals, perchlorate, and cyanide (total). At sites where a drill rig was used, the drill rig was surveyed by RCTs and certified for release before it was moved from the site.

3.2.7 Storage and Disposal of Investigation-Derived Waste

The IDW generated as a result of field-investigation activities included drill cuttings, excavated material (soil, asphalt and concrete pavement removed to access the material below, cast iron pipe), used personal protective equipment, and miscellaneous materials used during dry decontamination of sampling equipment (e.g., paper towels and nitrile gloves). The IDW was characterized as specified in the approved waste characterization strategy form. All waste was placed in approved containers and was managed in accordance with SOP-5022, "Characterization and Management of Environmental Restoration (ER) Project Waste." The management of IDW is described in Appendix C.

3.3 Deviations

The sampling activities proposed in the Phase II investigation work plan (LANL 2010, 110860) were implemented to define extent of contamination and define areas of soil exceeding cleanup levels. Based on the results of the Phase II sampling, additional sampling and/or remediation was required at SWMUs 01-001(d3), 01-001(f), 01-001(g), 01-001(o), 01-003(a), 01-003(d), 32-002(b2), and 61-007 and AOCs C-43-001 and 01-003(b2). This scope was not included in the Phase II investigation work plan but was conducted to meet the investigation and remediation objectives of the Phase II investigation work plan.

4.0 REGULATORY CRITERIA

This section describes the criteria used for evaluating potential risk to ecological and human receptors. Regulatory criteria identified by medium in the Consent Order include cleanup standards, risk-based screening levels, and risk-based cleanup goals.

Human health risk-screening evaluations were conducted using NMED guidance (NMED 2017, 602273). Ecological risk-screening assessments were performed using Laboratory guidance (LANL 2017, 602649).

4.1 Current and Future Land Use

The specific screening levels used in the risk evaluation and corrective action decision process at a site depend on the current and reasonably foreseeable future land use(s). The current and reasonably foreseeable future land use(s) for a site determines the receptors and exposure scenarios used to select screening and cleanup levels. The land use within and surrounding the Upper Los Alamos Canyon Aggregate Area is currently both residential and industrial/commercial. Land within the aggregate area owned by Los Alamos County and private land owners is currently used for residential and commercial purposes and this use should continue for the foreseeable future. Land use for property owned by DOE is industrial and is expected to remain industrial for the reasonably foreseeable future. A construction worker scenario is evaluated because underground utilities are present near or within the boundaries of various Upper Los Alamos Canyon Aggregate Area SWMUs and AOCs, and maintenance or repair of these underground utilities is a reasonable possibility in the foreseeable future. The residential scenario is evaluated for sites on property not owned by DOE. For sites on DOE property, the residential scenario is evaluated for comparison purposes and is the decision scenario for sites that do not require future controls. The recreational scenario was also evaluated for SMWU 01-001(f) since recreational trails are present at the site.

4.2 Screening Levels

Human health and ecological risk-screening evaluations were conducted for the chemicals of potential concern (COPCs) detected in solid media at sites within the Upper Los Alamos Canyon Aggregate Area. The human health risk-screening assessments (Appendix G) were performed on inorganic and organic COPCs using NMED soil screening levels (SSLs) for the industrial, construction worker, and residential scenarios (NMED 2017, 602273). Recreational SSLs are from LANL (2017, 602581). When an NMED SSL for a COPC was not available, SSLs were obtained from EPA regional tables (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables) (adjusted to a risk level of 10^{-5} for carcinogens). For this investigation report, the May 2018 online version of the EPA regional tables was used to obtain EPA screening levels. Radionuclides were assessed using the Laboratory screening action levels (SALs) for the same scenarios (LANL 2015, 600929). Surrogate SSLs were used for some COPCs for which no SSLs were available based on structural similarity or breakdown products.

NMED guidance includes total chromium SSLs for the residential, industrial, and construction worker scenarios (NMED 2017, 602273). Because the toxicity of chromium strongly depends on its oxidation state, NMED and EPA also have SSLs for trivalent chromium and hexavalent chromium. For screening purposes, the NMED SSLs for total chromium are used for comparison unless there is a known or suspected source of hexavalent chromium at the SWMU/AOC or site conditions could alter the speciation of chromium in the environment. Total chromium screening levels are appropriate for low-level releases to soil from sources not associated with hexavalent chromium. However, NMED and EPA recommend collecting valence-specific data for chromium if chromium is likely to be an important contaminant at a site and when hexavalent chromium may exist (NMED 2017, 602273; (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables).

The Laboratory conducted a chromium background study to determine the prevalence of hexavalent chromium in soil, sediment, and tuff samples where there was no evidence of previous releases of chromium (LANL 2017, 602650). The report concluded that naturally occurring chromium is predominantly in the trivalent form and that the appropriate SSL for comparisons with data for purposes of evaluating extent of contamination at sites with no known chromium releases is the trivalent SSL. The chromium background study was approved by NMED in October 2017 (NMED 2017, 602678).

With one exception, the SWMUs and AOCs included in this investigation report are not known or suspected to be sources of hexavalent chromium. The SWMU 01-001(d1) septic tank may have received discharges of blowdown from a cooling tower (LANL 2017, 602404). The SWMU 01-001(d1) septic tank discharged through the SWMU 01-001(d3) outfall, which is included in this investigation report. Samples from SWMU 01-001(d3) were analyzed for hexavalent chromium and samples from all other sites were analyzed for total chromium. In accordance with the NMED-approved chromium background study (LANL 2017, 602650; NMED 2017, 602678), total chromium results are compared with the trivalent chromium SSLs for the purpose of evaluating extent of contamination. SSLs for total chromium, rather than SSLs for trivalent chromium, are conservatively used for the purpose of evaluating potential human-health risk due to exposure to chromium.

4.3 Ecological Screening Levels

The ecological risk-screening assessments (Appendix G) were conducted using ecological screening levels (ESLs) obtained from the Laboratory's ECORISK Database, Version 4.1 (LANL 2017, 602538). The ESLs are based on similar species and are derived from experimentally determined no observed adverse effect levels, lowest observed adverse effect levels (LOAELs), or doses determined lethal to 50% of the test population. Information relevant to the calculation of ESLs, including concentration equations, dose equations, bioconcentration factors, transfer factors, and toxicity reference values, is presented in the ECORISK Database, Version 4.1 (LANL 2017, 602538).

4.4 Cleanup Standards

As specified in the Consent Order, screening levels are used as soil cleanup levels unless they are determined to be impracticable or values do not exist for current and reasonably foreseeable future land use. Screening assessments compare COPC concentrations for each site with industrial, residential, and construction worker SSLs/SALs.

The cleanup goals specified in the Consent Order are a target risk of 1×10^{-5} for carcinogens or a hazard index (HI) of 1 for noncarcinogens. For radionuclides, the target dose is 25 mrem/yr as authorized by DOE Order 458.1. The SSLs/SALs used in the risk-screening assessments in Appendix G are based on these cleanup goals.

5.0 DATA REVIEW METHODOLOGY

The purpose of the data review is to define the nature and extent of contaminants for each site addressed by this investigation report. The nature of a contaminant refers to the specific contaminants that are present, the affected media, and associated concentrations. The nature of contamination is defined through identification of COPCs, which is discussed in section 5.1. The identification of a chemical or radionuclide as a COPC does not mean the constituent(s) is related to the site and is a result of site operations. A COPC is identified because it is present at a site based on the criteria discussed below but may be present because of adjacent and/or upgradient operations, and/or infrastructure typical of industrial and metropolitan development. If such origins are evident, the constituents may be excluded from the data analyses and risk assessments. The extent of contamination refers to the spatial distribution of COPCs, with an emphasis on the distribution of COPCs potentially posing a risk or requiring corrective action. The process for determining the extent of contamination and for concluding no further sampling for extent is warranted is discussed in section 5.2.

5.1 Identification of COPCs

The COPCs are chemicals and radionuclides that may be present as a result of releases from SWMUs or AOCs. Inorganic chemicals and some radionuclides occur naturally and inorganic chemicals and radionuclides detected because of natural background are not considered COPCs. Similarly, some radionuclides may be present as a result of fallout from historical nuclear weapons testing and these radionuclides are also not considered COPCs. The Laboratory has collected data on background concentrations of many inorganic chemicals, naturally occurring radionuclides, and fallout radionuclides. These data have been used to develop media-specific background values (BVs) and fallout values (FVs) (LANL 1998, 059730). For inorganic chemicals and radionuclides for which BVs or FVs exist, identification of COPCs involves background comparisons, which are described in sections 5.1.1 and 5.1.2. If no BVs or FVs are available or if samples are collected where FVs are not appropriate (i.e., greater than 1-ft depth or in rock), COPCs are identified based on detection status (i.e., if the inorganic chemical or radionuclide is detected, it is identified as a COPC unless available information indicates it is not present as a result of a release from the SWMU or AOC).

Organic chemicals may also be present as a result of anthropogenic activities unrelated to the SWMU or AOC or, to a lesser extent, from natural sources. Because no background data for organic chemicals are available, background comparisons cannot be performed in the same manner as for inorganic chemicals or radionuclides. Therefore, organic COPCs are identified on the basis of detection status (i.e., the organic chemical is detected). When assessing the nature of contamination, the history of site operations may be evaluated to determine whether an organic COPC is present because of a release from a SWMU or AOC or is present from non-site-related sources. Organic chemicals that are present from sources other than releases from a SWMU or AOC may be eliminated as COPCs and are not evaluated further.

5.1.1 Inorganic Chemical and Radionuclide Background Comparisons

The COPCs are identified for inorganic chemicals and radionuclides following EP-SOP-10071, “Background Comparisons for Inorganic Chemicals,” and EP-SOP-10073, “Background Comparisons for Radionuclides.” Inorganic COPCs are identified by comparing site data with BVs, statistical comparisons, and other lines of evidence, as applicable (LANL 1998, 059730). The upper end of the background data set may be used for comparison if one or more of the following conditions exist:

- Statistically determined BV is significantly greater than the maximum background concentration.
- Statistical tests cannot be performed because of insufficient data (fewer than eight samples and/or five detections per medium) or a high percentage of nondetections.
- Sufficient numbers of samples have been collected to determine nature and extent but results are predominately nondetections.
- Site history does not indicate the constituent is directly related to site activities or to a dominant waste stream.
- Spatial analyses do not show a pattern or trend indicating contamination.
- The maximum detected concentration is statistically determined to be an outlier. (Note: A sufficient number of samples must be collected to show a point is an outlier and is not indicative of a hotspot.)

Radionuclides are identified as COPCs based on background comparisons or statistical methods if BVs or FVs are available, based on detection status if BVs or FVs have not been established, and based on other lines of evidence, as applicable.

Background data are generally available for inorganic chemicals in soil, sediment, and tuff (LANL 1998, 059730). However, some analytes (e.g., nitrate and perchlorate) have no BVs. A BV may be either a calculated value from the background data set (upper tolerance limit [UTL] or the 95% upper confidence bound on the 95th quantile) or a detection limit (DL). When a BV is based on a DL, there is no corresponding background data set for that analyte/media combination.

For inorganic chemicals, data are evaluated by sample media to facilitate the comparison with media-specific background data. To identify inorganic COPCs, the first step is to compare the sampling result with BVs. If sampling results are above the BV and sufficient data are available (eight or more sampling results and five or more detections), statistical tests are used to compare the site sample data with the background data set for the appropriate media. If statistical tests cannot be performed because of insufficient data or a high percentage of nondetections, the sampling results are compared with the BV and the upper end of the background data set for the appropriate media. If concentrations are above the BV but no results are greater than the upper end of the background data set, lines of evidence are presented to determine whether the inorganic chemical is or is not a COPC. If at least one sampling result is above the BV and the upper end of the background data set, the inorganic chemical is identified as a COPC. The same evaluation is performed using DLs when an inorganic chemical is not detected but has a DL above the BV. If no BV is available, detected inorganic chemicals are identified as COPCs.

Radionuclides are identified as COPCs based on comparisons with BVs for naturally occurring radionuclides or with FVs for fallout radionuclides. Thorium-228, thorium-230, thorium-232, uranium-234, uranium-235/236, and uranium-238 are naturally occurring radionuclides. Americium-241, cesium-137, plutonium-238, plutonium-239/240, strontium-90, and tritium are fallout radionuclides.

Naturally occurring radionuclides detected at activities above their respective BVs are identified as COPCs. These radionuclides have no background data sets. If there is no associated BV and the radionuclide is detected, it is retained as a COPC.

The FVs for the fallout radionuclides apply to the top 0.0 to 1.0 ft of soil and fill and to sediment regardless of depth. If a fallout radionuclide is detected in a soil or fill sample collected below 1.0 ft or in tuff samples, the radionuclide is identified as a COPC. For soil and fill samples from 1.0 ft below ground surface (bgs) or less, if the activity of a fallout radionuclide is greater than the FV, comparisons of the top 0.0 to 1.0 ft sampling data are made with the fallout data set and the radionuclide is eliminated as a COPC if activities are similar to fallout activities based on statistical comparisons or comparisons with the maximum fallout concentration. Sediment results are evaluated in the same manner, although all data are included, not only the data from 0.0 to 1.0 ft bgs.

The FV for tritium in surface soil (LANL 1998, 059730) is in units of pCi/mL. This FV requires using sample percent moisture to convert sample tritium data from pCi/g (as provided by analytical laboratories) to the corresponding values in units of pCi/mL. Because sample percent moisture historically has been determined using a variety of methods, often undocumented, the Laboratory adopted the conservative approach of identifying tritium in soil as a COPC based on detection status.

Sample media encountered during investigations include soil (all soil horizons, designated by the media code ALLH or SOIL); fill material (media code FILL); sediment (media code SED); and Bandelier Tuff (media codes Qbt 1g, Qct, Qbo, Qbt 2, Qbt 3, and Qbt 4). Because no separate BVs are available for fill material, fill samples are evaluated by comparison with soil BVs (LANL 1998, 059730). In this report, the discussions of site contamination in soil include fill samples with soil samples in sample counts and comparisons with background. Fill samples are not discussed separately from soil. The upper and lower units of the Bandelier Tuff (Qbt 2, Qbt 3, and Qbt 4; Qbt 1g, Qct, Qbo, respectively) are likewise evaluated together with respect to background (LANL 1998, 059730).

5.1.2 Statistical Methods Overview

A variety of statistical methods may be applied to each of the data sets. The use of any of these methods depends on how appropriate the method is for the available data. The results of the statistical tests are presented in Appendix F.

5.1.2.1 Distributional Comparisons

Comparisons between site-specific data and Laboratory-collected background data are performed using a variety of statistical methods. These methods begin with a simple comparison of site data with a UTL estimated from the background data (UTL or the 95% upper confidence bound on the 95th quantile). The UTLs are used to represent the upper end of the concentration distribution and are referred to as BVs. The UTL comparisons are then followed, when appropriate, by statistical tests that evaluate potential differences between the distributions. These tests are used for testing hypotheses about data from two potentially different distributions (e.g., a test of the hypothesis that site concentrations are elevated above background levels). Nonparametric tests most commonly performed include the Gehan test (modification of the Wilcoxon Rank Sum test) and the quantile test (Gehan 1965, 055611; Gilbert and Simpson 1990, 055612).

The Gehan test is recommended when between 10% and 50% of the data sets are nondetections. It handles data sets with nondetections reported at multiple DLs in a statistically robust manner (Gehan 1965, 055611; Millard and Deverel 1988, 054953). The Gehan test is not recommended if either of the two data sets has more than 50% nondetections. If there are no nondetected concentrations in the data, the Gehan test is equivalent to the Wilcoxon Rank Sum test. The Gehan test is the preferred test because of its applicability to a majority of environmental data sets and its recognition and recommendation in EPA-sponsored workshops and publications.

The quantile test is better suited to assessing shifts in a subset of the data. The quantile test determines whether more of the observations in the top chosen quantile of the combined data set come from the site data set than would be expected by chance, given the relative sizes of the site and background data sets. If the relative proportion of the two populations being tested is different in the top chosen quantile of the data than in the remainder of the data, the distributions may be partially shifted because of a subset of site data. This test is capable of detecting a statistical difference when only a small number of concentrations are elevated (Gilbert and Simpson 1992, 054952). The quantile test is the most useful distribution shift test where samples from a release represent a small fraction of the overall data collected. The quantile test is applied at a prespecified quantile or threshold, usually the 80th percentile. The test cannot be performed if more than 80% (or, in general, more than the chosen percentile) of the combined data are nondetected values. It can be used when the frequency of nondetections is approximately the same as the quantile being tested. For example, in a case with 75% nondetections in the combined background and site data set, application of a quantile test comparing 80th percentiles is appropriate. However, the test cannot be performed if nondetections occur in the top chosen quantile. The threshold percentage can be adjusted to accommodate the detection rate of an analyte or to look for differences further into the distribution tails. The quantile test is more powerful than the Gehan test for detecting differences when only a small percentage of the site concentrations is elevated.

Occasionally, if the differences between two distributions appear to occur far into the tails, the slippage test may be performed. This test evaluates the potential for some of the site data to be greater than the maximum concentration in the background data set if, in fact, the site data and background data came from the same distribution. This test is based on the maximum concentration in the background data set and the number (“n”) of site concentrations that exceed the maximum concentration in the background set (Gilbert and Simpson 1990, 055612, pp. 5–8). The result (p-value) of the slippage test is the probability that “n” (or more) site samples exceed the maximum background concentration by chance alone. The test accounts for the number of samples in each data set (number of samples from the site and number of samples from background) and determines the probability of “n” (or more) exceedances if the two data sets came from identical distributions. This test is similar to the BV comparison in that it evaluates the largest site measurements but is more useful than the BV comparison because it is based on a statistical hypothesis test, not simply on a statistic calculated from the background distribution.

For all statistical tests, a p-value less than 0.05 was the criterion for accepting the null hypothesis that site sampling results are different from background (Appendix F).

5.1.2.2 Graphical Presentation

Box plots are provided for a visual representation of the data and to help illustrate the presence of outliers or other anomalous data that may affect statistical results and interpretations. The plots allow a visual comparison among data distributions. The differences of interest may include an overall shift in concentration (shift of central location) or, when the centers are nearly equal, a difference between the upper tails of the two distributions (elevated concentrations in a small fraction of one distribution). The plots may be used in conjunction with the statistical tests (distributional comparisons) described above. Unless otherwise noted, the nondetected concentrations are included in the plots at their reported DL.

The box plots produced in Appendix F of this report consist of a box, a line across the box, whiskers (lines extended beyond the box and terminated with a short perpendicular line), and points outside the whiskers. The box area of the plot is the region between the 25th percentile and the 75th percentile of the data, the interquartile range or middle half of the data. The horizontal line within the box represents the median (50th percentile) of the data. The whiskers extend to the most extreme point that is not considered an outlier, with a maximum whisker length of 1.5 times the interquartile range, outside of which data may be evaluated for their potential to be outliers. The concentrations are plotted as points overlying the box plot. When a data set contains both detected and nondetected concentrations reported as DLs, the detected concentrations are plotted as Xs, and the nondetected concentrations are plotted as Os.

5.2 Extent of Contamination

Spatial concentration trends are initially used to determine whether the extent of contamination is defined. Evaluation of spatial concentration data considers the conceptual site model of the release and subsequent migration. Specifically, the conceptual site model should define where the highest concentrations would be expected if a release had occurred and how these concentrations should vary with distance and depth. If the results are different from the conceptual site model, it could indicate no release has occurred or there are other sources of contamination.

In general, both laterally and vertically decreasing concentrations are used to define extent. If concentrations are increasing or not changing, other factors are considered to determine whether extent is defined or if additional extent sampling is warranted. These factors include

- the magnitude of concentrations and rate of increase compared with SSLs/SALs,
- the magnitude of concentrations of inorganic chemicals or radionuclides compared with the maximum background concentrations for the medium,
- concentrations of organic chemicals compared with estimated quantitation limits (EQLs), and
- results from nearby sampling locations.

The primary focus for defining the extent of contamination is characterizing contamination that potentially poses a potential unacceptable risk and may require additional corrective actions. As such, comparison with SSLs/SALs is used as an additional step following a determination of whether extent is defined by decreasing concentrations with depth and distance and whether concentrations are below EQLs or DLs. The initial SSL/SAL comparison is conducted using the residential SSL/SAL (regardless of whether the current and reasonably foreseeable future land use is residential) because this value is typically the most protective. If the current and reasonably foreseeable future land use is not residential, comparison with the relevant SSL/SAL may also be conducted if the residential SSL/SAL is exceeded or otherwise similar to COPC concentrations. For the SWMUs and AOC within the Upper Los Alamos Canyon Aggregate Area, the current and reasonably foreseeable future land uses are industrial/commercial and residential for land owned by Los Alamos County and private owners and industrial for land owned by DOE (section 4.1).

The SSL/SAL comparison is not necessary if all COPC concentrations are decreasing with depth and distance. If, however, concentrations increase with depth and distance or do not display any obvious trends, the SSLs/SALs are used to determine whether additional sampling for extent is warranted. If the COPC concentrations are sufficiently below the SSL/SAL (e.g., the residential and/or industrial SSL/SAL is 10 times [an order of magnitude] or more than all concentrations), the COPC does not pose a potential unacceptable risk, and no further sampling for extent is warranted. The validity of the assumption that the COPC does not pose a risk is confirmed using the results of the risk-screening assessment. The calculation of risk also assists in determining whether additional sampling is warranted to define the extent of contamination needing additional corrective actions.

Calcium, magnesium, potassium, and sodium may be COPCs for some sites. These constituents are essential nutrients and their maximum concentrations are compared with NMED's essential nutrient screening levels (NMED 2017, 602273). If the maximum concentration is less than the screening level(s), no additional sampling for extent is warranted and the inorganic chemical is eliminated from further evaluation in the risk assessment.

6.0 TA-00 BACKGROUND AND FIELD INVESTIGATION RESULTS

TA-00 includes sites outside the former and current boundaries of the Laboratory. Two sites at TA-00 were sampled. SWMU 00-017 was sampled according to the approved Phase II investigation work plan (LANL 2010, 110860; NMED 2011, 111674) and also underwent subsequent sampling to define extent. AOC C-00-044 was discovered after the Phase II work plan was submitted and was not included in that plan's sampling activities but was subsequently sampled.

6.1 Background of TA-00

One SWMU and one AOC at TA-00 are addressed in this report (Table 1.1-1).

- SWMU 00-017 consists of industrial waste lines.
- AOC C-00-044 is a soil contamination area impacted by lead paint chips from maintenance of the bridge across Los Alamos Canyon.

SWMU 00-017 includes former line 167, former manhole (unassigned land release) (ULR) 33, and lines 170 and 171. Former line 167 and former manhole ULR-33 were removed by 1985, except for the anchors and sections of pipe encased in anchors. Lines 170 and 171 are the only sections of the industrial waste line known to remain in Los Alamos townsite. The site of former line 167 and former manhole ULR-33 under the Omega Bridge remains undeveloped. Nine concrete anchors and 3-ft-long sections of pipe encased in each of the anchors remain at the site.

AOC C-00-044 is located beneath the bridge across Los Alamos Canyon and consists of soil contaminated by lead paint chips from bridge maintenance.

6.1.1 Operational History

The industrial waste lines were installed to serve the entire Laboratory since the Laboratory was established in 1943. With an estimated total length of 39,000 ft, the underground industrial waste lines and associated sumps and pumps were used to transport waste generated by various operations to treatment facilities. The estimated operation period for the majority of these waste lines is from the 1950s to the 1970s. Phased decommissioning and removal of the waste lines began in 1964, and various removal projects were completed through 1986.

The bridge across Los Alamos Canyon receives periodic maintenance, including painting, and past maintenance activities have resulted in lead paint chips being deposited on the canyon floor.

6.1.2 Summary of Releases

The industrial waste lines carried contaminated liquid wastes generated by various Laboratory operations. Contamination was found when the waste lines and associated structures were excavated (Gunderson and Ahlquist 1979, 008897, pp. 24–36). As a result, the soil and/or tuff in the surrounding environment may be contaminated.

Chips of lead-based paint have been released to Los Alamos Canyon during bridge maintenance activities.

6.2 SWMU 00-017, Industrial Waste Lines

6.2.1 Site History and Operational History

SWMU 00-017 consists of former industrial waste line 167, former manhole ULR-33, and former industrial waste lines 170 and 171 (Figure 6.2-1). Former waste line 167 and former manhole ULR-33 were removed before 1985, except for the concrete anchors and sections of drainpipe encased in the anchors. Lines 170 and 171 are the only sections of industrial waste line known to remain in Los Alamos townsite. The site of former waste line 167 and former manhole ULR-33 under the Omega Bridge in Los Alamos Canyon remains undeveloped. Nine concrete anchors and 3-ft-long sections of drainpipe encased in each of the anchors remain at the site.

The industrial waste lines were installed to serve the entire Laboratory from its beginning in 1943. With an estimated total length of 39,000 ft, the underground industrial waste lines and associated sumps and pumps were used to transport waste generated by various operations to treatment facilities. The SWMU 00-017 waste lines transferred industrial waste to SWMUs 03-038(a) and 03-038(b), a former pump house with two concrete underground tanks and a former 28,500-gal. steel waste-holding tank, respectively. The estimated operation period for the majority of these waste lines is from the 1950s to the 1970s. Phased decommissioning and removal of the waste lines began in 1964, and various removal projects were completed through 1986. Currently, the former location of line 167 on the canyon wall beneath the Omega Bridge is undeveloped. The location of line 170 is covered with asphalt parking lots and narrow landscaped areas in the parking lot medians. The location of line 171 is entirely covered by the parking lot and LAMC. Both remaining waste-line sections are 15 to 20 ft bgs.

6.2.2 Relationship to Other SWMUs

The 2010 investigation report concluded the elevated concentrations of lead detected in surface samples collected from locations in Los Alamos Canyon under the north and south ends of the Omega Bridge during the 2009 investigation of SWMU 00-017 were likely a result of contamination from AOC C-00-044. AOC 43-001(b2), a storm drain outfall that discharges west of the HRL to the south-facing slope of Los Alamos Canyon, is located upgradient of SWMU 00-017. However, the outfall discharge area is east of SWMU 00-017. SWMUs 03-038(a) and 03-030(b) are located on the south rim of Los Alamos Canyon near the Omega Bridge, upgradient of SWMU 00-017. All the structures associated with the former pump house and storage tanks were removed in 1981 and 1982, and the site is currently undeveloped.

6.2.3 Summary of Previous Investigations

1998–1999 Investigation Activities

A total of 44 samples were collected from 28 locations along former waste line 167 and waste lines 170 and 171 at SWMU 00-017 in 1998 and 1999. Results from the sampling activities in 1998 and 1999 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination at the site.

2009 Investigation Activities

Fifteen samples were collected from five locations at SWMU 00-017 in 2009. Results from the sampling activities in 2009 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination at the site.

6.2.4 Site Contamination

6.2.4.1 Soil, Rock, and Sediment Sampling

As part of the Phase II investigation at SWMU 00-017, six samples were collected from five locations and analyzed for inorganic chemicals to define extent of contamination.

6.2.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

6.2.4.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at SWMU 00-017 consist of results from 65 samples collected from 34 locations in 1998–1999, 2009, and 2012. The 65 samples include 23 soil/fill, 33 tuff, and 9 sediment samples. Table 6.2-1 lists the samples collected and the analyses requested for each sample. Figure 6.2-1 shows the sampling locations.

Inorganic Chemicals

A total of 59 samples (17 soil/fill, 33 tuff, and 9 sediment) were analyzed for TAL metals, 53 samples (16 soil/fill, 30 tuff, and 7 sediment) were analyzed for cyanide, and 15 samples (12 tuff and 3 sediment) were analyzed for nitrate and perchlorate. Table 6.2-2 presents the inorganic chemicals detected or detected above BVs. Plate 2 shows the spatial distribution of inorganic chemicals detected or detected above BVs.

Aluminum was detected above the Qbt 2,3,4 BV (7340 mg/kg) in 10 samples with a maximum concentration of 21,000 mg/kg. The quantile and slippage tests indicated site concentrations of aluminum in tuff are statistically different from background (Figure F-1 and Table F-1). Aluminum is retained as a COPC.

Antimony was not detected but had DLs (12 mg/kg to 14 mg/kg) above the soil, sediment, and Qbt 2,3,4 BVs (0.83 mg/kg, 0.83 mg/kg, and 0.5 mg/kg) in 14 soil samples, 18 tuff samples, and 4 sediment samples. Antimony is retained as a COPC.

Arsenic was detected above the Qbt 2,3,4 BV (2.79 mg/kg) in 15 samples with a maximum concentration of 4.5 mg/kg. The Gehan and quantile tests indicated site concentrations of arsenic in tuff are statistically different from background (Figure F-2 and Table F-1). Arsenic is retained as a COPC.

Barium was detected above the Qbt 2,3,4 BV (46 mg/kg) in 10 samples with a maximum concentration of 130 mg/kg. The Gehan and quantile tests indicated site concentrations of barium in tuff are statistically different from background (Figure F-3 and Table F-1). Barium is retained as a COPC.

Beryllium was detected above the Qbt 2,3,4 BV (1.21 mg/kg) in five samples with a maximum concentration of 1.6 mg/kg. The Gehan test indicated site concentrations of beryllium in tuff are statistically different from background (Table F-1). However, the quantile and slippage tests indicated site concentrations of beryllium in tuff are not statistically different from background (Figure F-4 and Table F-1). Beryllium is not a COPC.

Cadmium was detected above the sediment BV (0.4 mg/kg) in 1 sample at a concentration of 0.49 mg/kg and was not detected but had DLs (0.54 mg/kg to 0.68 mg/kg) above the soil BV (0.4 mg/kg) and sediment BV in 16 soil samples and 4 sediment samples. Cadmium is retained as a COPC.

Calcium was detected above the Qbt 2,3,4 BV (2200 mg/kg) in five samples with a maximum concentration of 2800 mg/kg. The Gehan and slippage tests indicated site concentrations of calcium in tuff are statistically different from background (Figure F-5 and Table F-1). Calcium is retained as a COPC.

Chromium was detected above the soil and Qbt 2,3,4 BVs (19.3 mg/kg and 7.14 mg/kg) in 1 soil sample and 17 tuff samples with a maximum concentration of 34 mg/kg. The Gehan and quantile tests indicated site concentrations of chromium in soil are not statistically different from background (Figure F-6 and Table F-2) but site concentrations of chromium in tuff are statistically different from background (Figure F-7 and Table F-1). Chromium is retained as a COPC.

Cobalt was detected above the Qbt 2,3,4 BV (3.14 mg/kg) in seven samples with a maximum concentration of 7.2 mg/kg. The Gehan test indicated site concentrations of cobalt in tuff are statistically different from background (Table F-1). However, the quantile and slippage tests indicated site concentrations of cobalt in tuff are not statistically different from background (Figure F-8 and Table F-1). Cobalt is not a COPC.

Copper was detected above the Qbt 2,3,4 BV (4.66 mg/kg) in seven samples with a maximum concentration of 10 mg/kg. The Gehan and quantile tests indicated site concentrations of copper in tuff are statistically different from background (Figure F-9 and Table F-1). Copper is retained as a COPC.

Cyanide was detected above the soil BV (0.5 mg/kg) in 1 sample at a concentration of 1.6 mg/kg and was not detected but had DLs (0.52 mg/kg to 0.68 mg/kg) above the soil BV and Qbt 2,3,4 BV (0.5 mg/kg) in 15 soil samples and 28 tuff samples. Cyanide is retained as a COPC.

Iron was detected above the Qbt 2,3,4 BV (14,500 mg/kg) in seven samples with a maximum concentration of 17,000 mg/kg. The Gehan and quantile tests indicated site concentrations of iron in tuff are statistically different from background (Figure F-10 and Table F-1). Iron is retained as a COPC.

Lead was detected above the soil, sediment, and Qbt 2,3,4 BVs (23.3 mg/kg, 19.7 mg/kg, and 11.2 mg/kg) in 5 soil samples, 8 sediment samples, and 17 tuff samples with a maximum concentration of 450 mg/kg. The Gehan and quantile tests indicated site concentrations of lead in soil are not statistically different from background (Figure F-11 and Table F-2) but site concentrations of lead in sediment and tuff are statistically different from background (Figure F-12 and Table F-3, and Figure F-13 and Table F-1, respectively). Lead is retained as a COPC.

Magnesium was detected above the Qbt 2,3,4 BV (1690 mg/kg) in six samples with a maximum concentration of 300 mg/kg. The Gehan test indicated site concentrations of magnesium in tuff are statistically different from background (Table F-1). However, the quantile and slippage tests indicated site concentrations of magnesium in tuff are not statistically different from background (Figure F-14 and Table F-1). Magnesium is not a COPC.

Mercury was detected above the soil BV (0.1 mg/kg) in 5 samples with a maximum concentration of 3.4 mg/kg and was not detected but had DLs (0.11 mg/kg to 0.14 mg/kg) above the soil BV and sediment and Qbt 2,3,4 BVs (0.1 mg/kg for both) in 11 soil samples, 4 sediment samples, and 17 tuff samples. Mercury is retained as a COPC.

Nickel was detected above the Qbt 2,3,4 BV (6.58 mg/kg) in 12 samples with a maximum concentration of 11.7 mg/kg. The quantile and slippage tests indicated site concentrations of nickel in tuff are statistically different from background (Figure F-15 and Table F-1). Nickel is retained as a COPC.

Nitrate was detected in nine samples with a maximum concentration of 5.2 mg/kg. Nitrate is naturally occurring, and the concentrations likely reflect naturally occurring levels. In addition, SWMU 00-017 was an industrial waste line that was used to convey radioactive liquid waste and is not a source of nitrate. Nitrate is not a COPC.

Perchlorate was detected in one sample at a concentration of 0.0079 mg/kg. Perchlorate is retained as a COPC.

Selenium was not detected but had DLs (0.31 mg/kg to 1.3 mg/kg) above the sediment and Qbt 2,3,4 BVs (0.3 mg/kg for both) in 7 sediment samples and 19 tuff samples. Selenium is retained as a COPC.

Silver was detected above the soil BV (1 mg/kg) in 1 sample at a concentration of 1.2 mg/kg and was not detected but had DLs (2.2 mg/kg to 2.7 mg/kg) above the soil BV and sediment and Qbt 2,3,4 BVs (1 mg/kg for both) in 16 soil samples, 5 sediment samples, and 18 tuff samples. Silver is retained as a COPC.

Thallium was not detected but had DLs (2.2 mg/kg to 2.6 mg/kg) above the soil, sediment, and Qbt 2,3,4 BVs (0.73 mg/kg, 0.73 mg/kg, and 1.1 mg/kg) in 10 soil samples, 4 sediment samples, and 10 tuff samples. Thallium is retained as a COPC.

Vanadium was detected above the Qbt 2,3,4 BV (17 mg/kg) in four samples with a maximum concentration of 20 mg/kg. The Gehan test indicated site concentrations of vanadium in tuff are statistically different from background (Table F-1). However, the quantile and slippage tests indicated site concentrations of vanadium in tuff are not statistically different from background (Figure F-16 and Table F-1). Vanadium is not a COPC.

Organic Chemicals

A total of 36 samples (15 soil, 18 tuff, and 3 sediment) were analyzed for SVOCs VOCs, PCBs, and pesticides. Table 6.2-3 presents the detected organic chemicals. Plate 3 shows the spatial distribution of detected organic chemicals.

Organic chemicals detected at SWMU 00-017 include Aroclor-1254. The detected organic chemical is retained as a COPC.

Radionuclides

A total of 52 samples (15 soil, 30 tuff, and 7 sediment) were analyzed for isotopic plutonium and isotopic uranium; 51 samples (15 soil, 29 tuff; and 7 sediment) were analyzed for gamma-emitting radionuclides and tritium; and 15 samples (12 tuff and 3 sediment) were analyzed for americium-241 and strontium-90. Table 6.2-4 presents the radionuclides detected or detected above BVs/FVs. Plate 4 shows the spatial distribution of radionuclides detected or detected above BVs/FVs.

Americium-241 was detected in two tuff samples with a maximum activity of 0.587 pCi/g. Americium-241 is retained as a COPC.

Cesium-137 was detected below 1 ft bgs in one soil sample and was detected in one tuff sample with a maximum activity of 3.27 pCi/g. Cesium-137 is retained as a COPC.

Plutonium-238 was detected below 1 ft bgs in three soil samples with a maximum activity of 0.165 pCi/g. Plutonium-238 is retained as a COPC.

Plutonium-239/240 was detected above the sediment FV (0.068 pCi/g) in four samples, detected below 1 ft bgs in eight soil samples, and detected in five tuff samples with a maximum concentration of 12.85 pCi/g. Plutonium-239/240 is retained as a COPC.

Tritium was detected in six samples with a maximum activity of 0.22 pCi/g. Tritium is retained as a COPC.

Uranium-235/236 was detected above the Qbt 2,3,4 BV (0.09 pCi/g) in 2 samples, with a maximum activity of 0.172 pCi/g. The maximum activity was only 0.082 pCi/g above BV and uranium-235/236 was not detected or detected above BV in 50 other samples (detected below BV in 30 samples). Uranium-235/236 is not a COPC.

6.2.4.4 Nature and Extent of Contamination

The nature and extent of inorganic, organic, and radionuclide COPCs at SWMU 00-017 are discussed below.

Inorganic Chemicals

Inorganic COPCs at SWMU 00-017 include aluminum, antimony, arsenic, barium, cadmium, calcium, chromium, copper, cyanide, iron, lead, mercury, nickel, perchlorate, selenium, silver, and thallium.

Aluminum was detected above the Qbt 2,3,4 BV in 10 samples with a maximum concentration of 21,000 mg/kg. The detections above BV were generally in the deepest samples collected at each location and aluminum was not detected above BV in overlying soil samples. Most of the concentrations in soil samples were equivalent to or greater than the tuff concentrations, indicating that concentrations decreased or did not change substantially with depth (Appendix E, Pivot Tables). Concentrations decreased laterally along the waste line. All detections above BV were at or below 10 ft bgs, beyond the depth intervals evaluated for risk. The residential SSL is approximately 3.7 times the maximum concentration, and the industrial SSL is approximately 61 times the maximum concentration. Lateral extent of aluminum is defined and further sampling for vertical extent is not warranted.

Antimony was not detected but had DLs (12 mg/kg to 14 mg/kg) above the soil, sediment, and Qbt 2,3,4 BVs in 14 soil samples, 18 tuff samples, and 4 sediment samples. The residential SSL is approximately 2.2 times the maximum DL, and the industrial SSL is approximately 37 times the maximum DL. Further sampling for extent of antimony is not warranted.

Arsenic was detected above the Qbt 2,3,4 BV in 15 tuff samples with a maximum concentration of 4.5 mg/kg. The detections above BV were generally in the deepest samples collected at each location and arsenic was not detected above BV in overlying soil samples. Concentrations in soil samples were similar to the tuff concentrations, indicating that concentrations did not change substantially with depth (Appendix E, Pivot Tables). Concentrations did not change substantially laterally along the waste line. All detections above BV were at or below 10 ft bgs, beyond the depth intervals evaluated for risk. The residential SSL is approximately 1.6 times the maximum concentration, and the industrial SSL is approximately 8 times the maximum concentration. Further sampling for extent of arsenic is not warranted.

Barium was detected above the Qbt 2,3,4 BV in 10 samples with a maximum concentration of 130 mg/kg. The detections above BV were generally in the deepest samples collected at each location and barium was not detected above BV in overlying soil samples. Many of the concentrations in soil samples were equivalent to or greater than the tuff concentrations, indicating that concentrations decreased or did not change substantially with depth (Appendix E, Pivot Tables). Concentrations decreased laterally along the waste line. All detections above BV were at or below 10 ft bgs, beyond the depth intervals evaluated for risk. The residential SSL is approximately 120 times the maximum concentration. Lateral extent of barium is defined and further sampling for vertical extent is not warranted.

Cadmium was detected above the sediment BV in 1 sample at a concentration of 0.49 mg/kg and was not detected but had DLs (0.54 mg/kg to 0.68 mg/kg) above the soil and sediment BVs in 15 soil samples and 4 sediment samples. Concentrations decreased with depth at location 00-604247 and decreased downgradient. The residential SSL is approximately 104 times the maximum DL. Further sampling for extent of cadmium is not warranted.

Calcium was detected above the Qbt 2,3,4 BV in five samples with a maximum concentration of 2800 mg/kg. Concentrations increased with depth at locations 00-10139 and 00-604250; did not change substantially with depth (400 mg/kg or less) at locations 00-10135, 00-10137, and 00-10138; and decreased laterally along the waste line (concentrations in shallow samples at locations 00-10135, 00-10137, and 00-10138 were 2200 mg/kg, 2000 mg/kg, and 2400 mg/kg, respectively, and below the soil BV [Appendix E, Pivot Tables]). The residential essential nutrient SSL is approximately 4640 times the maximum concentration. Lateral extent of calcium is defined and further sampling for vertical extent is not warranted.

Chromium was detected above the soil and Qbt 2,3,4 BVs in 1 soil sample and 17 tuff samples with a maximum concentration of 34 mg/kg. Concentrations increased with depth at locations 00-10138, 00-604249, 00-604250, and 00-604251; decreased with depth at locations 00-10125 and 00-10134; and did not change substantially with depth (1.2 mg/kg or less) at all other locations (concentrations in overlying soil samples were all similar to or greater than concentrations in tuff samples [Appendix E, Pivot Tables]). Concentrations decreased laterally along the waste line and decreased downgradient on the canyon slope. As described in section 4.2, SWMU 00-017 is not a potential source of hexavalent chromium and use of the SSL for trivalent chromium to determine whether additional sampling is warranted is appropriate. The residential SSL for trivalent chromium (117,000 mg/kg) is approximately 3440 times the maximum concentration. Lateral extent of chromium is defined and further sampling for vertical extent is not warranted.

Copper was detected above the Qbt 2,3,4 BV in seven samples with a maximum concentration of 10 mg/kg. The detections above BV were in the deepest samples collected at each location and copper was not detected above BV in overlying soil samples. Most of the concentrations in soil samples were equivalent to or greater than the tuff concentrations, indicating that concentrations decreased or did not change substantially with depth (Appendix E, Pivot Tables). Concentrations decreased laterally along the waste line. All detections above BV were at or below 10 ft bgs, beyond the depth intervals evaluated for risk. The residential SSL is approximately 313 times the maximum concentration. Lateral extent of copper is defined and further sampling for vertical extent is not warranted.

Cyanide was detected above the soil BV in 1 sample at a concentration of 1.6 mg/kg and was not detected but had DLs (0.52 mg/kg to 0.68 mg/kg) above the soil and Qbt 2,3,4 BVs in 15 soil samples and 28 tuff samples. Concentrations decreased with depth at location 00-10126 and decreased laterally along the waste line. The residential SSL is approximately 6.9 times the maximum concentration, and the industrial SSL is approximately 39 times the maximum concentration. The residential SSL is approximately 16 times the maximum DL, and the industrial SSL is approximately 92 times the maximum DL. Further sampling for extent of cyanide is not warranted.

Iron was detected above the Qbt 2,3,4 BV in seven samples with a maximum concentration of 17,000 mg/kg. Concentrations did not change with depth or did not change substantially with depth (2000 mg/kg or less) at all locations (concentrations in overlying soil samples were all the same as or similar to concentrations in tuff samples [Appendix E, Pivot Tables]). Concentrations did not change substantially laterally (2000 mg/kg). The residential SSL is approximately 3.2 times the maximum concentration, and the industrial SSL is approximately 53 times the maximum concentration. Further sampling for extent of iron is not warranted.

Lead was detected above the soil; sediment; and Qbt 2,3,4 BVs in 5 soil samples, 8 sediment samples, and 17 tuff samples with a maximum concentration of 450 mg/kg. Only one depth was sampled at locations 00-10145, 00-10146, 00-10180, 00-10181, 00-10183, and 00-10184 and concentrations did not change substantially with depth (4 mg/kg or less) or decreased with depth at all other locations (where lead was detected only above BV in Qbt 4 samples, concentrations in overlying soil samples were similar to concentrations in tuff samples [Appendix E, Pivot Tables]). Vertical extent at locations 00-10143, 00-10144, 00-101481, 00-10182, 00-10183, and 00-10184 is defined by decreasing concentrations in deeper samples at location 00-604251, located within approximately 20 ft of the other locations. Concentrations decreased downgradient on the canyon slope. The residential SSL is approximately 19 times the maximum concentration, and the industrial SSL is approximately 38 times the maximum concentration where vertical extent is not defined (21 mg/kg at location 00-10136). Lateral extent of lead is defined and further sampling for vertical extent is not warranted.

Mercury was detected above the soil BV in 5 samples with a maximum concentration of 3.4 mg/kg and was not detected but had DLs (0.11 mg/kg to 0.14 mg/kg) above the soil, sediment, and Qbt 2,3,4 BVs in 11 soil samples, 4 sediment samples, and 17 tuff samples. Concentrations decreased with depth at all locations and decreased laterally along the waste line. Lateral and vertical extent of mercury are defined.

Nickel was detected above the Qbt 2,3,4 BV in 12 samples with a maximum concentration of 11.7 mg/kg. Concentrations increased with depth at location 00-604251, did not change substantially with depth (1.4 mg/kg or less) at all other locations, and did not change substantially laterally (2.2 mg/kg) (where nickel was detected only above BV in Qbt 4 samples, concentrations in overlying soil samples were similar to concentrations in tuff samples [Appendix E, Pivot Tables]). The residential SSL is approximately 133 times the maximum concentration. Further sampling for extent of nickel is not warranted.

Perchlorate was detected in one sample at a concentration of 0.0079 mg/kg. Concentrations increased with depth at location 00-604251 and decreased downgradient on the canyon slope. The residential SSL is approximately 6940 times the maximum concentration. Lateral extent of perchlorate is defined and further sampling for vertical extent is not warranted.

Selenium was not detected but had DLs (0.31 mg/kg to 1.3 mg/kg) above the sediment and Qbt 2,3,4 BVs in 7 sediment samples and 19 tuff samples. The residential SSL is approximately 300 times the maximum DL. Further sampling for extent of selenium is not warranted.

Silver was detected above the soil BV in 1 sample at a concentration of 1.2 mg/kg and was not detected but had DLs (2.2 mg/kg to 2.7 mg/kg) above the soil; sediment; and Qbt 2,3,4 BVs in 16 soil samples, 5 sediment samples, and 18 tuff samples. Concentrations decreased with depth and decreased downgradient on the canyon slope. The residential SSL is approximately 150 times the maximum DL. Further sampling for extent of silver is not warranted.

Thallium was not detected but had DLs (2.2 mg/kg to 2.6 mg/kg) above the soil; sediment; and Qbt 2,3,4 BVs in 10 soil samples, 4 sediment samples, and 10 tuff samples. The maximum DL is approximately 3.3 times the residential SSL, and the industrial SSL is approximately 5 times the maximum DL. Further sampling for extent of thallium is not warranted.

Organic Chemicals

Organic COPCs at SWMU 00-017 include Aroclor-1254.

Aroclor-1254 was detected in one sample at a concentration of 0.11 mg/kg. Concentrations decreased with depth and decreased laterally along the waste line. Lateral and vertical extent of Aroclor-1254 are defined.

Radionuclides

Radionuclide COPCs at SWMU 00-017 include americium-241, cesium-137, plutonium-238, plutonium-239/240, and tritium.

Americium-241 was detected in two tuff samples with a maximum activity of 0.587 pCi/g. Activities increased with depth at location 00-604249, decreased with depth at location 00-604251, and increased downgradient on the canyon slope. The residential SAL is approximately 141 times the maximum activity. Further sampling for extent of americium-241 is not warranted.

Cesium-137 was detected below 1 ft bgs in one soil sample and was detected in one tuff sample with a maximum activity of 3.27 pCi/g. Activities decreased with depth at all locations and decreased laterally along the waste line. Lateral and vertical extent of cesium-137 are defined.

Plutonium-238 was detected below 1 ft bgs in three soil samples with a maximum activity of 0.165 pCi/g. Activities decreased with depth at all locations and decreased laterally along the waste line. Lateral and vertical extent of plutonium-238 are defined.

Plutonium-239/240 was detected above the sediment FV in four samples, detected below 1 ft bgs in eight soil samples, and detected in five tuff samples with a maximum concentration of 12.85 pCi/g. Only one depth was sampled at locations 00-10142, 00-10145, and 00-10146; activities decreased with depth at all other locations; and activities decreased laterally along the waste line. The residential SAL is approximately 6.2 times the maximum activity, and the industrial SSL is approximately 93 times the maximum activity. Further sampling for extent of plutonium-239/240 is not warranted.

Tritium was detected in six samples with a maximum activity of 0.22 pCi/g. Activities increased at location 00-10125; only one depth was sampled at locations 00-10141, 00-10142, and 00-10145; activities decreased with depth at all other locations; and activities decreased laterally along the waste line. The residential SAL is approximately 7730 times the maximum activity. Further sampling for extent of tritium is not warranted.

Summary of Nature and Extent

The lateral and vertical extent of inorganic, organic, and radionuclide COPCs is defined or no further sampling for extent is warranted at SWMU 00-017.

6.2.5 Summary of Human Health Risk Screening

Industrial Scenario

The total excess cancer risk for the industrial scenarios 2×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.4, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.004 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 2×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 1, which is equivalent to the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.5 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Residential Scenario

The total excess cancer risk for the residential scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 4, which is greater than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 2 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Based on the risk-screening assessment results, no potential unacceptable carcinogenic risks or doses exist for the industrial, construction worker, and residential scenarios at SWMU 00-017, and no potential unacceptable noncarcinogenic risks exist for the industrial and construction worker scenarios. Potential unacceptable noncarcinogenic risk exists for the residential scenario.

6.2.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for threatened and endangered [T&E] species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for SWMU 00-017.

6.3 AOC C-00-044, Soil Contamination

6.3.1 Site History and Operational History

AOC C-00-044 consists of surface contamination resulting from the historical use of lead-based paint on the Omega Bridge (Figure 6.3-1). The bridge was constructed in 1951 and is located in both TA-00 and TA-03. This AOC was identified in 1999 during Resource Conservation and Recovery Act Facility Investigation (RFI) activities conducted at SWMU 00-017. Elevated lead concentrations were detected in surface samples collected from locations in Los Alamos Canyon under the north and south ends of the bridge during the investigation of SWMU 00-017. The lead could not reasonably be attributed to SWMU 00-017, an inactive underground industrial waste line. During further research and interviews with Los Alamos County and Laboratory maintenance staff, it was discovered that lead paint chips were deposited beneath the bridge on the north and south slopes of Los Alamos Canyon as a result of periodic bridge maintenance activities, including scraping and chipping old paint before new paint was applied. The use of lead-based paint has been discontinued.

6.3.2 Relationship to Other SWMUs

There are no upgradient SWMUs or AOCs that may have contributed contamination to AOC C-00-044. AOC 43-001(b2), a storm drain outfall that discharges west of the HRL to the south-facing slope of Los Alamos Canyon is located upgradient of AOC C-00-044. However, the outfall discharge area is east of AOC C-00-044.

6.3.3 Summary of Previous Investigations

AOC C-00-044 has not been investigated previously. Samples collected at SWMU 00-017 contained elevated concentrations of lead, likely as a result of contamination from AOC C-00-044.

6.3.4 Site Contamination

6.3.4.1 Soil, Rock, and Sediment Sampling

As part of the investigation at AOC C-00-044, a total of 46 samples were collected from 22 locations and analyzed for inorganic chemicals and organic chemicals to define nature and extent of contamination.

6.3.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

6.3.4.3 Soil, Rock, and Sediment Analytical Results

Decision-level data at AOC C-00-044 consist of results from 46 samples collected from 20 locations in 2012. The 46 samples include 37 soil, 5 tuff, and 4 sediment samples. Table 6.3-1 lists the samples collected and the analyses requested for each sample. Figure 6.3-1 shows the sampling locations.

Inorganic Chemicals

A total of 46 samples (37 soil, 5 tuff, and 4 sediment) were analyzed for TAL metals. Table 6.3-2 presents the inorganic chemicals detected or detected above BVs. Plate 5 shows the spatial distribution of inorganic chemicals detected or detected above BVs.

Antimony was not detected but had DLs (0.879 mg/kg to 0.192 mg/kg) above the soil; sediment; and Qbt 2,3,4 BVs (0.83 mg/kg, 0.83 mg/kg, and 0.5 mg/kg) in 37 soil samples, 3 sediment samples, and 3 tuff samples. Antimony is retained as a COPC.

Cadmium was not detected above the soil BV (0.4 mg/kg) but had DLs (0.439 mg/kg to 0.603 mg/kg) above BV in 10 samples. The DLs were only 0.039 mg/kg to 0.203 mg/kg above the BV; the maximum DL (0.603 mg/kg) is below or equivalent to the 3 highest concentrations (0.6 mg/kg, 1.4 mg/kg, and 2.6 mg/kg) and 3 highest DLs (2 mg/kg, 2 mg/kg, and 2 mg/kg) in the soil background data set. Cadmium is not a COPC.

Lead was detected above the soil; sediment; and Qbt 2,3,4 BVs (23.3 mg/kg, 19.7 mg/kg, and 11.2 mg/kg) in 17 soil samples, 4 sediment samples, and 1 tuff sample with a maximum concentration of 334 mg/kg. The Gehan and quantile tests indicated site concentrations of lead in soil are statistically different from background (Figure F-17 and Table F-4). Lead is retained as a COPC.

Manganese was detected above the soil BV (671 mg/kg) in one sample at a concentration of 737 mg/kg. The Gehan and quantile tests indicated site concentrations of manganese in soil are not statistically different from background (Figure F-18 and Table F-4). Manganese is not a COPC.

Mercury was detected above the soil BV (0.1 mg/kg) in 1 sample at a concentration of 0.116 mg/kg. The concentration was only 0.016 mg/kg above BV and mercury was not detected or detected above BV in 43 other samples (detected below BV in 38 samples). Mercury is not a COPC.

Selenium was not detected but had DLs (0.967 mg/kg to 1.19 mg/kg) above the sediment and Qbt 2,3,4 BVs (0.3 mg/kg for both) in four sediment samples and three tuff samples. Selenium is retained as a COPC.

Sodium was detected above the soil BV (915 mg/kg) in six samples with a maximum concentration of 10,300 mg/kg. The Gehan and quantile tests indicated site concentrations of sodium in soil are not statistically different from background (Figure F-19 and Table F-4). Sodium is not a COPC.

Zinc was detected above the soil and sediment BVs (48.8 mg/kg and 60.2 mg/kg) in six soil samples and one sediment sample with a maximum concentration of 85.4 mg/kg. The Gehan and quantile tests indicated site concentrations of zinc in soil are statistically different from background (Figure F-20 and Table F-4). Zinc is retained as a COPC.

Organic Chemicals

A total of 44 samples (37 soil, 3 tuff, and 4 sediment) were analyzed for SVOCs. Table 6.3-3 presents the detected organic chemicals. Plate 6 shows the spatial distribution of detected organic chemicals.

Polycyclic Aromatic Hydrocarbons

Polycyclic aromatic hydrocarbons (PAHs) are a class of SVOCs frequently detected as a result of environmental sampling but generally were not released from the SWMUs or AOCs being investigated. PAHs unrelated to site activities are thus often detected in samples analyzed for the presence of site-related SVOCs.

PAHs are known to be widely distributed in the environment from a number of sources, both natural, such as forest fires, and anthropogenic, such as combustion of fossil fuels, oil drips off motor vehicles, vehicle tires, coal tar pitch, and weathering or eroding of asphalt pavement (Kose et al. 2008, 219977; Teaf 2008, 219976). PAHs from these sources generally occur as complex mixtures, not as single compounds. Individual PAH compounds can be manufactured for research purposes, and some PAHs (e.g., anthracene, fluorene, naphthalene, and pyrene) are used in dye production, the manufacture of synthetic fibers, and in plastics and pesticides.

The principal sources of PAHs in soil along parking lots, roads, and highways are vehicular exhaust and emissions, the wearing of tires, and asphalt. PAH-containing materials, such as asphalt and rubber particles, do not easily dissolve in water, preventing migration, except as suspended particles in storm water. PAH concentrations in excess of soil cleanup levels may result from common anthropogenic sources, such as runoff from asphalt parking lots.

Site Activities

AOC C-00-044 consists of soil where chips of lead-based paint were deposited during bridge maintenance activities and was identified as an AOC because of lead contamination in soil. The site is located in Los Alamos canyon and receives runoff from developed areas in the Los Alamos townsite. PAHs were not associated with the paint chips deposited at this site but are known to be present in urban storm runoff. Therefore, the PAHs detected in samples used to characterize this site [acenaphthene; anthracene; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 2-methylnaphthalene; naphthalene; phenanthrene; and pyrene] are associated with the Los Alamos townsite, are not related to historic Laboratory site operations, and are not COPCs.

Organic COPCs

Other organic chemicals detected at AOC C-00-044 include bis(2-ethylhexyl)phthalate and butylbenzylphthalate. The detected organic chemicals listed are retained as COPCs.

Radionuclides

Samples at AOC C-00-044 were not analyzed for radionuclides.

6.3.4.4 Nature and Extent of Contamination

The nature and extent of inorganic and organic COPCs at AOC C-00-044 are discussed below.

Inorganic Chemicals

Inorganic COPCs at AOC C-00-044 include antimony, lead, selenium, and zinc.

Antimony was not detected but had DLs (0.879 mg/kg to 1.92 mg/kg) above the soil; sediment; and Qbt 2,3,4 BVs in 37 soil samples, 3 sediment samples, and 3 tuff samples. The residential SSL is approximately 16 times the maximum DL. Further sampling for extent of antimony is not warranted.

Lead was detected above the soil; sediment; and Qbt 2,3,4 BVs in 17 soil samples, 4 sediment samples, and 1 tuff sample with a maximum concentration of 334 mg/kg. Concentrations decreased with depth at all locations and decreased laterally. Lateral and vertical extent of lead are defined.

Selenium was not detected but had DLs (0.967 mg/kg to 1.19 mg/kg) above the sediment and Qbt 2,3,4 BVs in four sediment samples and three tuff samples. The residential SSL is approximately 329 times the maximum DL. Further sampling for extent of selenium is not warranted.

Zinc was detected above the soil and sediment BVs in six soil samples and one sediment sample with a maximum concentration of 85.4 mg/kg. Concentrations did not increase substantially with depth at location 00-614753 (5.4 mg/kg), decreased with depth at all other locations, and decreased downgradient on the canyon slope. The residential SSL is approximately 423 times the maximum concentration. Lateral extent of zinc is defined and further sampling for vertical extent is not warranted.

Organic Chemicals

Organic COPCs detected at AOC C-00-044 include bis(2-ethylhexyl)phthalate and butylbenzylphthalate.

Bis(2-ethylhexyl)phthalate was detected in one sample at a concentration of 0.945 mg/kg. Concentrations decreased with depth and decreased laterally down the canyon slope. Lateral and vertical extent of bis(2-ethylhexyl)phthalate are defined.

Butylbenzylphthalate was detected in 11 samples with a maximum concentration of 6.38 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient on the canyon slope. Lateral and vertical extent of butylbenzylphthalate are defined.

Summary of Nature and Extent

The lateral and vertical extent of inorganic and organic COPCs is defined or no further sampling for extent is warranted at AOC C-00-044.

6.3.5 Summary of Human Health Risk Screening

Industrial Scenario

The total excess cancer risk for the industrial scenario is 6×10^{-9}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-1.0 ft depth interval.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 2×10^{-9}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–10.0 ft depth interval.

Residential Scenario

The total excess cancer risk for the residential scenario is 3×10^{-8}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–10.0 ft depth interval.

Based on the risk-screening assessment results, no potential unacceptable risks or doses exist for the industrial, construction worker, and residential scenarios at AOC C-00-044.

6.3.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for AOC C-00-044.

7.0 FORMER TA-01 BACKGROUND AND FIELD INVESTIGATION RESULTS

Thirteen sites at former TA-01 were sampled (Table 1.1-1) according to the approved Phase II work plan (LANL 2010, 110860; NMED 2011, 111674) and subsequent post-cleanup confirmation sampling.

7.1 Background of Former TA-01

Sixteen SWMUs and AOCs at former TA-01 are addressed in this report (Table 1.1-1).

- SWMUs 01-001(a, d2, d3, f, g, o, and s2) are septic tanks and sanitary waste lines.
- SWMU 01-002(a2)-00 is an industrial waste line.
- SWMUs 01-003(a and d) and AOC 01-003(b2) are landfills.
- SWMU 01-006(a) and AOC 01-006(e), SWMU 01-006(h2), and SWMU-01-006(h3) are drainlines, storm drains, and their outfalls.
- SWMU 01-007(c) is an area of suspected subsurface soil contamination.

Starting in 1976, land located in former TA-01 was transferred from DOE to Los Alamos County and private parties. Except for the sites located on the slope of Los Alamos Canyon that are still on DOE land, the majority of these sites are located within the Los Alamos townsite on private, county or public school property. These sites have been backfilled, regraded, and recontoured and have undergone significant construction since the property transfer. No evidence of previous TA-01 Laboratory structures exists in the area.

7.1.1 Operational History

The approximately 50-acre mesa-top area of former TA-01 was the location of the initial Los Alamos Scientific Laboratory from 1943 to 1965. During this time, research work on nuclear weapons was carried out. Operations at former TA-01 were gradually relocated to new technical areas from 1945 to 1965. Phased D&D activities began at former TA-01 in 1953 and continued through 1976 (Ahlquist et al. 1977, 005710, p. 2). The general operational history of SWMUs and AOCs with former TA-01 is discussed below. Not all of these sites are addressed in this investigation report, but releases from sites not in this report may have impacted sites included in this report.

SWMUs 01-001(a,b,c,d,e,f,g,o,s,t,u) are septic tanks and sanitary waste lines. These sites served a variety of Laboratory facilities and generally discharged to the canyon slope above Los Alamos Canyon.

SWMU 01-002, the industrial waste line, consisted of an extensive network of underground drains and pipelines that collected fluids from process buildings.

SWMUs 01-003(a,b,d,e) and AOC 01-003(c) are landfills. SWMU 01-003(a) is the Bailey Bridge landfill located at the head of Bailey Bridge Canyon. SWMU 01-003(b) and AOC 01-003(c) are the surface-disposal sites for construction debris, which was reportedly dumped over the north rim of Los Alamos Canyon. SWMU 01-003(d) is the Can Dump Site located on the hillside above the Los Alamos Canyon just south of the current U.S. West Communications Facility. SWMU 01-003(e) is the surface-disposal site southeast of the former Los Alamos Inn and is partly on the mesa top and partly on the Los Alamos Canyon hillside. The origin of the construction debris at this site is not documented.

SWMUs 01-006(a,b,c,d,h,n,o) and AOCs 01-006(e,g) are drainlines, storm drains, and their outfalls. Five are drainlines [01-006(a,b,c,d,e)] and four are storm drains [01-006(h,g,n,o)]. They either discharged directly into Los Alamos Canyon or released effluent onto the ground surface near the buildings they served.

SWMUs 01-007(a,b,c,d,e,j,l) and AOC 01-007(k) are areas of suspected subsurface soil contamination. Subsurface contamination may be present in soil beneath and adjacent to former TA-01 structures. Most of these locations are currently beneath paved roads, parking lots, commercial buildings, or townhouses, which comprise a major portion of the present-day Los Alamos townsite. The suspected soil contamination could have resulted from original Laboratory operations or from demolition and removal of buildings.

7.1.2 Summary of Releases

Releases from septic systems, the industrial waste line, drainlines, and storm water drainages occurred as a result of normal site operations (e.g., discharges from outfalls) and accidental spills or releases. No documentation exists to estimate the volumes or rates of the flow of the effluent from septic system outlet pipes, the industrial waste line, drainlines, or storm water drainages to outfalls.

Releases from septic tanks and sanitary waste lines [SWMUs 01-001(a,d3,f,g,o,s2)] may have occurred as a result of leaks and may have caused subsurface contamination. Discharges from outfalls, as a result of normal site operation, may have caused surface and subsurface contamination on the hillside of Los Alamos Canyon.

Releases from the industrial waste line (SWMU 01-002) may have occurred as a result of leaks and may have caused subsurface contamination. Although the entire industrial waste line has been removed, residual contamination may remain in the former location of the industrial waste line. The discharge location from the industrial waste line (TA-45) falls within the Pueblo Canyon Aggregate Area.

Placement of contaminated materials at landfills [SWMUs 01-003(a,d,e) and AOCs 01-003(b,c)] may have caused surface and subsurface contamination on the hillside of Los Alamos Canyon.

Contamination from drainlines, storm drains, and their outfalls [SWMUs 01-006(a,b,c,d,h,n,o) and AOCs 01-006(e,g)] may have occurred as a result of leaks and intentional discharges.

Contamination at the areas of suspected subsurface soil contamination [SWMUs 01-007(a,b,c,d,e,j,l) and AOC 01-007(k)] may be a direct result of spills or releases that may have caused surface and subsurface contamination.

7.2 SWMU 01-001(a), Septic Tank 134

7.2.1 Site History and Operational History

SWMU 01-001(a) consists of a former sanitary septic system that included former septic tank 134 (structure 01-134), inlet and outlet drainlines, and an outfall at former TA-01 (Figure 7.2-1). Former septic tank 134 measured 5 ft x 9 ft x 5.67 ft deep and was constructed of reinforced concrete in 1949. The septic tank was located south of the sheet metal shop (former building 01-104) and served warehouse 19 (former building 01-103) and the sheet metal shop from 1949 to 1964. Two separate sanitary waste lines from buildings 01-103 and 01-104 tied into the septic tank, which discharged through an outlet drainline to an outfall in Bailey Bridge Canyon (LANL 2001, 069946, p. 35). Warehouse 19 was reportedly used to store unknown nonradioactive materials. Buildings 01-103 and 01-104 were decommissioned and removed in 1964 as part of the relocation of all TA-01 activities to new Laboratory technical areas south of the Los Alamos townsite. During the final radioactive clearance screening for warehouse 19 in 1964, the concrete floor was found to be contaminated with uranium-238. The contaminated floor was demolished and disposed of in Bailey Bridge Canyon and covered with soil (Montoya 1965, 003711). Part of the floor drain associated with warehouse 19 was excavated and found to have no radiological contamination. The remainder of the floor drain was left in place (Montoya 1965, 003711). Septic tank 134 was removed during the Ahlquist Radiological Survey in 1975. The tank was found to have no evidence of radiological contamination and was disposed of at Material Disposal Area (MDA) G at TA-54 (Ahlquist et al. 1977, 005710).

7.2.2 Relationship to Other SWMUs

There are no upgradient SWMUs or AOCs that may have contributed contamination to SWMU 01-001(a).

7.2.3 Summary of Previous Investigations

1992 Investigation Activities

Two composite soil samples were collected along the Bailey Bridge Canyon rim; however, composite samples do not meet QA/QC requirements, so the sample results are not included in this report.

2008 Investigation Activities

Seventeen samples were collected from eight locations at SWMU 01-001(a) in 2008. Results from the sampling activities in 2008 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination at the site.

7.2.4 Site Contamination

7.2.4.1 Soil, Rock, and Sediment Sampling

As part of the Phase II investigation at SWMU 01-001(a), a total of 31 samples were collected from 15 locations and analyzed for inorganic chemicals to define extent of contamination.

7.2.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

7.2.2.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at SWMU 01-001(a) consist of results from 48 samples collected from 14 locations in 2008–2009 and 2011–2012. The 48 samples include 15 soil, 29 tuff, and 4 sediment samples. Table 7.2-1 lists the samples collected and the analyses requested for each sample. Figure 7.2-1 shows the sampling locations.

Inorganic Chemicals

A total of 48 samples (15 soil/fill, 29 tuff, and 4 sediment) were analyzed for TAL metals and 17 samples (12 tuff and 5 sediment) were analyzed for nitrate, perchlorate, and cyanide. Table 7.2-2 presents the inorganic chemicals detected or detected above BVs. Figure 7.2-2 shows the spatial distribution of inorganic chemicals detected or detected above BVs.

Barium was detected above the sediment and Qbt 2,3,4 BVs (127 mg/kg and 46 mg/kg) in three sediment samples and two tuff samples with a maximum concentration of 181 mg/kg. The Gehan and quantile tests indicated site concentrations of barium in tuff are not statistically different from background (Figure F-21 and Table F-5). There were too few sediment samples to perform statistical tests. The maximum concentration is greater than the highest concentration in the sediment background data set (127 mg/kg). Barium is retained as a COPC.

Cadmium was detected above the Qbt 2,3,4 BV (1.63 mg/kg) in two samples with a maximum concentration of 4.9 mg/kg and was not detected but had DLs (0.462 mg/kg to 0.519 mg/kg) above the soil BV (0.4 mg/kg) in three samples. The Gehan and quantile tests indicated site concentrations of cadmium in tuff are not statistically different from background (Figure F-22 and Table F-5). The soil DLs are only 0.062 mg/kg to 0.119 mg/kg above BV and are below or equivalent to the three highest concentrations (0.6 mg/kg, 1.4 mg/kg, and 2.6 mg/kg) and three highest DLs (2 mg/kg, 2 mg/kg, and 2 mg/kg) in the soil background data set. Cadmium is not a COPC.

Calcium was detected above the Qbt 2,3,4 BV (2200 mg/kg) in one sample at a concentration of 3740 mg/kg. The Gehan test indicated site concentrations of calcium in tuff are statistically different from background (Table F-5). However, the quantile and slippage tests indicated site concentrations of calcium in tuff are not statistically different from background (Figure F-23 and Table F-5). Calcium is not a COPC.

Chromium was detected above the soil and Qbt 2,3,4 BVs (19.3 mg/kg and 7.14 mg/kg) in 1 soil sample and 13 tuff samples with a maximum concentration of 52.6 mg/kg. The Gehan and quantile tests indicated site concentrations of chromium in soil are not statistically different from background (Figure F-24 and Table F-6) but site concentrations of chromium in tuff are statistically different from background (Figure F-25 and Table F-5). Chromium is retained as a COPC.

Cobalt was detected above the sediment BV (4.73 mg/kg) in 1 sample at a concentration of 5.4 mg/kg. There were too few sediment samples to perform statistical tests. The concentration was only 0.67 mg/kg above the BV and cobalt was detected below BV in 45 other samples. Cobalt is not a COPC.

Copper was detected above the soil and Qbt 2,3,4 BVs (14.7 mg/kg and 4.66 mg/kg) in four soil samples and six tuff samples with a maximum concentration of 54.3 mg/kg. The Gehan and quantile tests indicated site concentrations of copper in soil and tuff are statistically different from background (Figure F-26 and Table F-6, and Figure F-27 and Table F-5, respectively). Copper is retained as a COPC.

Cyanide was not detected but had DLs (0.51 mg/kg to 0.54 mg/kg) above the soil and Qbt 2,3,4 BVs (0.5 mg/kg for both) in one soil sample and three tuff samples. Cyanide is retained as a COPC.

Lead was detected above the Qbt 2,3,4 BV (11.2 mg/kg) in three samples with a maximum concentration of 17.2 mg/kg. The Gehan and slippage tests indicated site concentrations of lead in tuff are statistically different from background (Figure F-28 and Table F-5). Lead is retained as a COPC.

Nickel was detected above the Qbt 2,3,4 BV (6.58 mg/kg) in nine samples with a maximum concentration of 26.3 mg/kg. The quantile and slippage tests indicated site concentrations of nickel in tuff are statistically different from background (Figure F-29 and Table F-5). Nickel is retained as a COPC.

Nitrate was detected in 10 samples with a maximum concentration of 0.88 mg/kg. Although nitrate is naturally occurring, SWMU 01-001(a) is a septic system that managed sanitary wastewater. As a result, the concentrations detected may be site related rather than reflecting only naturally occurring levels. Nitrate is retained as a COPC.

Perchlorate was detected in two samples with a maximum concentration of 0.0045 mg/kg. Perchlorate is retained as a COPC.

Selenium was not detected but had DLs (0.52 mg/kg to 0.64 mg/kg) above the sediment and Qbt 2,3,4 BVs (0.3 mg/kg for both) in three sediment samples and five tuff samples. Selenium is retained as a COPC.

Silver was detected above the Qbt 2,3,4 BV (1 mg/kg) in three samples with a maximum concentration of 10.9 mg/kg and was not detected but had DLs (2.61 mg/kg to 2.82 mg/kg) above the Qbt 2,3,4 BV in three samples. Silver is retained as a COPC.

Vanadium was detected above the sediment BV (19.7 mg/kg) in two samples with a maximum concentration of 22 mg/kg. There were too few sediment samples to perform statistical tests and the concentrations are above the highest concentration in the sediment background data set (20 mg/kg). Vanadium is retained as a COPC.

Organic Chemicals

A total of 46 samples (15 soil, 29 tuff, and 4 sediment) were analyzed for SVOCs, VOCs, and PCBs and 29 samples (14 soil and 15 tuff) were analyzed for bis(2-ethylhexyl)phthalate. Table 7.2-3 presents the detected organic chemicals. Figure 7.2-3 shows the spatial distribution of detected organic chemicals.

Organic chemicals detected at SWMU 01-001(a) include acenaphthene; acetone; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; chrysene; di-n-octylphthalate; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; methylene chloride; phenanthrene; and pyrene. The detected organic chemicals are retained as COPCs.

Radionuclides

A total of 17 samples (1 soil, 12 tuff, and 4 sediment) were analyzed for americium-241, gamma-emitting radionuclides, tritium, isotopic plutonium, and isotopic uranium. Table 7.2-4 presents the radionuclides detected or detected above BVs/FVs. Figure 7.2-4 shows the spatial distribution of radionuclides detected or detected above BVs/FVs.

Plutonium-239/240 was detected in one tuff sample at an activity of 0.164 pCi/g. Plutonium-239/240 is retained as a COPC.

7.2.2.4 Nature and Extent of Contamination

The nature and extent of inorganic, organic, and radionuclide COPCs at SWMU 01-001(a) are discussed below.

Inorganic Chemicals

Inorganic COPCs at SWMU 01-001(a) include barium, chromium, copper, cyanide, lead, nickel, nitrate, perchlorate, selenium, silver, and vanadium.

Barium was detected above the sediment and Qbt 2,3,4 BVs in three sediment samples and two tuff samples with a maximum concentration of 181 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of barium are defined.

Chromium was detected above the soil and Qbt 2,3,4 BVs in 1 soil sample and 13 tuff samples with a maximum concentration of 52.6 mg/kg. Concentrations increased with depth at locations 00-603748, 00-603753, 00-614781, and 00-614782; decreased with depth at all other locations; and decreased downgradient. As described in section 4.2, SWMU 01-001(a) is not a potential source of hexavalent chromium and use of the SSL for trivalent chromium to determine whether additional sampling is warranted is appropriate. The residential SSL for trivalent chromium (117,000 mg/kg) is approximately 2220 times the maximum concentration. Lateral extent of chromium is defined and further sampling for vertical extent is not warranted.

Copper was detected above the soil and Qbt 2,3,4 BVs in four soil samples and six tuff samples with a maximum concentration of 54.3 mg/kg. Concentrations increased with depth at locations 00-603753 and 00-603754, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 58 times the maximum concentration. Lateral extent of copper is defined and further sampling for vertical extent is not warranted.

Cyanide was not detected but had DLs (0.51 mg/kg to 0.54 mg/kg) above the soil and Qbt 2,3,4 BVs in one soil sample and three tuff samples. The residential SSL is approximately 21 times the maximum DL. Further sampling for extent of cyanide is not warranted.

Lead was detected above the Qbt 2,3,4 BV in three samples with a maximum concentration of 17.2 mg/kg. Concentrations increased with depth at location 00-603749, decreased with depth at locations 00-603748 and 00-603761, and decreased downgradient (the concentration in a shallow sample at location 00-603761 was 18.5 mg/kg and below the soil BV [Appendix E, Pivot Tables]). The residential SSL is approximately 23 times the maximum concentration. Lateral extent of lead is defined and further sampling for vertical extent is not warranted.

Nickel was detected above the Qbt 2,3,4 BV in nine samples with a maximum concentration of 26.3 mg/kg. Concentrations did not change substantially with depth (0.5 mg/kg) at location 00-603752, decreased with depth at all other locations, and decreased downgradient (the concentration in a shallow sample at location 00-603752 was 7.2 mg/kg and below the soil BV [Appendix E, Pivot Tables]). The residential SSL is approximately 59 times the maximum concentration. Lateral extent of nickel is defined and further sampling for vertical extent is not warranted.

Nitrate was detected in 10 samples with a maximum concentration of 0.88 mg/kg. Concentrations increased with depth at location 00-603754, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 142,000 times the maximum concentration. Lateral extent of nitrate is defined and further sampling for vertical extent is not warranted.

Perchlorate was detected in two samples with a maximum concentration of 0.0045 mg/kg. Concentrations decreased with depth at location 00-603761 and decreased downgradient. Lateral and vertical extent of perchlorate are defined.

Selenium was not detected but had DLs (0.52 mg/kg to 0.64 mg/kg) above the sediment and Qbt 2,3,4 BVs in three sediment samples and five tuff samples. The residential SSL is approximately 611 times the maximum DL. Further sampling for extent of selenium is not warranted.

Silver was detected above the Qbt 2,3,4 BV in three samples with a maximum concentration of 10.9 mg/kg and was not detected but had DLs (2.61 mg/kg to 2.82 mg/kg) above the Qbt 2,3,4 BV in three samples. Concentrations increased with depth at location 00-603754, decreased with depth at locations 00-603752, 00-603753, and decreased downgradient. The residential SSL is approximately 36 times the maximum concentration and 139 times the maximum DL. Lateral extent of silver is defined and further sampling for vertical extent is not warranted.

Vanadium was detected above the sediment BV in two samples with a maximum concentration of 22 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of vanadium are defined.

Organic Chemicals

Organic COPCs at SWMU 01-001(a) include acenaphthene; acetone; anthracene; Aroclor-1254; Aroclor-1260, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, di-n-octylphthalate, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, methylene chloride, phenanthrene, and pyrene.

Acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene were each detected in one sample at concentrations ranging from

0.047 mg/kg to 0.36 mg/kg. Concentrations decreased with depth and decreased downgradient at location 01-603748. Lateral and vertical extent of acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene are defined.

Acetone was detected in three samples with a maximum concentration of 0.0034 mg/kg. Concentrations increased with depth at locations 00-603749 and 00-603761, decreased with depth at location 00-603751, and decreased downgradient. The residential SSL is approximately 19,500,000 times the maximum concentration. Lateral extent of acetone is defined and further sampling for vertical extent is not warranted.

Aroclor-1254 was detected in five samples with a maximum concentration of 0.13 mg/kg. Concentrations increased with depth at location 00-603750, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 60 times the maximum concentration where vertical extent is not defined (0.019 mg/kg at location 00-603750). Lateral extent of Aroclor-1254 is defined and further sampling for vertical extent is not warranted.

Aroclor-1260 was detected in three samples with a maximum concentration of 0.011 mg/kg. Concentrations increased with depth at location 00-603761, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 221 times the maximum concentration. Lateral extent of Aroclor-1260 is defined and further sampling for vertical extent is not warranted.

Bis(2-ethylhexyl)phthalate was detected in seven samples with a maximum concentration of 2 mg/kg. Concentrations increased with depth at location 00-603752, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 190 times the maximum concentration. Lateral extent of bis(2-ethylhexyl)phthalate is defined and further sampling for vertical extent is not warranted.

Di-n-octylphthalate was detected in one sample at a concentration of 0.16 mg/kg. Concentrations decreased with depth and decreased downgradient. Lateral and vertical extent of di-n-octylphthalate are defined.

Methylene chloride was detected in nine samples with a maximum concentration of 0.0058 mg/kg. Concentrations did not change substantially with depth (0.0026 mg/kg or less) at locations 00-603748, 00-603749, 00-603750, and 00-603751; decreased with depth at location 00-603761; and decreased downgradient. The residential SSL is approximately 70,500 times the maximum concentration. Lateral extent of methylene chloride is defined and further sampling for vertical extent is not warranted.

Radionuclides

Radionuclide COPCs at SWMU 01-001(a) include plutonium-239/240.

Plutonium-239/240 was detected in one tuff sample at a concentration of 0.164 pCi/g. Activities increased with depth and decreased downgradient. The residential SAL is approximately 482 times the maximum activity. Lateral extent of plutonium-239/240 is defined and further sampling for vertical extent is not warranted.

Summary of Nature and Extent

The lateral and vertical extent of inorganic, and organic, and radionuclide COPCs is defined or no further sampling for extent is warranted at SWMU 01-001(a).

7.2.5 Summary of Human Health Risk Screening

Industrial Scenario

The total excess cancer risk for the industrial scenario is 2×10^{-8}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.004, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–1.0 ft depth interval.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 3×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–10.0 ft depth interval.

Residential Scenario

The total excess cancer risk for the residential scenario is 5×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–10.0 ft depth interval.

Based on the risk-screening assessment results, no potential unacceptable risks or doses exist for the industrial, construction worker, and residential scenarios at SWMU 01-001(a).

7.2.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for SWMU 01-001(a).

7.3 SWMU 01-001(d2), Soil Contamination from Septic Tank 138

7.3.1 Site History and Operational History

SWMU 01-001(d2)] was originally part of former SWMU 01-001(d), which was split into SWMUs 01-001(d1), 01-001(d2), and 01-001(d3) in a request for modification of the Laboratory's Hazardous Waste Facility Permit approved by NMED on November 9, 2016 (LANL 2016, 601921). The Laboratory proposed to split SWMU 01-001(d) into three newly designated SWMUs because each component of the SWMU is located on property owned by different entities.

SWMU 01-001(d2) consists of soil contamination associated with former septic tank 138 that was connected to former buildings K, V, and Y by a sanitary waste line [SWMU 01-001(d1)] and the portion of the former outlet drainline located on private property directly north of DOE Property (Plate 7). The septic tank was a cylindrical metal tank measuring 4 ft in diameter x 4 ft high, installed in 1943, and located southeast of former building Y. Building K was a chemical stock room that contained a still for repurifying mercury. Records indicate mercury spills from the still occurred periodically. Building V housed the original uranium and beryllium machine shop. Dry-grinding of boron was also conducted in building V. Building Y housed a cryogenics and physics laboratory that handled tritium, uranium-238, and polonium-210. In addition, a cooling tower (former structure 01-82) was associated with building Y and was removed in June 1956. Because no drainline or outfall was directly associated with the former cooling tower, blowdown could have been discharged to septic tank 138 through an existing drainline [new SWMU 01-001(d1)] associated with building Y. The former septic tank outfall was located east of former building Y and discharged over the rim of Los Alamos Canyon. This outfall area and former location of the outlet drainline located on DOE property is known as Hillside 138 [new SWMU 01-001(d3)].

The SWMU 01-001(d2) septic tank and surrounding soil (approximately 1 ft around the entire tank) were removed in 1975 during the Ahlquist radiological survey conducted at TA-01 (Ahlquist et al. 1977, 005710). No radiological contamination was found in the septic tank, on the broken pipe shards from the inlet line, or in the outlet line; therefore, the section of the inlet line located beneath an office building was left in place. Samples collected from Hillside 138 indicated elevated levels of plutonium-239 and cesium-137; however, the hillside was not decontaminated during the survey because it was inaccessible. The area was fenced to prevent public access from the mesa top.

7.3.2 Relationship to Other SWMUs

Upgradient new SWMUs 01-001(d1), 01-006(h1), 01-006(h2), and 01-006(h3) may have contributed contamination to SWMU 01-001(d2).

7.3.3 Summary of Previous Investigations

No previous corrective action investigations have been conducted at SWMU 01-001(d2).

7.3.4 Site Contamination

SWMU 01-001(d2) is beneath a structure on private property and was inaccessible during the investigation and not sampled.

7.3.5 Summary of Human Health Risk Screening

Because no investigation sampling has been performed at SWMU 01-001(d2), human health risk was not evaluated.

7.3.6 Summary of Ecological Risk Screening

Because no investigation sampling has been performed at SWMU 01-001(d2), ecological risk was not evaluated.

7.4 SWMU 01-001(d3), Soil Contamination from Septic Tank 138

7.4.1 Site History and Operational History

SWMU 01-001(d3)] was originally part of former SWMU 01-001(d), which was split into SWMUs 01-001(d1), 01-001(d2), and 01-001(d3) in a request for modification of the Laboratory's Hazardous Waste Facility Permit approved by NMED on November 9, 2016 (LANL 2016, 601921). The Laboratory proposed to split SWMU 01-001(d) into three newly designated SWMUs because each component of the SWMU is located on property owned by different entities.

SWMU 01-001(d3) consists of a portion of the former outlet line from former septic tank 138 [new SWMU 01-001(d2)] and the outfall through which wastewater from the tank discharged onto the canyon rim and north slope of Los Alamos Canyon (Plate 7). This outfall area, known as Hillside 138, is located on DOE-owned property in TA-41. The septic tank was a cylindrical metal tank measuring 4 ft in diameter x 4 ft high, installed in 1943, and located southeast of former building Y. Building K was a chemical stock room that housed a mercury still. Building V housed the original uranium and beryllium machine shop. Dry-grinding of boron was also conducted in building V. Building Y housed a physics laboratory that handled tritium, uranium-238, and polonium-210. In addition, a cooling tower (former structure 01-82) was associated with building Y and was removed in June 1956. Because no drainline or outfall was directly associated with the former cooling tower, blowdown could have been discharged to septic tank 138 through an existing drainline [new SWMU 01-001(d1)] associated with building Y. The corrective action for SWMU 01-001(d1) was completed in the investigation of the former Los Alamos Inn property (LANL 2017, 602404).

The septic tank and surrounding soil were removed in 1975 during the Ahlquist radiological survey conducted at TA-01 (Ahlquist et al. 1977, 005710). No radiological contamination was found in the septic tank, broken pipe shards from the inlet line, or in the outlet line; therefore, the section of the inlet line located beneath an office building was left in place. Samples collected from Hillside 138 indicated elevated levels of plutonium-239 and cesium-137; however, the hillside was not decontaminated during the survey because it was inaccessible. The area was fenced to prevent public access from the mesa top.

7.4.2 Relationship to Other SWMUs

Upgradient new SWMUs 01-001(d1), 01-001(d2), 01-006(h1), 01-006(h2), and 01-006(h3) may have contributed contamination to new SWMU 01-001(d3). Former SWMU 01-001(d) overlaps the footprint of former SWMU 01-006(h), and the two sites share the same hillside area.

7.4.3 Summary of Previous Investigations

Because former SWMU 01-001(d) was split into three new SWMUs [SWMUs 01-001(d1), 01-001(d2), and 01-001(d3)] in November 2016, the previous investigations described below were performed for all or portions of former SWMU 01-001(d). Former SWMU 01-001(d) overlaps the footprint of former SWMU 01-006(h), and the two sites shared the same hillside area in Los Alamos Canyon. Therefore, the historical investigation activities for former SWMU 01-001(d) also applied to former SWMU 01-006(h).

1992–1994 Investigation Activities

Both the canyon rim area and the outfall area known as Hillside 138 [new SWMU 01-001(d3)] were extensively sampled including the entire drainage pathway from the mesa top to the bottom of Los Alamos Canyon. The 1992–1994 investigation results are not decision-level data.

1996–1997 Interim Action

During the interim action (IA) conducted at former SWMU 01-001(d), contaminated soil on Hillside 138 [new SWMU 01-001(d3)] was removed to reduce the potential migration of contaminants from the site in 1996–1997. Approximately 20 yd^3 of mercury-contaminated soil was removed from the cliff below the upper and lower bench areas within new SWMU 01-001(d3). Data from confirmation samples collected within the excavated area resulted in further excavation. Additional confirmation samples were not collected (LANL 1997, 056908).

2008 Investigation Activities

A total of 48 samples were collected from 22 locations within the area that is now SWMU 01-001(d3), i.e., within the Hillside 138 outfall area and down the hillside drainage into Los Alamos Canyon in 2008. Results from the sampling activities in 2008 were presented in the previous investigation report

(LANL 2010, 108528). Additional sampling was required to define the extent of contamination along with the removal of soil and tuff around 3 sampling locations where concentrations of plutonium-239/240 exceeded the residential SAL and around 2 sampling locations where mercury concentrations also exceeded the residential SSL.

7.4.4 Site Contamination

7.4.4.1 Soil, Rock, and Sediment Sampling

As part of the Phase II investigation and remediation activities at SWMU 01-001(d3), a total of 23 samples were collected from 108 locations and analyzed for inorganic chemicals, organic chemicals, and radionuclides to define extent of contamination and verify cleanup goals.

2017 Investigation Activities

Previous investigation data from what is now SWMU 01-001(d3) indicated a strong correlation between mercury concentrations and plutonium-239/240 activities. Based on this correlation, a soil screening method was used to determine the extent of both mercury and plutonium-239/240 contamination and to determine the areas where soil and tuff required removal. Using this method, media samples were collected in a grid pattern throughout the area of suspected radioactive contamination (Figure 7.4-1). Samples were collected at depths of 0–1 ft bgs every 5–10 ft laterally within the grid and submitted to an on-site laboratory and screened for plutonium-239/240 activities. Screening results were evaluated for each location, and locations where activities exceeded the recreational cleanup level for plutonium-239/240 (770 pCi/g from 0–1 ft bgs) were flagged for excavation. Locations with activities below 770 pCi/g, considered bounding for excavation purposes, were used to establish the lateral extent of areas of excavation where activities exceeded 770 pCi/g. This method was used to define a total of five separate areas within SWMU 01 001(d3) requiring remediation (Figure 7.4-2).

Before soil excavation and restoration were completed in these five areas, additional lateral and vertical confirmation samples were collected from the bounding locations that define the lateral extent of the excavation areas and submitted to an off-site analytical laboratory to determine if mercury concentrations and plutonium-239/240 activities were below the acceptable cleanup and risk levels. The five areas were also sampled for waste characterization purposes.

A total of 243 soil screening, investigation, confirmation, and waste characterization samples were collected within SWMU 01-001(d3). In addition, approximately 70 yd3 of contaminated soil containing mercury and plutonium-239/240 was excavated from SWMU 01-001(d3), packaged in waste bags, and shipped off-site to a licensed offsite disposal facility, for final disposition. Following soil removal, the excavated areas were restored with approximately 71 yd3 of clean fill, topsoil, and other materials, per applicable regulatory requirements.

7.4.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

7.4.4.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at SWMU 01-001(d3) consist of results from 285 samples collected from 108 locations in 2008–2009, 2011–2012, 2013, and 2017. The 285 samples include 44 soil, 225 tuff (13 Qbt 1g, 2 Qbt 1v, 207 Qbt 3, and 3 Qct), and 16 sediment samples. Table 7.4-1 lists the samples collected and the analyses requested for each sample. Plate 7 shows the sampling locations.

Inorganic Chemicals

A total of 77 samples (14 soil, 13 Qbt 1g, 2 Qbt 1v, 29 Qbt 3, 3 Qct, and 16 sediment) were analyzed for TAL metals, 97 samples (18 soil and 79 Qbt 3) were analyzed for mercury, 52 samples (9 soil, 10 Qbt 1g, 17 Qbt 3, and 16 sediment) were analyzed for nitrate and cyanide, and 48 samples (5 soil, 10 Qbt 1g, 17 Qbt 3, and 16 sediment) were analyzed for perchlorate. Table 7.4-2 presents the inorganic chemicals detected or detected above BVs. Plates 8a and 8b show the spatial distribution of inorganic chemicals detected or detected above BVs.

Aluminum was detected above the Qbt 1g, Qct, Qbo BV (3560 mg/kg) in five samples with a maximum concentration of 12,000 mg/kg. The Gehan and quantile tests indicated site concentrations of aluminum in tuff are statistically different from background (Figure F-30 and Table F-7). Aluminum is retained as a COPC.

Antimony was detected above the soil and Qbt 2,3,4 BVs (0.83 mg/kg and 0.5 mg/kg) in 1 soil sample and 1 tuff sample with a maximum concentration of 27.4 mg/kg and was not detected, but had DLs (0.882 mg/kg to 1.31 mg/kg) above the soil and Qbt 2,3,4 BVs and Qbt 1g, Qct, Qbo BV (0.5 mg/kg) in 7 soil samples, 11 Qbt 3 samples, 3 Qbt 1g samples, and 3 Qct samples. Antimony is retained as a COPC.

Arsenic was detected above the Qbt 2,3,4 and Qbt 1g, Qct, Qbo BVs (2.79 mg/kg and 0.56 mg/kg) in 1 Qbt 3 sample, 11 Qbt 1g samples, 1 Qbt 1v sample, and 2 Qct samples with a maximum concentration of 3.3 mg/kg. The Gehan and quantile tests indicated site concentrations of arsenic in the upper tuff units are not statistically different from background (Figure F-31 and Table F-8). The quantile and slippage tests indicated site concentrations of arsenic in the lower tuff units are statistically different from background (Figure F-32 and Table F-7). Arsenic is retained as a COPC.

Barium was detected above the soil; sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs (295 mg/kg, 127 mg/kg, 46 mg/kg, and 25.7 mg/kg) in 2 soil samples, 2 sediment samples, 16 Qbt 3 samples, 3 Qbt 1g samples, and 2 Qct samples with a maximum concentration of 513 mg/kg. The Gehan and quantile tests indicated site concentrations of barium in sediment are not statistically different from background (Figure F-33 and Table F-9). The Gehan and slippage tests indicated site concentrations of barium in the lower tuff units are statistically different from background (Figure F-34 and Table F-7). Barium is retained as a COPC.

Beryllium was detected above the Qbt 2,3,4 and Qbt 1g, Qct, Qbo BVs (1.21 mg/kg and 1.44 mg/kg) in one Qbt 1g sample, one Qbt 3 sample, and one Qct sample with a maximum concentration of 2.24 mg/kg. The Gehan and quantile tests indicated site concentrations of beryllium in upper tuff units are not statistically different from background (Figure F-35 and Table F-8). The Gehan and slippage tests indicated site concentrations of beryllium in lower tuff units are statistically different from background (Figure F-36 and Table F-7). Beryllium is retained as a COPC.

Cadmium was detected above the soil, sediment, and Qbt 2,3,4 BVs (0.4 mg/kg, 0.4 mg/kg, and 1.83 mg/kg) in one soil sample, one sediment sample, and four tuff samples with a maximum concentration of 4.99 mg/kg and was not detected but had DLs (0.446 mg/kg to 0.56 mg/kg) above the soil BV and Qbt 1g, Qct, Qbo BV (0.4 mg/kg) in four soil samples and six tuff samples. Cadmium is retained as a COPC.

Calcium was detected above the Qbt 1g, Qct, Qbo BV (1900 mg/kg) in two samples with a maximum concentration of 10,200 mg/kg. The Gehan test indicated site concentrations of calcium in tuff are statistically different from background (Table F-7). However, the quantile and slippage tests indicated site concentrations of calcium in tuff are not statistically different from background (Figure F-37 and Table F-7). Calcium is not a COPC.

Chromium was detected above the Qbt 2,3,4; Qbt 1v; and Qbt 1g, Qct, Qbo BVs (7.14 mg/kg, 2.24 mg/kg, and 2.6 mg/kg) in 11 Qbt 1g samples, 1 Qbt 1v sample, 16 Qbt 3 samples, and 3 Qct samples with a maximum concentration of 124 mg/kg. The Gehan and quantile tests indicated site concentrations of chromium in upper and lower tuff units are statistically different from background (Figure F-38 and Table F-8, and Figure F-39 and Table F-7, respectively). Chromium is retained as a COPC.

Cobalt was detected above the sediment BV (4.73 mg/kg) in one sample at a concentration of 5.2 mg/kg. The Gehan and quantile tests indicated site concentrations of cobalt in sediment are not statistically different from background (Figure F-40 and Table F-9). Cobalt is not a COPC.

Copper was detected above the soil; sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs (14.7 mg/kg, 11.2 mg/kg, 4.66 mg/kg and 3.96 mg/kg) in 3 soil samples, 2 sediment samples, 1 Qbt 1g sample, 11 Qbt 3 samples, and 1 Qct sample with a maximum concentration of 42.1 mg/kg. The Gehan and quantile tests indicated site concentrations of copper in soil and sediment are not statistically different from background (Figure F-41 and Table F-10, and Figure F-42 and Table F-9, respectively). The Gehan and quantile tests indicated site concentrations of copper in upper and lower tuff units are statistically different from background (Figure F-43 and Table F-8, and Figure F-44 and Table F-7, respectively). Copper is retained as a COPC.

Cyanide was not detected but had DLs (0.51 mg/kg and 0.53 mg/kg) above the Qbt 2,3,4 and Qbt 1g, Qct, Qbo BVs (0.5 mg/kg for both) in 1 Qbt 3 sample and 1 Qbt 1g sample. The DLs were only 0.01 mg/kg and 0.03 mg/kg above the BVs and cyanide was not detected or detected above BV in 52 other samples. Cyanide is not a COPC.

Hexavalent chromium was detected in 45 samples with a maximum concentration of 6.45 mg/kg. Hexavalent chromium is retained as COPC.

Iron was detected above the Qbt 2,3,4 and Qbt 1g, Qct, Qbo BVs (14,500 mg/kg and 3700 mg/kg) in 12 Qbt 1g samples, 2 Qbt 1v samples, 1 Qbt 3 sample, and 3 Qct samples with a maximum concentration of 21,600 mg/kg. The Gehan and quantile tests indicated site concentrations of iron in upper tuff units are not statistically different from background (Figure F-45 and Table F-8) but site concentrations of iron in lower tuff units are statistically different from background (Figure F-46 and Table F-7). Iron is retained as a COPC.

Lead was detected above the soil; sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs (23.3 mg/kg, 19.7 mg/kg, 11.2 mg/kg, and 13.5 mg/kg) in 5 soil samples, 4 sediment samples, 3 Qbt 1g samples, and 18 Qbt 3 samples with a maximum concentration of 251 mg/kg. The Gehan and quantile tests indicated site concentrations of lead in soil are not statistically different from background (Figure F-47 and Table F-10) but site concentrations of lead in sediment and upper and lower tuff units are statistically different from background (Figure F-48 and Table F-9, Figure F-49 and Table F-8, and Figure F-50 and Table F-7, respectively). Lead is retained as a COPC.

Magnesium was detected above the Qbt 1g, Qct, Qbo BV (739 mg/kg) in two samples with a maximum concentration of 2840 mg/kg. The Gehan and slippage tests indicated site concentrations of magnesium in tuff are statistically different from background (Figure F-51 and Table F-7). Magnesium is retained as a COPC.

Manganese was detected above the Qbt 2,3,4 and Qbt 1g, Qct, Qbo BVs (482 mg/kg and 189 mg/kg) in 10 Qbt 1g samples, 2 Qbt 1v samples, 1 Qbt 3 sample, and 3 Qct samples with a maximum concentration of 507 mg/kg. The Gehan and quantile tests indicated site concentrations of manganese in upper tuff units are not statistically different from background (Figure F-52 and Table F-8) but site concentrations of manganese in lower tuff units are statistically different from background (Figure F-53 and Table F-7). Manganese is retained as a COPC.

Mercury was detected above the soil; sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs (0.1 mg/kg for each) in 17 soil samples, 5 sediment samples, 1 Qbt 1g sample, 1 Qbt 1v sample, and 90 Qbt 3 samples with a maximum concentration of 159 mg/kg. Mercury is retained as a COPC.

Nickel was detected above the Qbt 2,3,4 and Qbt 1g, Qct, Qbo BVs (6.58 mg/kg and 2 mg/kg) in 10 Qbt 1g samples, 3 Qct samples, and 5 Qbt 3 samples with a maximum concentration of 19.5 mg/kg. The quantile and slippage tests indicated site concentrations of nickel in upper and lower tuff units are statistically different from background (Figure F-54 and Table F-8, and Figure F-55 and Table F-7, respectively). Nickel is retained as a COPC.

Nitrate was detected in 33 samples with a maximum concentration of 43.7 mg/kg. Although nitrate is naturally occurring, SWMU 01-001(d3) is a drainline and outfall from a septic system that managed sanitary wastewater. As a result, the concentrations detected may be site related rather than reflecting only naturally occurring levels. Nitrate is retained as a COPC.

Perchlorate was detected in eight samples with a maximum concentration of 0.0035 mg/kg. Perchlorate is retained as a COPC.

Selenium was detected above the sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs (0.3 mg/kg for each) in two sediment samples, six Qbt 1g samples, and nine Qbt 3 samples with a maximum concentration of 0.625 mg/kg and was not detected but had DLs (0.51 mg/kg to 0.987 mg/kg) above BVs in three sediment samples, four Qbt 1g samples, three Qct samples, and five Qbt 3 samples. Selenium is retained as a COPC.

Silver was detected above the soil and Qbt 2,3,4 BVs (1 mg/kg for each) in one soil sample and three tuff samples with a maximum concentration of 8 mg/kg and was not detected but had DLs (2.34 mg/kg to 4.67 mg/kg) above the soil BV and Qbt 1g, Qct, Qbo BV (1 mg/kg) in two soil samples and six tuff samples. Silver is retained as a COPC.

Vanadium was detected above the Qbt 1g, Qct, Qbo BV (4.59 mg/kg) in five samples with a maximum concentration of 8.16 mg/kg. The Gehan and quantile tests indicated site concentrations of vanadium in lower tuff units are statistically different from background (Figure F-56 and Table F-7). Vanadium is retained as a COPC.

Zinc was detected above the soil; sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs (48.8 mg/kg, 60.2 mg/kg, 63.5mg/kg, and 40 mg/kg) in one soil sample, one sediment sample, three Qbt 1g samples, four Qbt 3 samples, two Qbt 1v samples, and one Qct sample with a maximum concentration of 168 mg/kg. The quantile and slippage tests indicated site concentrations of zinc in soil are not statistically different from background (Figure F-57 and Table F-10). The Gehan and quantile tests indicated site concentrations of zinc in sediment and upper tuff units are not statistically different from background

(Figure F-58 and Table F-9, and Figure F-59 and Table F-8, respectively) but site concentrations of zinc in lower tuff units are statistically different from background (Figure F-60 and Table F-7). Zinc is retained as a COPC.

Organic Chemicals

A total of 52 samples (8 soil, 28 tuff, and 16 sediment) were analyzed for SVOCs, VOCs, and PCBs. Table 7.4-3 presents the detected organic chemicals. Plate 9 shows the spatial distribution of detected organic chemicals.

Polycyclic Aromatic Hydrocarbons

PAHs are a class of SVOCs frequently detected as a result of environmental sampling but generally were not released from the SWMUs or AOCs being investigated. PAHs unrelated to site activities are thus often detected in samples analyzed for the presence of site-related SVOCs.

PAHs are known to be widely distributed in the environment from a number of sources, both natural, such as forest fires, and anthropogenic, such as combustion of fossil fuels, oil drips off motor vehicles, vehicle tires, coal tar pitch, and weathering or eroding of asphalt pavement (Kose et al. 2008, 219977; Teaf 2008, 219976). PAHs from these sources generally occur as complex mixtures, not as single compounds. Individual PAH compounds can be manufactured for research purposes and some PAHs (e.g., anthracene, fluorene, naphthalene, and pyrene) are used in dye production, the manufacture of synthetic fibers, and in plastics and pesticides.

The principal sources of PAHs in soil along parking lots, roads, and highways are vehicular exhaust and emissions, the wearing of tires, and asphalt. PAH-containing materials, such as asphalt and rubber particles, do not easily dissolve in water, thus preventing migration, except as suspended particles in storm water. PAH concentrations in excess of soil cleanup levels may result from common anthropogenic sources such as runoff from asphalt-paved areas (e.g., roads and parking areas).

Site Activities

SWMU 01-001(d3) is a drainline and outfall from septic tank 138, which served former buildings K, V, and Y. Building K was a chemical stock room that contained a mercury still. Building V housed the original uranium and beryllium machine shop. Dry-grinding of boron was also conducted in building V. Building Y housed a physics laboratory that handled tritium, uranium-238, and polonium-210. SWMU 01-001(d3) was identified as a SWMU because of the potential for contamination from metals, radionuclides, and solvents. Operations within these former buildings did not use or produce PAHs. SWMU 01-001(d3) is located on the canyon slope and received runoff from paved areas and areas where fill likely containing asphalt had been deposited. PAHs were detected infrequently and at low concentrations (0.036 mg/kg to 0.13 mg/kg) and the results do not appear indicative of a site-related release. Therefore, the PAHs detected in samples used to characterize this site [benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; chrysene; fluoranthene; phenanthrene; and pyrene] are associated with runoff onto the site, are not related to historic Laboratory site operations, and are not COPCs.

Organic COPCs

Other organic chemicals detected at SWMU 01-001(d3) acetone, Aroclor-1254, Aroclor-1260, bis(2-ethylhexyl)phthalate, di-n-butylphthalate, methylene chloride, pentachlorophenol, and toluene. The detected organic chemicals listed are retained as COPCs.

Radionuclides

A total of 247 samples (37 soil, 196 tuff, and 14 sediment) were analyzed for isotopic plutonium; 68 samples (11 soil, 43 tuff, and 14 sediment) for gamma-emitting radionuclides; 47 samples (7 soil, 26 tuff, and 14 sediment) for americium-241, isotopic uranium, and tritium; and 41 samples (3 soil, 24 tuff, and 14 sediment) for strontium-90. Table 7.4-4 presents the radionuclides detected or detected above BVs/FVs. Plates 10a and 10b show the spatial distribution of radionuclides detected or detected above BVs/FVs.

Americium-241 was detected below 1 ft bgs in one soil sample and detected in one tuff sample with a maximum activity of 0.116 pCi/g. Americium-241 is retained as a COPC.

Cesium-137 was detected below 1 ft bgs in two soil samples and detected in nine tuff samples with a maximum activity of 1.01 pCi/g. Cesium-137 is retained as a COPC.

Plutonium-238 was detected above the soil FV (0.023 pCi/g) in 4 samples, detected below 1 ft bgs in 2 soil samples, and detected in 19 tuff samples with a maximum activity of 0.54 pCi/g. Plutonium-238 is retained as a COPC.

Plutonium-239/240 was detected above the soil and sediment FVs (0.054 pCi/g and 0.068 pCi/g) in 22 soil samples and 9 sediment samples, detected below 1 ft bgs in 6 soil samples, and detected in 173 tuff samples with a maximum activity of 2960 pCi/g. Plutonium-239/240 is retained as a COPC.

Strontium-90 was detected in one tuff sample at an activity of 0.276 pCi/g. Strontium-90 is retained as a COPC.

Uranium-234 was detected above the sediment and Qbt 2,3,4 BVs (2.59 pCi/g and 1.98 pCi/g) in 1 sediment sample and 1 tuff sample with a maximum activity of 2.68 pCi/g. The maximum activity was only 0.09 pCi/g above the sediment BV and uranium-234 was detected below BV in 45 other samples. Uranium-234 is not a COPC.

Uranium-235/236 was detected above the Qbt 2,3,4 BV (0.09 pCi/g) in 2 tuff samples with a maximum activity of 0.165 pCi/g. The maximum activity was only 0.075 pCi/g above BV and uranium-235/236 was not detected or detected above BV in 45 other samples (detected below BV in 6 samples). Uranium-235/236 is not a COPC.

Uranium-238 was detected above the sediment and Qbt 2,3,4 BVs (2.29 pCi/g and 1.93 pCi/g) in 1 sediment sample and 1 tuff sample with a maximum activity of 2.4 pCi/g. The maximum activities in sediment and tuff were only 0.11 pCi/g and 0.38 pCi/g above BV, respectively, and uranium-238 was detected below BV in 45 other samples. Uranium-238 is not a COPC.

7.4.4.4 Nature and Extent of Contamination

The nature and extent of inorganic, organic, and radionuclide COPCs at SWMU 01-001(d3) are discussed below.

Inorganic Chemicals

Inorganic COPCs at SWMU 01-001(d3) include aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, copper, hexavalent chromium, iron, lead, magnesium, manganese, mercury, nickel, nitrate, perchlorate, selenium, silver, vanadium, and zinc.

Aluminum was detected above the Qbt 1g, Qct, Qbo BV in five samples with a maximum concentration of 12,000 mg/kg. Concentrations increased with depth at locations 00-603815, 00-603817, 00-603818, and 00-603819; decreased with depth at location 00-603816; and decreased downgradient. The residential SSL is approximately 6.5 times the maximum concentration, and the industrial SSL is approximately 108 times the maximum concentration. Lateral extent of aluminum is defined and further sampling for vertical extent is not warranted.

Antimony was detected above the soil and Qbt 2,3,4 BVs in 1 soil sample and 1 tuff sample with a maximum concentration of 27.4 mg/kg and was not detected, but had DLs (0.882 mg/kg to 1.31 mg/kg) above the soil; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs in 7 soil samples, 11 Qbt 3 samples, 3 Qbt 1g samples, and 3 Qct samples. Concentrations decreased with depth at location 01-61554 and concentrations decreased laterally. The residential SSL is approximately 24 times the maximum DL. Further sampling for extent of antimony is not warranted.

Arsenic was detected above the Qbt 2,3,4 and Qbt 1g, Qct, Qbo BVs in 1 Qbt 3 sample, 11 Qbt 1g samples, 1 Qbt 1v sample, and 2 Qct samples with a maximum concentration of 3.3 mg/kg. Concentrations did not change substantially with depth (0.026 mg/kg) at location 00-603815, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 10 times and the industrial SSL is approximately 51 times the maximum concentration where vertical extent is not defined (0.71 mg/kg at location 00-603815). Lateral extent of arsenic is defined and further sampling for vertical extent is not warranted.

Barium was detected above the soil; sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs in 2 soil samples, 2 sediment samples, 16 Qbt 3 samples, 3 Qbt 1g samples, and 2 Qct samples with a maximum concentration of 513 mg/kg. Concentrations increased with depth at locations 00-603815 and 01-61523; concentrations did not change substantially with depth (0.7 mg/kg or less) at locations 00-603817 and 00-603819; only one depth was sampled at locations 01-61535 through 01-61553; and concentrations decreased laterally (the concentration in the shallow sample at location 00-603817 was 27.5 mg/kg and below the sediment BV [Appendix E, Pivot Tables]). The residential SSL is approximately 30 times the maximum concentration. Lateral extent of barium is defined and further sampling for vertical extent is not warranted.

Beryllium was detected above the Qbt 2,3,4 and Qbt 1g, Qct, Qbo BVs in one Qbt 1g sample, one Qbt 3 sample, and one Qct sample with a maximum concentration of 2.24 mg/kg. Concentrations increased with depth at locations 00-603810 and 00-603817, decreased with depth at location 00-603816, and decreased downgradient. The residential SSL is approximately 69 times the maximum concentration. Lateral extent of beryllium is defined and further sampling for vertical extent is not warranted.

Cadmium was detected above the soil, sediment, and Qbt 2,3,4 BVs in one soil sample, one sediment sample, and six tuff samples with a maximum concentration of 4.99 mg/kg and was not detected but had DLs (0.446 mg/kg to 0.56 mg/kg) above the soil BV and Qbt 1g, Qct, Qbo BV in four soil samples and six tuff samples. Only one depth was sampled at location 01-61550, concentrations decreased with depth at all other locations, and concentrations decreased laterally. The residential SSL is approximately 8.1 times the maximum concentration, and the industrial SSL is approximately 128 times the maximum concentration. Lateral extent of cadmium is defined and further sampling for vertical extent is not warranted.

Chromium was detected above the Qbt 2,3,4; Qbt 1v; and Qbt 1g, Qct, Qbo BVs in 11 Qbt 1g samples, 1 Qbt 1v sample, 16 Qbt 3 samples, and 3 Qct samples with a maximum concentration of 124 mg/kg. Concentrations increased with depth at locations 00-603799, 00-603802, 00-603805, and 00-603810; concentrations did not change substantially with depth (1.7 mg/kg or less) at locations 00-603813, 00-603815, and 00-603817; only one depth was sampled at locations 01-61537 through 01-61544 and 01-61550; concentrations decreased with depth at all other locations; and concentrations decreased laterally (the concentration in the shallow sample at location 00-603817 was 2.2 mg/kg and below the sediment BV [Appendix E, Pivot Tables]). The residential SSL is slightly less than the maximum concentration, and the industrial SSL is approximately 4.1 times the maximum concentration. The residential risk for chromium at SWMU 01-001(d3) is 9.5×10^{-7} (Appendix G, Table G-4.2-27). Lateral extent of chromium is defined and further sampling for vertical extent is not warranted.

Copper was detected above the soil; sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs in 3 soil samples, 2 sediment samples, 1 Qbt 1g sample, 11 Qbt 3 samples, and 1 Qct sample with a maximum concentration of 42.1 mg/kg. Concentrations increased with depth at locations 00-603802, 00-603810, 00-603815, and 00-603817; only one depth was sampled at location 01-61550; concentrations decreased with depth at all other locations; and concentrations decreased laterally. The residential SSL is approximately 74 times the maximum concentration. Lateral extent of copper is defined and further sampling for vertical extent is not warranted.

Hexavalent chromium was detected in 45 samples with a maximum concentration of 6.45 mg/kg. Concentrations increased with depth at locations 00-603802, 00-603810, 00-603815, 00-603817, 00-603818, 01-159, 01-165, 01-61556, 01-61571, 01-61572, 01-61573, 01-61574, 01-61576, 01-61580, 01-61581, 01-61596, 01-61597; decreased with depth at all other locations, and concentrations decreased laterally. The residential SSL is 2.1 times less than the maximum concentration and the industrial SSL is approximately 11 times the maximum concentration. Lateral extent of hexavalent chromium is defined and further sampling for vertical extent is not warranted.

Iron was detected above the Qbt 2,3,4 and Qbt 1g, Qct, Qbo BVs in 12 Qbt 1g samples, 2 Qbt 1v samples, 1 Qbt 3 sample, and 3 Qct samples with a maximum concentration of 21,600 mg/kg. Concentrations increased with depth at locations 00-603815, 00-603817, 00-603818, and 00-603819; decreased with depth at all other locations; and decreased downgradient. The residential SSL is approximately 2.5 times the maximum concentration, and the industrial SSL is approximately 42 times the maximum concentration. Lateral extent of iron is defined and further sampling for vertical extent is not warranted.

Lead was detected above the soil; sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs in 5 soil samples, 3 sediment samples, 3 Qbt 1g samples, and 18 Qbt 3 samples with a maximum concentration of 251 mg/kg. Concentrations increased with depth at locations 00-603802, 00-603815, and 01-61523; only one depth was sampled at locations 01-61535, 01-61538, 01-61539, 01-61540, 01-61550, 01-61552, and 01-61553; concentrations decreased with depth at all other locations, and concentrations decreased laterally. The residential SSL is 1.6 times the maximum concentration, and the industrial SSL is approximately 3.2 times the maximum concentration. The residential hazard quotient (HQ) for lead was 0.0445 (Appendix G, Table G-4.2-28). Lateral extent of lead is defined and further sampling for vertical extent is not warranted.

Magnesium was detected above the Qbt 1g, Qct, Qbo BV in two samples with a maximum concentration of 2840 mg/kg. Concentrations increased with depth at locations 00-603815 and 00-603817 and decreased downgradient. The residential essential nutrient SSL is approximately 7360 times the maximum concentration. Lateral extent of magnesium is defined and further sampling for vertical extent is not warranted.

Manganese was detected above the Qbt 2,3,4 and Qbt 1g, Qct, Qbo BVs in 10 Qbt 1g samples, 2 Qbt 1v samples, 1 Qbt 3 sample, and 3 Qct samples with a maximum concentration of 507 mg/kg. Concentrations increased with depth at locations 00-603818 and 00-603819, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 21 times the maximum concentration. Lateral extent of manganese is defined and further sampling for vertical extent is not warranted.

Mercury was detected above the soil; sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs in 17 soil samples, 5 sediment samples, 1 Qbt 1g sample, 1 Qbt 1v sample, and 90 Qbt 3 samples with a maximum concentration of 159 mg/kg. Concentrations increased with depth at locations 00-603799, 00-603801, 00-603804, 00-603811, 00-603820, 01-60, 01-61, 01-62, 01-65, and 00-61597; only one depth was sampled at locations 01-61535, 01-61538, 01-61539, 01-61549, 01-61550, 01-61552, and 01-61553; concentrations decreased with depth at all other locations; and concentrations decreased laterally. The residential SSL is 6.8 times less than the maximum concentration, and the industrial SSL is approximately 2.4 times the maximum concentration. The industrial HQ for mercury was 0.0254 (Appendix G, Table G-4.2-22). Lateral extent of mercury is defined and further sampling for vertical extent is not warranted.

Nickel was detected above the Qbt 2,3,4 and Qbt 1g, Qct, Qbo BVs in 10 Qbt-1g samples, 3 Qct samples, and 5 Qbt 3 samples with a maximum concentration of 19.5 mg/kg. Concentrations increased with depth at locations 00-603805, 00-603813, 00-603815, and 00-603817; decreased with depth at all other locations; and decreased downgradient. The residential SSL is approximately 79 times the maximum concentration. Lateral extent of nickel is defined and further sampling for vertical extent is not warranted.

Nitrate was detected in 33 samples with a maximum concentration of 43.7 mg/kg. Concentrations increased with depth at locations 00-603799 and 00-603802; concentrations did not change substantially with depth (0.04 mg/kg) at location 00-603805; only one depth was sampled at locations 01-61548 through 01-61553; concentrations decreased with depth at all other locations; and concentrations decreased laterally. The residential SSL is approximately 2860 times the maximum concentration. Lateral extent of nitrate is defined and further sampling for vertical extent is not warranted.

Perchlorate was detected in eight samples with a maximum concentration of 0.0035 mg/kg. Concentrations increased with depth at location 00-603813, did not change substantially with depth (0.0009 mg/kg) at location 00-603800, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 15,700 times the maximum concentration. Lateral extent of perchlorate is defined and further sampling for vertical extent is not warranted.

Selenium was detected above the sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs in two sediment samples; six Qbt 1g samples; and nine Qbt 3 samples with a maximum concentration of 0.625 mg/kg and was not detected but had DLs (0.51 mg/kg to 0.987 mg/kg) above BVs in three sediment samples; four Qbt 1g samples; three Qct samples; and five Qbt 3 samples. Concentrations increased with depth at locations 00-603800, 00-603801, 00-603802, 00-603807, 00-603808, 00-603809, 00-603810, and 00-603821; did not change substantially with depth (0.02 mg/kg) at location 00-603805; decreased with depth at all other locations; and decreased downgradient. The residential SSL is approximately 626 times the maximum concentration and 396 times the maximum DL. Lateral extent of selenium is defined and further sampling for vertical extent is not warranted.

Silver was detected above the soil and Qbt 2,3,4 BVs in one soil sample and three tuff samples with a maximum concentration of 8 mg/kg and was not detected but had DLs (2.34 mg/kg to 4.67 mg/kg) above the soil and Qbt 1g, Qct, Qbo BVs in two soil samples and six tuff samples. Concentrations increased with depth at location 00-603802, only one depth was sampled at location 01-61550, concentrations decreased with depth at all other locations, and concentrations decreased downgradient. The residential SSL is approximately 49 times the maximum concentration. Lateral extent of silver is defined and further sampling for vertical extent is not warranted.

Vanadium was detected above the Qbt 1g, Qct, Qbo BV in five samples with a maximum concentration of 8.16 mg/kg. Concentrations increased with depth at locations 00-603815, 00-603817, 00-603818, and 00-603819 and decreased downgradient. The residential SSL is approximately 48 times the maximum concentration. Lateral extent of vanadium is defined and further sampling for vertical extent is not warranted.

Zinc was detected above the soil; sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs in one soil sample, one sediment sample, three Qbt 1g samples, four Qbt 3 samples, two Qbt 1v samples, and one Qct sample with a maximum concentration of 168 mg/kg. Concentrations increased with depth at location 00-603817, concentrations did not change substantially with depth (0.9 mg/kg) at location 00-603812, concentrations decreased with depth at all other locations, and concentrations decreased downgradient. The residential SSL is approximately 140 times the maximum concentration. Lateral extent of zinc is defined and further sampling for vertical extent is not warranted.

Organic Chemicals

Organic COPCs at SWMU 01-001(d3) include acetone, Aroclor-1254, Aroclor-1260, bis(2-ethylhexyl)phthalate, di-n-butylphthalate, methylene chloride, pentachlorophenol, and toluene.

Acetone was detected in one sample with a maximum concentration of 0.0073 mg/kg. Concentrations increased with depth at location 00-603810 and decreased downgradient. The residential SSL is approximately 908,000 times the maximum concentration. Lateral extent of acetone is defined and further sampling for vertical extent is not warranted.

Aroclor-1254 was detected in 10 samples with a maximum concentration of 0.59 mg/kg. Only one depth was sampled at locations 01-61550 through 01-61553, concentrations decreased with depth at all other locations, and concentrations decreased downgradient. The residential SSL is approximately 1.9 times the maximum concentration, and the industrial SSL is approximately 19 times the maximum concentration. Lateral extent of Aroclor-1254 is defined and further sampling for vertical extent is not warranted.

Aroclor-1260 was detected in 15 samples with a maximum concentration of 0.35 mg/kg. Concentrations increased with depth at location 00-603802, only one depth was sampled at locations 01-61550 through 01-61553, concentrations did not change substantially with depth (0.01 mg/kg) at location 00-603800, concentrations decreased with depth at all other locations, and concentrations decreased downgradient. The residential SSL is approximately 6.9 times the maximum concentration, and the industrial SSL is approximately 32 times the maximum concentration. Lateral extent of Aroclor-1260 is defined and further sampling for vertical extent is not warranted.

Bis(2-ethylhexyl)phthalate was detected in four samples with a maximum concentration of 0.88 mg/kg. Concentrations increased with depth at location 00-603809, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 432 times the maximum concentration. Lateral extent of bis(2-ethylhexyl)phthalate is defined and further sampling for vertical extent is not warranted.

Di-n-butylphthalate was detected in five samples with a maximum concentration of 0.21 mg/kg. Concentrations increased with depth at location 00-603779, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 235,000 times the maximum concentration. Lateral extent of di-n-butylphthalate is defined and further sampling for vertical extent is not warranted.

Methylene chloride was detected in one sample with a maximum concentration of 0.0012 mg/kg. Concentrations decreased with depth and decreased downgradient. Lateral and vertical extent of methylene chloride are defined.

Pentachlorophenol was detected in one sample at a concentration of 0.8 mg/kg. Concentrations decreased with depth and decreased downgradient. Lateral and vertical extent of pentachlorophenol are defined.

Toluene was detected in one sample at a concentration of 0.00083 mg/kg. Concentrations decreased with depth and decreased downgradient. Lateral and vertical extent of toluene are defined.

Radionuclides

Radionuclide COPCs at SWMU 01-001(d3) are americium-241, cesium-137, plutonium-238, plutonium-239/240, and strontium-90.

Americium-241 was detected below 1 ft bgs in one soil sample and detected in one tuff sample with a maximum activity of 0.116 pCi/g. Only one depth was sampled at locations 01-61550 and 01-615503 and activities decreased downgradient. The residential SAL is approximately 716 times the maximum activity. Lateral extent of americium-241 is defined and further sampling for vertical extent is not warranted.

Cesium-137 was detected below 1 ft bgs in two soil samples and detected in nine tuff samples with a maximum activity of 1.01 pCi/g. Activities increased with depth at locations 00-603801, 00-603802, 00-603806, and 00-603820; only one depth was sampled at locations 01-61550, 01-61552, and 01-61553; activities decreased with depth at all other locations; and activities decreased downgradient. The residential SAL is approximately 17 times and the industrial SAL is approximately 59 times the maximum activity where vertical extent is not defined (0.692 pCi/g at location 00-603802). Lateral extent of cesium-137 is defined and further sampling for vertical extent is not warranted.

Plutonium-238 was detected above the soil FV in 4 samples, detected below 1 ft bgs in 2 soil samples, and detected in 19 tuff samples with a maximum activity of 0.54 pCi/g. Activities increased with depth at locations 01-165 and 01-61589; only one depth was sampled at locations 01-61550, 01-61552, and 01-61553; activities decreased with depth at all other locations; and activities decreased downgradient. The residential SAL is approximately 156 times the maximum activity. Lateral extent of plutonium-238 is defined and further sampling for vertical extent is not warranted.

Plutonium-239/240 was detected above the soil and sediment FVs in 22 soil samples and 9 sediment samples, detected below 1 ft bgs in 6 soil samples, and detected in 173 tuff samples with a maximum activity of 2960 pCi/g. Activities increased with depth at locations 00-603801, 00-603802, 00-603819, 00-603820, 01-57, 01-58, 01-59, 01-60, 01-61, 01-62, 01-65, and 01-167; concentrations did not change substantially with depth (0.17 pCi/g) at location 01-61596; only one depth was sampled at locations 01-61548 through 01-61553; activities decreased with depth at all other locations; and concentrations decreased laterally. The residential SAL is approximately 6.9 times less than the maximum activity where vertical extent is not defined (543 pCi/g at location 01.61), and the industrial SAL is approximately 2.2 times this activity. The dose from plutonium-239/240 for the industrial scenario at SMWU 01-001(d3) is 5.5 mrem/yr (Appendix G, Table G-4.2-23). Lateral extent of plutonium-239/240 is defined and further sampling for vertical extent is not warranted.

Strontium-90 was detected in one tuff sample at an activity of 0.276 pCi/g. Activities increased with depth at location 00-603820 and decreased downgradient. The residential SAL is approximately 54 times the maximum activity. Lateral extent of strontium-90 is defined and further sampling for vertical extent is not warranted.

Summary of Nature and Extent

The lateral and vertical extent of inorganic, organic, and radionuclide COPCs is defined or no further sampling for extent is warranted at SWMU 01-001(d3).

7.4.5 Summary of Human Health Risk Screening

Industrial Scenario

The total excess cancer risk for the industrial scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 6 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 5×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 1, which is equivalent to the NMED target HI of 1 (NMED 2017, 602273). The total dose is 17 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Residential Scenario

The total excess cancer risk for the residential scenario is 8×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 2, which is greater than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 44 mrem/yr, which is greater than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Based on the risk-screening assessment results, no potential unacceptable carcinogenic risks exist for the industrial, construction worker, and residential scenarios at SWMU 00-001(d3); no potential unacceptable noncarcinogenic risks exist for the industrial scenario; and no potential unacceptable doses exist for the industrial and construction worker scenarios. Potential unacceptable noncarcinogenic risk exists for the construction worker and residential scenarios and potential unacceptable dose exists for the residential scenario.

7.4.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for SWMU 01-001(d3).

7.5 SWMU 01-001(f), Septic Tank 140

7.5.1 Site History and Operational History

SWMU 01-001(f) is the former location of septic tank 140 (former structure 01-140), its associated inlet and outlet drainlines, and a former outfall in former TA-01 (Plate 11). Septic tank 140 measured 3 ft x 6 ft x 5 ft deep and was constructed of reinforced concrete in 1945 (LANL 2001, 069946, p. 36). The tank was located west of former K-1 Building (building 01-98) and served HT Building (01-29) [SWMU 01-007(p)] and FP Building (01-20). The septic system outfall discharged into Los Alamos Canyon to an area later designated as Hillside 140, which is situated in TA-43 downslope from former TA-01. HT Building was used to heat-treat and machine natural and enriched uranium. FP Building was a foundry for nonradioactive and nonferrous metals and was not radiologically contaminated (Buckland 1964, 004810; Ahlquist et al. 1977, 005710, p. 39). The heat treatment and machining operations likely resulted in discharges of radioactive waste to the tank and outfall, and the machining operations were likely the source of the PCBs found in the SWMU 01-001(f) outfall and drainage below. In 1946, low levels of plutonium and polonium were detected in the drain to the waste line from HT Building. Buildings 01-98 and 01-29 were decommissioned and removed in 1965 as part of the relocation of all TA-01 activities to new Laboratory technical areas south of the Los Alamos townsite. HT Building was found to be radioactively-contaminated during its decontamination and demolition and was disposed of at an unspecified MDA. Use of the SWMU 01-001(f) septic system ceased in 1965.

During the 1975–1976 Ahlquist Radiological Survey conducted at SWMU 01-001(f), septic tank 140 was found to be filled with sludge with high levels of uranium activity (Ahlquist et al. 1977, 005710, p. 111). Both inlet and outlet lines were contaminated. The septic tank, all inlet and outlet drainlines, and approximately 351 yd^3 of contaminated soil were removed in 1976. Although the mesa-top portion of SWMU 01-001(f) was determined to be decontaminated, steep terrain prevented the removal of all known contamination on the hillside south and west of the outlet excavation.

Currently, the mesa-top area of SWMU 01-001(f) is developed; former drainline locations are under pavement and buildings in the Ridge Park Village residential development. The location of former septic tank 140 is partially covered by a building. The outfall location and the hillside drainage into which it discharged are located on undeveloped land owned by DOE.

Two surface water retention basins were constructed at the bottom of the drainage in 2010. Installation of controls to divert run-on away for the SWMU 01-001(f) outfall and stabilize the hillside drainage portion of the site was completed in 2015. Storm water runoff from the area above the drainage is currently being collected via a drop inlet and piping system and discharged directly into the stream channel below the drainage.

7.5.2 Relationship to Other SWMUs

There are no SWMUs or AOCs upgradient of SWMU 01-001(f) that are potentially impacting the site.

7.5.3 Summary of Previous Investigations

1992–1993 Investigation Activities

Both the canyon rim area and the outfall area known as Hillside 140 were extensively sampled including the entire drainage pathway from the mesa top to the bottom of Los Alamos Canyon. All but six samples collected from six locations in the outfall area were subsequently excavated during a voluntary corrective action (VCA) in 1996. The 1992–1993 investigation results are not decision-level data.

1996 VCA

Contaminated soil above the 6000 counts per minute (cpm) level was excavated during the 1996 VCA. A correlation was established between isotopic uranium concentrations and the Ludlum radiation detection instrument to guide excavation activities. The total volume of soil removed from Hillside 140 was approximately 15 yd^3. Verification samples were not collected because cleanup activities were driven by the use of real-time radiological screening data.

2008 Investigation Activities

A total of 43 samples were collected from 21 locations along former drainlines, within the septic tank footprint and outfall area, and down the hillside drainage into Los Alamos Canyon in 2008. Results from the sampling activities in 2008 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination, along with the removal of sediment and tuff in selected areas of the site where Aroclor-1254 was detected at concentrations above the residential SSL.

2009 Interim Measure

Approximately 496 yd^3 of PCB-contaminated sediment and rock were removed from the drainage below the SWMU 01-001(f) outfall, 2290 yd^3 of PCB-contaminated sediment was removed at the base of the drainage, and 94 confirmation samples were collected from excavated areas during the 2009 interim measure (IM). Results from IM activities were presented in the IM report (LANL 2010, 109422). Additional removal was necessary to complete the cleanup of PCB contamination.

2010 Supplemental IM

Approximately 127 yd^3 of PCB-contaminated low-level radioactive waste was generated from the removal of contaminated soil, sediment, and rock from the outfall area and from two additional areas within the hillside drainage channel below the site during the 2010 supplemental IM. Results from supplemental IM activities were presented in the supplemental IM report (LANL 2010, 110763). Additional sampling was required to define the extent of contamination.

7.5.4 Site Contamination

7.5.4.1 Soil, Rock, and Sediment Sampling

As part of the Phase II investigation and remediation activities at SWMU 01-001(f), a total of 156 samples were collected from 102 locations and analyzed for inorganic chemicals, organic chemicals, and radionuclides to define extent of contamination and verify cleanup goals.

7.5.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

7.5.4.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at SWMU 01-001(f) consist of results from 191 samples collected from 125 locations from 2008 through 2013. The 191 samples include 33 soil, 1 Qal, 103 Qbt 3, and 54 sediment samples. Table 7.5-1 lists the samples collected and the analyses requested for each sample. Plate 11 shows the sampling locations.

Inorganic Chemicals

A total of 35 samples (29 sediment and 6 Qbt 3) were analyzed for TAL metals and 34 samples (28 sediment and 6 Qbt 3) were analyzed for nitrate, perchlorate, and cyanide. Table 7.5-2 presents the inorganic chemicals detected or detected above BVs. Plate 12 shows the spatial distribution of inorganic chemicals detected or detected above BVs.

Antimony was detected above the sediment BV (0.83 mg/kg) in 3 samples with a maximum concentration of 1.3 mg/kg and was not detected but had DLs (0.975 mg/kg to 1.36 mg/kg) above the BV in 14 samples. Antimony is retained as a COPC.

Cadmium was not detected but had DLs (0.528 mg/kg to 0.622 mg/kg) above the sediment BV (0.4 mg/kg) in eight samples. Cadmium is retained as a COPC.

Calcium was detected above the sediment BV (4420 mg/kg) in two samples with a maximum concentration of 15,600 mg/kg. The Gehan and quantile tests indicated site concentrations of calcium in sediment are not statistically different from background (Figure F-61 and Table F-11). Calcium is not a COPC.

Chromium was detected above the sediment and Qbt 2,3,4 BVs (10.5 mg/kg and 7.14 mg/kg) in one sediment sample and two tuff samples with a maximum concentration of 10.9 mg/kg. The Gehan and quantile tests indicated site concentrations of chromium in tuff are statistically different from background (Figure F-62 and Table F-12). Chromium is retained as a COPC.

Cobalt was detected above the sediment BV (4.73 mg/kg) in one sample at a concentration of 7.49 mg/kg. Cobalt is retained as a COPC.

Copper was detected above the sediment and Qbt 2,3,4 BVs (11.2 mg/kg and 4.66 mg/kg) in two sediment samples and one tuff sample with a maximum concentration of 14.3 mg/kg. The Gehan and quantile tests indicated site concentrations of copper in sediment are not statistically different from background (Figure F-63 and Table F-11) but site concentrations of copper in tuff are statistically different from background (Figure F-64 and Table F-12). Copper is retained as a COPC.

Cyanide was not detected but had DLs (0.51 mg/kg to 0.6 mg/kg) above the Qbt 2,3,4 BV (0.5 mg/kg) in four samples. Cyanide is retained as a COPC.

Lead was detected above the sediment and Qbt 2,3,4 BVs (11.2 mg/kg and 13.5 mg/kg) in six sediment samples and one tuff sample with a maximum concentration of 25.2 mg/kg. The Gehan and quantile tests indicated site concentrations of lead in sediment are statistically different from background (Figure F-65 and Table F-11). The Gehan and slippage tests indicated site concentrations of lead in tuff are statistically different from background (Figure F-66 and Table F-12). Lead is retained as a COPC.

Magnesium was detected above the sediment BV (2370 mg/kg) in one sample at a concentration of 2410 mg/kg. The Gehan and quantile tests indicated site concentrations of magnesium in sediment are not statistically different from background (Figure F-67 and Table F-11). Magnesium is not a COPC.

Manganese was detected above the sediment BV (543 mg/kg) in one sample at a concentration of 1000 mg/kg. Manganese is retained as a COPC.

Nickel was detected above the sediment BV (9.38 mg/kg) in one sample at a concentration of 12.6 mg/kg. Nickel is retained as a COPC.

Nitrate was detected in 13 samples with a maximum concentration of 3.24 mg/kg. Although nitrate is naturally occurring, SWMU 01-001(f) is a septic system that managed sanitary wastewater. As a result, the concentrations detected may be site related rather than reflecting only naturally occurring levels. Nitrate is retained as a COPC.

Selenium was detected above the Qbt 2,3,4 BV (0.3 mg/kg) in 1 sample at a concentration of 0.32 mg/kg and was not detected but had DLs (0.52 mg/kg to 1.37 mg/kg) above the sediment BV (0.3 mg/kg) in 25 samples. Selenium is retained as a COPC.

Vanadium was detected above the sediment BV (19.7 mg/kg) in one sample at a concentration of 24.4 mg/kg. The Gehan and quantile tests indicated site concentrations of vanadium in sediment are not statistically different from background (Figure F-68 and Table F-11). Vanadium is not a COPC.

Zinc was detected above the sediment BV (60.2 mg/kg) in six samples with a maximum concentration of 131 mg/kg. The Gehan and quantile tests indicated site concentrations of zinc in sediment are statistically different from background (Figure F-69 and Table F-11). Zinc is retained as a COPC.

Organic Chemicals

A total of 178 samples (33 soil, 1 Qal, 102 Qbt 3, and 42 sediment) were analyzed for PCBs, 34 samples (6 Qbt 3 and 28 sediment) for SVOCs, and 36 samples (7 Qbt 3 and 29 sediment) for VOCs. Tables 7.5-3 and 7.5-4 present the detected organic chemicals. Plate 13 shows the spatial distribution of detected organic chemicals.

Organic chemicals detected at SWMU 01-001(f) include acenaphthene; acetone; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; benzyl alcohol; bis(2-ethylhexyl)phthalate; butylbenzylphthalate; chloroform; 4-chlorotoluene, chrysene; dibenz(a,h)anthracene; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 4-isopropyltoluene; phenanthrene; pyrene; styrene; toluene; 1,2,4-trimethylbenzene; and 1,3-xylene+1,4-xylene. The detected organic chemicals are retained as COPCs.

Radionuclides

A total of 36 samples (29 sediment and 7 Qbt 3) were analyzed for isotopic uranium and 34 samples (28 sediment and 6 Qbt 3) for isotopic plutonium, gamma-emitting radionuclides, americium-241, strontium-90, and tritium. Table 7.5-5 presents the radionuclides detected or detected above BVs/FVs. Plate 14 shows the spatial distribution of radionuclides detected or detected above BVs/FVs.

Americium-241 was detected above the sediment FV (0.04 pCi/g) in 1 sample at an activity of 0.0456 pCi/g. The activity was only 0.0056 pCi/g above BV and americium-241 was not detected in 33 other samples. Americium-241 is not a COPC.

Plutonium-239/240 was detected above the sediment FV (0.068 pCi/g) in 15 samples with a maximum activity of 0.222 pCi/g. Putonium-239/240 is retained as a COPC.

Uranium-234 was detected above the sediment and Qbt 2,3,4 BVs (2.59 pCi/g and 1.98 pCi/g) in 21 sediment samples and 3 tuff samples with a maximum activity of 32 pCi/g. Uranium-234 is retained as a COPC.

Uranium-235/236 was detected above the sediment and Qbt 2,3,4 BVs (0.2 pCi/g and 0.09 pCi/g) in 18 sediment samples and 3 tuff samples with a maximum activity of 1.69 pCi/g. Uranium-235/236 is retained as a COPC.

Uranium-238 was detected above the sediment and Qbt 2,3,4 BVs (2.29 pCi/g and 1.93 pCi/g) in 22 sediment samples and 3 tuff samples with a maximum activity of 38.7 pCi/g. Uranium-238 is retained as a COPC.

7.5.4.4 Nature and Extent of Contamination

The nature and extent of inorganic, organic, and radionuclide COPCs at SWMU 01-001(f) are discussed below.

Inorganic Chemicals

Inorganic COPCs at SWMU 01-001(f) include antimony, cadmium, chromium, cobalt, copper, cyanide, lead, manganese, nickel, nitrate, selenium, and zinc.

Antimony was detected above the sediment BV in 3 samples with a maximum concentration of 1.3 mg/kg and was not detected but had DLs (0.975 mg/kg to 1.36 mg/kg) above the BV in 14 samples. Concentrations decreased with depth at location 00-603836, only one depth was sampled at locations 01-128 and 01-132, and concentrations decreased downgradient. The residential SSL is approximately 24 times the maximum concentration and 23 times the maximum DL. Further sampling for extent of antimony is not warranted.

Cadmium was not detected but had DLs (0.528 mg/kg to 0.622 mg/kg) above the sediment BV in eight samples. The residential SSL is approximately 113 times the maximum DL. Further sampling for extent of cadmium is not warranted.

Chromium was detected above the sediment and Qbt 2,3,4 BVs in one sediment sample and two tuff samples with a maximum concentration of 10.9 mg/kg. Concentrations increased with depth at locations 00-603833 and 00-603836 and concentrations decreased downgradient. As described in section 4.2, SWMU 01-001(f) is not a potential source of hexavalent chromium and use of the SSL for trivalent chromium to determine whether additional sampling is warranted is appropriate. The residential SSL for trivalent chromium (117,000 mg/kg) is approximately 10,700 times the maximum concentration. Lateral extent of chromium is defined and further sampling for vertical extent is not warranted.

Cobalt was detected above the sediment BV in one sample at a concentration of 7.49 mg/kg. Only one depth was sampled at location 01-127 and concentrations decreased downgradient. The residential SSL is approximately 3.1 times the maximum concentration and the industrial SSL is approximately 52 times the maximum concentration. Lateral extent of cobalt is defined and further sampling for vertical extent is not warranted.

Copper was detected above the sediment and Qbt 2,3,4 BVs in two sediment samples and one tuff sample with a maximum concentration of 14.3 mg/kg. Concentrations increased with depth at locations 00-603825 and 00-6038236, only one depth was sampled at location 01-128, and concentrations decreased downgradient. The residential SSL is approximately 219 times the maximum concentration. Further sampling for extent of copper is not warranted.

Cyanide was not detected but had DLs (0.51 mg/kg to 0.6 mg/kg) above the Qbt 2,3,4 BV in four samples. The residential SSL is approximately 18 times the maximum DL. Further sampling for extent of cyanide is not warranted.

Lead was detected above the soil; sediment; and Qbt 2,3,4 BVs in six sediment samples and one tuff sample with a maximum concentration of 25.2 mg/kg. Only one depth was sampled at locations 01-132 and 01-133; concentrations deceased with depth at all other locations; and concentrations decreased downgradient. The residential SSL is approximately 16 times the maximum concentration, and the industrial SSL is approximately 32 times the maximum concentration. Lateral extent of lead is defined and further sampling for vertical extent is not warranted.

Manganese was detected above the sediment BV in one sample at a concentration of 1000 mg/kg. Only one depth was sampled at location 01-127 and concentrations decreased downgradient. The residential SSL is approximately 10 times the maximum concentration, and the industrial SSL is approximately 160 times the maximum concentration. Lateral extent of manganese is defined and further sampling for vertical extent is not warranted.

Nickel was detected above the sediment BV in one sediment sample at a concentration of 12.6 mg/kg. Concentrations decreased with depth and concentrations decreased downgradient. Lateral and vertical extent of nickel are defined.

Nitrate was detected in 13 samples with a maximum concentration of 3.24 mg/kg. Concentrations increased with depth at locations LA-610960 and LA-610966; only one depth was sampled at locations 01-128, 01-129, 01-131, 01-132, and 01-133; concentrations deceased with depth at all other locations; and concentrations decreased downgradient. The residential SSL is approximately 38,500 times the maximum concentration. Lateral extent of nitrate is defined and further sampling for vertical extent is not warranted.

Selenium was detected above the Qbt 2,3,4 BV in 1 sample at a concentration of 0.32 mg/kg and was not detected but had DLs (0.52 mg/kg to 1.37 mg/kg) above the sediment BV in 25 samples. Concentrations increased with depth at location 00-603836 and decreased downgradient. The residential SSL is approximately 1220 times the maximum concentration and 285 times the maximum DL. Further sampling for extent of selenium is not warranted.

Zinc was detected above the sediment BV in six samples with a maximum concentration of 131 mg/kg. Only one depth was sampled at locations 01-124, 01-125, 01-128, 01-132, and 01-133; concentrations decreased with depth at location 00-603836; and concentrations decreased downgradient. The residential SSL is approximately 179 times the maximum concentration. Lateral extent of zinc is defined and further sampling for vertical extent is not warranted.

Organic Chemicals

Organic COPCs at SWMU 01-001(f) include acenaphthene; acetone; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; benzyl alcohol; bis(2-ethylhexyl)phthalate; butylbenzylphthalate; chloroform; 4-chlorotoluene, chrysene; dibenz(a,h)anthracene; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 4-isopropyltoluene; phenanthrene; pyrene; styrene; toluene; 1,2,4-trimethylbenzene; and 1,3-xylene+1,4-xylene.

The PAHs acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene were detected in from 3 to 19 samples. PAHs were detected most frequently in surface samples. The highest concentrations of PAHs were detected in surface samples at locations 00-603835, 00-603837, 01-131, and 01-132. Concentrations increased with depth at location 01-138; only one depth was sampled at locations 01-123 through 01-133; and concentrations decreased with depth at all locations and decreased downgradient. The residential SSL was greater than the maximum concentration of all detected PAHs except benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenz(a,h)anthracene. The residential SSL for benzo(a)anthracene is similar to the maximum concentration (1.24 mg/kg), and the industrial SSL is approximately 26 times the maximum concentration. The residential SSL for benzo(a)pyrene is similar to the maximum concentration (1.17 mg/kg), and the industrial SSL is approximately 20 times the maximum concentration. The residential SSL for benzo(b)fluoranthene is similar to the maximum concentration (1.88 mg/kg), and the industrial SSL is approximately 17 times the maximum concentration. The residential SSL for dibenz(a,h)anthracene is similar to the maximum concentration (0.171 mg/kg), and the industrial SSL is approximately 19 times the maximum concentration. The lateral extent of PAHs is defined and further sampling for vertical extent is not warranted.

Acetone was detected in eight samples with a maximum concentration of 0.02 mg/kg. Concentrations increased with depth at locations 00-603835, 01-138, and LA-610964; only one depth was sampled at locations 01-128 and 01-130; concentrations decreased with depth at locations 00-603832 and 01-139; and concentrations decreased downgradient. The residential SSL is approximately 3,320,000 times the maximum concentration. Lateral extent of acetone is defined and further sampling for vertical extent is not warranted.

Aroclor-1254 was detected in 147 samples with a maximum concentration of 58.8 mg/kg. Samples at numerous locations were collected at only one depth, either as confirmation samples within remediated areas, or as surface samples to characterize lateral extent of contamination. The former consist of subsurface tuff samples and the latter consist of soil and sediment samples collected above tuff. Samples at multiple depths into tuff were collected at locations 00-603830, 01-612623, 01-612624, 01-612630, 01-614683, 01-134, 01-135, and 01-138 and concentrations decreased with depth or did not change substantially with depth at these locations. Samples were collected downgradient at locations LA-610960, LA-610961, and LA-610962 to define lateral extent and concentrations decreased downgradient. Because several phases of PCB cleanup have been conducted at this site, the need for further sampling is based on the results of the human health risk-screening evaluation. Further sampling for extent of Aroclor-1254 is not warranted.

Aroclor-1260 was detected in 88 samples with a maximum concentration of 19.4 mg/kg. Samples at numerous locations were collected at only one depth, either as confirmation samples within remediated areas, or as surface samples to characterize lateral extent of contamination. The former consist of subsurface tuff samples and the latter consist of soil and sediment samples collected above tuff. Samples at multiple depths into tuff were collected at locations 00-603830, 01-612623, 01-612624, 01-612630, 01-614683, 01-134, 01-135, and 01-138 and concentrations decreased with depth or did not change substantially with depth at these locations. Samples were collected downgradient at locations LA-610960, LA-610961, and LA-610962 to define lateral extent and concentrations decreased downgradient. Because several phases of PCB cleanup have been conducted at this site, the need for further sampling is based on the results of the human health risk-screening evaluation. Further sampling for extent of Aroclor-1260 is not warranted.

Benzoic acid was detected in six samples with a maximum concentration of 0.621 mg/kg. Concentrations decreased with depth at locations 00-603836 and 01-139; only one depth was sampled at locations 01-125, 01-127, 01-128, and 01-129; and concentrations decreased downgradient. The residential SSL is approximately 403,000 times the maximum concentration. Lateral extent of benzoic acid is defined and further sampling for vertical extent is not warranted.

Benzyl alcohol was detected in eight samples with a maximum concentration of 0.202 mg/kg. Concentrations increased with depth at locations LA-610964 and LA-610966; only one depth was sampled at locations 01-131 and 01-133; concentrations decreased with depth at locations 01-138 and 01-139; and concentrations decreased downgradient. The residential SSL is approximately 31,000 times the maximum concentration. Lateral extent of benzyl alcohol is defined and further sampling for vertical extent is not warranted.

Bis(2-ethylhexyl)phthalate was detected in five samples with a maximum concentration of 1.25 mg/kg. Concentrations decreased with depth at locations 00-603835 and 00-603836; only one depth was sampled at locations 01-128 and 01-131; and concentrations decreased downgradient. The residential SSL is approximately 304 times the maximum concentration. Lateral extent of bis(2-ethylhexyl)phthalate is defined and further sampling for vertical extent is not warranted.

Butylbenzylphthalate was detected in one sample at a concentration of 0.192 mg/kg. Only one depth was sampled at location 01-127 and concentrations decreased downgradient. The residential SSL is approximately 15,100 times the detected concentration. Lateral extent of butylbenzylphthalate is defined and further sampling for vertical extent is not warranted.

Chloroform was detected in one sample at a concentration of 0.000411 mg/kg. Concentrations decreased with depth and decreased downgradient. Lateral and vertical extent of chloroform are defined.

Chlorotoluene[4-] was detected in one sample at a concentration of 0.000425 mg/kg. Concentrations decreased with depth and decreased downgradient. Lateral and vertical extent of 4-chlorotoluene are defined.

Isopropyltoluene[4-] was detected in two samples with a maximum concentration of 0.000754 mg/kg. Only one depth was sampled at location 01-130; concentrations decreased with depth at location LA-610966; and concentrations decreased downgradient. The residential SSL is approximately 3,110,000 times the maximum concentration. Lateral extent of 4-isopropyltoluene is defined and further sampling for vertical extent is not warranted.

Styrene was detected in one sample at a concentration of 0.00109 mg/kg. Only one depth was sampled at location 01-130 and concentrations decreased downgradient. The residential SSL is approximately 6,630,000 times the maximum concentration. Lateral extent of styrene is defined and further sampling for vertical extent is not warranted.

Toluene was detected in one sample at a concentration of 0.00165 mg/kg. Concentrations decreased with depth and decreased downgradient. Lateral and vertical extent of toluene are defined.

Trimethylbenzene[1,2,4-] was detected in one sample at a concentration of 0.00041 mg/kg. Concentrations decreased with depth and decreased downgradient. Lateral and vertical extent of 1,2,4-trimethylbenzene are defined.

Xylene[1,3-]+xylene[1,4-] was detected in one sample at a concentration of 0.000843 mg/kg. Concentrations decreased with depth and increased downgradient. The residential SSL is approximately 1,020,000 times the maximum concentration. Vertical extent of 1,3-xylene+1,4-xylene is defined and further sampling for lateral extent is not warranted.

Radionuclides

Radionuclide COPCs at SWMU 01-001(f) include plutonium-239/240, uranium-234, uranium-235/236, and uranium-238.

Plutonium-239/240 was detected above the sediment FV in 15 samples with a maximum activity of 0.222 pCi/g. Activities increased with depth at locations 00-603832 and 01-138; only one depth was sampled at locations 01-123, 01-124, 01-125, 01-127, 01-128, 01-130, and 01-132; activities did not change substantially with depth (0.004 pCi/g) at location LA-610960; activities decreased with depth at all other locations; and activities decreased downgradient. The residential SAL is approximately 356 times the maximum activity. Lateral extent of plutonium-239/240 is defined and further sampling for vertical extent is not warranted.

Uranium-234 was detected above the sediment and Qbt 2,3,4 BVs in 21 sediment samples and 3 tuff samples with a maximum activity of 32 pCi/g. Activities increased with depth at location 01-138; only one depth was sampled at locations 01-123 through 01-133; activities did not change substantially with depth (0.49 pCi/g or less) at locations 00-603836 and LA-610960; activities decreased with depth at all other locations; and activities decreased downgradient. The residential SAL is approximately 9.1 times the maximum activity, and the industrial SAL is approximately 97 times the maximum activity. Lateral extent of uranium-234 is defined and further sampling for vertical extent is not warranted.

Uranium-235/236 was detected above the sediment and Qbt 2,3,4 BVs in 18 sediment samples and 3 tuff samples with a maximum activity of 1.69 pCi/g. Activities increased with depth at location 01-138; only one depth was sampled at locations 01-123 through 01-133; activities did not change substantially with depth (0.67 pCi/g or less) at locations 00-603835, 00-603836, and LA-610960; activities decreased with depth at all other locations; and activities decreased downgradient. The residential SAL is approximately 25 times the maximum activity. Lateral extent of uranium-235/236 is defined and further sampling for vertical extent is not warranted.

Uranium-238 was detected above the sediment and Qbt 2,3,4 BVs in 22 sediment samples and 3 tuff samples with a maximum activity of 38.7 pCi/g. Activities increased with depth at locations 00-603832 and 01-138; only one depth was sampled at locations 01-123 through 01-133; activities did not change substantially with depth (0.77 pCi/g or less) at locations 00-603835, 00-603836, and LA-610960; activities decreased with depth at all other locations; and activities decreased downgradient. The residential SAL is approximately 3.9 times the maximum activity, and the industrial SAL is approximately 18 times the maximum activity. Lateral extent of uranium-238 is defined and further sampling for vertical extent is not warranted.

Summary of Nature and Extent

The lateral and vertical extent of inorganic, organic, and radionuclide COPCs is defined or no further sampling for extent is warranted at SWMU 01-001(f).

7.5.5 Summary of Human Health Risk Screening

Industrial Scenario

The total excess cancer risk for the industrial scenario is 4×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.7 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Recreational Scenario

The total excess cancer risk for the recreational scenario is 4 × 10^{-6}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The recreational HI is 0.5, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.2 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 1 × 10^{-6}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The construction worker HI is 2, which is greater than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.9 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Residential Scenario

The total excess cancer risk for the residential scenario is 5 × 10^{-5}, which is greater than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The residential HI is 5, which is greater than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 3 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Based on the risk-screening assessment results, no potential unacceptable risks or doses exist for the industrial or recreational scenarios at SWMU 01-001(f). No potential unacceptable carcinogenic risk or dose exists for the construction worker scenario. Potential carcinogenic risk exists for the residential scenario, and potential noncarcinogenic risk exists for the construction worker and residential scenarios.

7.5.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for SWMU 01-001(f).

7.6 SWMU 01-001(g), Septic Tank 141

7.6.1 Site History and Operational History

SWMU 01-001(g) consists of a former sanitary septic system that included former septic tank 141 (former structure 01-141), inlet and outlet drainlines, and an outfall at former TA-01 (Figure 7.6-1). Former septic tank 141 was a cylindrical steel tank with dimensions measuring approximately 4 ft in diameter and 4 ft deep that was installed in 1943 (Ahlquist et al. 1977, 003270). The septic tank was located south of X Building (building 01-79) near the edge of Los Alamos Canyon and received sanitary waste from X Building through a single sanitary waste line. X Building housed a cyclotron (accelerator) in which radioactive targets were tested. Wastewater from the septic tank flowed through an outlet line and discharged to an outfall on the rim of Los Alamos Canyon. X Building was decommissioned and removed in 1954 as part of the relocation of all TA-01 activities to new Laboratory technical areas south of the Los Alamos townsite. Septic tank 141 was removed during the Ahlquist Radiological Survey in 1975 (Ahlquist et al. 1977, 005710). The tank, its contents, and surrounding soil were found to have no evidence of radiological contamination and were removed and disposed of at an unnamed MDA. Currently, the location of the former inlet drainline is under one of the Los Arboles condominium buildings and the outfall location is on undeveloped land owned by the DOE.

7.6.2 Relationship to Other SWMUs

Upgradient SWMUs 01-001(d1), 01-006(h1), 01-006(h2), and 01-006(h3) may have contributed contamination to SWMU 01-001(g).

7.6.3 Summary of Previous Investigations

1992 Investigation Activities

Composite soil samples were collected along the Bailey Bridge Canyon rim in 1992. Because the samples were composited, the data are not applicable and not discussed further. One surface fill sample was also collected near the location of the former septic tank in 1992. The 1992 investigation results are not decision-level data.

2008 Investigation Activities

Eleven samples were collected from five locations at SWMU 01-001(g) in 2008. Results from the sampling activities in 2008 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination at the site, along with soil removal around two sampling locations to reduce concentrations of plutonium-239/240 to below the residential SAL.

7.6.4 Site Contamination

7.6.4.1 Soil, Rock, and Sediment Sampling

As part of the Phase II investigation activities at SWMU 01-001(g), a total of 32 samples were collected from 16 locations and analyzed for inorganic chemicals and radionuclides to define extent of contamination and verify cleanup goals.

2016 Investigation Activities

Per the approved Phase II Upper Los Alamos Canyon Aggregate Area investigation work plan (LANL 2010, 110860; NMED 2011, 111674), the extent of all COPCs had been defined at SWMU 01-001(g), with the exception of the vertical extent of chromium and nickel and the lateral extent of plutonium-239/240. Additional sampling was performed, and extent was defined for chromium and nickel. COPC concentrations and activities, except for activities of plutonium-239/240, were below residential cleanup levels. Before work performed in fiscal year 2016, plutonium-239/240 activities were above residential cleanup level at two locations on DOE property, and soil removal was determined to be required in the areas surrounding both locations. To fully define the areas and depths of soil removal in these areas, additional step-out sampling around sampling locations where plutonium-239/240 activities were above residential cleanup levels was completed. The analytical results indicated additional soil removal was necessary to ensure all soil with activities of plutonium-239/240 above residential cleanup levels was removed.

Soil was removed from two areas south of the former waste line (Figure 7.6-1). The specific areas and depths of soil removals associated with the site were bounded by sampling locations where plutonium-239/240 was known to be below residential cleanup levels. Approximately 43 yd^3 of plutonium-239/240–contaminated soil was removed from the two excavation areas, packaged in waste bags, and shipped off-site to a licensed offsite waste disposal facility for final disposition. Following soil removal, the excavation areas were restored with appropriate restoration materials.

7.6.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

7.6.4.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at SWMU 01-001(g) consist of results from 72 samples collected from 25 locations from 2008 through 2016. The 72 samples include 29 soil, 39 Qbt 3, and 4 sediment samples. Table 7.6-1 lists the samples collected and the analyses requested for each sample. Figure 7.6-1 shows the sampling locations.

Inorganic Chemicals

A total of 16 samples (4 sediment and 12 Qbt 3) were analyzed for TAL metals and 11 samples (4 sediment and 7 Qbt 3) were analyzed for nitrate, perchlorate, and cyanide. Table 7.6-2 presents the inorganic chemicals detected or detected above BVs. Figure 7.6-2 shows the spatial distribution of inorganic chemicals detected or detected above BVs.

Chromium was detected above the Qbt 2,3,4 BV (7.14 mg/kg) in six samples with a maximum concentration of 27.9 mg/kg. The Gehan and quantile tests indicated site concentrations of chromium in tuff are statistically different from background (Figure F-70 and Table F-13). Chromium is retained as a COPC.

Cyanide was not detected but had a DL (0.51 mg/kg) above the Qbt 2,3,4 BV (0.5 mg/kg) in three samples. The DL was only 0.01 mg/kg above the BV and cyanide was not detected in eight other samples. Cyanide is not a COPC.

Nickel was detected above the Qbt 2,3,4 BV (6.58 mg/kg) in four samples with a maximum concentration of 13.4 mg/kg. The quantile and slippage tests indicated site concentrations of nickel in tuff are statistically different from background (Figure F-71 and Table F-13). Nickel is retained as a COPC.

Nitrate was detected in five samples with a maximum concentration of 1.5 mg/kg. Although nitrate is naturally occurring, SWMU 01-001(g) is a septic system that managed sanitary wastewater. As a result, the concentrations detected may be site related rather than reflecting only naturally occurring levels. Nitrate is retained as a COPC.

Perchlorate was detected in two samples with a maximum concentration of 0.0044 mg/kg. Perchlorate is retained as a COPC.

Selenium was not detected but had a DL (0.52 mg/kg) above the Qbt 2,3,4 BV (0.3 mg/kg) in one sample. Selenium is retained as a COPC.

Organic Chemicals

A total of 11 samples (7 tuff and 4 sediment) were analyzed for SVOCs, VOCs, and PCBs. Table 7.6-3 presents the detected organic chemicals. Figure 7.6-3 shows the spatial distribution of detected organic chemicals.

Organic chemicals detected at SWMU 01-001(g) include Aroclor-1260, bis(2-ethylhexyl)phthalate, and methylene chloride. The detected organic chemicals are retained as COPCs.

Radionuclides

A total of 11 samples (7 tuff and 4 sediment) were analyzed for americium-241, gamma-emitting radionuclides, isotopic uranium, strontium-90, and tritium; 67 samples (29 soil, 34 tuff, and 4 sediment) were analyzed for isotopic plutonium. Table 7.6-4 presents the radionuclides detected or detected above BVs/FVs. Plate 15 shows the spatial distribution of radionuclides detected or detected above BVs/FVs.

Plutonium-238 was detected above the soil FV (0.023 pCi/g) in one sample, detected below 1 ft bgs in three soil samples, and detected in seven tuff samples with a maximum activity of 0.582 pCi/g. Plutonium-238 is retained as a COPC.

Plutonium-239/240 was detected above the soil and sediment FVs (0.054 pCi/g and 0.068 pCi/g) in 4 soil samples and 2 sediment samples, detected below 1 ft bgs in 4 soil samples, and detected in 30 tuff samples with a maximum activity of 115 pCi/g. Plutonium-239/240 is retained as a COPC.

Uranium-235/236 was detected above the Qbt 2,3,4 BV (0.09 pCi/g) in three samples with a maximum activity of 0.224 pCi/g. Uranium-235/236 is retained as a COPC.

7.6.4.4 Nature and Extent of Contamination

The nature and extent of inorganic, organic, and radionuclide COPCs at SWMU 01-001(g) are discussed below.

Inorganic Chemicals

Inorganic COPCs at SWMU 01-001(g) include chromium, nickel, nitrate, perchlorate, and selenium.

Chromium was detected above the Qbt 2,3,4 BV in six samples with a maximum concentration of 27.9 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of chromium are defined.

Nickel was detected above the Qbt 2,3,4 BV in four samples with a maximum concentration of 13.4 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of nickel are defined.

Nitrate was detected in five samples with a maximum concentration of 1.5 mg/kg. Concentrations increased with depth at location 00-603846, decreased with depth at all other locations, and increased downgradient. The residential SSL is approximately 83,300 times the maximum concentration. Further sampling for extent of nitrate is not warranted.

Perchlorate was detected in two samples with a maximum concentration of 0.0044 mg/kg. Concentrations increased with depth at locations 00-603846 and 00-603849 and did not change substantially downgradient (0.0015 mg/kg). The residential SSL is approximately 12,400 times the maximum concentration. Further sampling for extent of perchlorate is not warranted.

Selenium was not detected but had a DL (0.52 mg/kg) above the Qbt 2,3,4 BV in one sample. The residential SSL is approximately 752 times the maximum DL. Further sampling for extent of selenium is not warranted.

Organic Chemicals

Organic COPCs at SWMU 01-001(g) include Aroclor-1260, bis(2-ethylhexyl)phthalate, and methylene chloride.

Aroclor-1260 was detected in four samples with a maximum concentration of 0.021 mg/kg. Concentrations increased with depth at location 00-603846, decreased with depth at all other locations, and increased downgradient. The residential SSL is approximately 116 times the maximum concentration. Further sampling for extent of Aroclor-1260 is not warranted.

Bis(2-ethylhexyl)phthalate was detected in one sample at a concentration of 0.074 mg/kg. Concentrations decreased with depth and decreased downgradient. Lateral and vertical extent of bis(2-ethylhexyl)phthalate are defined.

Methylene chloride was detected in six samples with a maximum concentration of 0.0065 mg/kg. Concentrations did not change substantially with depth (0.0023 mg/kg or less) and did not change substantially laterally (0.003 mg/kg). The residential SSL is approximately 62,900 times the maximum concentration. Further sampling for extent of methylene chloride is not warranted.

Radionuclides

Radionuclide COPCs at SWMU 01-001(g) include plutonium-238, plutonium-239/240, and uranium-235/236.

Plutonium-238 was detected above the soil FV in one sample, detected below 1 ft bgs in three soil samples, and detected in seven tuff samples with a maximum activity of 0.582 pCi/g. Activities increased with depth at locations 00-603846, 01-148, 01-43, and 01-44; decreased with depth at all other locations, and decreased downgradient. The residential SAL is approximately 144 times the maximum activity. Lateral extent of plutonium-238 is defined and further sampling for vertical extent is not warranted.

Plutonium-239/240 was detected above the soil and sediment FVs in 4 soil samples and 2 sediment samples, detected below 1 ft bgs in 4 soil samples, and detected in 30 tuff samples with a maximum activity of 115 pCi/g. Activities increased with depth at locations 01-44, 01-45, 01-46, 01-47, 01-148, 01-240, LA-61493, LA-61494, LA-61495, and LA-61497; deceased with depth at all other locations; and decreased downgradient. The residential SAL is approximately 2.3 times and the industrial SAL is approximately 35 times the maximum activity where vertical extent is not defined (34.7 pCi/g at location 01-240). Lateral extent of plutonium-239-240 is defined and further sampling for vertical extent is not warranted.

Uranium-235/236 was detected above the Qbt 2,3,4 BV in three samples with a maximum activity of 0.224 pCi/g. Activities increased with depth at locations 00-603847 and 00-603848, decreased with depth at location 00-603849, and decreased downgradient. The residential SAL is approximately 188 times the maximum activity. Lateral extent of uranium-235/236 is defined and further sampling for vertical extent is not warranted.

Summary of Nature and Extent

The lateral and vertical extent of inorganic, organic, and radionuclide COPCs is defined or no further sampling for extent is warranted at SWMU 01-001(g).

7.6.5 Summary of Human Health Risk Screening

Industrial Scenario

The total excess cancer risk for the industrial scenario is 2×10^{-8}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.000006, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.4 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 4×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 3 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Residential Scenario

The total excess cancer risk for the residential scenario is 2×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.006, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 7 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Based on the risk-screening assessment results, no potential unacceptable risks or doses exist for the industrial, construction worker, and residential scenarios at SWMU 01-001(g).

7.6.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for SWMU 01-001(g).

7.7 SWMU 01-001(o), Sanitary Waste Line

7.7.1 Site History and Operational History

SWMU 01-001(o) is the former sanitary waste line that was located east of Bailey Bridge and served former J Building (structure 01-34) and former ML Building (structure 01-42) (Figure 7.7-1). J Building housed a laboratory of unknown nature, and ML Building housed a medical laboratory. The former sanitary waste line from former Q Building was tied into the SWMU 01-001(o) waste line. Q Building was used by the medical and health-monitoring group. Film calibration was conducted in the north basement of former Q Building, where a small radium spill contaminated part of the basement. The spill was cleaned up, but some contamination remained. The SWMU waste line discharged directly to the head of Bailey Bridge Canyon. Accidents in 1955 and 1957 resulted in radioactive contamination in ML Building. Decontamination activities were not totally successful after the 1957 accident because floor areas remained contaminated. Some of the floor was painted and covered with cardboard until the building was demolished in 1958; building debris was disposed of at MDAs C and G. Concrete with gross-alpha activities less than 2500 cpm was disposed of in Bailey Bridge Canyon. In 1959, monitoring of the sanitary waste systems indicated the SWMU 01-001(o) waste line from Buildings J and ML was contaminated. The sanitary waste line was removed in 1959 and disposed of at MDA G.

During the 1974 to 1976 Ahlquist Radiological Survey conducted at SWMU 01-001(o), results of the survey indicated a portion of the waste line remained in place; the remaining waste line was subsequently removed and disposed of at MDA G (Ahlquist et al. 1977, 005710).

Currently, the locations of the former waste line run across Loma Vista Drive and under a Los Arboles condominium building.

7.7.2 Relationship to Other SWMUs

Upgradient SWMUs 01-006(o) and 01-003(a) may have contributed contamination to SWMU 01-001(o).

7.7.3 Summary of Previous Investigations

1992 Investigation Activities

Six samples were collected within the outfall area in 1992. The 1992 investigation results are not decision-level data.

2008 Investigation Activities

Eighteen samples were collected from nine locations at the outfall and in the drainage downgradient of the outfall at SWMU 01-001(o) in 2008. Results from the sampling activities in 2008 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination at the site, along with soil removal around one sampling location to reduce concentrations of Aroclor-1254 above the residential SSL.

7.7.4 Site Contamination

7.7.4.1 Soil, Rock, and Sediment Sampling

As part of the Phase II investigation activities at SWMU 01-001(o), a total of 64 samples were collected from 26 locations and analyzed for inorganic chemicals, organic chemicals, and radionuclides to define extent of contamination.

7.7.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

7.7.4.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at SWMU 01-001(o) consist of results from 82 samples collected from 28 locations from 2008 through 2017. The 82 samples include 57 soil and 25 Qbt 3 samples. Table 7.7-1 lists the samples collected and the analyses requested for each sample. Figure 7.7-1 shows the sampling locations.

Inorganic Chemicals

A total of 41 samples (16 soil and 25 Qbt 3) were analyzed for TAL metals and 18 samples (9 soil and 9 Qbt 3) were analyzed for nitrate, perchlorate, and cyanide. Table 7.7-2 presents the inorganic chemicals detected or detected above BVs. Figure 7.7-2 shows the spatial distribution of inorganic chemicals detected or detected above BVs.

Antimony was not detected but had a DL (1.4 mg/kg) above the soil BV (0.83 mg/kg) in one sample. Antimony is retained as a COPC.

Cadmium was detected above soil BV (0.4 mg/kg) in two samples with a maximum concentration of 4 mg/kg. Cadmium is retained as a COPC.

Calcium was detected above the soil BV (6120 mg/kg) in one sample at a concentration of 13,200 mg/kg. Calcium is retained as a COPC.

Chromium was detected above the soil and Qbt 2,3,4 BVs (19.3 mg/kg and 7.14 mg/kg) in 3 soil samples and 13 tuff samples with a maximum concentration of 35.9 mg/kg. The Gehan and quantile tests indicated site concentrations of chromium in soil are not statistically different from background (Figure F-72 and Table F-14), but site concentrations of chromium in tuff are statistically different from background (Figure F-73 and Table F-15). Chromium is retained as a COPC.

Copper was detected above the soil and Qbt 2,3,4 BVs (14.7 mg/kg and 4.66 mg/kg) in four soil samples and two tuff samples with a maximum concentration of 448 mg/kg. The quantile and slippage tests indicated site concentrations of copper in soil are statistically different from background (Figure F-74 and Table F-14). The Gehan and quantile tests indicated site concentrations of copper in tuff are statistically different from background (Figure F-75 and Table F-15). Copper is retained as a COPC.

Cyanide was not detected but had DLs (0.53 mg/kg to 0.62 mg/kg) above the soil and Qbt 2,3,4 BVs (0.5 mg/kg for both) in three soil samples and four tuff samples. Cyanide is retained as a COPC.

Lead was detected above the soil and Qbt 2,3,4 BVs (19.7 mg/kg and 11.2 mg/kg) in six soil samples and six tuff samples with a maximum concentration of 62.7 mg/kg. The Gehan and quantile tests indicated site concentrations of lead in soil are statistically different from background (Figure F-76 and Table F-14). The Gehan and slippage tests indicated site concentrations of lead in tuff are statistically different from background (Figure F-77 and Table F-15). Lead is retained as a COPC.

Mercury was detected above the soil and Qbt 2,3,4 BVs (0.1 mg/kg for both) in seven soil samples and one tuff sample with a maximum concentration of 0.44 mg/kg. Mercury is retained as a COPC.

Nickel was detected above the soil and Qbt 2,3,4 BVs (15.4 mg/kg and 6.58 mg/kg) in one soil sample and three tuff samples with a maximum concentration of 15.8 mg/kg. The Gehan and quantile tests indicated site concentrations of nickel in soil are not statistically different from background (Figure F-78 and Table F-14). The quantile test indicated site concentrations of nickel in tuff are statistically different from background (Figure F-79 and Table F-15). Nickel is retained as a COPC.

Nitrate was detected in 12 samples with a maximum concentration of 0.45 mg/kg. Although nitrate is naturally occurring, SWMU 01-001(o) is a waste line that contained sanitary wastewater. As a result, the concentrations detected may be site related rather than reflecting only naturally occurring levels. Nitrate is retained as a COPC.

Perchlorate was detected in two samples with a maximum concentration of 0.0025 mg/kg. Perchlorate is retained as a COPC.

Selenium was not detected but had DLs (0.52 mg/kg and 0.55 mg/kg) above the Qbt 2,3,4 BV (0.3 mg/kg) in two samples. Selenium is retained as a COPC.

Silver was detected above the soil BV (1 mg/kg) in one sample at a concentration of 1.5 mg/kg and was not detected but had DLs (2.61 mg/kg to 3.07 mg/kg) above the Qbt 2,3,4 BV (1 mg/kg) in five samples. Silver is retained as a COPC.

Zinc was detected above the soil BV (48.8 mg/kg) in six samples with a maximum concentration of 405 mg/kg. The Gehan and quantile tests indicated site concentrations of zinc in soil are statistically different from background (Figure F-80 and Table F-14). Zinc is retained as a COPC.

Organic Chemicals

A total of 41 samples (16 soil and 25 tuff) were analyzed for SVOCs; 18 samples (9 soil and 9 tuff) for VOCs; and 82 samples (57 soil and 25 tuff) for PCBs. Tables 7.7-3 and 7.7-4 present the detected organic chemicals. Plate 16 shows the spatial distribution of detected organic chemicals.

Polycyclic Aromatic Hydrocarbons

PAHs are a class of SVOCs frequently detected as a result of environmental sampling but generally were not released from the SWMUs or AOCs being investigated. PAHs unrelated to site activities are thus often detected in samples analyzed for the presence of site-related SVOCs.

PAHs are known to be widely distributed in the environment from a number of sources, both natural, such as forest fires, and anthropogenic, such as combustion of fossil fuels, oil drips off motor vehicles, vehicle tires, coal tar pitch, and weathering or eroding of asphalt pavement (Kose et al. 2008, 219977; Teaf 2008, 219976). PAHs from these sources generally occur as complex mixtures, not as single compounds. Individual PAH compounds can be manufactured for research purposes and some PAHs (e.g., anthracene, fluorene, naphthalene, and pyrene) are used in dye production, the manufacture of synthetic fibers, and in plastics and pesticides.

The principal sources of PAHs in soil along parking lots, roads, and highways are vehicular exhaust and emissions, the wearing of tires, and asphalt. PAH-containing materials, such as asphalt and rubber particles, do not easily dissolve in water, thus preventing migration, except as suspended particles in storm water. PAH concentrations in excess of soil cleanup levels may result from common anthropogenic sources such as runoff from asphalt-paved areas (e.g., roads and parking areas).

Site Activities

SWMU 01-001(o) is a sanitary waste line, which served former buildings J and ML. Building J was a laboratory building and Building ML housed a medical laboratory. SWMU 01-001(o) was identified as a SWMU because of the potential for contamination from metals, uranium, and plutonium. Operations within these former buildings did not use or produce PAHs. SWMU 01-001(o) is located on the mesa top in an area that received fill potentially containing asphalt and now receives run-on from paved areas. PAHs were detected infrequently (in 2 of 21 samples) and at low concentrations (0.0259 mg/kg to 0.715 mg/kg) and the results do not appear indicative of a site-related release. Therefore, the PAHs detected in samples used to characterize this site [acenaphthene; anthracene; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; chrysene; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; phenanthrene; and pyrene] are associated with fill and runoff, are not related to historic Laboratory site operations, and are not COPCs.

Organic COPCs

Other organic chemicals detected at SWMU 01-001(o) include acetone; Aroclor-1254; Aroclor-1260; benzoic acid; bis(2-ethylhexyl)phthalate; di-n-butylphthalate; methylene chloride; and 1,2,4-trimethylbenzene. The detected organic chemicals listed are retained as COPCs.

Radionuclides

A total of 41 samples (16 soil and 25 tuff) were analyzed for americium-241, gamma-emitting radionuclides, isotopic plutonium, and strontium-90 and 18 samples (9 soil and 9 tuff) for isotopic uranium and tritium. Table 7.7-5 presents the radionuclides detected or detected above BVs/FVs. Figure 7.7-3 shows the spatial distribution of radionuclides detected or detected above BVs/FVs.

Americium-241 was detected above the soil FV (0.013 pCi/g) in two samples and detected in three tuff samples with a maximum activity of 0.228 pCi/g. Americium-241 is retained as a COPC.

Cesium-137 was detected in two tuff samples with a maximum activity of 0.482 pCi/g. Cesium-137 is retained as a COPC.

Plutonium-238 was detected in one tuff sample at an activity of 0.0145 pCi/g. Plutonium-238 is retained as a COPC.

Plutonium-239/240 was detected above the soil FV (0.054 pCi/g) in 2 samples, detected below 1 ft bgs in 6 soil samples, and detected in 18 tuff samples with a maximum activity of 6.51 pCi/g. Plutonium-239/240 is retained as a COPC.

Strontium-90 was detected in two tuff samples with a maximum activity of 0.41 pCi/g. Strontium-90 is retained as a COPC.

Tritium was detected in one sample at an activity of 1.33 pCi/g. Tritium is retained as a COPC.

7.7.4.4 Nature and Extent of Contamination

The nature and extent of inorganic, organic, and radionuclide COPCs at SWMU 01-001(o) are discussed below.

Inorganic Chemicals

Inorganic COPCs at SWMU 01-001(o) include antimony, cadmium, calcium, chromium, copper, cyanide, lead, mercury, nickel, nitrate, perchlorate, selenium, silver, and zinc.

Antimony was not detected but had a DL (1.4 mg/kg) above the soil BV in one sample. The residential SSL is approximately 22 times the DL. Further sampling for extent of antimony is not warranted.

Cadmium was detected above soil BV in two samples with a maximum concentration of 4 mg/kg. Concentrations increased with depth at location 00-603858 and decreased downgradient. The residential SSL is approximately 18 times the maximum concentration, and the industrial SSL is approximately 278 times the maximum concentration. Lateral extent of cadmium is defined and further sampling for vertical extent is not warranted.

Calcium was detected above the soil BV in one sample at a concentration of 13,200 mg/kg. Concentrations increased with depth and decreased downgradient. The NMED residential essential nutrient SSL is approximately 980 times the maximum concentration. The lateral extent of calcium is defined and further sampling for vertical extent is not warranted.

Chromium was detected above the soil and Qbt 2,3,4 BVs in 3 soil samples and 13 tuff samples with a maximum concentration of 35.9 mg/kg. Concentrations increased with depth at locations 00-603858 and 01-614792, decreased with depth at all other locations, and decreased downgradient. As described in section 4.2, SWMU 01-001(o) is not a potential source of hexavalent chromium and use of the SSL for trivalent chromium to determine whether additional sampling is warranted is appropriate. The residential SSL for trivalent chromium (117,000 mg/kg) is approximately 3260 times the maximum concentration. Lateral extent of chromium is defined and further sampling for vertical extent is not warranted.

Copper was detected above the soil and Qbt 2,3,4 BVs in four soil samples and two tuff samples with a maximum concentration of 448 mg/kg. Concentrations increased with depth at locations 00-603850 and 00-603858, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 7 times the maximum concentration, and the industrial SSL is approximately 116 times the maximum concentration. Lateral extent of copper is defined and further sampling for vertical extent is not warranted.

Cyanide was not detected but had DLs (0.53 mg/kg to 0.62 mg/kg) above the soil and Qbt 2,3,4 BVs in three soil samples and four tuff samples. The residential SSL is approximately 18 times the DL. Further sampling for extent of cyanide is not warranted.

Lead was detected above the soil and Qbt 2,3,4 BVs in six soil samples and six tuff samples with a maximum concentration of 62.7 mg/kg. Concentrations increased with depth at locations 00-603856 and 00-603858, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 6.4 times the maximum concentration, and the industrial SSL is approximately 13 times the maximum concentration. Lateral extent of lead is defined and further sampling for vertical extent is not warranted.

Mercury was detected above the soil and Qbt 2,3,4 BVs in seven soil samples and one tuff sample with a maximum concentration of 0.44 mg/kg. Concentrations increased with depth at locations 00-603858 and 01-614792, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 53 times the maximum concentration. Lateral extent of mercury is defined and further sampling for vertical extent is not warranted.

Nickel was detected above the soil and Qbt 2,3,4 BVs in one soil sample and three tuff samples with a maximum concentration of 15.8 mg/kg. Concentrations increased with depth at location 00-603858, decreased with depth at location 00-603855, and decreased downgradient (the concentration in the shallow sample at location 00-603855 was 12.4 mg/kg and below the soil BV [Appendix E, Pivot Tables]). The residential SSL is approximately 99 times the maximum concentration. Lateral extent of nickel is defined and further sampling for vertical extent is not warranted.

Nitrate was detected in 12 samples with a maximum concentration of 0.45 mg/kg. Concentrations did not change substantially with depth or laterally (0.364 mg/kg or less). The residential SSL is approximately 278,000 times the maximum concentration. Further sampling for extent of nitrate is not warranted.

Perchlorate was detected in two samples with a maximum concentration of 0.0025 mg/kg. Concentrations increased with depth at location 00-603854, decreased with depth at location 00-603858, and did not change substantially laterally (0.03 mg/kg). The residential SSL is approximately 21,900 times the maximum concentration. Further sampling for extent of perchlorate is not warranted.

Selenium was not detected but had DLs (0.52 mg/kg and 0.55 mg/kg) above the Qbt 2,3,4 BV in two samples. The residential SSL is approximately 711 times the maximum DL. Further sampling for extent of selenium is not warranted.

Silver was detected above the soil BV in one sample at a concentration of 1.5 mg/kg and was not detected but had DLs (2.61 mg/kg to 3.07 mg/kg) above the Qbt 2,3,4 BV in five samples. Concentrations increased with depth and decreased downgradient at location 00-603858. The residential SSL is approximately 261 times the maximum concentration and 127 times the maximum DL. Further sampling for extent of silver is not warranted.

Zinc was detected above the soil BV in six samples with a maximum concentration of 405 mg/kg. Concentrations increased with depth at location 00-603858, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 58 times the maximum concentration. Lateral extent of zinc is defined and further sampling for vertical extent is not warranted.

Organic Chemicals

Organic COPCs at SWMU 01-001(o) include acetone; Aroclor-1254; Aroclor-1260; benzoic acid; bis(2-ethylhexyl)phthalate; di-n-butylphthalate; methylene chloride; and 1,2,4-trimethylbenzene.

Acetone was detected in two samples with a maximum concentration of 0.0049 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of acetone are defined.

Aroclor-1254 was detected in 55 samples with a maximum concentration of 4.51 mg/kg. Concentrations increased with depth at locations 00-603853, 01-40, 01-41, 01-42, 01-66, 01-152, 01-158, and 01-61547; only one depth was sampled at location 00-603851; concentrations decreased with depth at all other locations; and concentrations decreased downgradient. The residential SSL is approximately 2.3 times and the industrial SSL is approximately 22 times the maximum concentration where vertical extent is not defined (0.493 mg/kg at location 01-152). Lateral extent of Aroclor-1254 is defined and further sampling for vertical extent is not warranted.

Aroclor-1260 was detected in 65 samples with a maximum concentration of 0.811 mg/kg. Concentrations increased with depth at locations 00-603853, 01-40, 01-41, 01-42, 01-66, 01-152, 01-158, 01-61521, and 01-61547; concentrations decreased with depth at all other locations; and concentrations decreased downgradient. The residential SSL is approximately 7.8 times and the industrial SSL is approximately 36 times the maximum concentration where vertical extent is not defined (0.311 mg/kg at location 01-66). Lateral extent of Aroclor-1260 is defined and further sampling for vertical extent is not warranted.

Benzoic acid was detected in one sample at a concentration of 0.35 mg/kg. Concentrations decreased with depth and decreased downgradient at location 00-603855. Lateral and vertical extent of benzoic acid are defined.

Bis(2-ethylhexyl)phthalate was detected in three samples with a maximum concentration of 0.12 mg/kg. Concentrations increased with depth at location 00-603855, did not change substantially with depth (0.033 mg/kg) at location 00-603858, and decreased downgradient. The residential SSL is approximately 3170 times the maximum concentration. Lateral extent of bis(2-ethylhexyl)phthalate is defined and further sampling for vertical extent is not warranted.

Di-n-butylphthalate was detected in five samples with a maximum concentration of 2.68 mg/kg. Concentrations increased with depth at locations 01-603858 and 01-152, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 2300 times the maximum concentration. Lateral extent of di-n-butylphthalate is defined and further sampling for vertical extent is not warranted.

Methylene chloride was detected in one sample at a concentration of 0.00073 mg/kg. Concentrations increased with depth and decreased downgradient at location 00-603857. The residential SSL is approximately 560,000 times the maximum concentration. Lateral extent of methylene chloride is defined and further sampling for vertical extent is not warranted.

Trimethylbenzene[1,2,4-] was detected in two samples with a maximum concentration of 0.00048 mg/kg. Concentrations did not change substantially with depth (0.00002 mg/kg) at location 00-603850 and decreased downgradient. The residential SSL is approximately 625,000 times the maximum concentration. Lateral extent of 1,2,4-trimethylbenzene is defined and further sampling for vertical extent is not warranted.

Radionuclides

Radionuclide COPCs at SWMU 01-001(o) included americium-241, cesium-137, plutonium-238, plutonium-239/240, strontium-90, and tritium.

Americium-241 was detected above the soil FV in two samples and detected in three tuff samples with a maximum activity of 0.228 pCi/g. Activities decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of americium-241 are defined.

Cesium-137 was detected in two tuff samples with a maximum activity of 0.482 pCi/g. Activities decreased with depth at all locations and increased downgradient at location 01-614790. The residential SAL is approximately 25 times the maximum activity. Vertical extent of cesium-137 is defined and further sampling for lateral extent is not warranted.

Plutonium-238 was detected in one tuff sample at an activity of 0.0145 pCi/g. Activities decreased with depth and increased downgradient at location 01-614790. The residential SAL is approximately 5790 times the maximum activity. Vertical extent of plutonium-238 is defined and further sampling for lateral extent is not warranted.

Plutonium-239/240 was detected above the soil FV in 2 samples, detected below 1 ft bgs in 6 soil samples, and detected in 18 tuff samples with a maximum activity of 6.51 pCi/g. Activities increased with depth at locations 00-603850, 00-603853, 00-603856, 00-603858, 01-614789, and 01-614792; decreased with depth at all other locations; and decreased downgradient. The residential SAL is approximately 23 times the maximum activity where vertical extent is not defined (3.41 pCi/g at location 00-603858). Lateral extent of plutonium-239/240 is defined and further sampling for vertical extent is not warranted.

Strontium-90 was detected in two tuff samples with a maximum activity of 0.41 pCi/g. Activities decreased with depth and decreased downgradient at location 00-603857. Lateral and vertical extent of strontium-90 are defined.

Tritium was detected in one sample at an activity of 1.33 pCi/g. Only one depth was sampled at location 00-603850 and activities decreased downgradient. The residential SAL is approximately 1280 times the maximum activity. Lateral extent of tritium is defined and further sampling for vertical extent is not warranted.

Summary of Nature and Extent

The lateral and vertical extent of inorganic, organic, and radionuclide COPCs is defined or no further sampling for extent is warranted at SWMU 01-001(o).

7.7.5 Summary of Human Health Risk Screening

Industrial Scenario

The total excess cancer risk for the industrial scenario is 2×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.3 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 4×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.3 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Residential Scenario

The total excess cancer risk for the residential scenario is 4×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.7, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 1 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Based on the risk-screening assessment results, no potential unacceptable risks or doses exist for the industrial, construction worker, and residential scenarios at SWMU 01-001(o).

7.7.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for SWMU 01-001(o).

7.8 SWMU 01-001(s2), Septic System Waste Line

7.8.1 Site History and Operational History

SWMU 01-001(s2) was originally part of former SWMU 01-001(s), which was split into SWMUs 01-001(s1) and 01-001(s2) in a request for modification of the Laboratory’s Hazardous Waste Facility Permit approved by NMED on November 9, 2016 (LANL 2016, 601921). The Laboratory proposed to split SWMU 01-001(s) into two newly designated SWMUs because each component of the SWMU is located on property owned by different entities.

SWMU 01-001(s2) consists of the majority of the former western sanitary waste line (WSWL) located outside and west of the former Los Alamos Inn property at former TA-01 (Plate 17). The WSWL consisted of vitrified clay pipe (VCP) and served former buildings A and B; former boiler house 2; and former buildings C, D, G, M, V, and Sigma. The buildings that were served by former SWMU 01-001(s) housed most of the plutonium and uranium processing and production operations in the early days of the Laboratory. Former SWMU 01-001(s) exited former building D, ran parallel to most of the main industrial waste line [SWMUs 01-002(a1)-00 and 01-002(a2)-00], and passed near the southwest corner of former building C. It then proceeded west along the former Finch Street and turned north between former buildings T-221 and T-225 [new SWMU 01-001(s2)]. This sanitary waste line connected to a septic tank [SWMU 00-030(g)], which discharged into Acid Canyon. The portion of the WSWL leading from building C to the east end of the eastern building of the Trinity Village apartments was removed in the 1960s. The grading plan and the building foundation plan for Trinity Village indicated that the sanitary line would have been removed beneath the central and western Trinity Village buildings before construction. However, the section of drainline beneath the eastern Trinity Village building may still be in place.

Building A housed administrative offices. Building B had administrative offices and electronic and metallurgical laboratories; small amounts of radionuclide foils were stored in a concrete vault in the building. Boiler house 2 supplied steam to TA-01 buildings. Building C housed a uranium machine shop and other machining (e.g., graphite machining) operations; before its removal in 1964, building C was found to be free of radioactive contamination, except for the concrete building pad, which was removed to an unspecified MDA. Building D was used to process plutonium. Building G housed the Sigma Pile, a small pile of graphite and uranium; leak-testing of radium sources was also performed in building G. In 1959, the building G structure was found to be uncontaminated and was removed. The concrete floor was found to be slightly contaminated with radioactivity and, along with drainlines, was taken to an unspecified MDA. Building M was used to process and recover enriched uranium. Building V contained offices and a toolmaker's shop; it was the original machine shop for machining uranium and beryllium and for dry-grinding boron at TA-01. The Sigma Building was used for machining radionuclides for casting and powder metallurgy.

7.8.2 Relationship to Other SWMUs

Upgradient SWMUs 01-002(a2)-00, 01-006(o), and 01-007(d) may have contributed contamination to SWMU 01-001(s2).

7.8.3 Summary of Previous Investigations

Because former SWMU 01-001(s) was split into two new SWMUs [SWMUs 01-001(s1) and 01-001(s2)] in November 2016, the previous investigations described below were performed for all or portions of former SWMU 01-001(s).

1994 and 1996 Investigation Activities

Thirteen locations along the WSWL were physically accessible for field investigation. Geophysical surveys were conducted and boreholes were drilled to assess potential contamination adjacent to and inside the WSWL. Four samples were collected from four locations and a 210-ft length of the WSWL from near Timber Ridge to Trinity Drive was removed in 1994. The 1994 investigation results are not decision-level data.

1996 IA Activities

An additional 262 ft of the WSWL was removed from the west and east ends of what is now SWMU 01-001(s2) along with several manholes in 1996. Confirmation samples were collected from soil and tuff underlying VCP sections, and characterization samples were collected from materials contained within VCP sections. Data indicated that no significant releases had occurred at locations where sections of drainline had been removed. The 1996 sampling data is not available and is not discussed further.

2008 Investigation Activities

Twenty-four samples were collected from twelve locations in 2008. Results from the sampling activities in 2008 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination at the site.

7.8.4 Site Contamination

7.8.4.1 Soil, Rock, and Sediment Sampling

As part of the Phase II investigation activities at SWMU 01-001(s2), a total of 11 samples were collected from 6 locations and analyzed for inorganic chemicals and radionuclides to define extent of contamination.

7.8.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

7.8.4.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at SWMU 01-001(s2) consist of results from 35 samples collected from 16 locations during 2008–2009 and 2012. The 35 samples include 5 soil and 30 Qbt 3 samples. Table 7.8-1 lists the samples collected and the analyses requested for each sample. Plate 17 shows the sampling locations.

Inorganic Chemicals

A total of 35 samples (5 soil and 30 Qbt 3) were analyzed for TAL metals and 24 tuff samples were analyzed for nitrate, perchlorate, and cyanide. Table 7.8-2 presents the inorganic chemicals detected or detected above BVs. Plate 18 shows the spatial distribution of inorganic chemicals detected or detected above BVs.

Aluminum was detected above the Qbt 2,3,4 BV (7340 mg/kg) in five samples with a maximum concentration of 9510 mg/kg. The Gehan and slippage tests indicated site concentrations of aluminum in tuff are not statistically different from background (Figure F-81 and Table F-16). Aluminum is not a COPC.

Antimony was not detected but had DLs (0.55 mg/kg to 1.24 mg/kg) above the Qbt 2,3,4 BV (0.5 mg/kg) in six samples. Antimony is retained as a COPC.

Arsenic was detected above the Qbt 2,3,4 BV (2.79 mg/kg) in two samples with a maximum concentration of 3 mg/kg. The Gehan and quantile tests indicated site concentrations of arsenic in tuff are statistically different from background (Figure F-82 and Table F-16). Arsenic is retained as a COPC.

Barium was detected above the Qbt 2,3,4 BV (46 mg/kg) in 15 samples with a maximum concentration of 324 mg/kg. The Gehan and quantile tests indicated site concentrations of barium in tuff are statistically different from background (Figure F-83 and Table F-16). Barium is retained as a COPC.

Cadmium was detected above the Qbt 2,3,4 BV (1.83 mg/kg) in one sample at a concentration of 2.3 mg/kg. The Gehan and quantile tests indicated site concentrations of cadmium in tuff are not statistically different from background (Figure F-84 and Table F-16). Cadmium is not a COPC.

Calcium was detected above the Qbt 2,3,4 BV (2200 mg/kg) in two samples with a maximum concentration of 3560 mg/kg. The Gehan and quantile tests indicated site concentrations of calcium in tuff are statistically different from background (Figure F-85 and Table F-16). Calcium is retained as a COPC.

Chromium was detected above the Qbt 2,3,4 BV (7.14 mg/kg) in six samples with a maximum concentration of 27.4 mg/kg. The Gehan and quantile tests indicated site concentrations of chromium in tuff are statistically different from background (Figure F-86 and Table F-16). Chromium is retained as a COPC.

Cobalt was detected above the Qbt 2,3,4 BV (3.14 mg/kg) in three samples with a maximum concentration of 4.8 mg/kg. The Gehan and quantile tests indicated site concentrations of cobalt in tuff are not statistically different from background (Figure F-87 and Table F-16). Cobalt is not a COPC.

Copper was detected above the Qbt 2,3,4 BV (4.66 mg/kg) in 12 samples with a maximum concentration of 35.1 mg/kg. The Gehan and quantile tests indicated site concentrations of copper in tuff are statistically different from background (Figure F-88 and Table F-16). Copper is retained as a COPC.

Cyanide was not detected but had DLs (0.53 mg/kg to 0.86 mg/kg) above the Qbt 2,3,4 BV (0.5 mg/kg) in 12 samples. Cyanide is retained as a COPC.

Lead was detected above the Qbt 2,3,4 BV (11.2 mg/kg) in 13 samples with a maximum concentration of 39.6 mg/kg. The Gehan and quantile tests indicated site concentrations of lead in tuff are statistically different from background (Figure F-89 and Table F-16). Lead is retained as a COPC.

Magnesium was detected above the Qbt 2,3,4 BV (1690 mg/kg) in one sample at a concentration of 2060 mg/kg. The Gehan and quantile tests indicated site concentrations of magnesium in tuff are statistically different from background (Figure F-90 and Table F-16). Magnesium is retained as a COPC.

Nickel was detected above the Qbt 2,3,4 BV (6.58 mg/kg) in eight samples with a maximum concentration of 13.7 mg/kg. The quantile and slippage tests indicated site concentrations of nickel in tuff are statistically different from background (Figure F-91 and Table F-16). Nickel is retained as a COPC.

Nitrate was detected in 15 samples with a maximum concentration of 4.5 mg/kg. Although nitrate is naturally occurring, SWMU 01-001(s2) is a waste line that contained sanitary wastewater. As a result, the concentrations detected may be site related rather than reflecting only naturally occurring levels. Nitrate is retained as a COPC.

Perchlorate was detected in one sample at a concentration of 0.0039 mg/kg. Perchlorate is retained as a COPC.

Selenium was detected above the Qbt 2,3,4 BV (0.3 mg/kg) in four samples with a maximum concentration of 0.63 mg/kg and was not detected but had DLs (0.57 mg/kg to 1.22 mg/kg) above the BV in nine samples. Selenium is retained as a COPC.

Silver was detected above the Qbt 2,3,4 BV (1 mg/kg) in one sample at a concentration of 4.5 mg/kg. Silver is retained as a COPC.

Organic Chemicals

A total of 20 tuff samples were analyzed for SVOCs, VOCs, and PCBs. Table 7.8-3 presents the detected organic chemicals. Plate 19 shows the spatial distribution of detected organic chemicals.

Polycyclic Aromatic Hydrocarbons

PAHs are a class of SVOCs frequently detected as a result of environmental sampling but generally were not released from the SWMUs or AOCs being investigated. PAHs unrelated to site activities are thus often detected in samples analyzed for the presence of site-related SVOCs.

PAHs are known to be widely distributed in the environment from a number of sources, both natural, such as forest fires, and anthropogenic, such as combustion of fossil fuels, oil drips off motor vehicles, vehicle tires, coal tar pitch, and weathering or eroding of asphalt pavement (Kose et al. 2008, 219977; Teaf 2008, 219976). PAHs from these sources generally occur as complex mixtures, not as single compounds. Individual PAH compounds can be manufactured for research purposes and some PAHs (e.g., anthracene, fluorene, naphthalene, and pyrene) are used in dye production, the manufacture of synthetic fibers, and in plastics and pesticides.

The principal sources of PAHs in soil along parking lots, roads, and highways are vehicular exhaust and emissions, the wearing of tires, and asphalt. PAH-containing materials, such as asphalt and rubber particles, do not easily dissolve in water, thus preventing migration, except as suspended particles in storm water. PAH concentrations in excess of soil cleanup levels may result from common anthropogenic sources such as runoff from asphalt-paved areas (e.g., roads and parking areas).

Site Activities

SWMU 01-001(s2) is part of a sanitary waste line that the served the western portion of former TA-01 and was identified as a SWMU because of the potential for contamination from radionuclides and metals from former TA-01 buildings. Operations within these former buildings did not use or produce PAHs. The SWMU 01-001(s2) waste line was located adjacent to roadways and paved parking areas, and samples were collected by augering through pavement or adjacent to the paving. Although all samples at this site were collected from depth, the concentrations were low and PAHs were detected in only 5 of 20 samples. The maximum concentration was 0.78 mg/kg, and most of the 33 detected PAH results were less than 0.1 mg/kg. The sample locations and the frequency and magnitude of detection suggest the detections of PAHs may have resulted from cross-contamination from augering through asphalt and/or surface contamination. Additionally, because PAHs are not associated with sanitary wastewater, the PAHs detected in samples used to characterize this site [acenaphthene; anthracene; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; phenanthrene; and pyrene] are associated with asphalt, are not related to historic Laboratory site operations, and are not COPCs.

Organic COPCs

Other organic chemicals detected at SWMU 01-001(s2) include acetone, Aroclor-1254, Aroclor-1260, bis(2-ethylhexyl)phthalate, methylene chloride, and 1-propylbenzene. The detected organic chemicals listed are retained as COPCs.

Radionuclides

A total of 20 tuff samples were analyzed for americium-241, gamma-emitting radionuclides, isotopic uranium, and strontium-90; 29 samples (4 soil and 25 tuff) for isotopic plutonium; and 31 samples (5 soil and 26 tuff) for tritium. Table 7.8-4 presents the radionuclides detected or detected above BVs/FVs. Plate 20 shows the spatial distribution of radionuclides detected or detected above BVs/FVs.

Plutonium-239/240 was detected below 1 ft bgs in one soil sample and was detected in three tuff samples with a maximum activity of 0.564 pCi/g. Plutonium-239/240 is retained as a COPC.

Tritium was detected in two samples with a maximum activity of 0.9 pCi/g. Tritium is retained as a COPC.

Uranium-234 was detected above the Qbt 2,3,4 BV (1.98 pCi/g) in 1 sample at an activity of 1.99 pCi/g. The activity was only 0.01 pCi/g above BV and uranium-234 was detected below BV in 19 other samples. Uranium-234 is not a COPC.

7.8.4.4 Nature and Extent of Contamination

The nature and extent of inorganic, organic, and radionuclide COPCs at SWMU 01-001(s2) are discussed below.

Inorganic Chemicals

Inorganic COPCs at SWMU 01-001(s2) include antimony, arsenic, barium, calcium, chromium, copper, cyanide, lead, magnesium, nickel, nitrate, perchlorate, selenium, and silver.

Antimony was not detected but had DLs (0.55 mg/kg to 1.24 mg/kg) above the Qbt 2,3,4 BV in six samples. The residential and industrial SSLs were approximately 9 times and 51 times the maximum DL, respectively. Further sampling for extent of antimony is not warranted.

Arsenic was detected above the Qbt 2,3,4 BV in two samples with a maximum concentration of 3 mg/kg. Concentrations decreased with depth at location 03-603864. The deeper sample collected in 2012 from location 03-603860 was not analyzed for arsenic. All concentrations were below the maximum Qbt 2,3,4 background concentration (5 mg/kg). Further sampling for extent of arsenic is not warranted.

Barium was detected above the Qbt 2,3,4 in 15 samples with a maximum concentration of 324 mg/kg. Concentrations increased with depth at locations 03-603860, 03-603868, 03-603869, and 03-603870; decreased with depth at locations 01-9, 03-603859, 03-603863, and 03-603864; and increased laterally. The residential SSL is approximately 48 times the maximum concentration. Further sampling for extent of barium is not warranted.

Calcium was detected above the Qbt 2,3,4 BV in two samples with a maximum concentration of 3560 mg/kg. Concentrations decreased with depth at location 03-603864. The deeper sample collected in 2012 from location 03-603859 was not analyzed for calcium. Concentrations decreased laterally. The NMED residential essential nutrient SSL is approximately 3652 times the maximum concentration. The lateral extent of calcium is defined and further sampling for vertical extent is not warranted.

Chromium was detected above the Qbt 2,3,4 BV in six samples with a maximum concentration of 27.4 mg/kg. Concentrations increased with depth at location 03-603870; decreased with depth at locations 03-603862, 03-603863, and 03-603864; and decreased laterally. As described in section 4.2, SWMU 01-001(s2) is not a potential source of hexavalent chromium and use of the SSL for trivalent chromium to determine whether additional sampling is warranted is appropriate. The residential SSL for trivalent chromium (117,000 mg/kg) is approximately 4270 times the maximum concentration. Lateral extent of chromium is defined and further sampling for vertical extent is not warranted.

Copper was detected above the Qbt 2,3,4 BV in 12 samples with a maximum concentration of 35.1 mg/kg. Concentrations increased with depth at locations 03-603861, 03-603863, and 03-603868; decreased with depth at locations 01-9, 03-603859, 03-603860, and 03-603864; and decreased laterally. The residential SSL is approximately 89 times the maximum concentration. Further sampling for extent of copper is not warranted.

Cyanide was not detected but had DLs (0.53 mg/kg to 0.86 mg/kg) above the Qbt 2,3,4 BV in 12 samples. The residential SSL is approximately 13 times the maximum DL, and the industrial SSL is approximately 73 times the maximum DL. Further sampling for extent of cyanide is not warranted.

Lead was detected above the Qbt 2,3,4 BV in 13 samples with a maximum concentration of 39.6 mg/kg. Concentrations increased with depth at locations 01-09, 01-10, and 03-603868; decreased with depth at locations 01-11, 03-603860, 03-603861, 03-603863, 03-603864, and 03-603870; and decreased laterally. The residential SSL is approximately 10 times the maximum concentration, and the industrial SSL is approximately 20 times the maximum concentration. Further sampling for extent of lead is not warranted.

Magnesium was detected above the Qbt 2,3,4 BV in one sample at a concentration of 2060 mg/kg. The deeper sample collected in 2012 from location 03-603859 was not analyzed for magnesium. Concentrations decreased laterally. The NMED residential essential nutrient SSL is approximately 10,146 times the maximum concentration. The lateral extent of magnesium is defined, and further sampling for vertical extent is not warranted.

Nickel was detected above the Qbt 2,3,4 BV in eight samples with a maximum concentration of 13.7 mg/kg. Concentrations increased with depth at locations 03-603864 and 03-603870, decreased with depth at locations 03-603859 and 03-603862, and decreased laterally. The residential SSL is approximately 114 times the maximum concentration. Lateral extent of nickel is defined and further sampling for vertical extent is not warranted.

Nitrate was detected in 15 samples with a maximum concentration of 4.5 mg/kg. Concentrations increased with depth at locations 03-603865, 03-603867, and 03-603869; decreased with depth at locations 03-603859, 03-603861, 03-603862, 03-603863, 03-603864, and 03-603870; and decreased laterally. The residential SSL is approximately 27,800 times the maximum concentration. The lateral extent of nitrate is defined, and further sampling for vertical extent is not warranted.

Perchlorate was detected in one sample at a concentration of 0.0039 mg/kg. Concentrations increased with depth at location 03-603868 and decreased laterally. The residential SSL was approximately 14,000 times the maximum concentration. Lateral extent of perchlorate is defined and further sampling for vertical extent is not warranted.

Selenium was detected above the Qbt 2,3,4 BV in four samples with a maximum concentration of 0.63 mg/kg and was not detected but had DLs (0.57 mg/kg to 1.22 mg/kg) above the BV in nine samples. Concentrations decreased with depth at locations 03-603860, 03-603866, 03-603867, and 03-603870 and decreased laterally. The residential SSL is approximately 621 times the maximum concentration and approximately 321 times the maximum DL. Further sampling for extent of selenium is not warranted.

Silver was detected above the Qbt 2,3,4 BV in one sample at a concentration of 4.5 mg/kg. Concentrations increased with depth at location 03-603861 and decreased laterally. The residential SSL is approximately 87 times the maximum concentration. Lateral extent of silver is defined and further sampling for vertical extent is not warranted.

Organic Chemicals

Organic COPCs at SWMU 01-001(s2) include acetone, Aroclor-1254, Aroclor-1260, bis(2-ethylhexyl)phthalate, methylene chloride, and 1-propylbenzene.

Acetone was detected in eight samples with a maximum concentration of 0.062 mg/kg. Concentrations increased with depth at location 00-603862, decreased with depth at all other locations, and decreased laterally along the waste line. The residential SSL is approximately 1,070,000 times the maximum concentration. Lateral extent of acetone is defined and further sampling for vertical extent is not warranted.

Aroclor-1254 was detected in three samples with a maximum concentration of 0.21 mg/kg. Concentrations increased with depth at location 00-603867, decreased with depth at location 00-603864, and decreased laterally along the waste line. The residential SSL is approximately 5.4 times the maximum concentration, and the industrial SSL is approximately 23 times the maximum concentration. Lateral extent of Aroclor-1254 is defined and further sampling for vertical extent is not warranted.

Aroclor 1260 was detected in four samples with a maximum concentration of 0.033 mg/kg. Concentrations increased with depth at location 00-603865, did not change substantially with depth (0.003 mg/kg) at location 00-603867, and decreased laterally along the waste line. The residential SSL is approximately 74 times the maximum concentration, and the industrial SSL is approximately 336 times the maximum concentration. Lateral extent of Aroclor-1260 is defined and further sampling for vertical extent is not warranted.

Bis(2-ethylhexyl)phthalate was detected in one sample at a concentration of 0.082 mg/kg. Concentrations increased with depth at location 00-603859 and increased laterally along the waste line. The detected concentration was below the EQL. The residential SSL is approximately 4630 times the maximum concentration. Further sampling for extent of bis(2-ethylhexyl)phthalate is not warranted.

Methylene chloride was detected in five samples with a maximum concentration of 0.032 mg/kg. Concentrations increased with depth at location 00-603868, did not change substantially with depth (0.004 mg/kg) at location 00-603862, decreased with depth at location 00-603869, and decreased laterally along the waste line. The concentrations were below the EQLs. The residential SSL is approximately 12,800 times the maximum concentration. Lateral extent of methylene chloride is defined and further sampling for vertical extent is not warranted.

Propylbenzene[-1] was detected in one sample at a concentration of 0.0013 mg/kg. Concentrations decreased with depth at location 00-603861 and decreased laterally along the waste line. Lateral and vertical extent of 1-propylbenzene are defined.

Radionuclides

Radionuclide COPCs at SWMU 01-001(s2) include plutonium-239/240 and tritium.

Plutonium-239/240 was detected in one soil sample and three tuff samples with a maximum concentration of 0.564 pCi/g. Activities increased with depth at location 03-603865 and decreased with depth at locations 03-603682 and 03-603683. Only one depth was sampled at location 01-48. The residential SAL is approximately 85 times the maximum activity. Lateral extent of plutonium-239/240 is defined and further sampling for vertical extent is not warranted.

Tritium was detected in two samples with a maximum activity of 0.9 pCi/g. Activities decreased with depth at locations 03-603860 and 03-603870; activities decreased with depth at all other locations; and activities decreased laterally along the drainline. The residential SAL is approximately 1111 times the maximum activity. Further sampling for extent of tritium is not warranted.

Summary of Nature and Extent

The lateral and vertical extent of inorganic, organic, and radionuclide COPCs is defined or no further sampling for extent is warranted at SWMU 01-001(s2).

7.8.5 Summary of Human Health Risk Screening

Industrial Scenario

The samples at SWMU 01-001(s2) were collected from depths greater than 0.0 to 1.0 ft bgs; therefore, no complete exposure pathways exist for the industrial scenario.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 3×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.07 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Residential Scenario

The total excess cancer risk for the residential scenario is 4×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.4, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.2 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Based on the risk-screening assessment results, no potential unacceptable risks or doses exist for the industrial, construction worker, and residential scenarios at SWMU 01-001(s2).

7.8.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for SWMU 01-001(s2).

7.9 SWMU 01-002(a2)-00, Industrial Waste Line

7.9.1 Site History and Operational History

SWMU 01-002(a2)-00 was originally part of SWMU 01-002(a)-00, which was split into SWMUs 01-002(a1)-00 and 01-002(a2)-00 in a request for modification of the Laboratory's Hazardous Waste Facility Permit approved by NMED on November 9, 2016 (LANL 2016, 601921). The Laboratory proposed to split SWMU 01-002(a)-00 into two newly designated SWMUs because each component of the SWMU is located on property owned by different entities.

SWMU 01-002(a2)-00 consists of the majority of a former industrial waste line (former SWMU 01-002(a)-00) located in the southern and western portion of former TA-01 (Plate 21). SWMU 01-002(a2)-00 includes all sections of the former industrial waste line located outside the former LA Inn property. SWMU 01-002(a2)-00 includes the area around former boiler house 2, former buildings D, H, J-2, M, ML, Q, and Sigma, and several properties north of Trinity Drive extending to Canyon Road (near the location of former TA-45). These former buildings were the sources of major process discharges from former TA-01. From 1943 to 1951, chemical and radioactive process wastes flowed through this section of waste line and were ultimately discharged to Acid Canyon at the outfall near former TA-45 [SWMU 01-002(b)-00].

Boiler house 2 supplied steam for TA-01. Building D was used to process plutonium. Building H was used for source preparation of polonium-210. Building J-2 was used for radiochemistry work. Building M was used to recover enriched uranium-235. Building ML was a medical laboratory. Building Q was used to calibrate laboratory equipment using radium-226 as a check source. Sigma Building was used for machining radionuclides for casting and powder metallurgy.

The former TA-01 industrial waste line [former SWMU 01-002(a)-00] consisted of two sections: the main industrial waste line south of Trinity Drive ran from former building D, and the western industrial waste line ran from former building J-2 to its junction with the main industrial waste line outside the former TA-01 boundary. From the junction, the line ran north as a single unit. From 1943 to 1951 the line discharged untreated effluent into Acid Canyon. When the former TA-45 waste treatment facility was built at the disposal line outfall in 1951, liquid waste conveyed by the line was treated at the former TA-45 plant before disposal to the canyon.

During the Ahlquist radiological survey conducted in 1975 and 1976, the former SWMU 01-002(a)-00 industrial waste line in former TA-01 [including new SWMU 01-002(a2)-00] was completely removed along with a substantial amount of contaminated soil associated with the industrial waste line. Areas along the western industrial-waste line that were remediated by excavation and disposal in 1976 are designated as SWMU 01-007(j). In 1985, the last remnants of the industrial waste line between former TA-01 and the Acid Canyon outfall near former TA-45 were removed. Currently, the location of SWMU 01-002(a2)-00 is developed.

7.9.2 Relationship to Other SWMUs

There are approximately 10 other SWMUs and AOCs being investigated in the vicinity of SWMU 01-002(a2)-00 (Plate 21). SWMU 01-002(a2)-00 is adjacent to or collocated with SWMUs 01-001(s2), 01-001(u), 01-007(c), and 01-007(j) and these sites could have contributed contamination to SWMU 01-002(a2)-00.

7.9.3 Summary of Previous Investigations

1993–1994 Investigation Activities

Seventeen samples were collected from eleven locations at the former locations of buildings D, U, M, and Z and Loma Vista Drive properties along the path of the former SWMU 01-002(a)-00 waste line in 1993 and 1994. The 1993–1994 investigation results are not decision-level data.

2008 Investigation Activities

Twenty-eight samples were collected from fourteen locations along the former drainline in 2008. Results from the sampling activities in 2008 were presented in the previous investigation report (LANL 2010, 108528). The 2010 investigation report concluded the nature and extent of contamination have been defined and no further sampling for extent is warranted. This site does not pose a potential unacceptable risk or dose under the residential scenario and poses no potential ecological risk.

7.9.4 Site Contamination

7.9.4.1 Soil, Rock, and Sediment Sampling

No sampling was performed at SWMU 01-002(a2)-00 as part of the Phase II investigation activities.

7.9.4.2 Soil, Rock, and Sediment Field Screening Results

No sampling was performed at SWMU 01-002(a2)-00 as part of the Phase II investigation activities.

7.9.4.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at SWMU 01-002(a2)-00 consist of results from 28 tuff samples collected from 14 locations during 2008. Table 7.9-1 lists the samples collected and the analyses requested for each sample. Plate 21 shows the sampling locations.

Inorganic Chemicals

A total of 28 tuff samples were analyzed for TAL metals, nitrate, perchlorate, and cyanide. Table 7.9-2 presents the inorganic chemicals detected or detected above BVs. Plate 22 shows the spatial distribution of inorganic chemicals detected or detected above BVs.

Aluminum was detected above the Qbt 2,3,4 BV (7340 mg/kg) in three samples with a maximum concentration of 13,200 mg/kg. The Gehan and quantile tests indicated site concentrations of aluminum in tuff are not statistically different from background (Figure F-92 and Table F-17). Aluminum is not a COPC.

Antimony was not detected but had DLs (0.55 mg/kg to 0.63 mg/kg) above the Qbt 2,3,4 BV (0.5 mg/kg) in two samples. Antimony is retained as a COPC.

Arsenic was detected above the Qbt 2,3,4 BV (2.79 mg/kg) in one sample at a concentration of 3.7 mg/kg. The Gehan and quantile tests indicated site concentrations of arsenic in tuff are statistically different from background (Figure F-93 and Table F-17). Arsenic is retained as a COPC.

Barium was detected above the Qbt 2,3,4 BV (46 mg/kg) in seven samples with a maximum concentration of 201 mg/kg. The Gehan and quantile tests indicated site concentrations of barium in tuff are not statistically different from background (Figure F-94 and Table F-17). Barium is not a COPC.

Beryllium was detected above the Qbt 2,3,4 BV (1.21 mg/kg) at a concentration of 1.3 mg/kg. The Gehan and quantile tests indicated site concentrations of beryllium in tuff are not statistically different from background (Figure F-95 and Table F-17). Beryllium is not a COPC.

Calcium was detected above the Qbt 2,3,4 BV (2200 mg/kg) in four samples with a maximum concentration of 6290 mg/kg. The Gehan and quantile tests indicated site concentrations of calcium in tuff are not statistically different from background (Figure F-96 and Table F-17). Calcium is not a COPC.

Chromium was detected above the Qbt 2,3,4 BV (7.14 mg/kg) in 17 samples with a maximum concentration of 59.4 mg/kg. The Gehan and quantile tests indicated site concentrations of chromium in tuff are statistically different from background (Figure F-97 and Table F-17). Chromium is retained as a COPC.

Cobalt was detected above the Qbt 2,3,4 BV (3.14 mg/kg) in one sample at a concentration of 3.2 mg/kg. The Gehan and quantile tests indicated site concentrations of cobalt in tuff are not statistically different from background (Figure F-98 and Table F-17). Cobalt is not a COPC.

Copper was detected above the Qbt 2,3,4 BV (4.66 mg/kg) in three samples with a maximum concentration of 6.4 mg/kg. The Gehan and quantile tests indicated site concentrations of copper in tuff are statistically different from background (Figure F-99 and Table F-17). Copper is retained as a COPC.

Cyanide was detected above the Qbt 2,3,4 BV (0.5 mg/kg) in 1 sample at a concentration of 0.51 mg/kg and was not detected but had DLs (0.51mg/kg to 0.62 mg/kg) above the BV in 10 samples. Cyanide is retained as a COPC.

Lead was detected above the Qbt 2,3,4 BV (11.2 mg/kg) in seven samples with a maximum concentration of 74.2 mg/kg. The Gehan and quantile tests indicated site concentrations of lead in tuff are statistically different from background (Figure F-100 and Table F-17). Lead is retained as a COPC.

Magnesium was detected above the Qbt 2,3,4 BV (1690 mg/kg) in two samples with a maximum concentration of 2350 mg/kg. The Gehan and quantile tests indicated site concentrations of magnesium in tuff are not statistically different from background (Figure F-101 and Table F-17). Magnesium is not a COPC.

Mercury was detected above the Qbt 2,3,4 BV (0.1 mg/kg) in 1 sample at a concentration of 0.101 mg/kg. The concentration was only 0.001 mg/kg above the BV and mercury was not detected or detected above BV in 27 other samples (detected below BV in 17 samples). Mercury is not a COPC.

Nickel was detected above the Qbt 2,3,4 BV (6.58 mg/kg) in 13 samples with a maximum concentration of 27.4 mg/kg. The quantile and slippage tests indicated site concentrations of nickel in tuff are statistically different from background (Figure F-102 and Table F-17). Nickel is retained as a COPC.

Nitrate was detected in 13 samples with a maximum concentration of 44.3 mg/kg. Although nitrate is naturally occurring, the maximum concentration likely does not reflect naturally occurring levels. Nitrate is retained as a COPC.

Selenium was detected above the Qbt 2,3,4 BV (0.3 mg/kg) in six samples with a maximum concentration of 0.43 mg/kg and was not detected but had DLs (0.56 mg/kg to 0.61 mg/kg) above the BV in six samples. Selenium is retained as a COPC.

Organic Chemicals

A total 28 tuff samples were analyzed for SVOCs, VOCs, and PCBs. Table 7.9-3 presents the detected organic chemicals. Plate 23 shows the spatial distribution of detected organic chemicals.

Organic chemicals detected at SWMU 01-002(a2)-00 include acetone, Aroclor-1254, Aroclor-1260, bis(2-ethylhexyl)phthalate, methylene chloride, toluene, and trichlorofluoromethane. The detected organic chemicals are retained as COPCs.

Radionuclides

A total of 28 tuff samples were analyzed for americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, tritium, and strontium-90. Table 7.9-4 presents the radionuclides detected or detected above BVs/FVs. Plate 24 shows the spatial distribution of radionuclides detected or detected above BVs/FVs.

Plutonium-239/240 was detected in six tuff samples with a maximum activity of 29.5 pCi/g. Plutonium-239/240 is retained as a COPC.

Tritium was detected in two samples with a maximum activity of 0.92 pCi/g. Tritium is retained as a COPC.

Uranium-235/236 was detected above the Qbt 2,3,4 BV (0.09 pCi/g) in one sample at an activity of 0.231 pCi/g. Uranium-235/236 is retained as a COPC.

7.9.4.4 Nature and Extent of Contamination

The nature and extent of inorganic, organic, and radionuclide COPCs at SWMU 01-002(a2)-00 are discussed below.

Inorganic Chemicals

Inorganic COPCs at SWMU 01-002(a2)-00 include antimony, arsenic, chromium, copper, cyanide, lead, nickel, nitrate and selenium.

Antimony was not detected but had DLs (0.55 mg/kg to 0.63 mg/kg) above the Qbt 2,3,4 BV in two samples. The residential and industrial SSLs were approximately 50 times and 824 times the maximum DL, respectively. Further sampling for extent of antimony is not warranted.

Arsenic was detected above the Qbt 2,3,4 BV in one sample at a concentration of 3.7 mg/kg. Concentrations increased with depth at location 00-603891. All concentrations were below the maximum Qbt 2,3,4 background concentration (5 mg/kg). Further sampling for extent of arsenic is not warranted.

Chromium was detected above the Qbt 2,3,4 BV in 17 samples with a maximum concentration of 59.4 mg/kg. Concentrations decreased with depth at locations 00-603885, 00-603888, 00-603893, 00-604530, and 00-604531 and increased with depth at locations 03-603884, 00-603886, 00-603887, 00-603890, 00-603891, and 00-603896. Concentrations decreased laterally along the waste line. As described in section 4.2, SWMU 01-002(a2)-00 is not a potential source of hexavalent chromium and use of the SSL for trivalent chromium to determine whether additional sampling is warranted is appropriate. The residential SSL for trivalent chromium (117,000 mg/kg) is approximately 1970 times the maximum concentration. Lateral extent of chromium is defined and further sampling for vertical extent is not warranted.

Copper was detected above the Qbt 2,3,4 BV in three samples with a maximum concentration of 6.4 mg/kg. Concentrations decreased with depth at all locations and decreased laterally along the waste line. The lateral and vertical extent of copper are defined.

Cyanide was detected above Qbt 2,3,4 BV in 1 sample at a concentration of 0.51 mg/kg and was not detected but had DLs (0.51 mg/kg to 0.62 mg/kg) above the Qbt 2,3,4 BV in 10 samples. Concentrations increased with depth at location 00-603892 and decreased laterally along the waste line. The residential SSL is approximately 22 times the maximum concentration, and the industrial SSL is approximately 123 times the maximum concentration. The residential SSL is approximately 18 times the maximum DL, and the industrial SSL is approximately 101 times the maximum DL. Further sampling for extent of cyanide is not warranted.

Lead was detected above the Qbt 2,3,4 BV in seven samples with a maximum concentration of 74.2 mg/kg. Concentrations increased with depth at locations 00-603886 and 00-603889; decreased with depth at locations 00-603888, 00-603894, and 00-604531; and decreased laterally along the waste line. The residential SSL is approximately 5.4 times the maximum concentration, and the industrial SSL is approximately 11 times the maximum concentration. Lateral extent of lead is defined and further sampling for vertical extent is not warranted.

Nickel was detected above the Qbt 2,3,4 BV in 13 samples with a maximum concentration of 27.4 mg/kg. Concentrations increased with depth at locations 00-603886, 00-603887, 00-603890, 00-603891, and 00-603896; decreased with depth at locations 00-603885, 00-603888, 00-604530, and 00-604531; and decreased laterally along the waste line. The residential SSL is approximately 57 times the maximum concentration. Lateral extent of nickel is defined and further sampling for vertical extent is not warranted.

Nitrate was detected in 13 samples with a maximum concentration of 44.3 mg/kg. Concentrations increased with depth at locations 00-603888, 00-603894, 00-604530, and 00-604531; decreased with depth at locations 00-603889, and 00-603896; and increased laterally along the waste line. The residential SSL is approximately 2820 times the maximum concentration. Further sampling for extent of nitrate is not warranted.

Selenium was detected above the Qbt 2,3,4 BV in six samples with a maximum concentration of 0.43 mg/kg and was not detected, but had DLs (0.56 mg/kg to 0.61 mg/kg) above the BV in six samples. Concentrations increased with depth at locations 00-603886, 00-603889, 00-603891, and 00-603894; decreased with depth at location 00-603892; and decreased laterally along the waste line. The residential SSL is approximately 909 times the maximum concentration. The residential SSL is approximately 641 times the maximum DL. Further sampling for extent of selenium is not warranted.

Organic Chemicals

Organic COPCs at SWMU 01-002(a2)-00 include acetone, Aroclor-1254, Aroclor-1260, bis(2-ethylhexyl)phthalate, methylene chloride, toluene, and trichlorofluoromethane.

Acetone was detected in four samples with a maximum concentration of 0.0053 mg/kg. Concentrations increased with depth at locations 00-603886 and 00-603889, did not change with depth at location 00-603885, and decreased laterally along the waste line. The concentrations were below the EQLs. The residential SSL is approximately 12,000,000 times the maximum concentration. Further sampling for extent of acetone is not warranted.

Aroclor-1254 was detected in three samples with a maximum concentration of 0.21 mg/kg. Concentrations increased with depth at location 00-604530, decreased with depth at location 00-603888, and decreased laterally along the waste line. The residential SSL is approximately 5.4 times the maximum concentration, and the industrial SSL is approximately 52 times the maximum concentration. Lateral extent of Aroclor-1254 is defined and further sampling for vertical extent is not warranted.

Aroclor-1260 was detected in five samples with a maximum concentration of 0.01 mg/kg. Concentrations increased with depth at location 00-603896, decreased with depth at locations 00-603887 and 00-603892, and decreased laterally along the waste line. The residential SSL is approximately 243 times the maximum concentration. Lateral extent of Aroclor-1260 is defined and further sampling for vertical extent is not warranted.

Bis(2-ethylhexyl)phthalate was detected in two samples with a maximum concentration of 0.12 mg/kg. Concentrations increased with depth at all locations and decreased laterally along the waste line. The residential SSL is approximately 3170 times the maximum concentration. Lateral extent of bis(2-ethylhexyl)phthalate is defined and further sampling for vertical extent is not warranted.

Methylene chloride was detected in seven samples with a maximum concentration of 0.0058 mg/kg. Concentrations increased with depth at location 00-603886, decreased with depth at all other locations, and increased laterally along the waste line. The concentrations were below the EQLs. The residential SSL is approximately 70,500 times the maximum concentration. Further sampling for extent of methylene chloride is not warranted.

Toluene was detected in three samples with a maximum concentration of 0.001 mg/kg. Concentrations decreased with depth at all locations and increased laterally along the waste line. The concentrations were below the EQLs. The residential SSL is approximately 5,200,000 times the maximum concentration. Vertical extent of toluene is defined and further sampling for lateral extent is not warranted.

Trichlorofluoromethane was detected in one sample at a concentration of 0.00055 mg/kg. Concentrations decreased with depth and increased laterally along the waste line. The concentration was below the EQL. The residential SSL is approximately 2,200,000 times the maximum concentration. Vertical extent of trichlorofluoromethane is defined and further sampling for lateral extent is not warranted

Radionuclides

Radionuclide COPCs at SWMU 01-002(a2)-00 include plutonium-239/240, tritium, and uranium-235/236.

Plutonium-239/240 was detected in six samples with a maximum activity of 29.5 pCi/g. Activities increased with depth at location 00-604530, decreased with depth at all other locations, and decreased laterally along the waste line. The residential SAL is approximately 491 times the maximum activity where vertical extent is not defined (0.161 pCi/g at location 00-604530). Lateral extent of plutonium-239/240 is defined and further sampling for vertical extent is not warranted.

Tritium was detected in two samples with a maximum activity of 0.92 pCi/g. Activities decreased with depth at locations 00-603884 and 00-603891 and increased laterally along the waste line. The residential SSL is approximately 1850 times the maximum activity. Vertical extent of tritium is defined and further sampling for lateral extent is not warranted.

Uranium-235/236 was detected above the Qbt 2,3,4 BV in one sample at an activity of 0.231 pCi/g. Uranium-235/236 activities decreased with depth at location 00-603885 and decreased laterally along the waste line. The lateral and vertical extent of uranium-235/236 are defined.

Summary of Nature and Extent

The lateral and vertical extent of inorganic, organic, and radionuclide COPCs is defined or no further sampling for extent is warranted at SWMU 01-002(a2)-00.

7.9.5 Summary of Human Health Risk Screening

Industrial Scenario

The total excess cancer risk for the industrial scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.003, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.04 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 5×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.07 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Residential Scenario

The total excess cancer risk for the residential scenario is 5×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.4, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.2 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Based on the risk-screening assessment results, no potential unacceptable risks or doses exist for the industrial, construction worker, and residential scenarios at SWMU 01-002(a2)-00.

7.9.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for SWMU 01-002(a2)-00.

7.10 SWMU 01-003(a), Bailey Bridge Landfill

7.10.1 Site History and Operational History

SWMU 01-003(a) is the inactive Bailey Bridge landfill located at the head of Bailey Bridge Canyon at former TA-01 (Plate 25). Demolition debris from former TA-01 structures was placed on the hillsides in the drainage at the head of Bailey Bridge Canyon between 1959 and 1978. The area measured approximately 200 ft x 100 ft x 100 ft deep. A September 1964 Zia Company memorandum regarding disposal of former TA-01 debris from demolition activities specified that concrete walls and flooring from the former Sigma Building (structure 01-56) with radioactivity levels below 2500 cpm of surface alpha contamination were to be broken up and disposed of in Bailey Bridge Canyon; the disposed concrete was covered with 4 ft of earthen fill (Hill 1964, 004821). Demolition debris with less than 2500 cpm surface alpha contamination from several other buildings (the D-5 vault [01-11], HT [01-29], warehouse 19 [01-103], and the sheet metal shop [structure 01-104]) located in the western portion of former TA- 01 was also disposed of in Bailey Bridge Canyon and covered with soil (Ahlquist et al. 1977, 005710; DOE 1987, 008663). Additional fill was placed over the landfill and the area regraded before the area was developed for residential housing. As a result of all the debris and fill placed at the head of Bailey Bridge Canyon, the canyon edge was extending to the south by approximately 100 ft. The mesa-top portion of SWMU 01-003(a) is currently under pavement and one building of the Los Arboles townhouses. The area downslope of the landfill is undeveloped DOE land.

7.10.2 Relationship to Other SWMUs

Upgradient SWMUs 01-006(b) and 01-006(g) may have contributed contamination to SWMU 01-003(a).

7.10.3 Summary of Previous Investigations

1988 Investigation Activities

Radioactivity above background levels was observed in the Bailey Bridge Canyon area during the site reconnaissance survey in 1988.

1992 Investigation Activities

Five samples were collected from five locations within the landfill and in the drainage downgradient of the landfill in 1992. The 1992 investigation results are not decision-level data.

1994 Investigation Activities

Debris mapping and gross radiation screening were conducted in 1994. Radioactivity was not detected above background levels on any of the concrete debris at the site and no visible staining was observed. Therefore, samples were not collected.

2008 Investigation Activities

Thirty-six samples were collected from eighteen locations within the landfill and the drainage downgradient of the landfill to the canyon bottom in 2008. Results from the sampling activities in 2008 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination at the site, along with soil removal around three sampling locations to reduce concentrations of Aroclor-1254 above the residential SSL and the removal of soil around one sampling location to reduce lead concentrations above the residential SSL.

7.10.4 Site Contamination

7.10.4.1 Soil, Rock, and Sediment Sampling

As part of the Phase II investigation activities at SWMU 01-003(a), a total of 96 samples were collected from 39 locations and analyzed for inorganic chemicals, organic chemicals, and radionuclides to define extent of contamination.

7.10.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

7.10.4.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at SWMU 01-003(a) consist of results from 132 samples collected from 41 locations from 2009 to 2015. The 132 samples include 35 soil, 5 Qbt 1g, 36 Qbt 3, and 56 sediment samples. Table 7.10-1 lists the samples collected and the analyses requested for each sample. Plate 25 shows the sampling locations.

Inorganic Chemicals

A total of 79 samples (9 soil, 5 Qbt 1g, 26 Qbt 3, and 39 sediment) were analyzed for TAL metals and 36 samples (7 soil, 5 Qbt 1g, 11 Qbt 3, and 13 sediment) were analyzed for nitrate, perchlorate, and cyanide. Table 7.10-2 presents the inorganic chemicals detected or detected above BVs. Plate 26 shows the spatial distribution of inorganic chemicals detected or detected above BVs.

Aluminum was detected above the Qbt 2,3,4 BV (7340 mg/kg) in one sample at a concentration of 8410 mg/kg. The Gehan and quantile tests indicated site concentrations of aluminum in tuff are not statistically different from background (Figure F-103 and Table F-18). Aluminum is not a COPC.

Antimony was not detected but had a DL (0.64 mg/kg) above the Qbt 2,3,4 BV (0.5 mg/kg) in 1 sample. The DL was only 0.14 mg/kg above the BV and antimony was not detected in 28 other samples. Antimony is not a COPC.

Arsenic was detected above the Qbt 2,3,4 and Qbt 1g, Qct, Qbo BVs (2.79 mg/kg and 0.56 mg/kg) in one Qbt 3 sample and five Qbt 1g samples with a maximum concentration of 2.8 mg/kg and was not detected but had a DL (0.95 mg/kg) above the Qbt 1g, Qct, Qbo BVs (0.56 mg/kg) in one sample. The Gehan test indicated site concentrations of arsenic in the upper tuff units are statistically different from background (Table F-18). However, the quantile and slippage tests indicated site concentrations of arsenic in the upper tuff units are not statistically different from background (Figure F-104 and Table F-18). There are too few Qbt 1g samples to perform statistical tests for the lower tuff units. Arsenic is retained as a COPC.

Barium was detected above the sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs (127 mg/kg, 46 mg/kg, and 25.7 mg/kg) in one sediment sample, three Qbt 3 samples, and four Qbt 1g samples with a maximum concentration of 134 mg/kg. The Gehan and quantile tests indicated site concentrations of barium in sediment and upper tuff units are not statistically different from background (Figure F-105 and Table F-19, and Figure F-106 and Table F-18, respectively). There are too few Qbt 1g samples to perform statistical tests for the lower tuff units. Barium is retained as a COPC.

Beryllium was detected above the Qbt 2,3,4 BV (1.21 mg/kg) in two samples with a maximum concentration of 1.6 mg/kg. The Gehan and quantile tests indicated site concentrations of beryllium in tuff are not statistically different from background (Figure F-107 and Table F-18). Beryllium is not a COPC.

Calcium was detected above the Qbt 2,3,4 and Qbt 1g, Qct, Qbo BVs (2200 mg/kg, and 1900 mg/kg) in two Qbt 3 samples and two Qbt 1g samples with a maximum concentration of 15,100 mg/kg. The Gehan and slippage tests indicated site concentrations of calcium in upper tuff units are statistically different from background (Figure F-108 and Table F-18). Calcium is retained as a COPC.

Chromium was detected above the sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs (10.5 mg/kg, 7.14 mg/kg, and 2.6 mg/kg) in 3 sediment samples, 17 Qbt 3 samples, and 5 Qbt 1g samples with a maximum concentration of 32.2 mg/kg. The Gehan and quantile tests indicated site concentrations of chromium in sediment are not statistically different from background (Figure F-109 and Table F-19) but site concentrations of chromium in upper tuff unit are statistically different from background (Figure F-110 and Table F-18). Chromium is retained as a COPC.

Copper was detected above the soil; sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs (14.7 mg/kg, 11.2 mg/kg, 4.66 mg/kg, and 3.96 mg/kg) in one soil sample, one sediment sample, four Qbt 3 samples, and three Qbt 1g samples with a maximum concentration of 22.3 mg/kg. The Gehan and quantile tests indicated site concentrations of copper in sediment are not statistically different from background (Figure F-111 and Table F-19) but site concentrations of copper in upper tuff units are statistically different from background (Figure F-112 and Table F-18). Copper is retained as a COPC.

Cyanide was detected above the sediment BV (0.82 mg/kg) in one sample at a concentration of 1 mg/kg and was not detected but had DLs (0.52 mg/kg to 0.59 mg/kg) above the soil; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs (0.5 mg/kg for each) in two soil samples, five Qbt 3 samples, and four Qbt 1g samples. Cyanide is retained as a COPC.

Iron was detected above the Qbt 1g, Qct, Qbo BV (3700 mg/kg) in four samples with a maximum concentration of 5130 mg/kg. Iron is retained as a COPC.

Lead was detected above the soil; sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs (23.3 mg/kg, 19.7 mg/kg, 11.2 mg/kg, and 13.5 mg/kg) in four soil samples, seven sediment samples, five Qbt 3 samples, and two Qbt 1g samples with a maximum concentration of 44 mg/kg. The Gehan and quantile tests indicated site concentrations of lead in sediment and upper tuff units are statistically different from background (Figure F-113 and Table F-19, and Figure F-114 and Table F-18, respectively). Lead is retained as a COPC.

Manganese was detected above the Qbt 2,3,4 and Qbt 1g, Qct, Qbo BVs (482 mg/kg and 189 mg/kg) in one Qbt 3 sample and four Qbt 1g samples with a maximum concentration of 672 mg/kg. The Gehan and quantile tests indicated site concentrations of manganese in upper tuff units are not statistically different from background (Figure F-115 and Table F-18). There were too few samples to perform statistical tests for Qbt 1g. Manganese is retained as a COPC.

Mercury was detected above the soil, sediment, and Qbt 2,3,4 BVs (0.1 mg/kg for each) in four soil samples, eight sediment samples, and two Qbt 3 samples with a maximum concentration of 1.06 mg/kg. Mercury is retained as a COPC.

Nickel was detected above the sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs (9.38 mg/kg, 6.58 mg/kg, and 2 mg/kg) in one sediment sample, five Qbt 3 samples, and five Qbt 1g samples with a maximum concentration of 12.8 mg/kg. The quantile and slippage tests indicated site concentrations of nickel in upper tuff units are statistically different from background (Figure F-116 and Table F-18). Nickel is retained as a COPC.

Nitrate was detected in 17 samples with a maximum concentration of 8.8 mg/kg. Nitrate is naturally occurring, and the concentrations likely reflect naturally occurring levels. In addition, SWMU 01-003(a) is a debris disposal area and is not a source of nitrate. Nitrate is not a COPC.

Perchlorate was detected in one sample at a concentration of 0.0023 mg/kg. Perchlorate is retained as a COPC.

Selenium was not detected but had DLs (0.52 mg/kg to 0.58 mg/kg) above the sediment and Qbt 2,3,4 BVs (0.5 mg/kg for each) in nine sediment samples, three Qbt 3 samples, and four Qbt 1g samples. Selenium is retained as a COPC.

Silver was detected above the Qbt 2,3,4 BV (1 mg/kg) in 1 soil sample at a concentration of 1.4 mg/kg. The concentration was only 0.4 mg/kg above the BV and silver was detected below BV in 35 other samples. Silver is not a COPC.

Vanadium was detected above the Qbt 1g, Qct, Qbo BVs (4.59 mg/kg) in two samples with a maximum concentration of 5.5 mg/kg. There are too few Qbt 1g samples to perform statistical tests. Vanadium is retained as a COPC.

Zinc was detected above the soil; sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs (48.8 mg/kg, 60.2 mg/kg, 63.5mg/kg, and 40 mg/kg) in four soil samples, two sediment samples, one Qbt 3 sample, and three Qbt 1g samples with a maximum concentration of 91.9 mg/kg. The quantile and slippage tests indicated site concentrations of zinc in sediment are not statistically different from background (Figure F-117 and Table F-19). The Gehan and quantile tests indicated site concentrations of zinc in upper tuff units are not statistically different from background (Figure F-118 and Table F-18). There were too few soil and Qbt 1g samples to perform statistical tests. Zinc is retained as a COPC.

Organic Chemicals

A total of 88 samples (33 soil, 21 Qbt 3, 5 Qbt 1g, and 29 sediment) were analyzed for PCBs and 36 samples (7 soil, 11 Qbt 3, 5 Qbt 1g, and 13 sediment) were analyzed for SVOCs and VOCs. Tables 7.10-3 and 7.10-4 present the detected organic chemicals. Plate 27 shows the spatial distribution of detected organic chemicals.

Organic chemicals detected at SWMU 01-003(a) include acenaphthene; acetone; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; butylbenzylphthalate; chrysene; di-n-butylphthalate; dibenz(a,h)anthracene; dibenzofuran; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 4-isopropyltoluene; naphthalene; phenanthrene; and pyrene. The detected organic chemicals are retained as COPCs.

Radionuclides

A total of 36 samples (7 soil, 11 Qbt 3, 5 Qbt 1g, and 13 sediment) were analyzed for americium-241, gamma-emitting radionuclides, isotopic uranium, strontium-90, and tritium and 73 samples (9 soil, 26 Qbt 3, 5 Qbt 1g, and 33 sediment) were analyzed for isotopic plutonium. Table 7.10-5 presents the radionuclides detected or detected above BVs/FVs. Plate 28 shows the spatial distribution of radionuclides detected or detected above BVs/FVs.

Cesium-134 was detected in one soil sample at an activity of 0.043 pCi/g. Cesium-134 is retained as a COPC.

Plutonium-238 was detected above the sediment FV (0.006 pCi/g) in three samples with a maximum activity of 0.0442 pCi/g. Plutonium-238 is retained as a COPC.

Plutonium-239/240 was detected above the soil and sediment FVs (0.054 pCi/g and 0.068 pCi/g) in 2 soil samples and 31 sediment samples, detected below 1 ft bgs in 4 soil samples, and detected in 21 tuff samples with a maximum activity of 19.2 pCi/g. Plutonium-239/240 is retained as a COPC.

Tritium was detected in one sample at an activity of 0.4 pCi/g. Tritium is retained as a COPC.

Uranium-234 was detected above the Qbt 2,3,4 BV (1.98 pCi/g) in five samples with a maximum activity of 4.89 pCi/g. Uranium-234 is retained as a COPC.

Uranium-235/236 was detected above the Qbt 2,3,4 BV (0.09 pCi/g) in three samples with a maximum activity of 0.163 pCi/g. Uranium-235/236 is retained as a COPC.

Uranium-238 was detected above the Qbt 2,3,4 BV (1.93 pCi/g) in three samples with a maximum activity of 2.96 pCi/g. Uranium-238 is retained as a COPC.

7.10.4.4 Nature and Extent of Contamination

The nature and extent of inorganic, organic, and radionuclide COPCs at SWMU 01-003(a) are discussed below.

Inorganic Chemicals

Inorganic chemicals at SWMU 01-003(a) include arsenic, barium, calcium, chromium, copper, cyanide, iron, lead, manganese, mercury, nickel, perchlorate, selenium, vanadium, and zinc.

Arsenic was detected above the Qbt 2,3,4 and Qbt 1g, Qct, Qbo BVs in one Qbt 3 sample and five Qbt 1g samples with a maximum concentration of 2.8 mg/kg and was not detected but had a DL (0.95 mg/kg) above the Qbt 1g, Qct, Qbo BVs (0.56 mg/kg) in one sample. Concentrations did not change substantially with depth (0.01 mg/kg) at location 00-603914, decreased with depth at all other locations, and decreased downgradient (concentrations in shallow samples at locations 00-603914 and 00-603915 were 0.96 mg/kg and 1.3 mg/kg, respectively, and below the sediment BV [Appendix E, Pivot Tables]). The residential SSL is approximately 7.4 times the maximum concentration where vertical extent is not defined (0.95 mg/kg at location 00-603914), and the industrial SSL is approximately 38 times this concentration. The residential SSL is approximately 7.4 times the maximum DL and the industrial SSL is approximately 38 times the maximum DL. Lateral extent of arsenic is defined and further sampling for vertical extent is not warranted.

Barium was detected above the sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs in one sediment sample, three Qbt 3 samples, and four Qbt 1g samples with a maximum concentration of 134 mg/kg. Concentrations increased with depth at location 00-603904, decreased with depth at all other locations, and decreased downgradient (the concentration in the shallow sample at location 00-603915 was 38.7 mg/kg and below the sediment BV [Appendix E, Pivot Tables]). The residential SSL is approximately 116 times the maximum concentration. Lateral extent of barium is defined and further sampling for vertical extent is not warranted.

Calcium was detected above the Qbt 2,3,4 and Qbt 1g, Qct, Qbo BVs in two Qbt 3 samples and two Qbt 1g samples with a maximum concentration of 15,100 mg/kg. Concentrations increased with depth at location 00-603913, decreased with depth at all other locations, and decreased downgradient (concentrations in shallow samples at locations 00-603903, 00-603914, and 00-603918 were 3850 mg/kg, 2100 mg/kg and 5900 mg/kg, respectively, and below the soil and sediment BVs [Appendix E, Pivot Tables]). The residential essential nutrient SSL is approximately 861 times the maximum concentration. Lateral extent of calcium is defined and further sampling for vertical extent is not warranted.

Chromium was detected above the sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs in 3 sediment samples, 17 Qbt 3 samples, and 5 Qbt 1g samples with a maximum concentration of 32.2 mg/kg. Concentrations increased with depth at locations 00-603903, 00-603905, 00-603909, 00-603911, 00-603912, 00-603914, 00-603915, and 00-603916; concentrations decreased with depth at all other locations; and concentrations decreased downgradient. As described in section 4.2, SWMU 01-003(a) is not a potential source of hexavalent chromium and use of the SSL for trivalent chromium to determine whether additional sampling is warranted is appropriate. The residential SSL for trivalent chromium

(117,000 mg/kg) is approximately 3630 times the maximum concentration. Lateral extent of chromium is defined and further sampling for vertical extent is not warranted.

Copper was detected above the soil; sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs in one soil sample, one sediment sample, four Qbt 3 samples, and three Qbt 1g samples with a maximum concentration of 22.3 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient (concentrations in shallow samples at locations 00-603914 and 00-603915 were 7.1 mg/kg and 7.9 mg/kg, respectively, and below the sediment BV [Appendix E, Pivot Tables]). The lateral and vertical extent of copper are defined.

Cyanide was detected above the sediment BV in one sample at a concentration of 1 mg/kg and was not detected but had DLs (0.52 mg/kg to 0.59 mg/kg) above the soil; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs in two soil samples, five Qbt 3 samples, and four Qbt 1g samples. Only one depth was sampled at location 00-603905 and concentrations decreased downgradient. The residential SSL is approximately 11 times the maximum concentration, and the industrial SSL is approximately 68 times the maximum concentration. The residential SSL is approximately 19 times the maximum DL, and the industrial SSL is approximately 106 times the maximum DL. Further sampling for extent of cyanide is not warranted.

Iron was detected above the Qbt 1g, Qct, Qbo BV in four samples with a maximum concentration of 5130 mg/kg. Concentrations increased with depth at location 00-603914, did not change substantially with depth (110 mg/kg) at location 00-603916, decreased with depth at all other locations, and decreased downgradient (the concentration in the shallow sample at location 00-603916 was 4990 mg/kg and below the sediment BV [Appendix E, Pivot Tables]). The residential SSL is approximately 11 times the maximum concentration, and the industrial SSL is approximately 177 times the maximum concentration. Lateral extent of iron is defined and further sampling for vertical extent is not warranted.

Lead was detected above the soil; sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs in four soil samples, seven sediment samples, five Qbt 3 samples, and two Qbt 1g samples with a maximum concentration of 44 mg/kg. Concentrations increased with depth at location 00-603904, did not change substantially with depth (1 mg/kg) at location 00-603914, decreased with depth at all other locations, and decreased downgradient (the concentration in the shallow sample at location 00-603914 was 17.5 mg/kg and below the sediment BV [Appendix E, Pivot Tables]). The residential SSL is approximately 15 times and the industrial SSL is approximately 31 times the maximum concentration where vertical extent is not defined (26.1 mg/kg at location 00-603904). Lateral extent of lead is defined and further sampling for vertical extent is not warranted.

Manganese was detected above the Qbt 2,3,4 and Qbt 1g, Qct, Qbo BVs in one Qbt 3 sample and four Qbt 1g samples with a maximum concentration of 672 mg/kg. Concentrations increased with depth at locations 00-603915 and 00-603916, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 16 times the maximum concentration, and the industrial SSL is approximately 238 times the maximum concentration. Lateral extent of manganese is defined and further sampling for vertical extent is not warranted.

Mercury was detected above the soil, sediment, and Qbt 2,3,4 BVs in four soil samples, eight sediment samples, and two Qbt 3 samples with a maximum concentration of 1.06 mg/kg. Concentrations increased with depth at location 00-603918, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 22 times the maximum concentration, and the industrial SSL is approximately 367 times the maximum concentration. Lateral extent of mercury is defined and further sampling for vertical extent is not warranted.

Nickel was detected above the sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs in one sediment sample, five Qbt 3 samples, and five Qbt 1g samples with a maximum concentration of 12.8 mg/kg. Concentrations increased with depth at locations 00-603909, 00-603914, 00-603915, and 00-603917; did not change with depth at location 00-603916; decreased with depth at all other locations; and decreased downgradient (the concentration in the shallow sample at location 00-603916 was 6 mg/kg and below the sediment BV [Appendix E, Pivot Tables]). The residential SSL is approximately 122 times the maximum concentration. Lateral extent of nickel is defined and further sampling for vertical extent is not warranted.

Perchlorate was detected in one sample at a concentration of 0.0023 mg/kg. Concentrations decreased with depth and decreased downgradient. Lateral and vertical extent of perchlorate are defined.

Selenium was not detected but had DLs (0.52 mg/kg to 0.58 mg/kg) above the sediment and Qbt 2,3,4 BVs in nine sediment samples, three Qbt 3 samples, and four Qbt 1g samples. The residential SSL is approximately 674 times the maximum DL. Further sampling for extent of selenium is not warranted.

Vanadium was detected above the Qbt 1g, Qct, Qbo BV in two samples with a maximum concentration of 5.5 mg/kg. Concentrations did not change substantially with depth (0.1 mg/kg) at location 00-603914, decreased with depth at location 00-603916, and decreased downgradient (concentrations in shallow samples at locations 00-603914 and 00-603916 were 5.3 mg/kg and 8 mg/kg, respectively, and below the sediment BV [Appendix E, Pivot Tables]). The residential SSL is approximately 72 times the maximum concentration. Lateral extent of vanadium is defined and further sampling for vertical extent is not warranted.

Zinc was detected above the soil; sediment; Qbt 2,3,4; and Qbt 1g, Qct, Qbo BVs in four soil samples, two sediment samples, one Qbt 3 sample, and three Qbt 1g samples with a maximum concentration of 91.9 mg/kg. Concentrations did not change substantially with depth (3.6 mg/kg or less) at locations 00-603916 and 00-603918, decreased with depth at all other locations, and decreased downgradient (the concentration in the shallow sample at location 00-603916 was 45.3 mg/kg and below the sediment BV [Appendix E, Pivot Tables]). The residential SSL is approximately 256 times the maximum concentration. Lateral extent of zinc is defined and further sampling for vertical extent is not warranted.

Organic Chemicals

Organic COPCs at SWMU 01-003(a) include acenaphthene; acetone; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; butylbenzylphthalate; chrysene; di-n-butylphthalate; dibenz(a,h)anthracene; dibenzofuran; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 4-isopropyltoluene; naphthalene; phenanthrene; and pyrene.

The PAHs acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene were detected in from 1 to 20 samples. PAHs were detected most frequently in surface samples and PAHs were not detected in deep samples at locations where 3 or more depth intervals were sampled. The highest concentrations of PAHs were detected in surface samples at locations 00-603913, 00-603914, and 00-603915. The residential SSLs for PAHs were all greater than 10 times the maximum concentrations except for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene. The residential SSL for benzo(a)anthracene is approximately 5.6 times and the industrial SSL is approximately 21 times the maximum concentration where vertical extent is not defined (1.1 mg/kg) at location 00-603914. The residential SSL for benzo(a)pyrene is slightly less than and the industrial SSL is approximately 18 times the maximum concentration where vertical extent is not defined (1.3 mg/kg) at location 00-603914. The residential SSL for benzo(b)fluoranthene is slightly less than and the industrial SSL is approximately 17 times the maximum concentration where vertical extent is not defined (1.9 mg/kg) at location 00-603913. The residential SSL for benzo(k)fluoranthene is approximately 11 times and the industrial SSL is approximately 231 times the maximum concentration where vertical extent is not defined (1.4 mg/kg) at location 00-603914. Concentrations of dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene decrease with depth at all locations. PAH concentrations decrease downgradient. The lateral extent of PAHs is defined and further sampling for vertical extent is not warranted.

Acetone was detected in four samples with a maximum concentration of 0.078 mg/kg. Concentrations increased with depth at locations 00-603906 and 00-603919, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 850,000 times the maximum concentration. Lateral extent of acetone is defined and further sampling for vertical extent is not warranted.

Aroclor-1254 was detected in 81 samples with a maximum concentration of 16.3 mg/kg. Concentrations of Aroclor-1254 decreased with depth at most locations, but concentrations increased with depth or did not change substantially with depth at approximately one-third of the locations. Concentrations decreased downgradient. Aroclor-1254 was not detected above the recreational SSL in the interval 0 ft to 1 ft bgs. Further sampling for extent of Aroclor-1254 is not warranted.

Aroclor-1260 was detected in 52 samples with a maximum concentration of 4.66 mg/kg. Concentrations of Aroclor-1260 decreased with depth at approximately one-half the locations. Concentrations decreased downgradient. Aroclor-1260 was not detected above the recreational SSL in the interval 0 ft to 1 ft bgs. Further sampling for extent of Aroclor-1260 is not warranted.

Benzoic acid was detected in one sample at a concentration of 1.6 mg/kg. Concentrations decreased with depth and decreased downgradient. Lateral and vertical extent of benzoic acid are defined.

Bis(2-ethylhexyl)phthalate was detected in four samples with a maximum concentration of 0.38 mg/kg. Concentrations increased with depth at location 00-603914, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 1000 times the maximum concentration. Lateral extent of bis(2-ethylhexyl)phthalate is defined and further sampling for vertical extent is not warranted.

Butylbenzylphthalate was detected in one sample at a concentration of 0.036 mg/kg. Concentrations decreased with depth and decreased downgradient. Lateral and vertical extent of butylbenzylphthalate are defined.

Di-n-butylphthalate was detected in one sample at a concentration of 0.053 mg/kg. Concentrations increased with depth at location 00-603912 and decreased downgradient. The residential SSL is approximately 116,000 times the maximum concentration. Lateral extent of di-n-butylphthalate is defined and further sampling for vertical extent is not warranted.

Dibenzofuran was detected in six samples with a maximum concentration of 0.16 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of dibenzofuran are defined.

Isopropyltoluene[4-] was detected in one sample at a concentration of 0.015 mg/kg. Concentrations increased with depth at location 00-603913 and decreased downgradient. The residential SSL is approximately 157,000 times the maximum concentration. Lateral extent of 4-isopropyltoluene is defined and further sampling for vertical extent is not warranted.

Radionuclides

Radionuclide COPCs at SWMU 01-003(a) include cesium-134, plutonim-238, plutonium-239/240, tritium, uranium-234, uranium-235/236, and uranium-238.

Cesium-134 was detected in one soil sample at an activity of 0.043 pCi/g. Activities decreased with depth and decreased downgradient. Lateral and vertical extent of cesium-134 are defined.

Plutonium-238 was detected above the sediment FV in three samples with a maximum activity of 0.0442 pCi/g. Activities decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of plutonium-238 are defined.

Plutonium-239/240 was detected above the soil and sediment FVs in 2 soil samples and 31 sediment samples, detected below 1 ft bgs in 4 soil samples, and detected in 21 tuff samples with a maximum activity of 19.2 pCi/g. Activities increased with depth at locations 00-603912, 00-603913, and 00-603919; did not change substantially with depth (0.1 pCi/g) at location 01-616799; and decreased downgradient. The residential SAL is approximately 29 times the maximum activity where vertical extent is not defined (2.76 pCi/g at location 00-603912). Lateral extent of plutonium-239/240 is defined and further sampling for vertical extent is not warranted.

Tritium was detected in one sample at an activity of 0.4 pCi/g. Activities increased with depth and decreased downgradient. The residential SAL is approximately 4250 times the maximum activity. Lateral extent of tritium is defined and further sampling for vertical extent is not warranted.

Uranium-234 was detected above the Qbt 2,3,4 BV in five samples with a maximum activity of 4.89 pCi/g. Activities increased with depth at all locations and decreased downgradient. The residential SAL is approximately 59 times the maximum activity. Lateral extent of uranium-234 is defined and further sampling for vertical extent is not warranted.

Uranium-235/236 was detected above the Qbt 2,3,4 BV in three samples with a maximum activity of 0.163 pCi/g. Activities increased with depth at all locations and decreased downgradient. The residential SAL is approximately 258 times the maximum activity. Lateral extent of uranium-235/236 is defined and further sampling for vertical extent is not warranted.

Uranium-238 was detected above the Qbt 2,3,4 BV in three samples with a maximum activity of 2.96 pCi/g. Activities increased with depth at all locations and decreased downgradient. The residential SAL is approximately 51 times the maximum activity. Lateral extent of uranium-238 is defined and further sampling for vertical extent is not warranted.

Summary of Nature and Extent

The lateral and vertical extent of inorganic, organic, and radionuclide COPCs is defined or no further sampling for extent is warranted at SWMU 01-003(a).

7.10.5 Summary of Human Health Risk Screening

Industrial Scenario

The total excess cancer risk for the industrial scenario is 9×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.09 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 1, which is equivalent to the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.5 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Residential Scenario

The total excess cancer risk for the residential scenario is 9×10^{-5}, which is greater than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 3, which is greater than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 1 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Based on the risk-screening assessment results, no potential unacceptable risks or doses exist for the industrial and construction worker scenarios at SWMU 01-003(a) and no potential unacceptable dose exists for the residential scenario. Potential unacceptable carcinogenic and noncarcinogenic risks exist for the residential scenario at SWMU 01-003(a).

7.10.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for SWMU 01-003(a).

7.11 AOC 01-003(b2), Surface Disposal Site

7.11.1 Site History and Operational History

AOC 01-003(b2) was originally part of AOC 01-003(b), which was split into AOCs 01-003(b1) and 01-003(b2) in a request for modification of the Laboratory's Hazardous Waste Facility Permit approved by NMED on November 9, 2016 (LANL 2016, 601921). The Laboratory proposed to split AOC 01-003(b) into two newly designated SWMUs because each component of the AOC is located on property owned by different entities.

AOC 01-003(b2) is the primary portion of a suspected surface disposal site [former AOC 01-003(b)], reported to be located below the north rim of Los Alamos Canyon approximately 450 ft east of Bailey Bridge Canyon (Plate 29). AOC 01-003(b2) includes all of former AOC 01-003(b) except the northeast area now designated as AOC 01-003(b1) located within the southwest corner of the former LA Inn property. Evidence of the reported disposal area was not observed during several site visits conducted between the late 1980s and late 1990s (LANL 1990, 007511, p. 1-003). Several pieces of metal piping were found, a few objects were found scattered over more than an acre on the hillside, and the portable beta/gamma instruments used to screen each object registered only background radiation. Currently, the location of the area now designated as AOC 01-003(b2) is undeveloped.

7.11.2 Relationship to Other SWMUs

Upgradient SWMUs 01-006(b), 1-006(g), and 01-007(a) may have contributed contamination to AOC 01-003(b2).

7.11.3 Summary of Previous Investigations

2008 Investigation Activities

Ten samples were collected from five locations within the area now designated as AOC 01-003(b2). Results from the sampling activities in 2008 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination at the site.

7.11.4 Site Contamination

7.11.4.1 Soil, Rock, and Sediment Sampling

As part of the Phase II investigation activities at AOC 01-003(b), a total of 110 samples were collected from 29 locations and analyzed for inorganic chemicals and radionuclides to define extent of contamination and verify cleanup goals.

2016 Investigation Activities

Additional sampling in 2016 was conducted to evaluate if arsenic contamination within and around the site was associated with arsenic leaching out of pressure-treated lumber from private property. Subsequently, pressure-treated lumber samples and additional soil samples were collected in June and August 2016; the samples were submitted for analysis of arsenic. Analytical results indicated high concentrations of arsenic at several locations where pressure-treated lumber was sampled. Based on these results, more comprehensive “paired” sampling of pressure-treated lumber and soil was conducted at AOC 01-003(b2) and directly north of AOC 01-003(b2) to further evaluate potential correlation between arsenic concentrations detected in the pressure-treated lumber and arsenic concentrations in adjacent soil. The sampling data indicated arsenic contamination in soil is not likely to be legacy site–related and is most likely the result of arsenic leaching out of aged pressure-treated lumber.

7.11.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

7.11.4.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at AOC 01-003(b2) consist of results from 120 samples collected from 32 locations from 2009 to 2016. The 120 samples include 32 soil, 84 Qbt 3, and 4 sediment samples. Table 7.11-1 lists the samples collected and the analyses requested for each sample. Plate 29 shows the sampling locations.

Inorganic Chemicals

A total of 12 samples (1 soil, 4 sediment, and 7 tuff) were analyzed for TAL metals and perchlorate, 10 samples (1 soil, 4 sediment, and 5 tuff) were analyzed for nitrate and cyanide, and 108 samples (31 soil and 77 tuff) were analyzed for arsenic. Table 7.11-2 presents the inorganic chemicals detected or detected above BVs. Plate 30 shows the spatial distribution of inorganic chemicals detected or detected above BVs.

Aluminum was detected above the Qbt 2,3,4 BV (7340 mg/kg) in two samples with a maximum concentration of 10,900 mg/kg. Aluminum is retained as a COPC.

Antimony was not detected but had DLs (0.75 mg/kg to 2.1 mg/kg) above the sediment and Qbt 2,3,4 BVs (0.83 mg/kg and 0.5 mg/kg) in one sediment sample and one tuff sample. Antimony is retained as a COPC.

Arsenic was detected above the soil and Qbt 2,3,4 BVs (8.17 mg/kg and 2.79 mg/kg) in 10 soil samples and 53 tuff samples with a maximum concentration of 69.7 mg/kg. The highest levels of arsenic were detected downgradient of a retaining wall constructed of pressure-treated lumber. Samples of the pressure-treated wood were collected and analyzed for arsenic. Arsenic was detected in all samples with a maximum concentration of 4390 mg/kg. The pressure-treated wood appears to be the source of the arsenic contamination. Arsenic is not site related and is not a COPC.

Barium was detected above the Qbt 2,3,4 (46 mg/kg) in three samples with a maximum concentration of 228 mg/kg. Barium is retained as a COPC.

Beryllium was detected above the sediment and Qbt 2,3,4 BVs (1.31 mg/kg and 1.21 mg/kg) in one sediment sample and two tuff samples with a maximum concentration of 2.11 mg/kg. Beryllium is retained as a COPC.

Calcium was detected above the Qbt 2,3,4 BV (2200 mg/kg) in one sample at a concentration of 2630 mg/kg. Calcium is retained as a COPC.

Chromium was detected above the Qbt 2,3,4 BV (7.14 mg/kg) in two samples with a maximum concentration of 14.5 mg/kg. Chromium is retained as a COPC.

Copper was detected above the Qbt 2,3,4 BV (4.66 mg/kg) in two samples with a maximum concentration of 13.4 mg/kg. Copper is retained as a COPC.

Lead was detected above the soil and Qbt 2,3,4 BVs (22.3 mg/kg and 11.2 mg/kg) in one soil sample and three tuff samples with a maximum concentration of 73.1 mg/kg. Lead is retained as a COPC.

Magnesium was detected above the Qbt 2,3,4 BV (1690 mg/kg) in one sample at a concentration of 2090 mg/kg. Magnesium is retained as a COPC.

Nickel was detected above the Qbt 2,3,4 BV (6.58 mg/kg) in one sample at a concentration of 9.7 mg/kg. Nickel is retained as a COPC.

Nitrate was detected in nine samples with a maximum concentration of 2.4 mg/kg. Nitrate is naturally occurring, and the concentrations likely reflect naturally occurring levels. In addition, AOC 01-003(b2) is a disposal area and is not a source of nitrate. Nitrate is not a COPC.

Perchlorate was detected in four samples with a maximum concentration of 0.0432 mg/kg. Perchlorate is retained as a COPC.

Selenium was detected above the sediment and Qbt 2,3,4 BVs (0.3 mg/kg for both) in one sediment sample and four tuff samples with a maximum concentration of 1.5 mg/kg and was not detected but had a DL (1.04 mg/kg) above the Qbt 2,3,4 BV in one sample. Selenium is retained as a COPC.

Thallium was detected above the Qbt 2,3,4 BV (1.1 mg/kg) in 1 sample at a concentration of 1.8 mg/kg. The concentration was only 0.7 mg/kg above the BV and thallium was not detected or detected above BV in 51 other samples (detected below BV in 35 samples). Thallium is not a COPC.

Organic Chemicals

Samples at AOC 01-003(b2) were not analyzed for organic chemicals.

Radionuclides

A total of 10 samples (1 soil, 5 tuff, and 4 sediment) were analyzed for americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Table 7.11-3 presents the radionuclides detected or detected above BVs/FVs. Figure 7.11-1 shows the spatial distribution of radionuclides detected or detected above BVs/FVs.

Plutonium-238 was detected in one tuff sample at an activity of 0.178 pCi/g. Plutonium-238 is retained as a COPC.

Plutonium-239/240 was detected above the soil and sediment FVs (0.054 pCi/g and 0.068 pCi/g) in one soil sample and four sediment samples and detected in one tuff sample with a maximum activity of 2.11 pCi/g. Plutonium-239/240 is retained as a COPC.

7.11.4.4 Nature and Extent of Contamination

The nature and extent of inorganic and radionuclide COPCs at AOC 01-003(b2) are discussed below.

Inorganic Chemicals

Inorganic COPCs at AOC 01-003(b2) include aluminum, antimony, barium, beryllium, calcium, chromium, copper, lead, magnesium, nickel, perchlorate, and selenium.

Aluminum was detected above the Qbt 2,3,4 BV in two samples with a maximum concentration of 10,900 mg/kg. Concentrations increased with depth at location 00-604023 and decreased downgradient. The residential SSL is approximately 7.2 times the maximum concentration, and the industrial SSL is approximately 118 times the maximum concentration. Lateral extent of aluminum is defined and further sampling for vertical extent is not warranted.

Antimony was not detected but had DLs (0.75 mg/kg to 2.1 mg/kg) above the sediment and Qbt 2,3,4 BVs in one sediment sample and one tuff sample. The residential SSL is approximately 15 times the maximum DL, and the industrial SSL is approximately 247 times the maximum DL. Further sampling for extent of antimony is not warranted.

Barium was detected above the Qbt 2,3,4 (46 mg/kg) in three samples with a maximum concentration of 228 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of barium are defined.

Beryllium was detected above the sediment and Qbt 2,3,4 BVs in one sediment sample and two tuff samples with a maximum concentration of 2.11 mg/kg. Concentrations increased with depth at location 00-604023, decreased with depth at location 00-604024, and decreased downgradient. The residential SSL is approximately 74 times the maximum concentration. Lateral extent of beryllium is defined and further sampling for vertical extent is not warranted.

Calcium was detected above the Qbt 2,3,4 BV in one sample at a concentration of 2630 mg/kg. Concentrations increased with depth at location 00-604023 and decreased downgradient. The NMED residential essential nutrient SSL is approximately 49,400 times the maximum concentration. Lateral extent of calcium is defined and further sampling for vertical extent is not warranted.

Chromium was detected above the Qbt 2,3,4 BV in two samples with a maximum concentration of 14.5 mg/kg. Concentrations decreased with depth at location 00-604023 and decreased downgradient. Lateral and vertical extent of chromium are defined.

Copper was detected above the Qbt 2,3,4 BV in two samples with a maximum concentration of 13.4 mg/kg. Concentrations increased with depth at location 00-604023 and decreased downgradient. The residential SSL is approximately 234 times the maximum concentration. Lateral extent of copper is defined and further sampling for vertical extent is not warranted.

Lead was detected above the soil and Qbt 2,3,4 BVs in one soil sample and three tuff samples with a maximum concentration of 73.1 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of lead are defined.

Magnesium was detected above the Qbt 2,3,4 BV in one sample at a concentration of 2090 mg/kg. Concentrations increased with depth at location 00-604023 and decreased downgradient. The NMED residential essential nutrient SSL is approximately 10,000 times the maximum concentration. Lateral extent of magnesium is defined and further sampling for vertical extent is not warranted.

Nickel was detected above the Qbt 2,3,4 BV in one sample at a concentration of 9.7 mg/kg. Concentrations decreased with depth and decreased downgradient. Lateral and vertical extent of nickel are defined.

Perchlorate was detected in four samples with a maximum concentration of 0.0432 mg/kg. Concentrations increased with depth at locations 00-604023 and 00-604024 and decreased downgradient. The residential SSL is approximately 1270 times the maximum concentration. Lateral extent of perchlorate is defined and further sampling for vertical extent is not warranted.

Selenium was detected above the sediment and Qbt 2,3,4 BVs in one sediment sample and four tuff samples with a maximum concentration of 1.5 mg/kg and was not detected but had a DL (1.04 mg/kg) above the Qbt 2,3,4 BV in one sample. Concentrations increased with depth at location 00-604023, decreased with depth at location 00-604024, and decreased downgradient. The residential SSL is approximately 261 times the maximum concentration and 376 times the maximum DL. Further sampling for extent of selenium is not warranted.

Radionuclides

Radionuclide COPCs at AOC 01-003(b2) include plutonium-238 and plutonium 239/240.

Plutonium-238 was detected in one tuff sample at an activity of 0.178 pCi/g. Activities increased with depth at location 00-604026 and decreased downgradient. The residential SAL is approximately 472 times the maximum activity. Lateral extent of plutonium-238 is defined and further sampling for vertical extent is not warranted.

Plutonium-239/240 was detected above the soil and sediment FVs in one soil sample and four sediment samples and detected in one tuff sample with a maximum activity of 2.11 pCi/g. Activities decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of plutonium-239/240 are defined.

Summary of Nature and Extent

The lateral and vertical extent of inorganic and radionuclide COPCs is defined or no further sampling for extent is warranted at AOC 01-003(b2).

7.11.5 Summary of Human Health Risk Screening

Industrial Scenario

The total excess cancer risk for the industrial scenario is 5×10^{-11}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.04, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.04 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 2×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.2 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Residential Scenario

The total excess cancer risk for the residential scenario is 7×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.4 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Based on the risk-screening assessment results, no potential unacceptable risks or doses exist for the industrial, construction worker, and residential scenarios at AOC 01-003(b2).

7.11.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for AOC 01-003(b2).

7.12 SWMU 01-003(d), Surface Disposal Site

7.12.1 Site History and Operational History

SWMU 01-003(d), also known as Can Dump Site, was an area used for the surface disposal of empty solvent and paint cans during Zia Company operations (paint, carpentry, furniture repair, and sign shops) at former TA-01 (Plate 31). The former Zia Company operated several warehouses on the mesa top between Trinity Drive and Los Alamos Canyon from the early 1940s to the late 1950s in support of former TA-01 operations. The Zia Company warehouses formerly located in this area were used as paint, carpentry, furniture repair, and sign shops and were likely the source of the waste at the former Can Dump Site. No radioactive materials were handled in these warehouses because they were outside the TA-01 security fence. SWMU 01-003(d) is located on the undeveloped hillside of Los Alamos Canyon south of the current CenturyLink communications building and Trinity Drive (LANL 1990, 007511). Currently, the area is located on undeveloped DOE land.

7.12.2 Relationship to Other SWMUs

There are no upgradient SWMUs or AOCs that may have contributed contamination to SWMU 01-003(d).

7.12.3 Summary of Previous Investigations

1992 Investigation Activities

Three samples were collected from three locations within the hillside dump site in 1992. The 1992 investigation results are not decision-level data.

1995 VCA Activities

All visible paint cans and associated debris were removed during the 1995 VCA; confirmation samples were not collected. Approximately 12 yd^3 of empty cans was taken to the Los Alamos County landfill for disposal, and approximately 8500 lb of hazardous waste (mixture of soil and dried paint) was sent off-site for disposal. Some of the material on the upper slope of the canyon was considered unsafe to remove and was covered with erosion-control matting to minimize migration.

2008 Investigation Activities

Twelve samples were collected from six locations within and downgradient of the site in 2008. Results from the sampling activities in 2008 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination at the site.

7.12.4 Site Contamination

7.12.4.1 Soil, Rock, and Sediment Sampling

As part of the Phase II investigation activities at SWMU 01-003(d), a total of 37 samples were collected from 14 locations and analyzed for inorganic chemicals to define extent of contamination. The sampling data were used to determine the area of antimony-contaminated soil that was remediated in 2017.

2017 Investigation Activities

Approximately 65 yd^3 of contaminated soil containing antimony was removed from SWMU 01-003(d), packaged in waste bags, and shipped off-site to a licensed disposal facility for final disposition in 2017. Following soil removal, the excavated area was restored with approximately 61 yd^3 of clean fill, topsoil, and other materials, per applicable regulatory requirements. Six confirmation samples were collected from three locations.

7.12.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

7.12.4.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at SWMU 01-003(d) consist of results from 48 samples collected from 19 locations from 2008 to 2017. The 48 samples include 15 soil and 33 tuff samples. Table 7.12-1 lists the samples collected and the analyses requested for each sample. Plate 31 shows the sampling locations.

Inorganic Chemicals

A total of 32 samples (8 soil and 24 tuff) were analyzed for TAL metals; 16 samples (4 soil and 12 tuff) were analyzed for nitrate, perchlorate, and cyanide; and 16 samples (7 soil and 9 tuff) were analyzed for antimony. Table 7.12-2 presents the inorganic chemicals detected or detected above BVs. Plate 32 shows the spatial distribution of inorganic chemicals detected or detected above BVs.

Antimony was detected above the soil and Qbt 2,3,4 BVs (0.83 mg/kg and 0.5 mg/kg) in 6 soil samples and 15 tuff samples with a maximum concentration of 497 mg/kg and was not detected but had DLs (0.938 to 3.44 mg/kg) above BVs in 4 soil samples and 10 tuff samples. Antimony is retained as a COPC.

Barium was detected above the Qbt 2,3,4 BV (46 mg/kg) in six samples with a maximum concentration of 1130 mg/kg. Barium is retained as a COPC.

Beryllium was detected above the Qbt 2,3,4 BV (1.21 mg/kg) in 1 sample at a concentration of 1.6 mg/kg. The concentration was only 0.39 mg/kg above the BV and beryllium was detected below BV in 10 other samples. Beryllium is not a COPC.

Cadmium was detected above the Qbt 2,3,4 BV (0.4 mg/kg) in three samples with a maximum concentration of 9.84 mg/kg. Cadmium is retained as a COPC.

Calcium was detected above the Qbt 2,3,4 BV (2200 mg/kg) in one sample at a concentration of 2880 mg/kg. Calcium is retained as a COPC.

Chromium was detected above the Qbt 2,3,4 BV (7.14 mg/kg) in three samples with a maximum concentration of 38.8 mg/kg. Chromium is retained as a COPC.

Cyanide was not detected above the soil and Qbt 2.3.4 BVs (0.5 mg/kg for both) but had a DL (0.51 mg/kg) above BV in three soil samples and two tuff samples. The DL was only 0.01 mg/kg above the BV and cyanide was not detected in six other samples. Cyanide is not a COPC.

Lead was detected above the soil and Qbt 2,3,4 BVs (22.3 mg/kg and 11.2 mg/kg) in two soil samples and seven tuff samples with a maximum concentration of 482 mg/kg. The Gehan and quantile tests indicated site concentrations of lead in tuff are not statistically different from background (Figure F-119 and Table F-20). There were too few soil samples to perform statistical tests. Lead is retained as a COPC.

Nitrate was detected in eight samples with a maximum concentration of 39 mg/kg. Nitrate is naturally occurring, but the maximum concentration likely exceeds naturally occurring levels. Nitrate is retained as a COPC.

Perchlorate was detected in three samples with a maximum concentration of 0.0043 mg/kg. Perchlorate is retained as a COPC.

Selenium was detected above the Qbt 2,3,4 BV (0.5 mg/kg) in five samples with a maximum concentration of 0.62 mg/kg and was not detected but had DLs (0.968 to 0.988 mg/kg) above the BV in four samples. Selenium is retained as a COPC.

Zinc was detected above the soil BV (48.8 mg/kg) in four samples with a maximum concentration of 100 mg/kg. Zinc is retained as a COPC.

Organic Chemicals

A total of 12 samples (4 soil and 8 sediment) were analyzed for SVOCs, VOCs, and PCBs. Table 7.12-3 presents the detected organic chemicals. Figure 7.12-1 shows the spatial distribution of detected organic chemicals.

Organic chemicals detected at SWMU 01-003(d) include Aroclor-1260, bis(2-ethylhexyl)phthalate, and toluene. The detected organic chemicals are retained as COPCs.

Radionuclides

A total of 12 samples (4 soil and 8 tuff) were analyzed for americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Table 7.12-4 presents the radionuclides detected or detected above BVs/FVs. Figure 7.12-2 shows the spatial distribution of radionuclides detected or detected above BVs/FVs.

Plutonium-239/240 was detected above the soil FV (0.054 pCi/g) in three soil samples, detected below 1 ft bgs in one soil sample, and detected in one tuff sample with a maximum activity of 0.59 pCi/g. Plutonium-239/240 is retained as a COPC.

7.12.4.4 Nature and Extent of Contamination

The nature and extent of inorganic, organic, and radionuclide COPCs at SWMU 01-003(d) are discussed below.

Inorganic Chemicals

Inorganic COPCs at SWMU 01-003(d) include antimony, barium, cadmium, calcium, chromium, lead, nitrate, perchlorate, selenium, and zinc.

Antimony was detected above the soil and Qbt 2,3,4 BVs in 6 soil samples and 15 tuff samples with a maximum concentration of 497 mg/kg and was not detected but had DLs (0.938 to 3.44 mg/kg) above BVs in 4 soil samples and 10 tuff samples. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of antimony are defined.

Barium was detected above the Qbt 2,3,4 BV in six samples with a maximum concentration of 1130 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of barium are defined.

Cadmium was detected above the Qbt 2,3,4 BV in three samples with a maximum concentration of 9.84 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of cadmium are defined.

Calcium was detected above the Qbt 2,3,4 BV in one sample at a concentration of 2880 mg/kg. The concentration increased with depth and decreased downgradient. The NMED residential essential nutrient SSL is approximately 4500 times the maximum concentration. The lateral extent of calcium is defined and further sampling for vertical extent is not warranted.

Chromium was detected above the Qbt 2,3,4 BV in three samples with a maximum concentration of 38.8 mg/kg. Concentrations increased with depth at location 00-604031, decreased with depth at all other locations, and decreased downgradient. As described in section 4.2, SWMU 01-003(d) is not a potential source of hexavalent chromium and use of the SSL for trivalent chromium to determine whether additional sampling is warranted is appropriate. The residential SSL for trivalent chromium (117,000 mg/kg) is approximately 3020 times the maximum concentration. Lateral extent of chromium is defined and further sampling for vertical extent is not warranted.

Lead was detected above the soil and Qbt 2,3,4 BVs in two soil samples and seven tuff samples with a maximum concentration of 482 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of lead are defined.

Nitrate was detected in eight samples with a maximum concentration of 39 mg/kg. Concentrations did not change substantially with depth (0.1 mg/kg) at location 00-604027, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 3200 times the maximum concentration. Lateral extent of nitrate is defined and further sampling for vertical extent is not warranted.

Perchlorate was detected in three samples with a maximum concentration of 0.0043 mg/kg. Concentrations increased with depth at location 00-604030, decreased with depth at all other locations, and did not change substantially downgradient (0.0012 mg/kg). The residential SSL is approximately 12,700 times the maximum concentration. Further sampling for extent of perchlorate is not warranted.

Selenium was detected above the Qbt 2,3,4 BV in five samples with a maximum concentration of 0.62 mg/kg and was not detected but had DLs (0.968 to 0.988 mg/kg) above the BV in four samples. Concentrations did not change substantially with depth (0.34 mg/kg or less) at locations 00-604030 and 00-604031, decreased with depth at all other locations, and decreased downgradient (concentrations in shallow samples at locations 00-604030 and 00-604031 were 0.34 mg/kg and 0.27 mg/kg, respectively, and below the soil BV [Appendix E, Pivot Tables]). The residential SSL is approximately 630 times the maximum concentration and 396 times the maximum DL. Lateral extent of selenium is defined and further sampling for vertical extent is not warranted.

Zinc was detected above the soil BV in four samples with a maximum concentration of 100 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of zinc are defined.

Organic Chemicals

Organic COPCs at SWMU 01-003(d) include Aroclor-1260, bis(2-ethylhexyl)phthalate, and toluene.

Aroclor-1260 was detected in one sample at a concentration of 0.043 mg/kg. Concentrations decreased with depth and decreased downgradient. Lateral and vertical extent of Aroclor-1260 are defined.

Bis(2-ethylhexyl)phthalate was detected in one sample at a concentration of 0.054 mg/kg. Concentrations increased with depth and decreased downgradient. The residential SSL is approximately 7040 times the maximum concentration. Lateral extent of bis(2-ethylhexyl)phthalate is defined and further sampling for vertical extent is not warranted.

Toluene was detected in one sample at a concentration of 0.0017 mg/kg. Concentrations decreased with depth and increased downgradient. The residential SSL is approximately 3,070,000 times the maximum concentration. Vertical extent of toluene is defined and further sampling for lateral extent is not warranted.

Radionuclides

Radionuclide COPCs at SWMU 01-003(d) include plutonium-239/240.

Plutonium-239/240 was detected above the soil FV in three soil samples, detected below 1 ft bgs in one soil sample, and detected in one tuff sample with a maximum activity of 0.59 pCi/g. Activities decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of plutonium-239/240 are defined.

Summary of Nature and Extent

The lateral and vertical extent of inorganic, organic, and radionuclide COPCs is defined or no further sampling for extent is warranted at SWMU 01-003(d).

7.12.5 Summary of Human Health Risk Screening

Industrial Scenario

The total excess cancer risk for the industrial scenario is 4×10^{-8}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.08, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.01 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 1×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.6, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.03 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Residential Scenario

The total excess cancer risk for the residential scenario is 8×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 3, which is greater than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.07 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Based on the risk-screening assessment results, no potential unacceptable risks or doses exist for the industrial and construction worker scenarios at SWMU 01-003(d) and no potential unacceptable carcinogenic risk or dose exists for the residential scenario. Potential unacceptable noncarcinogenic risk exists for the residential scenario at SWMU 01-003(d).

7.12.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for SWMU 01-003(d).

7.13 SWMU 01-006(a), Drainlines and Outfall

7.13.1 Site History and Operational History

SWMU 01-006(a) consists of a former drainline and outfall that served cooling tower 80 (former structure 01-80) at former TA-01 (Figure 7.13-1). The drainline and outfall were located on the east side of the cooling tower and south of X Building (former structure 01-79) near the north rim of Los Alamos

Canyon. Cooling tower 80 was installed in 1944 and removed in 1954; the drainline was left in place. Biocides containing chromium may have been added to the cooling tower as was standard practice at the time. Currently, the location of the former drainline is under one of the Los Arboles condominium buildings. Although no record can be found on the removal of the drainline, it was likely removed during the construction of the residential building.

7.13.2 Relationship to Other SWMUs

Upgradient SWMUs 01-001(g) and 01-006(g) may have contributed contamination to SWMU 01-006(a).

7.13.3 Summary of Previous Investigations

1987 Investigation Activities

One sample was collected for field screening during a verification survey in 1987. The 1987 investigation results are not decision-level data.

1992 Investigation Activities

Three samples were collected from three locations in the drainage downgradient of the outfall in 1992. The 1992 investigation results are not decision-level data.

2008 Investigation Activities

Nineteen samples were collected from nine locations at the outfall and in the drainage downgradient of the outfall in 2008. Results from the sampling activities in 2008 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination at the site.

7.13.4 Site Contamination

7.13.4.1 Soil, Rock, and Sediment Sampling

As part of the Phase II investigation activities at SWMU 01-006(a), a total of four samples were collected from two locations and analyzed for radionuclides to define extent of contamination.

7.13.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

7.13.4.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at SWMU 01-006(a) consist of results from 23 samples collected from 9 locations from 2008 and 2012. The 23 samples include 4 soil, 5 sediment, and 14 tuff samples. Table 7.13-1 lists the samples collected and the analyses requested for each sample. Figure 7.13-1 shows the sampling locations.

Inorganic Chemicals

A total of 19 samples (4 soil, 5 sediment, and 10 tuff) were analyzed for TAL metals, nitrate, perchlorate, and cyanide. Table 7.13-2 presents the inorganic chemicals detected or detected above BVs. Figure 7.13-2 shows the spatial distribution of inorganic chemicals detected or detected above BVs.

Aluminum was detected above the Qbt 2,3,4 BV (7340 mg/kg) in one sample at a concentration of 9970 mg/kg. The Gehan and quantile tests indicated site concentrations of aluminum in tuff are not statistically different from background (Figure F-120 and Table F-21). Aluminum is not a COPC.

Antimony was not detected but had DLs (0.54 mg/kg and 0.61 mg/kg) above the Qbt 2,3,4 BV (0.5 mg/kg) in two samples. Antimony is retained as a COPC.

Arsenic was detected above the Qbt 2,3,4 BV (2.79 mg/kg) in four samples with a maximum concentration of 5.55 mg/kg. The Gehan and quantile tests indicated site concentrations of arsenic in tuff are statistically different from background (Figure F-121 and Table F-21). Arsenic is retained as a COPC.

Barium was detected above the Qbt 2,3,4 BV (46 mg/kg) in three samples with a maximum concentration of 235 mg/kg. The Gehan and quantile tests indicated site concentrations of barium in tuff are not statistically different from background (Figure F-122 and Table F-21). Barium is not a COPC.

Beryllium was detected above the Qbt 2,3,4 BV (1.21 mg/kg) in one sample at an activity of 1.5 mg/kg. The Gehan and quantile tests indicated site concentrations of beryllium in tuff are not statistically different from background (Figure F-123 and Table F-21). Beryllium is not a COPC.

Calcium was detected above the sediment and Qbt 2,3,4 BVs (4420 mg/kg and 2200 mg/kg) in one sediment sample and two tuff samples with a maximum concentration of 7640 mg/kg. The quantile and slippage tests indicated site concentrations of calcium in tuff are statistically different from background (Figure F-124 and Table F-21). Calcium is retained as a COPC.

Chromium was detected above the Qbt 2,3,4 BV (7.14 mg/kg) in seven samples with a maximum concentration of 18.5 mg/kg. The Gehan and quantile tests indicated site concentrations of chromium in tuff are statistically different from background (Figure F-125 and Table F-21). Chromium is retained as a COPC.

Copper was detected above the Qbt 2,3,4 BV (4.66 mg/kg) in four samples with a maximum concentration of 11.6 mg/kg. The Gehan and quantile tests indicated site concentrations of copper in tuff are statistically different from background (Figure F-126 and Table F-21). Copper is retained as a COPC.

Cyanide was not detected but had DLs (0.51 mg/kg to 0.6 mg/kg) above the Qbt 2,3,4 BV (0.5 mg/kg) in 11 samples. Cyanide is retained as a COPC.

Lead was detected above the sediment and Qbt 2,3,4 BVs (19.7 mg/kg and 11.2 mg/kg) in one sediment sample and three tuff samples with a maximum concentration of 42.8 mg/kg. The Gehan and quantile tests indicated site concentrations of lead in tuff are statistically different from background (Figure F-127 and Table F-21). Lead is retained as a COPC.

Magnesium was detected above the Qbt 2,3,4 BV (1690 mg/kg) in one sample at a concentration of 2420 mg/kg. The Gehan and quantile tests indicated site concentrations of magnesium in tuff are not statistically different from background (Figure F-128 and Table F-21). Magnesium is not a COPC.

Mercury was detected above the soil BV (0.1 mg/kg) in one soil sample at a concentration of 0.203 mg/kg. Mercury is retained as a COPC.

Nickel was detected above the Qbt 2,3,4 BV (6.58 mg/kg) in four samples with a maximum concentration of 9 mg/kg. The quantile and slippage tests indicated site concentrations of nickel in tuff are statistically different from background (Figure F-129 and Table F-21). Nickel is retained as a COPC.

Nitrate was detected in 10 samples with a maximum concentration of 2.3 mg/kg. Nitrate is naturally occurring, and the concentrations likely reflect naturally occurring levels. In addition, SWMU 01-006(a) is a cooling tower drainline and is not a source of nitrate. Nitrate is not a COPC.

Perchlorate was detected in five samples with a maximum concentration of 0.017 mg/kg. Perchlorate is retained as a COPC.

Selenium was detected above the Qbt 2,3,4 BV (0.3 mg/kg) in one sample at a concentration of 0.35 mg/kg and was not detected but had a DL of 0.53 mg/kg, above the BV, in one sample. Selenium is retained as a COPC.

Organic Chemicals

A total of 19 samples (4 soil, 10 tuff, and 5 sediment) were analyzed for SVOCs, VOCs, and PCBs. Table 7.13-3 presents the detected organic chemicals. Figure 7.13-3 shows the spatial distribution of detected organic chemicals.

Organic chemicals detected at SWMU 01-006(a) include acetone, Aroclor-1260, bis(2-ethylhexyl)phthalate, di-n-butylphthalate, and methylene chloride. The detected organic chemicals are retained as COPCs.

Radionuclides

A total of 19 samples (4 soil, 10 tuff, and 5 sediment) were analyzed for americium-241, gamma-emitting radionuclides, strontium-90, and tritium and 23 samples (4 soil, 14 tuff, and 5 sediment) were analyzed for isotopic plutonium and isotopic uranium. Table 7.13-4 presents the radionuclides detected or detected above BVs/FVs. Figure 7.13-4 shows the spatial distribution of radionuclides detected or detected above BVs/FVs.

Americium-241 was detected above the soil and sediment FVs (0.013 pCi/g and 0.4 pCi/g) in one soil sample and one sediment sample with a maximum activity of 0.466 pCi/g. Americium-241 is retained as a COPC.

Plutonium-238 was detected in one tuff sample at an activity of 0.031 pCi/g. Plutonium-238 is retained as a COPC.

Plutonium-239/240 was detected above the soil and sediment FVs (0.054 pCi/g and 0.068 pCi/g) in 3 soil samples and 5 sediment samples, detected below 1 ft bgs in 1 soil sample, and detected in 13 tuff samples with a maximum activity of 25.8 pCi/g. Plutonium-239/240 is retained as a COPC.

Uranium-234 was detected above the sediment BV (2.59 pCi/g) in one sample at an activity of 4.15 pCi/g. Uranium-234 is retained as a COPC.

Uranium-235/236 was detected above the Qbt 2,3,4 and sediment BVs (0.09 pCi/g and 0.2 pCi/g) in five tuff samples and two sediment samples with a maximum activity of 0.357 pCi/g. Uranium-235/236 is retained as a COPC.

Uranium-238 was detected above the sediment BV (2.29 pCi/g) in one sample at an activity of 3.12 pCi/g. Uranium-238 is retained as a COPC.

7.13.4.4 Nature and Extent of Contamination

The nature and extent of inorganic, organic, and radionuclide COPCs at SWMU 01-006(a) are discussed below.

Inorganic Chemicals

Inorganic COPCs identified at SWMU 01-006(a) include antimony, arsenic, calcium, chromium, copper, cyanide, lead, mercury, nickel, perchlorate, and selenium.

Antimony was not detected but had DLs (0.54 mg/kg and 0.61 mg/kg) above the Qbt 2,3,4 BV in two samples. The residential SSL is approximately 51 times the maximum DL. Further sampling for extent of antimony is not warranted.

Arsenic was detected above the Qbt 2,3,4 BV in four samples with a maximum concentration of 5.55 mg/kg. Concentrations increased with depth at locations 00-604039 and 00-604042 and did not change with depth at location 00-604044. The deeper sample collected in 2012 from location 00-604044 was not analyzed for arsenic. The residential SSL is approximately 1.3 times the maximum concentration, and the industrial SSL is approximately 6.5 times the maximum concentration. All detected concentrations are below the soil BV (8.17 mg/kg). Further sampling for extent of arsenic is not warranted.

Calcium was detected above the sediment and Qbt 2,3,4 BVs in one sediment sample and two tuff samples with a maximum concentration of 7640 mg/kg. Concentrations increased with depth at location 00-604042 and decreased with depth at location 00-604045. Concentrations decreased laterally. The NMED residential essential nutrient SSL is approximately 1700 times the maximum concentration. The lateral extent of calcium is defined and further sampling for vertical extent is not warranted.

Chromium was detected above the Qbt 2,3,4 BV in seven samples with a maximum concentration of 18.5 mg/kg. Concentrations increased with depth at locations 00-604039, 00-604041, 00-604042, 00-604044, and 00-604047. The deeper samples collected at locations 00-604041 and 00-604044 were not analyzed for chromium. Concentrations decreased laterally. The residential SSL is approximately 5.2 times the maximum concentration, and the industrial SSL is approximately 27 times the maximum concentration. The lateral extent of chromium is defined and further sampling for vertical extent is not warranted.

Copper was detected above the Qbt 2,3,4 BV in four samples with a maximum concentration of 11.6 mg/kg. Concentrations decreased with depth at location 00-604044 and increased with depth at locations 00-604039, 00-604041, and 00-604042. The deeper sample collected at location 00-604041 was not analyzed for copper. Concentrations decreased laterally. The residential SSL is approximately 270 times the maximum concentration. The lateral extent of copper is defined and further sampling for vertical extent is not warranted.

Cyanide was not detected but had DLs (0.51 mg/kg to 0.6 mg/kg) above the Qbt 2,3,4 BV in 11 samples. The residential SSL is approximately 18 times the maximum DL, and the industrial SSL is approximately 105 times the maximum DL. Further sampling for extent of cyanide is not warranted.

Lead was detected above the sediment and Qbt 2,3,4 BVs in one sediment sample and three tuff samples with a maximum concentration of 42.8 mg/kg. Concentrations decreased with depth at locations 00-604043 and 00-604044 and increased with depth at locations 00-604041 and 00-604042. The deeper sample collected at location 00-604041 was not analyzed for lead. Concentrations decreased laterally. The residential SSL is approximately 9 times the maximum concentration, and the industrial SSL is approximately 19 times the maximum concentration. The lateral extent of lead is defined and further sampling for vertical extent is not warranted.

Mercury was detected above the soil BV in one soil sample at a concentration of 0.203 mg/kg. Concentrations decreased with depth and decreased laterally. Lateral and vertical extent of mercury are defined.

Nickel was detected above the Qbt 2,3,4 BV in four samples with a maximum concentration of 9 mg/kg. Concentrations increased with depth at locations 00-604042, 00-604043, 00-604044, and 00-604047. The deeper sample collected at location 00-604044 was not analyzed for nickel. Concentrations decreased laterally. The residential SSL is approximately 173 times the maximum concentration. Further sampling for extent of nickel is not warranted.

Perchlorate was detected in five samples with a maximum concentration of 0.017 mg/kg. Concentrations increased with depth at locations 00-604040, 00-604041, and 00-604042 and concentrations decreased with depth at location 00-604047. Concentrations decreased laterally. The residential SSL is approximately 3220 times the maximum concentration. The lateral extent of perchlorate is defined and further sampling for vertical extent is not warranted.

Selenium was detected above the Qbt 2,3,4 BV in one sample at a concentration of 0.35 mg/kg and was not detected but had a DL of 0.53 mg/kg, above the BV, in one sample. Concentrations increased with depth at location 00-604047. Concentrations decreased with depth at all other locations and decreased laterally. The residential SSL is approximately 1120 times the detected concentration. The residential SSL is approximately 1120 times the DL. Further sampling for extent of selenium is not warranted.

Organic Chemicals

Organic COPCs at SWMU 01-006(a) include acetone, Aroclor-1260, bis(2-ethylhexyl)phthalate, di-n-butylphthalate, and methylene chloride.

Acetone was detected in one sample at a concentration of 0.0049 mg/kg. Concentrations increased with depth at location 00-604042 and decreased downgradient. The concentration was below the EQL. The residential SSL is approximately 1,350,000 times the maximum concentration. Lateral extent of acetone is defined and further sampling for vertical extent is not warranted.

Aroclor-1260 was detected in 16 samples with a maximum concentration of 0.052 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of Aroclor-1260 are defined.

Bis(2-ethylhexyl)phthalate was detected in three samples with a maximum concentration of 2.7 mg/kg. Concentrations increased with depth at locations 00-604042 and 00-604047, decreased with depth at location 00-604045, and decreased downgradient. The residential SSL is approximately 141 times the maximum concentration. Lateral extent of bis(2-ethylhexyl)phthalate is defined and further sampling for vertical extent is not warranted.

Di-n-butylphthalate was detected in two samples with a maximum concentration of 0.15 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of di-n-butylphthalate are defined.

Methylene chloride was detected in eight samples with a maximum concentration of 0.025 mg/kg. Concentrations increased with depth at locations 00-604039 and 00-604040, did not change substantially with depth (0.0011 mg/kg) at location 00-604042, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 16,400 times the maximum concentration. Lateral extent of methylene chloride is defined and further sampling for vertical extent is not warranted.

Radionuclides

Radionuclide COPCs identified at SWMU 01-006(a) include americium-241, plutonium-238, plutonium-239/240, uranium-234, uranium-235/236, and uranium-238.

Americium-241 was detected above the soil and sediment FVs in one soil sample and one sediment sample with a maximum activity of 0.466 pCi/g. Activities decreased with depth at locations 00-604042 and 00-604043 and decreased downgradient. Lateral and vertical extent of americium-241 are defined.

Plutonium-238 was detected in one tuff sample at an activity of 0.031 pCi/g. Activities decreased with depth at location 00-604041 and decreased downgradient. Lateral and vertical extent of plutonium-238 are defined.

Plutonium-239/240 was detected above the soil and sediment FVs in 3 soil samples and 5 tuff samples, detected below 1.0 ft bgs in 1 soil sample, and detected in 13 tuff samples with a maximum activity of 25.8 pCi/g. Activities decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of plutonium-239/240 are defined.

Uranium-234 was detected above the sediment BV in one sample at an activity of 4.15 pCi/g. Activities decreased with depth and decreased laterally. The lateral and vertical extent of uranium-234 are defined.

Uranium-235/236 was detected above the sediment and Qbt 2,3,4 BVs in two sediment samples and five tuff samples with a maximum activity of 0.357pCi/g. Activities decreased with depth at all locations and decreased laterally. The lateral and vertical extent of uranium-235/236 are defined.

Uranium-238 was detected above the sediment BV in one sample at an activity of 3.12 pCi/g. Activities decreased with depth at all locations and decreased laterally. The lateral and vertical extent of uranium-238 are defined.

Summary of Nature and Extent

The lateral and vertical extent of inorganic, organic, and radionuclide COPCs is defined or no further sampling for extent is warranted at SWMU 01-006(a).

7.13.5 Summary of Human Health Risk Screening

Industrial Scenario

The total excess cancer risk for the industrial scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.05, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.5 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 3×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 1 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Residential Scenario

The total excess cancer risk for the residential scenario is 5×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 3 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Based on the risk-screening assessment results, no potential unacceptable risks or doses exist for the industrial, construction worker, and residential scenarios at SWMU 01-006(a).

7.13.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for SWMU 01-006(a).

7.14 AOC 01-006(e), Drainlines and Outfall

7.14.1 Site History and Operational History

AOC 01-006(e) consists of two former drainlines and outfalls that discharged sanitary wastewater to Ashley Pond from 1947 to 1959 at former TA-01 (Figure 7.14-1). One drainline originated at building P (former building 01-46); the other drainline (a blowoff line) served the cleaning plant. Building P housed personnel offices; no radioactive materials or hazardous chemicals, except toluene, were used in the building. Little is known about the former cleaning plant other than it was replaced early in the Manhattan Project (1940s) by a parking lot. Cleaning solvents may have been used at the cleaning plant. The building P drainline was a 4-in.-diameter line that extended northeast from the building for approximately 100 ft underground to the southwest side of Ashley Pond. The drainline from the cleaning plant originated at the northwest corner of the building and extended underground to the southeast side of the pond. The cleaning plant was replaced by a parking lot in 1959; the location of the former cleaning plant is now under Trinity Drive (LANL 1992, 043454, pp. 6-46–6-47). In 1960, the banks of Ashley Pond were resloped, and an asphalt sidewalk was constructed around the perimeter of the pond in 1961.

Between 1966 and 1991, the pond was cleaned out four or five times. Cleaning activities involved pumping out the pond water to the storm drain system and refilling with fresh water. During one of the pond cleanings (probably during the 1975–1976 rehabilitation), approximately 6 in. of sediment was removed from the pond bottom and replaced with a layer of sand. A new concrete sidewalk surrounding the pond was constructed at the end of the rehabilitation project.

Currently, the locations of former pipelines are either landscaped or under pavement. The site is currently owned and operated by Los Alamos County.

7.14.2 Relationship to Other SWMUs

SWMU 01-001(t) is in the vicinity of AOC 01-006(e) and may have contributed contamination to the AOC (Figure 7.14-1).

7.14.3 Summary of Previous Investigations

1992 Investigation Activities

Six sludge and six water samples were collected from ten locations in Ashley Pond in 1992. The 1992 investigation results are not decision-level data.

2008 Investigation Activities

Six samples were collected from three locations along former drainlines in 2008. Results from the sampling activities in 2008 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination at the site.

7.14.4 Site Contamination

7.14.4.1 Soil, Rock, and Sediment Sampling

As part of the Phase II investigation activities at AOC 01-006(e), a total of six samples were collected from four locations and analyzed for inorganic chemicals and radionuclides to define extent of contamination.

7.14.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

7.14.4.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at AOC 01-006(e) consist of results from eight tuff samples collected from three locations in 2008 and 2012. Table 7.14-1 lists the samples collected and the analyses requested for each sample. Figure 7.14-1 shows the sampling locations.

Inorganic Chemicals

A total of eight tuff samples were analyzed for TAL metals, and six tuff samples were analyzed for nitrate, perchlorate, and cyanide. Table 7.14-2 presents the inorganic chemicals detected or detected above BVs. Figure 7.14-2 shows the spatial distribution of inorganic chemicals detected or detected above BVs.

Arsenic was detected above the Qbt 2,3,4 BV (2.79 mg/kg) in one sample at a concentration of 2.9 mg/kg. The concentration was only 0.11 mg/kg above the BV and was below the two highest concentrations in the upper tuff background data set (4 mg/kg and 5 mg/kg). Arsenic was not detected above BV in five other samples. Arsenic is not a COPC.

Barium was detected above the Qbt 2,3,4 (46 mg/kg) in two samples with a maximum concentration of 106 mg/kg. The Gehan and quantile tests indicated site concentrations of barium in tuff are statistically different from background (Figure F-130 and Table F-22). Barium is retained as a COPC.

Chromium was detected above the Qbt 2,3,4 BV (7.14 mg/kg) in four samples with a maximum concentration of 26.7 mg/kg. The Gehan and quantile tests indicated site concentrations of chromium in tuff are statistically different from background (Figure F-131 and Table F-22). Chromium is retained as a COPC.

Cyanide was not detected but had DLs (0.57 mg/kg to 0.61 mg/kg) above the Qbt 2,3,4 BV (0.5 mg/kg) in three samples. Cyanide is retained as a COPC.

Nickel was detected above the Qbt 2,3,4 BV (6.58 mg/kg) in one sample at a concentration of 11.2 mg/kg. The quantile and slippage tests indicated site concentrations of nickel in tuff are not statistically different from background (Figure F-132 and Table F-22). Nickel is not a COPC.

Selenium was not detected but had DLs (0.59 mg/kg to 0.61 mg/kg) above the Qbt 2,3,4 BV (0.5 mg/kg) in five samples. Selenium is retained as a COPC.

Organic Chemicals

A total of six tuff samples were analyzed for SVOCs, VOCs, and PCBs. Table 7.14-3 presents the detected organic chemicals. Figure 7.14-3 shows the spatial distribution of detected organic chemicals.

Organic chemicals detected at AOC 01-006(e) include acetone and benzyl alcohol. The detected organic chemicals are retained as COPCs.

Radionuclides

A total of six tuff samples were analyzed for americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. No radionuclides were detected or detected above BVs/FVs at AOC 01-006(e).

7.14.4.4 Nature and Extent of Contamination

The nature and extent of inorganic, organic, and radionuclide COPCs at AOC 01-006(e) are discussed below. Samples at AOC 01-006(e) were collected at three locations along the two former drainlines to define vertical extent of contamination. Lateral extent was not evaluated for AOC 01-006(e).

Inorganic Chemicals

Inorganic COPCs identified at AOC 01-006(e) include barium, chromium, cyanide, and selenium.

Barium was detected above the Qbt 2,3,4 in two samples with a maximum concentration of 106 mg/kg. Concentrations decreased with depth at all locations. Vertical extent of barium is defined.

Chromium was detected above the Qbt 2,3,4 BV in four samples with a maximum concentration of 26.7 mg/kg. Concentrations increased with depth at location 00-603876 and decreased with depth at location 00-603874. As described in section 4.2, AOC 01-006(e) is not a potential source of hexavalent chromium and use of the SSL for trivalent chromium to determine whether additional sampling is warranted is appropriate. The residential SSL for trivalent chromium (117,000 mg/kg) is approximately 4380 times the maximum concentration. Further sampling for extent of chromium is not warranted.

Cyanide was not detected but had DLs (0.57 mg/kg to 0.61 mg/kg) above the Qbt 2,3,4 BV in three samples. The residential SSL is approximately 18 times the maximum DL, and the industrial SSL is approximately 103 times the maximum DL. Further sampling for extent of cyanide is not warranted.

Selenium was not detected but had DLs (0.59 mg/kg to 0.61 mg/kg) above the Qbt 2,3,4 BV in five samples. The residential SSL is approximately 641 times the maximum DL. Further sampling for extent of selenium is not warranted.

Organic Chemicals

Organic COPCs at AOC 01-006(e) include acetone and benzyl alcohol.

Acetone was detected in two samples with a maximum concentration of 0.0063 mg/kg. Concentrations increased with depth at locations 00-603872 and 00-603874. The concentrations were below the EQLs. The residential SSL is approximately 10,500,000 times the maximum concentration. Further sampling for extent of acetone is not warranted.

Benzyl alcohol was detected in one sample at a concentration of 1.8 mg/kg. Concentrations increased with depth at location 00-603876. The residential SSL is approximately 3500 times the concentration. Further sampling for extent of benzyl alcohol is not warranted.

Radionuclides

No radionuclide COPCs were identified for AOC 01-006(e).

Summary of Nature and Extent

The lateral and vertical extent of inorganic and organic COPCs is defined or no further sampling for extent is warranted at AOC 01-006(e).

7.14.5 Summary of Human Health Risk Screening

Industrial Scenario

The samples at AOC 01-006(e) were collected from depths greater than 0.0 to 1.0 ft bgs; therefore, no complete exposure pathways exist for the industrial scenario.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 6×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–10.0 ft depth interval.

Residential Scenario

The total excess cancer risk for the residential scenario is 3×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.06, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–10.0 ft depth interval.

Based on the risk-screening assessment results, no potential unacceptable risks or doses exist for the industrial, construction worker, and residential scenarios at AOC 01-006(e).

7.14.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for AOC 01-006(e).

7.15 SWMU 01-006(h2), Drainlines and Outfall

7.15.1 Site History and Operational History

SWMU 01-006(h2) was originally part of former SWMU 01-006(h), which was split into SWMUs 01-006(h1), 01-006(h2), and 01-006(h3) in a request for modification of the Laboratory's Hazardous Waste Facility Permit approved by NMED on November 9, 2016 (LANL 2016, 601921). The Laboratory proposed to split SWMU 01-006(h) into three newly designated SWMUs because each component of the SWMU is located on property owned by different entities.

SWMU 01-006(h2) is the southernmost section of the former storm water drainage system including the outfall, which discharged to Los Alamos Canyon (Figure 7.15-1). Former SWMU 01-006(h) is the former storm water drainage system that served the northwest side of former building R (01-50) and the east side of former building Y (01-81). Former building R housed model, glass, carpentry, and plumbing shops, and former building Y housed a physics laboratory that handled tritium, uranium-238, and polonium-210. The drainage system discharged to an outfall located 25 ft south of former building Y on the north rim of Los Alamos Canyon, immediately west of Hillside 138 [new SWMUs 01-001(d2) and 01-001(d3)]. During the 1972–1974 Ahlquist radiological survey, no radioactivity was detected in and adjacent to components of the storm water drainage areas near former buildings R and Y; the drainlines were removed (Ahlquist et al. 1977, 005710).

Currently, the location of the southernmost section of the former storm water drainage system, including the outfall [SWMU 01-006(h2)], is on privately owned and commercially developed land. SWMU 01-006(h2) is currently located beneath a building.

7.15.2 Relationship to Other SWMUs

SWMU 01-006(h2) overlaps the footprint of SWMU 01-001(d2), and SWMU 01-006(h2) shares the same hillside outfall area as SWMU 01-001(d3).

7.15.3 Summary of Previous Investigations

2008 Investigation Activities

Previous investigations at former SWMU 01-001(d) (septic tank 138), which were also used for site evaluation at SWMU 01-006(h), did not include the area encompassing SWMU 01-006(h2).

7.15.4 Site Contamination

The SWMU 01-006(h2) drainage system is currently located beneath a building and could not be accessed for sampling. No samples have been collected at this location.

Samples collected at former SWMU 01-001(d3) (septic tank 138) are also used for site evaluation for the former SWMU 01-006(h2) outfall because it shares the same outfall area as former SWMU 01-001(d). The sampling results apply to both sites. These sampling results are described in section 7.4.4.

7.15.5 Summary of Human Health Risk Screening

No investigation sampling has been performed for SWMU 01-006(h2) and human health risk was not evaluated.

7.15.6 Summary of Ecological Risk Screening

No investigation sampling has been performed for SWMU 01-006(h2) and ecological risk was not evaluated.

7.16 SWMU 01-006(h3), Drainlines and Outfall

7.16.1 Site History and Operational History

SWMU 01-006(h3) was originally part of former SWMU 01-006(h), which was split into SWMUs 01-006(h1), 01-006(h2), and 01-006(h3) in a request for modification of the Laboratory's Hazardous Waste Facility Permit approved by NMED on November 9, 2016 (LANL 2016, 601921). The Laboratory proposed to split SWMU 01-006(h) into three newly designated SWMUs because each component of the SWMU is located on property owned by different entities.

SWMU 01-006(h3) is the northernmost section of the former storm water drainage system (Figure 7.15-1). Former SWMU 01-006(h) is the former storm water drainage system that served the northwest side of former building R (01-50) and the east side of former building Y (01-81). Former building R housed model, glass, carpentry, and plumbing shops, and former building Y housed a physics laboratory that handled tritium, uranium-238, and polonium-210. The drainage system discharged to an outfall located 25 ft south of former building Y on the north rim of Los Alamos Canyon [new SWMU 01-006(h2)], immediately west of Hillside 138 [new SWMUs 01-001(d2) and 01-001(d3)]. During the 1972–1974 Ahlquist radiological survey, no radioactivity was detected in and adjacent to components of the storm water drainage areas near former buildings R and Y; the drainlines were removed (Ahlquist et al. 1977, 005710).

Currently, the location of the northernmost section of the former storm water drainage system is on privately owned and commercially developed land. SWMU 01-006(h3) is currently located beneath a building.

7.16.2 Relationship to Other SWMUs

Upgradient SWMU 01-001(t) likely did not contribute contamination to SWMU 01-006(h3). The SWMU 01-006(h3) drainage system discharged to the SWMU 01-006(h2) outfall, which shares a common drainage area with SWMU 01-001(d3).

7.16.3 Summary of Previous Investigations

The former SWMU 01-006(h3) drainage system is currently located beneath a building on private property and is not accessible for sampling. No previous investigations have been performed at this site.

7.16.4 Site Contamination

No sampling has been performed for SWMU 01-006(h3).

7.16.5 Summary of Human Health Risk Screening

No investigation sampling has been performed for SWMU 01-006(h3) and human health risk was not evaluated.

7.16.6 Summary of Ecological Risk Screening

No investigation sampling has been performed for SWMU 01-006(h3) and ecological risk was not evaluated.

7.17 Site Contamination—SWMU 01-007(c), Soil Contamination

7.17.1 Site History and Operational History

SWMU 01-007(c) is an area of potential shallow subsurface gross alpha radioactive contamination north and west of former D Building (former building 01-6) in former TA-01 (Figure 7.17-1). Plutonium contamination was discovered during the 1974–1976 Ahlquist Radiological Survey conducted at SWMU 01-007(c) (Ahlquist et al. 1977, 005710, pp. 11, 70–77). Approximately 1300 m^3 of soil and remaining sections of a clay-tile waste line from former D Building was excavated and disposed of at an unspecified location (Ahlquist et al. 1977, 005710, p. 40). The clay-tile waste line was part of SWMU 01-001(s). Currently, the location of SWMU 01-007(c) is under pavement and residential buildings on private property or Los Alamos County streets.

7.17.2 Relationship to Other SWMUs

A portion of SWMU 01-001(s) was found at the site and may have contributed contamination to SWMU 01-007(c).

7.17.3 Summary of Previous Investigations

2008 Investigation Activities

Eight samples were collected from four locations in 2008. Results from the sampling activities in 2008 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination at the site.

7.17.4 Site Contamination

7.17.4.1 Soil, Rock, and Sediment Sampling

As part of the Phase II investigation activities at SWMU 01-007(c), a total of 17 samples were collected from 7 locations and analyzed for inorganic chemicals and radionuclides to define extent of contamination.

7.17.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

7.17.4.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at SWMU 01-007(c) consist of results from 25 samples collected from 7 locations in 2008 and 2012. The 25 samples include 6 soil and 19 tuff samples. Table 7.17-1 lists the samples collected and the analyses requested for each sample. Figure 7.17-1 shows the sampling locations.

Inorganic Chemicals

A total of 25 samples (6 soil and 19 tuff) were analyzed for TAL metals, and 8 tuff samples were analyzed for nitrate, perchlorate, and cyanide. Table 7.17-2 presents the inorganic chemicals detected or detected above BVs. Figure 7.17-2 shows the spatial distribution of inorganic chemicals detected or detected above BVs.

Antimony was not detected but had DLs (0.53 mg/kg and 0.54 mg/kg) above the Qbt 2,3,4 BV (0.5 mg/kg) in two samples. Antimony is retained as a COPC.

Chromium was detected above the Qbt 2,3,4 BV (7.14 mg/kg) in nine samples with a maximum concentration of 28.8 mg/kg. The Gehan and quantile tests indicated site concentrations of chromium in tuff are statistically different from background (Figure F-133 and Table F-23). Chromium is retained as a COPC.

Cyanide was not detected but had DLs (0.53 mg/kg to 0.6 mg/kg) above the Qbt 2,3,4 BV (0.5 mg/kg) in seven samples. Cyanide is retained as a COPC.

Lead was detected above the Qbt 2,3,4 BV (11.2 mg/kg) in four samples with a maximum concentration of 38.3 mg/kg. The quantile and slippage tests indicated site concentrations of lead in tuff are statistically different from background (Figure F-134 and Table F-23). Lead is retained as a COPC.

Nickel was detected above the Qbt 2,3,4 BV (6.58 mg/kg) in four samples with a maximum concentration of 13.1 mg/kg. The quantile and slippage tests indicated site concentrations of nickel in tuff are statistically different from background (Figure F-135 and Table F-23). Nickel is retained as a COPC.

Nitrate was detected in two samples with a maximum concentration of 0.18 mg/kg. Nitrate is naturally occurring, and the concentrations likely reflect naturally occurring levels. In addition, SWMU 01-007(c) is soil potentially contaminated by radionuclide releases and is not a source of nitrate. Nitrate is not a COPC.

Selenium was detected above the Qbt 2,3,4 BV (0.3 mg/kg) in seven samples with a maximum concentration of 0.41 mg/kg. Selenium is retained as a COPC.

Organic Chemicals

A total of eight tuff samples were analyzed for SVOCs, VOCs, and PCBs. Table 7.17-3 presents the detected organic chemicals. Figure 7.17-3 shows the spatial distribution of detected organic chemicals.

Organic chemicals detected at SWMU 01-007(c) include Aroclor-1260, benzene, n-butylbenzene, sec-butylbenzene, chloroform, 4-isopropyltoluene, styrene, toluene, vinyl chloride, and xylene (total). The detected organic chemicals are retained as COPCs.

Radionuclides

A total of eight tuff samples were analyzed for americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Table 7.17-4 presents the radionuclides detected or detected above BVs/FVs. Figure 7.17-4 shows the spatial distribution of radionuclides detected or detected above BVs/FVs.

Plutonium-238 was detected in one tuff sample at an activity of 0.112 pCi/g. Plutonium-238 is retained as a COPC.

Plutonium-239/240 was detected in three tuff samples with a maximum activity of 0.459 pCi/g. Plutonium-239/240 is retained as a COPC.

Uranium-235/236 was detected above the Qbt 2,3,4 BV (0.09 pCi/g) in one sample at an activity of 0.13 pCi/g. The activity was only 0.04 pCi/g above BV and uranium-235/236 was not detected in seven other samples. Uranium-235/236 is not a COPC.

7.17.4.4 Nature and Extent of Contamination

The nature and extent of inorganic, organic, and radionuclide COPCs at SWMU 01-007(c) are discussed below.

Inorganic Chemicals

Inorganic COPCs identified at SWMU 01-007(c) include antimony, chromium, cyanide, lead, nickel, and selenium.

Antimony was not detected but had DLs (0.53 mg/kg and 0.54 mg/kg) above the Qbt 2,3,4 BV in two samples. The residential SSL is approximately 58 times the maximum DL. Further sampling for extent of antimony is not warranted.

Chromium was detected above the Qbt 2,3,4 BV in nine samples with a maximum concentration of 28.8 mg/kg. Concentrations increased with depth at locations 01-614771 and 01-614772, decreased with depth at all other locations, and decreased laterally. As described in section 4.2, SWMU 01-007(c) is not a potential source of hexavalent chromium and use of the SSL for trivalent chromium to determine whether additional sampling is warranted is appropriate. The residential SSL for trivalent chromium (117,000 mg/kg) is approximately 4060 times the maximum concentration. Further sampling for extent of chromium is not warranted.

Cyanide was not detected but had DLs (0.53 mg/kg to 0.6 mg/kg) above the Qbt 2,3,4 BV in seven samples. The residential SSL is approximately 18 times the maximum DL, and the industrial SSL is approximately 105 times the maximum DL. Further sampling for extent of cyanide is not warranted.

Lead was detected above the Qbt 2,3,4 BV in four samples with a maximum concentration of 38.3 mg/kg. Concentrations decreased with depth at all locations and decreased laterally. Lateral and vertical extent of lead are defined.

Nickel was detected above the Qbt 2,3,4 BV in four samples with a maximum concentration of 13.1 mg/kg. Concentrations decreased with depth at all locations and decreased laterally. Lateral and vertical extent of nickel are defined.

Selenium was detected above the Qbt 2,3,4 BV in seven samples with a maximum concentration of 0.41 mg/kg. Concentrations decreased with depth at all locations and decreased laterally. Lateral and vertical extent of selenium are defined.

Organic Chemicals

Organic COPCs identified at SWMU 01-007(c) include Aroclor-1260, benzene, n-butylbenzene, sec-butylbenzene, chloroform, 4-isopropyltoluene, styrene, toluene, vinyl chloride, and xylene (total).

Aroclor-1260 was detected in two samples with a maximum concentration of 0.038 mg/kg. Concentrations decreased with depth at location 00-603895 and decreased laterally. Lateral and vertical extent of Aroclor-1260 are defined.

Benzene, n-butylbenzene, sec-butylbenzene, chloroform, 4-isopropyltoluene, toluene, vinyl chloride, and total xylene were each detected in one sample at location 00-603897 with maximum concentrations of 0.00012 mg/kg to 0.0051 mg/kg. Concentrations decreased with depth and increased laterally. All concentrations were below EQLs and the residential SSLs are at least 436 times greater than the detected concentrations. Vertical extent of benzene, n-butylbenzene, sec-butylbenzene, chloroform, 4-isopropyltoluene, toluene, vinyl chloride, and total xylene is defined and further sampling for lateral extent is not warranted.

Styrene was detected in one sample at a concentration of 0.00041 mg/kg. Concentrations decreased with depth and increased laterally. The residential SSL is approximately 17,600,000 times the detected concentration. Vertical extent of styrene is defined and further sampling for lateral extent is not warranted.

Radionuclides

Radionuclide COPCs at SWMU 01-007(c) include plutonim-238 and plutonium-239/240.

Plutonium-238 was detected in one tuff sample at an activity of 0.112 pCi/g. Activities decreased with depth at location 00-603900 and increased laterally. The residential SAL is approximately 750 times the maximum activity. Vertical extent of plutonium-238 is defined and further sampling for lateral extent is not warranted.

Plutonium-239/240 was detected in three tuff samples with a maximum activity of 0.459 pCi/g. Activities decreased with depth at all locations and decreased laterally. Lateral and vertical extent of plutonium-239/240 are defined.

Summary of Nature and Extent

The lateral and vertical extent of inorganic, organic, and radionuclide COPCs is defined or no further sampling for extent is warranted at SWMU 01-007(c).

7.17.5 Summary of Human Health Risk Screening

Industrial Scenario

The samples at SWMU 01-007(c) were collected from depths greater than 0.0 to 1.0 ft bgs; therefore, no complete exposure pathways exist for the industrial scenario.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 3×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.07 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Residential Scenario

The total excess cancer risk for the residential scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.07, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.2 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Based on the risk-screening assessment results, no potential unacceptable risks or doses exist for the industrial, construction worker, and residential scenarios at SWMU 01-007(c).

7.17.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for SWMU 01-007(c).

8.0 TA-03 BACKGROUND AND FIELD INVESTIGATION RESULTS

Four sites at TA-03 were sampled (Table 1.1-1) according to the approved Phase II work plan (LANL 2010, 110860; NMED 2011, 111674) and subsequent post-cleanup confirmation sampling.

8.1 Background of TA-03

Three SWMUs at TA-03 are addressed in this report (Table 1.1-1).

- SWMUs 03-038(a) and 03-038(b) are a former pump house with two concrete underground tanks and a former 28,500-gal. steel waste-holding tank, respectively. These sites are next to each other on the south rim of Los Alamos Canyon near the Omega Bridge. All the structures were removed in 1981 and 1982, and the site is currently undeveloped.
- SWMU 03-055(c) is the outfall of an active storm-drain system that previously received effluent from the floor drains of a nearby fire station. The storm drain currently collects and channels storm water runoff from parking lots and roads near the Laboratory's fire station.

8.1.1 Operational History

The pump house of SWMUs 03-038(a) and 03-038(b) was the central collection point for industrial wastes from various Laboratory buildings. The building, along with the concrete tanks and the steel holding tank, was constructed in 1952. Wastes were pumped from the tanks into the industrial waste line leading to the TA-50 radioactive liquid waste treatment facility (RLWTF) through 1965. The pump house and associated components became inactive in 1965.

The SWMU 03-055(c) storm drainage system is currently active.

8.1.2 Summary of Releases

In 1976, radioactive contamination was discovered to the west, south, and east of the pump house at SWMUs 03-038(a) and 03-038(b), although no leaks were discovered from the tanks when they were removed in 1980 and 1981 (Elder et al. 1986, 006666, p. 41).

The storm drain, SWMU 03-055(c), was connected to the floor drain of the fire station (building 03-41) but currently collects only storm water runoff from the parking lots north of the fire station and channels storm water toward Los Alamos Canyon.

8.2 SWMU 03-038(a), Former Waste Neutralization and Pumping Building

8.2.1 Site History and Operational History

SWMU 03-038(a) is the location of a former acid-neutralizing and pumping building (former building 03-700) located on DOE property near the southwest end of Omega Bridge on the mesa top near the south rim of Los Alamos Canyon in TA-03 (Figure 8.2-1). The building was constructed in 1952 and consisted of a 16-ft x 22-ft x 11-ft concrete-block pump house and two 14-ft x 22-ft x 14-ft concrete underground tanks. The pumping building was the central collection point for industrial wastes from the Chemical and Metallurgical Research Building (building 03-29), the Sigma Building (building 03-66), and other Laboratory buildings. Once collected, the industrial waste was pumped from the storage tanks into a waste line (line 167, SWMU 00-017) and transferred to the TA-50 RLWTF. In 1975 and 1976, the areas around building 03-700 and structure 03-738 [SWMU 03-038(b)] were remediated by the Zia Company after elevated gross alpha contamination was discovered near building 03-700. Soil was tested for radionuclides; one-third of the 72 samples taken from the west, south, and east sides of the building and structure 03-738 were positive for gross-alpha. Soil was excavated around building 03-700 and structure 03-738 before the samples were collected. No leaks were discovered from the SWMU 03-038(a) or SWMU 03-038(b) tanks.

Building 03-700 and associated sections of inlet and outlet waste lines, the pump station, the underground concrete tanks, and structure 03-738 were removed and disposed of at TA-54 in 1981 and 1982 as part of the Laboratory's 1981–1986 Radioactive Liquid Waste Lines Removal Project (Elder et al. 1986, 006666, p. 41). Screening data for samples collected from the tank excavations confirmed none of the tanks had ever leaked.

Building 03-700, structure 03-738, and associated sections of inlet and outlet waste lines, the pump station, and the underground concrete tanks were removed and disposed of at TA-54.

8.2.2 Relationship to Other SWMUs

SWMUs 03-038(a) and 03-038(b) are next to each other on the south rim of Los Alamos Canyon near the Omega Bridge. Other sites in the vicinity of SWMUs 03-038(a) and 03-038(b) are SWMU 00-017, which discharged to the sites, and AOC C-00-044 in Los Alamos Canyon (Figure 8.2-1).

8.2.3 Summary of Previous Investigations

2008 Investigation Activities

Eighteen samples were collected from six locations along former inlet and outlet waste lines and around former building 03-700 and former structure 03-738 in 2008. Results from the sampling activities in 2008 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination at the site.

8.2.4 Site Contamination

8.2.4.1 Soil, Rock, and Sediment Sampling

As part of the Phase II investigation activities at SWMUs 03-038(a) and 03-038(b), a total of 12 samples were collected from 6 locations and analyzed for inorganic chemicals to define extent of contamination.

8.2.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

8.2.4.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at SWMUs 03-038(a) and 03-038(b) consist of results from 30 samples collected from 10 locations in 2008 and 2012. The 30 samples include 9 soil and 21 tuff samples. Table 8.2-1 lists the samples collected and the analyses requested for each sample. Figure 8.2-1 shows the sampling locations.

Inorganic Chemicals

A total of 30 samples (9 soil and 21 tuff) were analyzed for TAL metals, and 18 tuff samples were analyzed for nitrate, perchlorate, and cyanide. Table 8.2-2 presents the inorganic chemicals detected or detected above BVs. Figure 8.2-2 shows the spatial distribution of inorganic chemicals detected or detected above BVs.

Antimony was not detected but had DLs (0.58 mg/kg to 0.6 mg/kg) above the Qbt 2,3,4 BV (0.5 mg/kg) in six samples. Antimony is retained as a COPC.

Arsenic was detected above the Qbt 2,3,4 BV (2.79 mg/kg) in one sample at a concentration of 3.1 mg/kg. The Gehan and slippage tests indicated site concentrations of arsenic in tuff are not statistically different from background (Figure F-136 and Table F-24). Arsenic is not a COPC.

Barium was detected above the Qbt 2,3,4 BV (46 mg/kg) in nine samples with a maximum concentration of 95.8 mg/kg. The Gehan and quantile tests indicated site concentrations of barium in tuff are statistically different from background (Figure F-137 and Table F-24). Barium is retained as a COPC.

Calcium was detected above the Qbt 2,3,4 BV (2200 mg/kg) in five samples with a maximum concentration of 4740 mg/kg. The quantile and slippage tests indicated site concentrations of calcium in tuff are statistically different from background (Figure F-138 and Table F-24). Calcium is retained as a COPC.

Chromium was detected above the Qbt 2,3,4 BV (7.14 mg/kg) in 10 samples with a maximum concentration of 151 mg/kg. The Gehan and quantile tests indicated site concentrations of chromium in tuff are statistically different from background (Figure F-139 and Table F-24). Chromium is retained as a COPC.

Cobalt was detected above the Qbt 2,3,4 BV (3.14 mg/kg) in one sample at a concentration of 4.5 mg/kg. The Gehan and quantile tests indicated site concentrations of cobalt in tuff are not statistically different from background (Figure F-140 and Table F-24). Cobalt is not a COPC.

Copper was detected above the Qbt 2,3,4 BV (4.66 mg/kg) in four samples with a maximum concentration of 10.3 mg/kg. The Gehan and quantile tests indicated site concentrations of copper in tuff are statistically different from background (Figure F-141 and Table F-24). Copper is retained as a COPC.

Cyanide was detected above the Qbt 2,3,4 BV (0.5 mg/kg) in 2 samples with a maximum concentration of 0.96 mg/kg and was not detected but had DLs (0.53 mg/kg to 0.6 mg/kg) above the BV in 11 samples. Cyanide is retained as a COPC.

Lead was detected above the Qbt 2,3,4 BV (11.2 mg/kg) in nine samples with a maximum concentration of 26.1 mg/kg. The Gehan and quantile tests indicated site concentrations of lead in tuff are statistically different from background (Figure F-142 and Table F-24). Lead is retained as a COPC.

Nickel was detected above the Qbt 2,3,4 BV (6.58 mg/kg) in seven samples with a maximum concentration of 71.6 mg/kg. The quantile and slippage tests indicated site concentrations of nickel in tuff are statistically different from background (Figure F-143 and Table F-24). Nickel is retained as a COPC.

Nitrate was detected in 17 samples with a maximum concentration of 8.6 mg/kg. Nitrate is naturally occurring, and the concentrations likely reflect naturally occurring levels. In addition, SWMUs 03-038(a) and 03-038(b) are an industrial waste management unit and are not a source of nitrate. Nitrate is not a COPC.

Perchlorate was detected in three samples with a maximum concentration of 0.039 mg/kg. Perchlorate is retained as a COPC.

Selenium was not detected but had DLs (0.54 mg/kg to 0.56 mg/kg) above the BV in four samples. Selenium is retained as a COPC.

Organic Chemicals

A total of 18 tuff samples were analyzed for SVOCs, VOCs, and PCBs. Table 8.2-3 presents the detected organic chemicals. Figure 8.2-3 shows the spatial distribution of detected organic chemicals.

Polycyclic Aromatic Hydrocarbons

PAHs are a class of SVOCs frequently detected as a result of environmental sampling but generally were not released from the SWMUs or AOCs being investigated. PAHs unrelated to site activities are thus often detected in samples analyzed for the presence of site-related SVOCs.

PAHs are known to be widely distributed in the environment from a number of sources, both natural, such as forest fires, and anthropogenic, such as combustion of fossil fuels, oil drips off motor vehicles, vehicle tires, coal tar pitch, and weathering or eroding of asphalt pavement (Kose et al. 2008, 219977; Teaf 2008, 219976). PAHs from these sources generally occur as complex mixtures, not as single compounds. Individual PAH compounds can be manufactured for research purposes and some PAHs (e.g., anthracene, fluorene, naphthalene, and pyrene) are used in dye production, the manufacture of synthetic fibers, and in plastics and pesticides.

The principal sources of PAHs in soil along parking lots, roads, and highways are vehicular exhaust and emissions, the wearing of tires, and asphalt. PAH-containing materials, such as asphalt and rubber particles, do not easily dissolve in water, thus preventing migration, except as suspended particles in storm water. PAH concentrations in excess of soil cleanup levels may result from common anthropogenic sources such as runoff from asphalt-paved areas (e.g., roads and parking areas).

Site Activities

SWMUs 03-038(a) and 03-038(b) are part of the industrial liquid waste system that served TA-03 and were identified as SWMUs because of the potential for contamination from radionuclides, acids, and caustics. Operations that generated these wastes did not use or produce PAHs. The SWMU 03-038(a) waste neutralization facility and SWMU 03-038(b) tank were located adjacent to roadways and paved parking areas and received runoff from these areas. Although all samples at this site were collected from depth, the concentrations were low and PAHs were detected in only 7 of 18 samples. The maximum concentration was 0.32 mg/kg and all but 3 detected PAH results were less than 0.1 mg/kg. The sample locations and the frequency and magnitude of detection suggest the detections of PAHs may have resulted from cross-contamination from augering through surface contamination. Additionally, because PAHs are not associated with industrial wastewater, the PAHs detected in samples used to characterize this site [benzo(a)pyrene; benzo(g,h,i)perylene; chrysene; dibenz(a,h)anthracene; fluoranthene; indeno(1,2,3-cd)pyrene; phenanthrene; and pyrene] are associated with runoff from urban areas, are not related to historic Laboratory site operations, and are not COPCs.

Organic COPCs

Other organic chemicals detected at SWMUs 03-038(a) and 03-038(b) include Aroclor-1254, Aroclor-1260, bis(2-ethylhexyl)phthalate, 2-hexanone, and toluene. The detected organic chemicals listed are retained as COPCs.

Radionuclides

A total of 18 tuff samples were analyzed for americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. No radionuclides were detected or detected above BVs/FVs.

8.2.4.4 Nature and Extent of Contamination

The nature and extent of inorganic, organic, and radionuclide COPCs at SWMUs 03-038(a) and 03-038(b) are discussed below.

Inorganic Chemicals

Inorganic COPCs identified at SWMUs 03-038(a) and 03-038(b) are antimony, barium, calcium, chromium, copper, cyanide, lead, nickel, perchlorate, and selenium.

Antimony was not detected but had DLs (0.58 mg/kg to 0.6 mg/kg) above the Qbt 2,3,4 BV in six samples. The residential SSL is approximately 52 times the maximum DL. Further sampling for extent of antimony is not warranted.

Barium was detected above the Qbt 2,3,4 BV in nine samples with a maximum concentration of 95.8 mg/kg. Concentrations increased with depth at locations 00-604255, 00-604256, and 00-604258; decreased with depth at locations 00-604254 and 00-604257; and increased downgradient. The residential SSL is approximately 163 times the maximum concentration. Further sampling for extent of barium is not warranted.

Calcium was detected above the Qbt 2,3,4 BV in five samples with a maximum concentration of 4740 mg/kg. Concentrations increased with depth at locations 00-604256, 00-604257, and 00-604258; did not change substantially with depth (100 mg/kg) at location 00-604254; and decreased downgradient.

The NMED residential essential nutrient SSL is approximately 127,400 times the maximum concentration. Lateral extent of calcium is defined and further sampling for vertical extent is not warranted.

Chromium was detected above the Qbt 2,3,4 BV in 10 samples with a maximum concentration of 151 mg/kg. Concentrations increased with depth at locations 00-604255, 00-604256, and 00-604258; decreased with depth at locations 00-604254, 400-604257, 00-604259, and 03-1; and decreased downgradient. As described in section 4.2, SWMUs 03-038(a) and 03-038(b) are not potential sources of hexavalent chromium and use of the SSL for trivalent chromium to determine whether additional sampling is warranted is appropriate. The residential SSL for trivalent chromium (117,000 mg/kg) is approximately 775 times the maximum concentration. Lateral extent of chromium is defined and further sampling for vertical extent is not warranted.

Copper was detected above the Qbt 2,3,4 BV in four samples with a maximum concentration of 10.3 mg/kg. Concentrations increased with depth at locations 00-604254 and 00-604258, decreased with depth at location 00-604259, and decreased downgradient. The residential SSL was approximately 304 times the maximum concentration. Lateral extent of copper is defined and further sampling for vertical extent is not warranted.

Cyanide was detected above the Qbt 2,3,4 BV in 2 samples with a maximum concentration of 0.96 mg/kg and was not detected but had DLs (0.53 mg/kg to 0.6 mg/kg) above the BV in 11 samples. Concentrations increased with depth at location 00-604257, decreased with depth at location 00-604259, and decreased downgradient. The residential SSL is approximately 11 times the maximum concentration, and the industrial SSL is approximately 65 times the maximum concentration. The residential SSL is approximately 18 times the maximum DL, and the industrial SSL is approximately 842 times the maximum DL. Further sampling for extent of cyanide is not warranted.

Lead was detected above the Qbt 2,3,4 BV in nine samples with a maximum concentration of 26.1 mg/kg. Concentrations increased with depth at locations 00-604256, 00-604258, and 03-614730; decreased at locations 00-604254, 00-604257, and 00-604259; and decreased downgradient. The residential SSL is approximately 15 times the maximum concentration, and the industrial SSL is approximately 31 times the maximum concentration. Lateral extent of lead is defined and further sampling for vertical extent is not warranted

Nickel was detected above the Qbt 2,3,4 BV in seven samples with a maximum concentration of 71.6 mg/kg. Concentrations increased with depth at locations 00-604256 and 00-604258, decreased with depth at locations 00-604254 and 00-604259, and decreased downgradient. The residential SSL is approximately 22 times the maximum concentration, and the industrial SSL is approximately 359 times the maximum concentration. Lateral extent of nickel is defined and further sampling for vertical extent is not warranted.

Perchlorate was detected in three samples with a maximum concentration of 0.039 mg/kg. Concentrations increased with depth at location 00-604254 and decreased downgradient. The residential SSL is approximately 1400 times the maximum concentration. Lateral extent of perchlorate is defined and further sampling for vertical extent is not warranted.

Selenium was not detected but had DLs (0.54 mg/kg to 0.56 mg/kg) above the BV in four samples. The residential SSL is approximately 698 times the maximum DL. Further sampling for extent of selenium is not warranted.

Organic Chemicals

Organic COPCs at SWMUs 03-038(a) and 03-038(b) include Aroclor-1254, Aroclor-1260, bis(2-ethylhexyl)phthalate, 2-hexanone, and toluene.

Aroclor-1254 was detected in five samples with a maximum concentration of 0.039 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of Aroclor-1254 are defined.

Aroclor-1260 was detected in 11 samples with a maximum concentration of 0.028 mg/kg. Concentrations increased with depth at locations 00-604255, 00-604256, and 00-604257; decreased with depth at all other locations; and decreased downgradient. The residential SSL is approximately 94 times the maximum concentration. Lateral extent of Aroclor-1260 is defined and further sampling for vertical extent is not warranted.

Bis(2-ethylhexyl)phthalate was detected in two samples with a maximum concentration of 0.083 mg/kg. Concentrations increased with depth at location 00-604254 and decreased downgradient. The residential SSL is approximately 4630 times the maximum concentration. Lateral extent of bis(2-ethylhexyl)phthalate is defined and further sampling for vertical extent is not warranted.

Hexanone[2-] was detected in one sample at a concentration of 0.0056 mg/kg. Concentrations decreased with depth and increased downgradient. The residential SSL is approximately 35,700 times the maximum concentration. Vertical extent of 2-hexanone is defined and further sampling for lateral extent is not warranted.

Toluene was detected in two samples with a maximum concentration of 0.0006 mg/kg. Concentrations increased with depth at location 00-604256, decreased with depth at location 00-604259, and did not change substantially laterally (0.000003 mg/kg). The residential SSL is approximately 8,700,000 times the maximum concentration. Further sampling for extent of toluene is not warranted.

Radionuclides

No radionuclide COPCs were identified at SWMUs 03-038(a) and 03-038(b).

Summary of Nature and Extent

The lateral and vertical extent of inorganic and organic COPCs is defined or no further sampling for extent is warranted at SWMUs 03-038(a) and 03-038(b).

8.2.5 Summary of Human Health Risk Screening

Industrial Scenario

The samples at SWMUs 03-038(a) and 03-038(b) were collected from depths greater than 0.0 to 1.0 ft bgs; therefore, no complete exposure pathways exist for the industrial scenario.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 6×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-10.0 ft depth interval.

Residential Scenario

The total excess cancer risk for the residential scenario is 3×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–10.0 ft depth interval.

Based on the risk-screening assessment results, no potential unacceptable risks or doses exist for the industrial, construction worker, and residential scenarios at SWMUs 03-038(a) and 03-038(b).

8.2.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for SWMUs 03-038(a) and 03-038(b).

8.3 SWMU 03-038(b), Waste Holding Tank

8.3.1 Site History and Operational History

SWMU 03-038(b) is the former location of a 28,500-gal. steel industrial waste holding tank (former structure 03-738) that was located directly north of former building 03-700 [SWMU 03-038(a)] near the southwest end of Omega Bridge on the mesa top, on DOE property near the south rim of Los Alamos Canyon in TA-03 (Figure 8.2-1). The tank was installed in 1952 and measured 11 ft in diameter x 44 ft long and was partially buried in the upper south wall of Los Alamos Canyon. Once collected, the industrial waste was pumped into a waste line (line 167, SWMU 00-017) and transferred to the TA-50 RLWTF. In 1975 and 1976, the areas around structure 03-738 and building 03-700 [SWMU 03-038(b)] were remediated by the Zia Company when elevated gross alpha contamination was discovered near structure 03-738 and building 03-700. Soil was tested for radionuclides; one-third of the 72 samples taken from the west, south, and east sides of building 03-700 and structure 03-738 were positive for gross-alpha. Soil was excavated around building 03-700 and structure 03-738 before the samples were collected. No leaks were discovered from the SWMU 03-038(a) or SWMU 03-038(b) tanks.

Structure 03-738, building 03-700 and associated sections of inlet and outlet waste lines, the pump station, and the underground concrete tanks were removed and disposed of at TA-54 in 1981 and 1982 as part of the Laboratory’s 1981–1986 Radioactive Liquid Waste Lines Removal Project (Elder et al. 1986, 006666, p. 41). Screening data for samples collected from the tank excavations confirmed none of the tanks had ever leaked.

8.3.2 Relationship to Other SWMUs

SWMUs 03-038(a) and 03-038(b) are next to each other on the south rim of Los Alamos Canyon near the Omega Bridge. Other sites in the vicinity of SWMUs 03-038(a) and 03-038(b) are SWMU 00-017, which discharged to the sites, and AOC C-00-044 in Los Alamos Canyon (Figure 8.2-1).

8.3.3 Summary of Previous Investigations

2008 Investigation Activities

Eighteen samples were collected from six locations along former inlet and outlet waste lines and around former building 03-700 and former structure 03-738 in 2008. Results from the sampling activities in 2008 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination at the site.

8.3.4 Site Contamination

SWMU 03-038(b) is collocated with SWMU 03-038(a) and the same data are used to evaluate both sites. Site contamination is evaluated in section 8.2.4.

8.3.5 Summary of Human Health Risk Screening

Human health risk screening results for SWMU 03-038(b) are presented in section 8.2.5.

8.3.6 Summary of Ecological Risk Screening

Ecological risk screening results for SWMU 03-038(b) are presented in section 8.2.5.

8.4 SWMU 03-055(c), Outfall

8.4.1 Site History and Operational History

SWMU 03-055(c) is an outfall and associated storm drain located north of the fire station (building 03-41) in the northeast corner of TA-03 (Figure 8.4-1). Storm water is channeled toward Los Alamos Canyon through a galvanized corrugated metal pipe (CMP) to the SWMU 03-055(c) outfall. From the early 1960s until 1991, floor drains in the fire station were tied into the SWMU 03-055(c) storm drain. In 1992, the fire station floor drains were connected to the TA-03 sanitary sewer system. Currently, the storm drain collects and channels only storm water runoff from parking lots located in the northern portion of TA-03 to the SWMU 03-055(c) outfall. The site is currently an undeveloped wooded area on DOE property.

8.4.2 Relationship to Other SWMUs

There are no upgradient SWMUs or AOCs that could have contributed contamination to SWMU 03-055(c).

8.4.3 Summary of Previous Investigations

1992 Investigation Activities

Two samples were collected from two locations in the drainage channel downgradient of the outfall in 1992. The 1992 investigation results are not decision-level data.

2008 Investigation Activities

Twenty samples were collected from ten locations within the outfall area and in the drainage downgradient of the outfall in 2008. Results from the sampling activities in 2008 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination at the site.

8.4.4 Site Contamination

8.4.4.1 Soil, Rock, and Sediment Sampling

As part of the Phase II investigation activities at SWMU 03-055(c), 12 samples were collected from 6 locations and analyzed for inorganic chemicals to define extent of contamination.

8.4.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

8.4.4.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at SWMU 03-055(c) consist of results from 32 samples collected from 10 locations in 2008 and 2012. The 32 samples include 12 soil and 20 sediment samples. Table 8.4-1 lists the samples collected and the analyses requested for each sample. Figure 8.4-1 shows the sampling locations.

Inorganic Chemicals

A total of 20 sediment samples were analyzed for TAL metals, nitrate, perchlorate, and cyanide, and 12 soil samples were analyzed for zinc. Table 8.4-2 presents the inorganic chemicals detected or detected above BVs. Figure 8.4-2 shows the spatial distribution of inorganic chemicals detected or detected above BVs.

Arsenic was detected above the sediment BV (3.98 mg/kg) in one sample at a concentration of 6.02 mg/kg. The Gehan and quantile tests indicated site concentrations of arsenic in sediment are statistically different from background (Figure F-144 and Table F-25). Arsenic is retained as a COPC.

Cadmium was not detected but had a DL (0.573 mg/kg) above the sediment BV (0.4 mg/kg) in 1 sample. The DL is only 0.173 mg/kg above the BV and cadmium was detected below BV in 19 other samples. Cadmium is not a COPC.

Calcium was detected above the sediment BV (4420 mg/kg) in two samples with a maximum concentration of 5670 mg/kg. The Gehan and quantile tests indicated site concentrations of calcium in sediment are not statistically different from background (Figure F-145 and Table F-25). Calcium is not a COPC.

Chromium was detected above the sediment BV (10.5 mg/kg) in two samples with a maximum concentration of 11.1 mg/kg. The Gehan and quantile tests indicated site concentrations of chromium in sediment are not statistically different from background (Figure F-146 and Table F-25). Chromium is not a COPC.

Cobalt was detected above the sediment BV (4.73 mg/kg) in one sample at a concentration of 8.52 mg/kg. The Gehan and quantile tests indicated site concentrations of cobalt in sediment are not statistically different from background (Figure F-147 and Table F-25). Cobalt is not a COPC.

Copper was detected above the sediment BV (11.2 mg/kg) in two samples with a maximum concentration of 15.1 mg/kg. The Gehan and quantile tests indicated site concentrations of copper in sediment are statistically different from background (Figure F-148 and Table F-25). Copper is retained as a COPC.

Cyanide was detected above the sediment BV (0.82 mg/kg) in three samples with a maximum concentration of 2.79 mg/kg. The quantile and slippage tests indicated site concentrations of cyanide in sediment are not statistically different from background (Figure F-149 and Table F-25). Cyanide is not a COPC.

Lead was detected above the sediment BV (19.7 mg/kg) in six samples with a maximum concentration of 174 mg/kg. The Gehan and quantile tests indicated site concentrations of lead in sediment are statistically different from background (Figure F-150 and Table F-25). Lead is retained as a COPC.

Nitrate was detected in seven samples with a maximum concentration of 1.59 mg/kg. Nitrate is naturally occurring, and the concentrations likely reflect naturally occurring levels. In addition, SWMU 03-055(c) is a storm drainage and is not a source of nitrate. Nitrate is not a COPC.

Selenium was detected above the sediment BV (0.3 mg/kg) in 2 samples with a maximum concentration of 1.13 mg/kg and was not detected but had DLs (1.56 mg/kg to 8.91 mg/kg) above the BV in 18 samples. Selenium is retained as a COPC.

Vanadium was detected above the sediment BV (19.7 mg/kg) in one sample at a concentration of 24 mg/kg. The Gehan and quantile tests indicated site concentrations of vanadium in sediment are not statistically different from background (Figure F-151 and Table F-25). Vanadium is not a COPC.

Zinc was detected above the soil and sediment BVs (48.8 mg/kg and 60.2 mg/kg) in 8 soil samples and 14 sediment samples with a maximum concentration of 279 mg/kg. The Gehan and quantile tests indicated site concentrations of zinc in soil and sediment are statistically different from background (Figure F-152 and Table F-26, and Figure F-153 and Table F-25, respectively). Zinc is retained as a COPC.

Organic Chemicals

A total of 20 sediment samples were analyzed for SVOCs, VOCs, PCBs, and explosive compounds. Table 8.4-3 presents the detected organic chemicals. Plate 33 shows the spatial distribution of detected organic chemicals.

Organic chemicals detected at SWMU 03-055(c) include acenaphthene; acetone; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; 2-butanone; chrysene; dibenzofuran; ethylbenzene; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 2-methylnaphthalene; naphthalene; phenanthrene; pyrene; toluene; trichlorofluoromethane; 1,2-xylene; and 1,3-xylene+1,4-xylene. The detected organic compounds are retained as COPCs.

Radionuclides

A total of 20 sediment samples were analyzed for americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Table 8.4-4 presents the radionuclides detected or detected above BVs/FVs. Figure 8.4-3 shows the spatial distribution of radionuclides detected or detected above BVs/FVs.

Plutonium-239/240 was detected above the sediment FV (0.068 pCi/g) in one sample at an activity of 0.0905 pCi/g. Plutonium-239/240 is retained as a COPC.

Tritium was detected in one sample at an activity of 0.116 pCi/g. Tritium is retained as a COPC.

8.4.4.4 Nature and Extent of Contamination

The nature and extent of inorganic, organic, and radionuclide COPCs at SWMU 03-055(c) are discussed below.

Inorganic Chemicals

Inorganic COPCs identified at SWMU 03-055(c) are arsenic, copper, lead, selenium, and zinc.

Arsenic was detected above the sediment BV in one sample at a concentration of 6.02 mg/kg. Concentrations decreased with depth and decreased downgradient. Lateral and vertical extent of arsenic are defined.

Copper was detected above the sediment BV in two samples with a maximum concentration of 15.1 mg/kg. Only one depth was sampled at location 03-603256, concentrations decreased with depth at location 03-603250, and concentrations increased downgradient. The residential SSL is approximately 207 times the maximum concentration. Further sampling for extent of copper is not warranted.

Lead was detected above the sediment BV in six samples with a maximum concentration of 174 mg/kg. Concentrations increased with depth at locations 03-603243 and 03-603248, decreased with depth at location 03-603258, and decreased downgradient. The residential SSL is approximately 5.7 times and the industrial SSL is approximately 11 times the maximum concentration where vertical extent is not defined (70 mg/kg at location 03-603248). Lateral extent of lead is defined and further sampling for vertical extent is not warranted.

Selenium was detected above the sediment BV in 2 samples with a maximum concentration of 1.13 mg/kg and was not detected but had DLs (1.56 mg/kg to 8.91 mg/kg) above the BV in 18 samples. Only 1 depth was sampled at locations 03-603255 and 03-603257, and concentrations decreased downgradient. The residential SSL is approximately 208 times the maximum concentration and 44 times the maximum DL. Lateral extent of selenium is defined and further sampling for vertical extent is not warranted.

Zinc was detected above the soil and sediment BVs in 8 soil sample and 14 sediment samples with a maximum concentration of 279 mg/kg. Concentrations increased with depth at location 03-603245, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 84 times the maximum concentration. Lateral extent of zinc is defined and further sampling for vertical extent is not warranted.

Organic Chemicals

Organic COPCs at SWMU 03-055(c) include acenaphthene; acetone; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; 2-butanone; chrysene; dibenzofuran; ethylbenzene; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 2-methylnaphthalene; naphthalene; phenanthrene; pyrene; toluene; trichlorofluoromethane; 1,2-xylene; and 1,3-xylene+1,4-xylene.

The PAHs acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, 2-methylnapthalene, naphthalene, phenanthrene, and pyrene were detected in from 2 to 19 samples. PAHs were detected most frequently in surface samples. The highest concentrations of PAHs were detected at location 00-603258, and concentrations of all PAHs decreased with depth at that location and decreased downgradient. The residential SSLs for PAHs were all greater than 10 times the maximum concentrations except for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene. The residential SSL for benzo(a)anthracene is approximately 10 times and the industrial SSL is approximately 215 times the maximum concentration where vertical extent is not defined (0.15 mg/kg at location 03-603248). The residential SSL for benzo(a)pyrene is approximately 8.1 times and the industrial SSL is approximately 171 times the maximum concentration where vertical extent is not defined (0.138 mg/kg at location 03-603248). The residential SSL for benzo(b)fluoranthene is approximately 6.3 times and the industrial SSL is approximately 133 times the maximum concentration where vertical extent is not defined (0.242 mg/kg at location 03-603248). The residential SSL for indeno(1,2,3-cd)pyrene is approximately 23 times and the industrial SSL is approximately 480 times the maximum concentration where vertical extent is not defined (0.0673 mg/kg at location 03-603248). The lateral extent of PAHs is defined and further sampling for vertical extent is not warranted.

Acetone was detected in one sample at a concentration of 0.00648 mg/kg. Concentrations increased with depth at location 03-603248 and decreased downgradient. The residential SSL is approximately 10,200,000 times the maximum concentration. Lateral extent of acetone is defined and further sampling for vertical extent is not warranted.

Aroclor-1254 was detected in 18 samples with a maximum concentration of 0.0347 mg/kg. Concentrations increased with depth at locations 03-603248 and 03-603250; concentrations did not change substantially with depth (0.006 mg/kg) at locations 03-603243 and 03-603245; only one depth was sampled at locations 03-603247, 03-603254, 03-603256, and 03-603257; concentrations decreased with depth at location 03-603258; and concentrations decreased downgradient. The residential SSL is approximately 32 times the maximum concentration. Lateral extent of Aroclor-1254 is defined and further sampling for vertical extent is not warranted.

Aroclor-1260 was detected in 18 samples with a maximum concentration of 0.036 mg/kg. Concentrations increased with depth at locations 03-603248 and 03-603250; concentrations did not change substantially with depth (0.007 mg/kg or less) at locations 03-603243 and 03-603245; only one depth was sampled at locations 03-603247, 03-603254, 03-603256, and 03-603257; concentrations decreased with depth at location 03-603258; and concentrations decreased downgradient. The residential SSL is approximately 68 times the maximum concentration. Lateral extent of Aroclor-1260 is defined and further sampling for vertical extent is not warranted.

Benzoic acid was detected in one sample at a concentration of 0.36 mg/kg. Concentrations decreased with depth and decreased laterally. Lateral and vertical extent of benzoic acid are defined.

Bis(2-ethylhexyl)phthalate was detected in 18 samples with a maximum concentration of 2.39 mg/kg. Concentrations increased with depth at location 03-603248, only one depth was sampled at locations 03-603247, 03-603254, 03-603256, and 03-603257; concentrations decreased with depth at all other locations; and concentrations decreased downgradient. The residential SSL is approximately 159 times the maximum concentration. Lateral extent of bis(2-ethylhexyl)phthalate is defined and further sampling for vertical extent is not warranted.

Butanone[2-] was detected in six samples with a maximum concentration of 0.23 mg/kg. Only one depth was sampled at location 03-603254; concentrations decreased with depth at all other locations; and concentrations decreased downgradient. The residential SSL is approximately 162,000 times the maximum concentration. Lateral extent of 2-butanone is defined and further sampling for vertical extent is not warranted.

Dibenzofuran was detected in three samples with a maximum concentration of 0.255 mg/kg. Concentrations decreased with depth at location 03-603258 and decreased downgradient. Lateral and vertical extent of dibenzofuran are defined.

Ethylbenzene was detected in four samples with a maximum concentration of 0.00161 mg/kg. Concentrations increased with depth at location 03-603249, decreased with depth at location 03-603258, and decreased downgradient. The residential SSL is approximately 46,300 times the maximum concentration. Lateral extent of ethylbenzene is defined and further sampling for vertical extent is not warranted.

Toluene was detected in four samples with a maximum concentration of 0.000616 mg/kg. Concentrations increased with depth at location 03-603248, only one depth was sampled at location 03-603254, concentrations decreased with depth at all other locations, and concentrations decreased downgradient. The residential SSL is approximately 8,470,000 times the maximum concentration. Lateral extent of toluene is defined and further sampling for vertical extent is not warranted.

Trichlorofluoromethane was detected in one sample at a concentration of 0.0133 mg/kg. Concentrations increased with depth at location 03-603245 and decreased downgradient. The residential SSL is approximately 91,700 times the maximum concentration. Lateral extent of trichlorofluoromethane is defined and further sampling for vertical extent is not warranted.

Xylene[1,2-] was detected in one sample at a concentration of 0.0015 mg/kg. Concentrations increased with depth at location 03-603258 and decreased downgradient. The residential SSL is approximately 532,000 times the maximum concentration. Lateral extent of 1,2-xylene is defined and further sampling for vertical extent is not warranted.

Xylene[1,3-]+xylene[1,4-] was detected in three samples with a maximum concentration of 0.00309 mg/kg. Concentrations decreased with depth at location 03-603258 and decreased downgradient. Lateral and vertical extent of 1,3-xylene+1,4-xylene are defined.

Radionuclides

Radionuclide COPCs at SWMU 03-055(c) include plutonium-239/240 and tritium.

Plutonium-239/240 was detected above the sediment FV in one sample at an activity of 0.0905 pCi/g. Activities decreased with depth and decreased downgradient. Lateral and vertical extent of plutonium-239/240 are defined.

Tritium was detected in one sample at an activity of 0.116 pCi/g. Activities decreased with depth at location 03-603250 and decreased downgradient. Lateral and vertical extent of tritium are defined.

Summary of Nature and Extent

The lateral and vertical extent of inorganic, organic, and radionuclide COPCs is defined or no further sampling for extent is warranted at SWMU 03-055(c).

8.4.5 Summary of Human Health Risk Screening

Industrial Scenario

The total excess cancer risk for the industrial scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.04, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–1.0 ft depth interval.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 2 × 10^{-7}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The construction worker HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.000002 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Residential Scenario

The total excess cancer risk for the residential scenario is 2 × 10^{-5}, which is greater than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The residential HI is 0.4, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.002 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Based on the risk-screening assessment results, no potential unacceptable noncarcinogenic risks or doses exist for the industrial, construction worker, and residential scenarios at SWMU 03-055(c) and no potential unacceptable carcinogenic risks exist for the industrial and construction worker scenarios. Potential unacceptable carcinogenic risk exists for the residential scenario.

8.4.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for SWMU 03-055(c).

9.0 FORMER TA-32 BACKGROUND AND FIELD INVESTIGATION RESULTS

One site at former TA-32 was sampled (Table 1.1-1) according to the approved Phase II work plan (LANL 2010, 110860; NMED 2011, 111674) and subsequent post-cleanup confirmation sampling.

9.1 Background of Former TA-32

One SWMU at former TA-32 is addressed in this report (Table 1.1-1).

- SWMU 32-002(b2) is former septic tank and its associated drainline and outfall.

The site of former TA-32 was occupied by the medical research facility in 1944 and after the research group expanded, operations were moved to TA-43 in 1953. All the structures at former TA-32 were removed after 1954. Before its current use, Los Alamos County used the site to store equipment and materials for road work and maintenance. Maintenance activities may have included the use of solvents, lubricants, and fuels; emptying of street sweeper contents until moved to a disposal facility; staging of asphalt, road salt, and other materials; and vehicle cleaning. The site has mixed ownership between the Los Alamos Public Schools, Los Alamos County, and private owners. Currently the site is mostly covered with asphalt pavement, a supermarket, a strip mall, and an automotive repair facility.

The site was investigated in 2008–2009 and 2012. Plate 34 shows the locations of this SWMU in former TA-32.

9.1.1 Operational History

The septic system, SWMU 32-002(b), was installed when the SWMU 32-002(a) septic system could no longer meet the usage requirement of the laboratory (32-1). The influent line of SWMU 32-002(a) was diverted to the septic tank of SWMU 32-002(b), which also received effluent from building 32-2. The outfall of SWMU 32-002(b) was at the edge of Los Alamos Canyon. The septic tank was removed in 1988, and the drainline was removed in 1996. SWMU 32-002(b) was split into SWMUs 32-002(b1) and 32-002(b2) in 2013 to expedite cleanup of the mesa-top portion of the site.

9.1.2 Summary of Releases

Research activities at building 32-1 involved radionuclides. Inorganic and organic chemicals may also have been used. Because no industrial waste line served former TA-32, it is possible chemical and radioactive wastes may have been disposed of in sinks and drains connected to the septic systems of SWMU 32-002(b2).

9.1.3 Summary of Previous Investigations

A Phase I RFI was conducted at former TA-32 in 1993. Samples were collected at SWMUs 32-001, 32-002(a), and 32-002(b) and AOC 32-003 and analyzed at on-site laboratories or did not have sufficient documentation to be validated.

A Phase II RFI and VCA were conducted at former TA-32 in 1996. Drainlines of SWMU 32-002(a) and SWMU 32-002(b) were removed, and part of the drainline of AOC 32-004 was also removed. Remedial activities included excavation of contaminated soil at SWMUs 32-002(a) and 32-002(b) and AOC 32-003. Samples collected at these four sites were analyzed at off-site laboratories for various combinations of the following: metals, SVOCs, VOCs, americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, and tritium. Results were presented in the historical investigation report for Upper Los Alamos Canyon Aggregate Area (LANL 2006, 091915). These data, combined with data from samples collected in 2008–2009, are presented in this investigation report.

9.1.4 Current Site Usage and Status

Former TA-32 was transferred to Los Alamos County in the 1960s. The site is currently developed and is being used commercially.

9.2 SWMU 32-002(b2), Soil Contamination from Former Septic System

9.2.1 Site History and Operational History

Former SWMU 32-002(b), a former septic system located at the edge of Los Alamos Canyon that served former buildings 32-01 and 32-02, was split into two new SWMUs [SWMUs 32-002(b1) and 32-002(b2)] in December 2012 to expedite completion of corrective actions on the mesa-top portion of the site owned by Los Alamos Public Schools (DOE 2012, 232356). SWMU 32-002(b1) is the portion of the former septic system that is located on property currently owned by Los Alamos Public Schools. The remainder of the septic system is located on property owned by DOE and is designated as SWMU 32-002(b2). SWMU 32-002(b2) includes the section of former inlet pipe, former septic tank 32-08, and the former outfall pipe located on a high-angle slope south of the Smith's Marketplace parking lot on property owned by DOE (Plate 34).

The former SWMU 32-002(b) septic system was installed between 1948 and 1950 directly northwest and slightly upgradient of the SWMU 32-002(a) septic tank, near the edge of Los Alamos Canyon. The SWMU 32-002(b) septic system consisted of a reinforced concrete tank (former structure 32-08) measuring 9 ft × 5 ft × 6 ft, inlet drainlines from former buildings 32-01 and 32-02, and an outlet drainline that discharged to an outfall at the edge of Los Alamos Canyon. This system was installed when the SWMU 32-002(a) septic system could no longer meet the usage requirement of the laboratory in former building 32-01. The influent line from the SWMU 32-002(a) septic system was diverted to the former SWMU 32-002(b) septic system, which also received effluent from former building 32-02, the medical research annex. The outfall of SWMU 32-002(b) was located at the edge of Los Alamos Canyon, approximately 15 ft southwest of the SWMU 32-002(a) outfall. The septic tank was removed in 1988 (LANL 1990, 007513), and the influent drainline was removed in 1996 and disposed of at TA-54, MDA G (LANL 1996, 059178, pp. 12, 71).

Research activities in former building 32-01 involved radionuclides; inorganic and organic chemicals may also have been used. Because no industrial waste line served former TA-32, it is possible chemical and radioactive wastes may have been disposed of in sinks and drains connected to the former SWMU 32-002(b) septic system.

9.2.2 Relationship to Other SWMUs

Upgradient SWMUs 32-002(a) and 32-002(b1) and AOC 32-003 likely contributed contamination to SWMU 32-002(b2).

9.2.3 Summary of Previous Investigations

Because former SWMU 32-002(b) was split into two new SWMUs [32-002(b1) and 32-002(b2)] in December 2012, the previous investigations described below were performed for former SWMU 32-002(b) and included collection of samples on both Los Alamos Public Schools and DOE property.

1993 Investigation Activities

Samples were collected from the former septic tank location, the outfall area, and former drainline locations in 1993. The 1993 investigation results are not decision-level data.

1996 Investigation Activities and VCA

Approximately 116 feet of inlet drainline associated with the former SWMU 32-002(b) septic system was removed in 1996. Confirmation samples were collected from five locations beneath the former drainline, and two samples were collected from two locations at the bottom of the former septic tank excavation. In addition, samples were collected from nine locations at the outfall area shared by SWMUs 32-002(a) and 32-002(b). Based on the 1996 Phase II RFI sampling results, approximately 1 ft^3 of soil was removed to reduce levels of Aroclor-1260 at the outfall, and the outfall drainline was grouted. Results from the sampling and remediation activities in 1996 were presented in the previous Phase II investigation and VCA report (LANL 1996, 059178).

2008 Investigation Activities

Twenty-two samples were collected from eleven locations in 2008. Results from the sampling activities in 2008 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination at the site.

2010 Accelerated Corrective Action

Eight deeper samples were collected from six existing sampling locations in 2010. Results from the sampling activities in 2010 were presented in Revision 1 of the remedy completion report for former TA-32 (LANL 2011, 111806.23). Revision 1 of the remedy completion report concluded that further evaluation is needed at SWMU 32-002(b) because elevated mercury concentrations were detected in the 1996 samples, resulting in a potential ecological risk for the earthworm as well as concentrations in excess of the residential SSL.

These locations, which are on DOE property, were resampled to confirm the presence of mercury at elevated levels. The subsequent sampling performed at SWMU 32-002(b) indicated additional sampling and remediation activities were necessary on the DOE-owned portion of the site [SWMU 32-002(b2)].

9.2.4 Site Contamination

9.2.4.1 Soil, Rock, and Sediment Sampling

As part of the Phase II investigation and remediation activities at SWMU 32-002(b2), a total of 129 samples were collected from 55 locations and analyzed for inorganic chemicals to define extent of contamination and verify cleanup goals.

2015 Investigation Activities

Approximately 158 yd^3 of mercury-contaminated soil at depths ranging from 2–5 ft bgs was removed from SWMU 32-002(b2) using a Menzi Muck spider excavator, packaged in waste bags, and shipped off-site to a licensed off-site disposal facility for final disposition. Mercury-contaminated soil at locations 32-61496, 32-61497, and 00-603593 was removed using hand methods. The excavated areas are shown on Plate 34.

Following soil removal, the excavated areas were restored with approximately 107 yd^3 of certified clean backfill material, and 24 yd^3 of topsoil was placed atop the backfill. The area was fertilized and reseeded, and 400 yd^2 of erosion-control matting was placed on top of the site.

A total of 22 confirmation samples were collected from 22 locations. Earthworm bioaccumulation composite samples were collected from three areas within the excavation boundary. One composite sample was collected approximately 50 ft outside and to the west of the excavation as a control. From each of these composite samples a mercury-only and an earthworm bioaccumulation sample was submitted for analysis. With the exception of the control area, coordinates for these composite samples were collocated with a historical sample location within these areas. Results of the bioaccumulation study are included in Appendix G.

9.2.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

9.2.4.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at SWMU 32-002(b2) consist of results from 151 samples collected from 60 locations from 2008 to 2015. The 151 samples include 65 soil and 86 tuff samples. Table 9.2-1 lists the samples collected and the analyses requested for each sample. Plate 34 shows the sampling locations.

Inorganic Chemicals

A total of 30 samples (1 soil and 29 tuff) were analyzed for TAL metals; 22 samples (1 soil and 21 tuff) were analyzed for nitrate, perchlorate, and cyanide; and 121 samples (64 soil and 57 tuff) were analyzed for mercury. Table 9.2-2 presents the inorganic chemicals detected or detected above BVs. Plate 35 shows the spatial distribution of inorganic chemicals detected or detected above BVs.

Antimony was detected above the Qbt 2,3,4 BV (0.5 mg/kg) in 1 sample at a concentration of 3.72 mg/kg and was not detected but had DLs (0.52 mg/kg to 1.14 mg/kg) above the BV in 13 samples. Antimony is retained as a COPC.

Arsenic was detected above the Qbt 2,3,4 BV (2.79 mg/kg) in three samples with a maximum concentration of 7.91 mg/kg. Arsenic is retained as a COPC.

Barium was detected above the Qbt 2,3,4 BV (46 mg/kg) in 10 samples with a maximum concentration of 220 mg/kg. Barium is retained as a COPC.

Chromium was detected above the Qbt 2,3,4 BV (7.14 mg/kg) in 24 samples with a maximum concentration of 167 mg/kg. Chromium is retained as a COPC.

Copper was detected above the Qbt 2,3,4 BV (4.66 mg/kg) in nine samples with a maximum concentration of 8.41 mg/kg. Copper is retained as a COPC.

Cyanide was not detected but had DLs (0.52 mg/kg to 0.59 mg/kg) above the Qbt 2,3,4 BV (0.5 mg/kg) in four samples. Cyanide is retained as a COPC.

Lead was detected above the Qbt 2,3,4 BV (11.2 mg/kg) in 12 samples with a maximum concentration of 67.3 mg/kg. Lead is retained as a COPC.

Mercury was detected above the soil and Qbt 2,3,4 BVs (0.1 mg/kg for both) in 45 soil samples and 34 tuff samples with a maximum concentration of 32.6 mg/kg. Mercury is retained as a COPC.

Nickel was detected above the Qbt 2,3,4 BV (6.58 mg/kg) in 15 samples with a maximum concentration of 28.5 mg/kg. Nickel is retained as a COPC.

Nitrate was detected in 12 samples with a maximum concentration of 8.5 mg/kg. Although nitrate is naturally occurring, SWMU 32-002(b2) is a septic system that managed sanitary wastewater. As a result, the concentrations detected may be site related rather than reflecting only naturally occurring levels. Nitrate is retained as a COPC.

Perchlorate was detected in three samples with a maximum concentration of 0.006 mg/kg. Perchlorate is retained as a COPC.

Selenium was detected above the Qbt 2,3,4 BV in 10 samples with a maximum concentration of 0.762 mg/kg and was not detected but had DLs (0.56 mg/kg to 1.18 mg/kg) above the BV in 6 samples. Selenium is retained as a COPC.

Silver was detected above the Qbt 2,3,4 BV (1 mg/kg) in three samples with a maximum concentration of 5.1 mg/kg. Silver is retained as a COPC.

Sodium was detected above the Qbt 2,3,4 BV (2770 mg/kg) in 1 sample at a concentration of 2840 mg/kg. The concentration was only 70 mg/kg above the BV and was less than or equivalent to the two highest concentrations in the upper tuff background data set (2790 mg/kg and 7700 mg/kg). Sodium was detected below BV in 27 other samples. Sodium is not a COPC.

Zinc was detected above the Qbt 2,3,4 BV (63.5 mg/kg) in three samples with a maximum concentration of 98.7 mg/kg. Zinc is retained as a COPC.

Organic Chemicals

A total of 35 samples (8 soil and 27 tuff) were analyzed for SVOCs; 26 samples (1 soil and 25 tuff) for VOCs; and 22 samples (1 soil and 21 tuff) for PCBs and dioxins/furans. Table 9.2-3 presents the detected organic chemicals. Plate 36 shows the spatial distribution of detected organic chemicals.

Dioxins and Furans

Dioxins and furans are frequently detected as a result of environmental sampling but generally are not associated with industrial activities conducted at the Laboratory or released from SWMUs or AOCs being investigated at the Laboratory.

Dioxins and furans are known to be widely distributed in the environment from a number of sources, both natural, such as forest fires, and anthropogenic, such as industrial sources and burning of municipal trash and other waste materials. Industrial sources of dioxins and furans are primarily associated with impurities in the production of chlorinated chemical products (e.g., pentachlorophenol, chlorinated herbicides) and the wastes associated with production of those materials. Another industrial source is the pulp and paper industry and processes that bleach wood pulp (EPA 2006, 600913). None of these common industrial process-related source activities have occurred at the Laboratory. Other anthropogenic sources of dioxins and furans include the combustion of materials containing chlorine, such as the incineration of municipal trash containing chlorinated plastics, and other waste materials (EPA 2006, 600913).

Because of the presence of an incinerator at former TA-32 (SWMU 32-001), the investigation work plan for Upper Los Alamos Canyon Aggregate Area specified analysis of samples collected at TA-32 for dioxins and furans (LANL 2006, 091916). Based on the results of the 2008 sampling, the site did not appear to be a source of dioxins and furans and additional sampling for dioxins and furans was not specified in the approved Phase II investigation work plan (LANL 2010, 110860; NMED 2011, 111674).

Polycyclic Aromatic Hydrocarbons

PAHs are a class of SVOCs frequently detected as a result of environmental sampling but generally were not released from the SWMUs or AOCs being investigated. PAHs unrelated to site activities are thus often detected in samples analyzed for the presence of site-related SVOCs.

PAHs are known to be widely distributed in the environment from a number of sources, both natural, such as forest fires, and anthropogenic, such as combustion of fossil fuels, oil drips off motor vehicles, vehicle tires, coal tar pitch, and weathering or eroding of asphalt pavement (Kose et al. 2008, 219977; Teaf 2008, 219976). PAHs from these sources generally occur as complex mixtures, not as single compounds. Individual PAH compounds can be manufactured for research purposes, and some PAHs (e.g., anthracene, fluorene, naphthalene, and pyrene) are used in dye production, the manufacture of synthetic fibers, and in plastics and pesticides.

The principal sources of PAHs in soil along parking lots, roads, and highways are vehicular exhaust and emissions, the wearing of tires, and asphalt. PAH-containing materials, such as asphalt and rubber particles, do not easily dissolve in water, preventing migration, except as suspended particles in storm water. PAH concentrations in excess of soil cleanup levels may result from common anthropogenic sources, such as runoff from asphalt parking lots.

Site Activities

SWMU 32-002(b2) is a former septic system that received wastewater from a biomedical research laboratory and was identified as a SWMU because of possible contamination from radionuclides and laboratory chemicals. There are no known uses or sources of dioxins and furans or PAHs in the laboratory.

The dioxin and furan congeners detected at SWMU 32-002(b2) were detected at concentrations ranging from 0.000000103 mg/kg to 0.00246 mg/kg, with 137 of 152 detections being hepta-, hexa-, and octa-chlorinated congeners. Octa-chlorinated congeners were present at the highest concentrations. These results likely reflect natural and/or anthropogenic background rather than a site-related release. The dioxin and furan congeners detected in samples used to characterize this site [1,2,3,4,6,7,8-heptachlorodibenzodioxin; 1,2,3,4,6,7,8-heptachlorodibenzofuran; 1,2,3,4,7,8,9-heptachlorodibenzofuran; 1,2,3,4,7,8-hexachlorodibenzodioxin; 1,2,3,6,7,8-hexachlorodibenzodioxin; 1,2,3,7,8,9-hexachlorodibenzodioxin; 1,2,3,4,7,8-hexachlorodibenzofuran; 1,2,3,6,7,8-hexachlorodibenzofuran; 1,2,3,7,8,9-hexachlorodibenzofuran; 2,3,4,6,7,8-hexachlorodibenzofuran; 1,2,3,4,6,7,8,9-octachlorodibenzodioxin; 1,2,3,4,6,7,8,9-octachlorodibenzofuran; 1,2,3,7,8-pentachlorodibenzodioxin; 1,2,3,7,8-pentachlorodibenzofuran; and 2,3,4,7,8-pentachlorodibenzofuran] are not related to historic Laboratory site operations and are not COPCs.

The SWMU 32-002(b2) septic system is located in an area that was transferred to Los Alamos County following cessation of Laboratory activities at former TA-32. The area was used for storage of materials, including fill containing pieces of asphalt and street sweepings. As there was no known source of PAHs in the biomedical laboratory, the asphalt-containing materials formerly stored at this site by Los Alamos County are the likely source of PAHs found in soil samples. The PAHs detected in samples used to characterize this site [benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; fluoranthene; indeno(1,2,3-cd)pyrene; phenanthrene; and pyrene] are associated with asphalt, are not related to historic Laboratory site operations, and are not COPCs.

Organic COPCs

Other organic chemicals detected at SWMU 32-002(b2) include Aroclor-1260, bis(2-ethylhexyl)phthalate, butylbenzylphthalate, and methylene chloride. The detected organic chemicals listed are retained as COPCs.

Radionuclides

A total of 22 samples (1 soil and 21 tuff) were analyzed for americium-241, isotopic plutonium, tritium, gamma-emitting radionuclides, isotopic uranium, and strontium-90. Table 9.2-4 presents the radionuclides detected or detected above BVs/FVs. Plate 37 shows the spatial distribution of radionuclides detected or detected above BVs/FVs.

Plutonium-239/240 was detected below 1 ft bgs in one soil sample and detected in one tuff sample with a maximum activity of 0.171 pCi/g. Plutonium-239/240 is retained as a COPC.

Strontium-90 was detected in one tuff sample at an activity of 0.45 pCi/g. Strontium-90 is retained as a COPC.

Uranium-235/236 was detected above the Qbt 2,3,4 BV (0.09 pCi/g) in one sample at an activity of 0.104 pCi/g. Uranium-235/236 is retained as a COPC.

9.2.4.4 Nature and Extent of Contamination

The nature and extent of inorganic, organic, and radionuclide COPCs at SWMU 32-002(b2) are discussed below.

Inorganic Chemicals

Inorganic COPCs at SWMU 32-002(b2) include antimony, arsenic, barium, chromium, copper, cyanide, lead, mercury, nickel, nitrate, perchlorate, selenium, silver, and zinc.

Antimony was detected above the Qbt 2,3,4 BV in 1 sample at a concentration of 3.72 mg/kg and was not detected but had DLs (0.52 mg/kg to 1.14 mg/kg) above the BV in 13 samples. Concentrations decreased with depth at location 00-603595 and decreased downgradient. The residential SSL is approximately 27 times the maximum DL. Further sampling for extent of antimony is not warranted.

Arsenic was detected above the Qbt 2,3,4 BV in three samples with a maximum concentration of 7.91 mg/kg. Concentrations decreased with depth at locations 00-603595 and 00-603597 and decreased downgradient. Lateral and vertical extent of arsenic are defined.

Barium was detected above the Qbt 2,3,4 BV in 10 samples with a maximum concentration of 220 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of barium are defined.

Chromium was detected above the Qbt 2,3,4 BV in 24 samples with a maximum concentration of 167 mg/kg. Concentrations increased with depth at locations 00-603596 and 00-603598, decreased with depth at all other locations, and decreased downgradient. As described in section 4.2, SWMU 32-002(b2) is not a potential source of hexavalent chromium and use of the SSL for trivalent chromium to determine whether additional sampling is warranted is appropriate. The residential SSL for trivalent chromium (117,000 mg/kg) is approximately 701 times the maximum concentration. Lateral extent of chromium is defined and further sampling for vertical extent is not warranted.

Copper was detected above the Qbt 2,3,4 BV in nine samples with a maximum concentration of 8.41 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of copper are defined.

Cyanide was not detected but had DLs (0.52 mg/kg to 0.59 mg/kg) above the Qbt 2,3,4 BV in four samples. The residential SSL is approximately 19 times the maximum DL, and the industrial SSL is approximately 106 times the maximum DL. Further sampling for extent of cyanide is not warranted.

Lead was detected above the Qbt 2,3,4 BV in 12 samples with a maximum concentration of 67.3 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of lead are defined.

Mercury was detected above the soil and Qbt 2,3,4 BVs in 45 soil samples and 34 tuff samples with a maximum concentration of 32.6 mg/kg. Concentrations increased with depth at location 32-614812, did not change substantially with depth (0.05 mg/kg) at location 32-61509, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 5.3 times and the industrial SSL is approximately 89 times the maximum concentration where vertical extent is not defined (4.4 mg/kg at location 32-614812). Lateral extent of mercury is defined and further sampling for vertical extent is not warranted.

Nickel was detected above the Qbt 2,3,4 BV in 15 samples with a maximum concentration of 28.5 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of nickel are defined.

Nitrate was detected in 12 samples with a maximum concentration of 8.5 mg/kg. Concentrations did not change substantially with depth (0.03 mg/kg) at location 00-603596, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 14,700 times the maximum concentration. Lateral extent of nitrate is defined and further sampling for vertical extent is not warranted.

Perchlorate was detected in three samples with a maximum concentration of 0.006 mg/kg. Concentrations increased with depth at location 00-603598; concentrations did not change substantially with depth (0.0004 mg/kg) at location 00-603597; and concentrations decreased downgradient. The residential SSL is approximately 9130 times the maximum concentration. Lateral extent of perchlorate is defined and further sampling for vertical extent is not warranted.

Selenium was detected above the Qbt 2,3,4 BV in 10 samples with a maximum concentration of 0.762 mg/kg and was not detected but had DLs (0.56 mg/kg to 1.18 mg/kg) above the BV in 6 samples. Concentrations increased with depth at locations 00-603589, 00-603590, and 00-603591; decreased with depth at all other locations; and decreased downgradient. The residential SSL is approximately 513 times the maximum concentration and 331 times the maximum DL. Further sampling for extent of selenium is not warranted.

Silver was detected above the Qbt 2,3,4 BV in three samples with a maximum concentration of 5.1 mg/kg. Concentrations did not change substantially with depth (0.3 mg/kg) at location 00-603597, decreased with depth at location 00-603595, and decreased downgradient. The residential SSL is approximately 77 times the maximum concentration. Lateral extent of silver is defined and further sampling for vertical extent is not warranted.

Zinc was detected above the Qbt 2,3,4 BV in three samples with a maximum concentration of 98.7 mg/kg. Concentrations did not change substantially with depth (2.8 mg/kg) at location 00-603595, decreased with depth at location 00-603590, and decreased downgradient. The residential SSL is approximately 238 times the maximum concentration. Lateral extent of zinc is defined and further sampling for vertical extent is not warranted.

Organic Chemicals

Organic COPCs at SWMU 32-002(b2) include Aroclor-1260, bis(2-ethylhexyl)phthalate, butylbenzylphthalate, and methylene chloride.

Aroclor-1260 was detected in five samples with a maximum concentration of 0.088 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of Aroclor-1260 are defined.

Bis(2-ethylhexyl)phthalate was detected in seven samples with a maximum concentration of 0.7 mg/kg. Concentrations increased with depth at location 00-603596, did not change substantially with depth (0.01 mg/kg) at location 00-603591, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 543 times the maximum concentration. Lateral extent of bis(2-ethylhexyl)phthalate is defined and further sampling for vertical extent is not warranted.

Butylbenzylphthalate was detected in two samples with a maximum concentration of 0.085 mg/kg. Concentrations decreased with depth at location 00-603591 and decreased downgradient. Lateral and vertical extent of butylbenzylphthalate are defined.

Methylene chloride was detected in two samples with a maximum concentration of 0.0084 mg/kg. Concentrations increased with depth at locations 00-603594 and 00-603599 and decreased downgradient. The residential SSL is approximately 48,700 times the maximum concentration. Lateral extent of methylene chloride is defined and further sampling for vertical extent is not warranted.

Radionuclides

Radionuclide COPCs at SWMU 32-002(b2) include plutonium-239/240, strontium-90, and uranium-235/236.

Plutonium-239/240 was detected below 1 ft bgs in one soil sample and detected in one tuff sample with a maximum activity of 0.171 pCi/g. Activities decreased with depth at location 00-603597 and decreased downgradient. Lateral and vertical extent of plutonium-239/240 are defined.

Strontium-90 was detected in one tuff sample at an activity of 0.45 pCi/g. Activities decreased with depth at location 00-603595 and decreased downgradient. Lateral and vertical extent of strontium-90 are defined.

Uranium-235/236 was detected above the Qbt 2,3,4 BV in one sample at an activity of 0.104 pCi/g. Activities increased with depth at location 00-603599 and increased downgradient. The residential SAL is approximately 404 times the maximum activity. Further sampling for lateral and vertical extent of uranium-235/236 is not warranted.

Summary of Nature and Extent

The lateral and vertical extent of inorganic, organic, and radionuclide COPCs is defined or no further sampling for extent is warranted at SWMU 32-002(b2).

9.2.5 Summary of Human Health Risk Screening

Industrial Scenario

The total excess cancer risk for the industrial scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.004 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.6, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.05 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Residential Scenario

The total excess cancer risk for the residential scenario is 9×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.6, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.8 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Based on the risk-screening assessment results, no potential unacceptable carcinogenic and noncarcinogenic risks or doses exist for the industrial, construction worker, and residential scenarios at SWMU 32-002(b2).

9.2.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for SWMU 32-002(b2).

10.0 TA-43 BACKGROUND AND FIELD INVESTIGATION RESULTS

One site [AOC C-43-001] at TA-43 was sampled (Table 1.1-1) according to the approved Phase II work plan (LANL 2010, 110860; NMED 2011, 111674) and subsequent post-cleanup confirmation sampling.

10.1 Background of TA-43

One AOC at TA-43 is addressed in this report (Table 1.1-1).

- AOC C-43-001 is a storm drain outfall that collects runoff from the HRL (building 43-1) loading dock and functions as the overflow from the lift station (structure 43-10). It discharges south of the HRL to the south-facing slope of Los Alamos Canyon.

10.1.1 Operational History

The storm drain outfall, AOC C-43-001, receives discharges from two storm drains that collect runoff from the HRL loading dock and from the overflow at a lift station (structure 43-10) and drains onto the south-facing slope of Los Alamos Canyon.

10.1.2 Summary of Releases

Trace amounts of a wide range of radionuclides were used in many animal studies at HRL. While all of the materials were disposed of by packaging as radioactive waste and shipped to TA-54, it is possible that some of the waste could have been disposed of in the drains (Potter 1994, 058454) until 1975. After that time, containers were provided for the transfer of contaminated liquid wastes to the Laboratory's industrial waste treatment plant at TA-50. Treated cooling water, once-through cooling water, and wastes from photoprocessing were routed to the sanitary waste system at various times. After 1987, recovery units, collection points, and the types of photochemicals being used were upgraded in an attempt to eliminate hazardous constituents. There are no known leaks in the sanitary waste system currently serving the HRL.

Contaminants may have been released to the environment through the TA-43 storm drain outfalls. AOC 43-001(b2), a storm drain outfall that discharges west of the HRL to the south-facing slope of Los Alamos Canyon, may have historically discharged radioactively contaminated water and/or once-through and treated cooling water (DOE 1987, 008663). AOC C-43-001 may have received sanitary waste if an overflow had occurred and/or radioactive, nonsanitary cooling water, although no documentation was found of any routine releases into the storm drains.

The pathological organic wastes incinerated were contaminated with trace quantities of nontransuranic isotopes. The incinerator, SWMU 43-002, was removed in 1992, the passage to the stack was sealed off with concrete mortar, and the top of the stack was blocked with a stack cover (Watanabe 1993, 058453). The ash pit remains, and the cleanout door is located in the east wall of the HRL.

10.2 AOC C-43-001, Storm Drain Outfall

10.2.1 Site History and Operational History

AOC C-43-001 is a storm drain system and outfall that discharges to Los Alamos Canyon in TA-43. The storm drain system collects storm water runoff from the HRL (building 43-1) loading dock and also functions as the overflow for a sanitary lift station (structure 43-10) (Plate 38). The overflow line is an 8-in.-diameter VCP that extends from structure 43-10 130 ft south to a manhole. A 12-in.-diameter CMP, which receives storm water from two storm drains and any effluent from the overflow, flows southwest for 160 ft and discharges into Los Alamos Canyon south of the HRL. The sanitary waste lines for the HRL [SWMU 43-001(a1) and AOC 43-001(a2)] may have become clogged from time-to-time, causing an overflow at the lift station. Any sanitary waste carried through the sewer lines could have discharged to the storm drain system. Although no documentation was found to confirm any routine releases to the storm drains, the outfall may have received radioactive, nonsanitary cooling water. Currently, the outfall is located on the undeveloped north slope of Los Alamos Canyon on DOE property.

10.2.2 Relationship to Other SWMUs

There are no upgradient SWMUs or AOCs that may have contributed contamination to AOC C-43-001. AOC 43-001(b2), a storm drain outfall that discharges west of the HRL to the south-facing slope of Los Alamos Canyon is located upgradient of AOC C-43-001. However, the outfall discharge area is west of AOC C-43-001.

10.2.3 Summary of Previous Investigations

2008 Investigation Activities

Fifteen samples were collected from seven locations in the area below the outfall in 2008. Results from the sampling activities in 2008 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination at the site.

10.2.4 Site Contamination

10.2.4.1 Soil, Rock, and Sediment Sampling

As part of the Phase II investigation activities at AOC C-43-001, a total of 177 samples were collected from 34 locations and analyzed for inorganic chemicals to define extent of contamination.

2012 to 2015 Investigation Activities

Soil sampling was conducted in 2012 and extent was defined for all COPCs except for lead. The analytical results indicated high concentrations of lead at various depths at three step-out sampling locations; the maximum concentration was approximately 50,000 mg/kg at one location. Additional sampling within and around the locations was conducted in 2013 to define the lateral and vertical extent of the lead contamination and to determine the extent of soil removal required to achieve the residential cleanup level.

In 2015, x-ray fluorescence (XRF) was used to screen soil at multiple depths at the three locations and multiple surrounding step-out locations. The samples collected for XRF screening were also sent to an off-site analytical laboratory and analyzed for lead. Based on the XRF screening and analytical results, no substantially elevated concentrations of lead were reported; the maximum concentration of lead was 136 mg/kg. Thus, the concentrations of lead at all locations are below the residential cleanup level.

Following further evaluation of site history, current conditions, and applicable data, the high concentrations of lead detected at the three locations were determined to be most likely from very small pieces of solid lead collected with the 2013 soil samples.

10.2.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

10.2.4.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at AOC C-43-001 consist of results from 192 samples collected from 40 locations from 2009 to 2015. The 192 samples include 40 soil, 9 sediment, and 143 tuff samples. Table 10.2-1 lists the samples collected and the analyses requested for each sample. Plate 38 shows the sampling locations.

Inorganic Chemicals

A total of 15 samples (8 sediment and 7 tuff) were analyzed for TAL metals, nitrate, perchlorate, and cyanide, and 177 samples (40 soil, 1 sediment, and 136 tuff) were analyzed for lead. Table 10.2-2 presents the inorganic chemicals detected or detected above BVs. Plate 39 shows the spatial distribution of inorganic chemicals detected or detected above BVs.

Arsenic was detected above the sediment BV (3.98 mg/kg) in two samples with a maximum concentration of 4.5 mg/kg. The Gehan and quantile tests indicated site concentrations of arsenic in sediment are not statistically different from background (Figure F-154 and Table F-27). Arsenic is not a COPC.

Barium was detected above the Qbt 2,3,4 BV (46 mg/kg) in 1 sample at a concentration of 46.1 mg/kg. The concentration was only 0.1 mg/kg above BV and was below the 2 highest values in the background data set for upper tuff units (48.4 mg/kg and 51.6 mg/kg). Barium was detected below BVs in 14 other samples. Barium is not a COPC.

Cadmium was detected above the sediment BV (0.4 mg/kg) in two samples with a maximum concentration of 0.46 mg/kg. The Gehan and quantile tests indicated site concentrations of cadmium in sediment are statistically different from background (Figure F-155 and Table F-27). Cadmium is retained as a COPC.

Calcium was detected above the sediment and Qbt 2,3,4 BVs (4420 mg/kg and 2200 mg/kg) in one sediment sample and one tuff sample with a maximum concentration of 4670 mg/kg. The Gehan and quantile tests indicated site concentrations of calcium in sediment are not statistically different from background (Figure F-156 and Table F-27). There were too few tuff samples to perform statistical tests but the maximum concentration was greater than the highest concentration in the background data set (2230 mg/kg). Calcium is retained as a COPC.

Chromium was detected above the sediment and Qbt 2,3,4 BVs (10.5 mg/kg and 7.14 mg/kg) in three sediment samples and four tuff samples with a maximum concentration of 43.5 mg/kg. The Gehan and slippage tests indicated site concentrations of chromium in sediment are statistically different from background (Figure F-157 and Table F-27). Chromium is retained as a COPC.

Cobalt was detected above the sediment BV (4.73 mg/kg) in one sample at a concentration of 4.9 mg/kg. The Gehan and quantile tests indicated site concentrations of cobalt in sediment are not statistically different from background (Figure F-158 and Table F-27). Cobalt is not a COPC.

Copper was detected above the sediment and Qbt 2,3,4 BVs (11.2 mg/kg and 4.66 mg/kg) in four sediment samples and four tuff samples with a maximum concentration of 52 mg/kg. The Gehan and quantile tests indicated site concentrations of copper in sediment are statistically different from background (Figure F-159 and Table F-27). Copper is retained as a COPC.

Cyanide was detected above the sediment BV (0.82 mg/kg) in one sample at a concentration of 1.3 mg/kg and was not detected but had DLs (0.54 mg/kg and 0.62 mg/kg) above the Qbt 2,3,4 BV (0.5 mg/kg) in two samples. Cyanide is retained as a COPC.

Lead was detected above the soil, sediment, and Qbt 2,3,4 BVs (22.3 mg/kg, 19.7 mg/kg, and 11.2 mg/kg) in 26 soil samples, 6 sediment samples, and 15 tuff samples with a maximum concentration of 202 mg/kg. The Gehan and quantile tests indicated site concentrations of lead in sediment are statistically different from background (Figure F-160 and Table F-27). Lead is retained as a COPC.

Mercury was detected above the sediment and Qbt 2,3,4 BVs (0.1 mg/kg for both) in five sediment samples and two tuff samples with a maximum concentration of 0.308 mg/kg. Mercury is retained as a COPC.

Nickel was detected above the Qbt 2,3,4 BV (6.58 mg/kg) in two samples with a maximum concentration of 11.3 mg/kg. There were too few tuff samples to perform statistical tests but the maximum concentration was greater than the highest concentration in the background data set (7 mg/kg). Nickel is retained as a COPC.

Nitrate was detected in 12 samples with a maximum concentration of 1.6 mg/kg. Nitrate is naturally occurring, and the concentrations likely reflect naturally occurring levels. In addition, AOC C-43-001 is a storm drain and is not a source of nitrate. Nitrate is not a COPC.

Selenium was detected above the sediment and Qbt 2,3,4 BVs (0.3 mg/kg for both) in one sediment sample and three tuff samples with a maximum concentration of 0.41 mg/kg and was not detected but had DLs (0.53 mg/kg to 0.61 mg/kg) above the BVs in six sediment samples and one tuff sample. Selenium is retained as a COPC.

Silver was detected above the sediment BV (1 mg/kg) in 1 sample at a concentration of 1.1 mg/kg. The concentration is only 0.1 mg/kg above BV and silver was not detected above BV in 14 other samples. Silver is not a COPC.

Vanadium was detected above the sediment BV (19.7 mg/kg) in one sample at a concentration of 20.4 mg/kg. The Gehan and quantile tests indicated site concentrations of vanadium in sediment are not statistically different from background (Figure F-161 and Table F-27). Vanadium is not a COPC.

Zinc was detected above the sediment BV (60.2 mg/kg) in five samples with a maximum concentration of 144 mg/kg. The Gehan and quantile tests indicated site concentrations of zinc in sediment are statistically different from background (Figure F-162 and Table F-27). Zinc is retained as a COPC.

Organic Chemicals

A total of 15 samples (7 tuff and 8 sediment) were analyzed for SVOCs, VOCs, PCBs, and dioxins/furans. Table 10.2-3 presents the detected organic chemicals. Plate 40 shows the spatial distribution of detected organic chemicals.

Dioxins and Furans

Dioxins and furans are frequently detected as a result of environmental sampling but generally are not associated with industrial activities conducted at the Laboratory or released from SWMUs or AOCs being investigated at the Laboratory.

Dioxins and furans are known to be widely distributed in the environment from a number of sources, both natural, such as forest fires, and anthropogenic, such as industrial sources and burning of municipal trash and other waste materials. Industrial sources of dioxins and furans are primarily associated with impurities in the production of chlorinated chemical products (e.g., pentachlorophenol, chlorinated herbicides) and the wastes associated with production of those materials. Another industrial source is the pulp and paper industry and processes that bleach wood pulp (EPA 2006, 600913). None of these common industrial process-related source activities have occurred at the Laboratory. Other anthropogenic sources of dioxins and furans include the combustion of materials containing chlorine, such as the incineration of municipal trash containing chlorinated plastics, and other waste materials (EPA 2006, 600913).

Because of the former presence of an incinerator at TA-43 (SWMU 43-002), the investigation work plan for Upper Los Alamos Canyon Aggregate Area specified analysis of samples collected at TA-43 for dioxins and furans (LANL 2006, 091916). Based on the results of the 2008 sampling, the site did not appear to be a source of dioxins and furans and additional sampling for dioxins and furans was not specified in the approved Phase II investigation work plan (LANL 2010, 110860; NMED 2011, 111674).

Polycyclic Aromatic Hydrocarbons

PAHs are a class of SVOCs frequently detected as a result of environmental sampling but generally were not released from the SWMUs or AOCs being investigated. PAHs unrelated to site activities are thus often detected in samples analyzed for the presence of site-related SVOCs.

PAHs are known to be widely distributed in the environment from a number of sources, both natural, such as forest fires, and anthropogenic, such as combustion of fossil fuels, oil drips off motor vehicles, vehicle tires, coal tar pitch, and weathering or eroding of asphalt pavement (Kose et al. 2008, 219977; Teaf 2008, 219976). PAHs from these sources generally occur as complex mixtures, not as single compounds. Individual PAH compounds can be manufactured for research purposes, and some PAHs (e.g., anthracene, fluorene, naphthalene, and pyrene) are used in dye production, the manufacture of synthetic fibers, and in plastics and pesticides.

The principal sources of PAHs in soil along parking lots, roads, and highways are vehicular exhaust and emissions, the wearing of tires, and asphalt. PAH-containing materials, such as asphalt and rubber particles, do not easily dissolve in water, preventing migration, except as suspended particles in storm water. PAH concentrations in excess of soil cleanup levels may result from common anthropogenic sources, such as runoff from asphalt parking lots.

Site Activities

AOC C-43-001 is a storm drain system outside the TA-43 HRL and was identified as an AOC because of potential for release of radionuclides from the laboratory, which could then have contaminated storm water. There are no known uses or sources of dioxins and furans or PAHs in the laboratory.

The dioxin and furan congeners detected at AOC C-43-001 were detected at concentrations ranging from 0.0000000812 mg/kg to 0.000711 mg/kg, with 125 of 155 detections being hepta-, hexa-, and octa-chlorinated congeners. Octa-chlorinated congeners were present at the highest concentrations. These results likely reflect natural and/or anthropogenic background rather than a site-related release. The dioxin and furan congeners detected in samples used to characterize this site [1,2,3,4,6,7,8-heptachlorodibenzodioxin; 1,2,3,4,6,7,8-heptachlorodibenzofuran; 1,2,3,4,7,8,9-heptachlorodibenzofuran; 1,2,3,4,7,8-hexachlorodibenzodioxin; 1,2,3,6,7,8-hexachlorodibenzodioxin; 1,2,3,7,8,9-hexachlorodibenzodioxin; 1,2,3,4,7,8-hexachlorodibenzofuran; 1,2,3,6,7,8-hexachlorodibenzofuran; 1,2,3,7,8,9-hexachlorodibenzofuran; 2,3,4,6,7,8-hexachlorodibenzofuran; 1,2,3,4,6,7,8,9-octachlorodibenzodioxin; 1,2,3,4,6,7,8,9-octachlorodibenzofuran; 1,2,3,7,8-pentachlorodibenzodioxin; 1,2,3,7,8-pentachlorodibenzofuran; 2,3,4,7,8-pentachlorodibenzofuran; 2,3,7,8-tetrachlorodibenzodioxin; and 2,3,7,8-tetrachlorodibenzodioxin] are not related to historic Laboratory site operations and are not COPCs.

The AOC C-43-001 storm drain system receives storm runoff from paved parking areas and roadways around the HRL, as well as roof drainage from the building. The asphalt paving and roofing materials are potential sources of PAHs in storm water and are not related to the potential releases for which the site was identified as an AOC. The samples for this site were collected on the slope below the outfall in an area impacted by storm water runoff. The PAHs detected in samples used to characterize this site [acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, 2-methylnaphthalene, naphthalene, phenanthrene, and pyrene] are associated with runoff from asphalt paving and roofs, are not related to historic Laboratory site operations, and are not COPCs.

Organic COPCs

Other organic chemicals detected at AOC C-43-001 include acetone, Aroclor-1254, Aroclor-1260, bis(2-ethylhexyl)phthalate, bromomethane, butylbenzylphthalate, dibenzofuran, 4-isopropyltoluene, and toluene. The detected organic chemicals listed are retained as COPCs.

Radionuclides

A total of 15 samples (7 tuff and 8 sediment) were analyzed for americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Table 10.2-4 presents the radionuclides detected or detected above BVs/FVs. Figure 10.2-1 shows the spatial distribution of radionuclides detected or detected above BVs/FVs.

Tritium was detected in one sample at an activity of 1.71 pCi/g. Tritium is retained as a COPC.

10.2.4.4 Nature and Extent of Contamination

The nature and extent of inorganic, organic, and radionuclide COPCs at AOC C-43-001 are discussed below.

Inorganic Chemicals

Inorganic COPCs at AOC C-43-001 include cadmium, calcium, chromium, copper, cyanide, lead, mercury, nickel, selenium, and zinc.

Cadmium was detected above the sediment BV in two samples with a maximum concentration of 0.46 mg/kg. Concentrations decreased with depth at all locations and increased downgradient. The residential SSL is approximately 153 times the maximum concentration. Vertical extent of cadmium is defined and further sampling for lateral extent is not warranted.

Calcium was detected above the sediment and Qbt 2,3,4 BVs in two samples with a maximum concentration of 4670 mg/kg. Concentrations decreased with depth at location 00-604278 and decreased downgradient. Lateral and vertical extent of calcium are defined.

Chromium was detected above the sediment and Qbt 2,3,4 BVs in three sediment samples and four tuff samples with a maximum concentration of 43.5 mg/kg. Concentrations increased with depth at locations 00-604278, 00-604279, and 00-604286; decreased with depth at all other locations; and increased laterally (the concentration in the shallow sample at location 00-604277 was 9.6 mg/kg and below the sediment BV [Appendix E, Pivot Tables]). As described in section 4.2, AOC C-43-001 is not a potential source of hexavalent chromium and use of the SSL for trivalent chromium to determine whether additional sampling is warranted is appropriate. The residential SSL for trivalent chromium (117,000 mg/kg) is approximately 2690 times the maximum concentration. Further sampling for extent of chromium is not warranted.

Copper was detected above the sediment and Qbt 2,3,4 BVs in four sediment samples and four tuff samples with a maximum concentration of 52 mg/kg. Concentrations decreased with depth at all locations and decreased laterally (concentrations in the shallow samples at locations 00-604277 and 00-604279 were 8.8 mg/kg and 7.1 mg/kg and below the sediment BV [Appendix E, Pivot Tables]). Lateral and vertical extent of copper are defined.

Cyanide was detected above the sediment BV in one sample at a concentration of 1.3 mg/kg and was not detected but had DLs (0.54 mg/kg and 0.62 mg/kg) above the Qbt 2,3,4 BV in two samples. Concentrations decreased with depth at location 00-604286 and decreased downgradient. The residential SSL is approximately 18 times the maximum DL. Further sampling for extent of cyanide is not warranted.

Lead was detected above the soil, sediment, and Qbt 2,3,4 BVs in 26 soil samples, 6 sediment samples, and 15 tuff samples with a maximum concentration of 202 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of lead are defined.

Mercury was detected above the sediment and Qbt 2,3,4 BVs in five sediment samples and two tuff samples with a maximum concentration of 0.308 mg/kg. Concentrations increased with depth at location 00-604277, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 76 times the maximum concentration. Lateral extent of mercury is defined and further sampling for vertical extent is not warranted.

Nickel was detected above the Qbt 2,3,4 BV in two samples with a maximum concentration of 11.3 mg/kg. Concentrations increased with depth at locations 00-604278 and 00-604286 and decreased downgradient. The residential SSL is approximately 138 times the maximum concentration. Lateral extent of nickel is defined and further sampling for vertical extent is not warranted.

Selenium was detected above the sediment and Qbt 2,3,4 BVs in one sediment sample and three tuff samples with a maximum concentration of 0.41 mg/kg and was not detected but had DLs (0.53 mg/kg to 0.61 mg/kg) above the BVs in six sediment samples and one tuff sample. Concentrations increased with depth at location 00-604277, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 621 times the maximum concentration and 640 times the maximum DL. Further sampling for extent of selenium is not warranted.

Zinc was detected above the sediment BV in five samples with a maximum concentration of 144 mg/kg. Concentrations decreased with depth at all locations and increased downgradient. The residential SSL is approximately 24 times the maximum concentration. Vertical extent of zinc is defined and further sampling for lateral extent is not warranted.

Organic Chemicals

Organic COPCs at AOC C-43-001 include acetone, Aroclor-1254, Aroclor-1260, bis(2-ethylhexyl)phthalate, bromomethane, butylbenzylphthalate, dibenzofuran, 4-isopropyltoluene, and toluene.

Acetone was detected in one sample at a concentration of 0.049 mg/kg. Concentrations increased with depth at location 00-604279 and decreased downgradient. The residential SSL is approximately 1,350,000 times the maximum concentration. Lateral extent of acetone is defined and further sampling for vertical extent is not warranted.

Aroclor-1254 was detected in 10 samples with a maximum concentration of 0.2 mg/kg. Concentrations decreased with depth at all locations and increased downgradient. The residential SSL is approximately 5.7 times the maximum concentration, and the industrial SSL is approximately 55 times the maximum concentration. Vertical extent of Aroclor-1254 is defined and further sampling for lateral extent is not warranted.

Aroclor-1260 was detected in seven samples with a maximum concentration of 0.044 mg/kg. Concentrations increased with depth at location 00-604278, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 55 times the maximum concentration, and the industrial SSL is approximately 250 times the maximum concentration. Lateral extent of Aroclor-1260 is defined and further sampling for vertical extent is not warranted.

Bis(2-ethylhexyl)phthalate was detected in seven samples with a maximum concentration of 0.34 mg/kg. Concentrations did not change substantially with depth (0.016 mg/kg) at location 00-604279, decreased with depth at all other locations, and decreased downgradient. The residential SSL is approximately 1120 times the maximum concentration. Lateral extent of bis(2-ethylhexyl)phthalate is defined and further sampling for vertical extent is not warranted.

Bromomethane was detected in three samples with a maximum concentration of 0.00072 mg/kg. Concentrations increased with depth at location 00-604848, did not change substantially with depth (0.00003 mg/kg) at location 00-604846, and did not change substantially laterally (0.00008 mg/kg). The residential SSL is approximately 403,000 times the maximum concentration. Further sampling for extent of bromomethane is not warranted.

Butylbenzylphthalate was detected in two samples with a maximum concentration of 0.17 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of butylbenzylphthalate are defined.

Dibenzofuran was detected in 11 samples with a maximum concentration of 0.4 mg/kg. Concentrations decreased with depth at all locations and decreased downgradient. Lateral and vertical extent of dibenzofuran are defined.

Isopropyltoluene[4-] was detected in three samples with a maximum concentration of 0.22 mg/kg. Concentrations increased with depth at locations 00-604279 and 00-604846 and increased downgradient. The residential SSL is approximately 10,700 times the maximum concentration. Further sampling for extent of 4-isopropyltoluene is not warranted.

Toluene was detected in one sample at a concentration of 0.00063 mg/kg. Concentrations decreased with depth at location 00-604286 and decreased downgradient. Lateral and vertical extent of toluene are defined.

Radionuclides

Radionuclide COPCs at AOC C-43-001 include tritium.

Tritium was detected in one sample at an activity of 1.71 pCi/g. Activities increased with depth at location 00-604278 and decreased downgradient. The residential SAL is approximately 994 times the maximum activity. Lateral extent of tritium is defined and further sampling for vertical extent is not warranted.

Summary of Nature and Extent

The lateral and vertical extent of inorganic, organic, and radionuclide COPCs is defined or no further sampling for extent is warranted at AOC C-43-001.

10.2.5 Summary of Human Health Risk Screening

Industrial Scenario

The total excess cancer risk for the industrial scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.07, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-1.0 ft depth interval.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 4×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.00003 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Residential Scenario

The total excess cancer risk for the residential scenario is 2×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.03 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

Based on the risk-screening assessment results, no potential unacceptable risks or doses exist for the industrial, construction worker, and residential scenarios at AOC C-43-001.

10.2.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for AOC C-43-001.

11.0 TA-61 BACKGROUND AND FIELD INVESTIGATION RESULTS

One site, SWMU 61-007, was sampled (Table 1.1-1) according to the approved Phase II work plan (LANL 2010, 110860; NMED 2011, 111674) and subsequent post-cleanup confirmation sampling.

11.1 Background of TA-61

Only one site at TA-61 (SWMU 61-007) is addressed in this report (Table 1.1-1). SWMU 61-007 is a former transformer-staging site along the south side of East Jemez Road. Currently, the site is under a dirt road and parking lot area near the Los Alamos County landfill and is not occupied. Figure 11.1-1 shows the location of SWMU 61-007 in TA-61.

11.1.1 Operational History

SWMU 61-007 is the location of a transformer-staging site of an electrical contracting firm that once operated in the area. The firm is no longer in business; its years of operation are not known (LANL 1990, 007511).

11.1.2 Summary of Releases

The subsurface soil is suspected to have been contaminated by releases of PCB-containing oil from transformers. In 1989, workers detected an organic odor while excavating a trench for a new sewer line along the south side of East Jemez Road, approximately 0.75 mi east of the intersection of East Jemez Road and Diamond Drive. Chemical analysis of the soil determined that the soil was contaminated with PCBs and 1,2,4-trichlorobenzene (Nylander 1989, 062843).

11.2 SWMU 61-007, Transformer Site

11.2.1 Site History and Operational History

SWMU 61-007 is the location of a transformer-staging site of an electrical contracting firm that once operated in the vicinity (Figure 11.1-1). The firm is no longer in existence, and its years of operation are not known. While excavating a trench for a new sewer line along the south side of East Jemez Road, approximately 0.75 mi east of the intersection of East Jemez Road and Diamond Drive in 1989, workers detected an organic odor. A chemical analysis of the soil determined that the soil was contaminated with PCBs and 1,2,4-trichlorobenzene (Nylander 1989, 062843).

Currently, the site is under a dirt road/parking area and is not occupied by any industrial area or residence. The municipal landfill for Los Alamos County is located south of SWMU 61-007.

11.2.2 Relationship to Other SWMUs

There are no upgradient SWMUs or AOCs that may have contributed contamination to SWMU 61-007.

11.2.3 Summary of Previous Investigations

2009 Investigation Activities

Twenty-two samples were collected from six locations in 2009. Results from the sampling activities in 2009 were presented in the previous investigation report (LANL 2010, 108528). Additional sampling was required to define the extent of contamination and the extent of soil removal necessary around sampling locations where Aroclor-1260 was detected at concentrations above the residential SSL.

11.2.4 Site Contamination

11.2.4.1 Soil, Rock, and Sediment Sampling

As part of the Phase II investigation activities at SWMU 61-007, a total of 107 samples were collected from 26 locations and analyzed for inorganic and organic chemicals to define extent of contamination and verify cleanup goals.

2015 Investigation Activities

PCB-contaminated soil was excavated from two areas at SWMU 61-007 in 2015. The first excavated area measured 33 ft long × 10 ft wide × 7 ft bgs and was bounded by sampling locations 61-614765, 61-61478, 61-61479, 61-61480, 61-61483, 61-61486, 61-61487, 61-61490 and 61-61494. A second area of PCB-contaminated soil was excavated at location 61-61484. The excavation area measured 11 ft long × 8 ft wide × 14 ft bgs. Existing samples collected below the excavation boundaries were used as confirmation samples. All PCB-contaminated waste was packaged in waste bags and shipped off-site to a licensed off-site disposal facility for final disposition. Following soil removal, the excavated areas were backfilled and covered with clean fill and compacted to appropriate engineering standards. The two excavated areas are included in Figure 11.1-1.

11.2.4.2 Soil, Rock, and Sediment Field Screening Results

No organic vapors were detected at more than 10 ppm above ambient air levels during headspace screening of the samples. No radiological-screening results exceeded twice the daily site background levels. Field-screening results are included with SCLs (Appendix E). No changes to sampling or other activities occurred because of the field-screening results.

11.2.4.3 Soil, Rock, and Sediment Sampling Analytical Results

Decision-level data at SWMU 61-007 consist of results from 129 samples collected from 29 locations from 2009 to 2014. The 129 samples include 98 soil and 31 tuff samples. Table 11.2-1 lists the samples collected and the analyses requested for each sample. Figure 11.1 -1 shows the sampling locations.

Inorganic Chemicals

Samples at SWMU 61-007 were not analyzed for inorganic chemicals.

Organic Chemicals

A total of 22 samples (18 soil and 4 tuff) were analyzed for SVOCs and VOCs and 129 samples (98 soil and 31 tuff) were analyzed for PCBs. Tables 11.2-2 and 11.2-3 present the detected organic chemicals. Plate 41 shows the spatial distribution of detected organic chemicals.

Polycyclic Aromatic Hydrocarbons

PAHs are a class of SVOCs frequently detected as a result of environmental sampling but generally were not released from the SWMUs or AOCs being investigated. PAHs unrelated to site activities are thus often detected in samples analyzed for the presence of site-related SVOCs.

PAHs are known to be widely distributed in the environment from a number of sources, both natural, such as forest fires, and anthropogenic, such as combustion of fossil fuels, oil drips off motor vehicles, vehicle tires, coal tar pitch, and weathering or eroding of asphalt pavement (Kose et al. 2008, 219977; Teaf 2008, 219976). PAHs from these sources generally occur as complex mixtures, not as single compounds. Individual PAH compounds can be manufactured for research purposes, and some PAHs (e.g., anthracene, fluorene, naphthalene, and pyrene) are used in dye production, the manufacture of synthetic fibers, and in plastics and pesticides.

The principal sources of PAHs in soil along parking lots, roads, and highways are vehicular exhaust and emissions, the wearing of tires, and asphalt. PAH-containing materials, such as asphalt and rubber particles, do not easily dissolve in water, preventing migration, except as suspended particles in storm water. PAH concentrations in excess of soil cleanup levels may result from common anthropogenic sources, such as runoff from asphalt parking lots.

Site Activities

SWMU 61-007 is the location of a former electrical transformer and was identified as a SWMU because of past releases of transformer oil containing PCBs. There are no other known sources of contamination.

The SWMU 61-007 transformer site is located adjacent to East Jemez Road, a main road at the Laboratory and in the Los Alamos townsite. The site receives runoff from the roadway, which likely contains weathered asphalt. PAHs were detected in only the two uppermost sampling intervals at each sampling location, whereas PCBs, which are known to be site related, were also detected in deeper samples. The PAHs detected in samples used to characterize this site [acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, 2-methylnaphthalene, naphthalene, phenanthrene, and pyrene] are associated with the adjacent roadway, are not related to historic Laboratory site operations, and are not COPCs.

Organic COPCs

Other organic chemicals detected at SWMU 61-007 include acetone; Aroclor-1254; Aroclor-1260; benzyl alcohol; bis(2-ethylhexyl)phthalate; 2-butanone; dibenzofuran; toluene; and 1,2,4-trichlorobenzene. The detected organic chemicals listed are retained as COPCs.

Radionuclides

Samples at SWMU 61-007 were not analyzed for radionuclides.

11.2.4.4 Nature and Extent of Contamination

The nature and extent of organic COPCs at SWMU 61-007 are discussed below.

Organic Chemicals

Organic COPCs at SWMU 61-007 include acetone; Aroclor-1254; Aroclor-1260; benzyl alcohol; bis(2-ethylhexyl)phthalate; 2-butanone; dibenzofuran; toluene; and 1,2,4-trichlorobenzene.

Acetone was detected in four samples with a maximum concentration of 0.91 mg/kg. Concentrations increased with depth at location 00-604289 and 00-604290, decreased with depth at all other locations, and increased laterally. The residential SSL is approximately 72,800 times the maximum concentration. Further sampling for extent of acetone is not warranted.

Aroclor-1254 was detected in two samples with a maximum concentration of 0.212 mg/kg. Concentrations increased with depth at location 61-61480 and increased laterally. The residential SSL is approximately 5.4 times the maximum concentration, and the industrial SSL is approximately 52 times the maximum concentration. Further sampling for extent of Aroclor-1254 is not warranted.

Aroclor-1260 was detected in 101 samples with a maximum concentration of 42.6 mg/kg. Concentrations increased with depth at locations 61-61477, 61-61478, 61-61480, 61-61486, and 61-61491; did not change substantially with depth (0.011 mg/kg) at location 61-61485; decreased with depth at all other locations; and decreased laterally. Cleanup of PCBs at this site was performed to meet construction worker risk levels. The construction worker SSL is approximately 20 times the maximum concentration where vertical extent is not defined (4.37 mg/kg at location 61-61477). Lateral extent of Aroclor-1260 is defined and further sampling for vertical extent is not warranted.

Benzyl alcohol was detected in five samples with a maximum concentration of 0.064 mg/kg. Concentrations did not change substantially with depth (0.004 mg/kg) at location 00-604291, decreased with depth at location 00-604532, and decreased laterally. All detected concentrations were below EQLs. The residential SSL is approximately 98,400 times the maximum concentration. Lateral extent of benzyl alcohol is defined and further sampling for vertical extent is not warranted.

Bis(2-ethylhexyl)phthalate was detected in three samples with a maximum concentration of 0.1 mg/kg. Concentrations decreased with depth at all locations and decreased laterally. Lateral and vertical extent of bis(2-ethylhexyl)phthalate are defined.

Butanone[2-] was detected in one sample at a concentration of 0.029 mg/kg. Concentrations increased with depth at location 00-604290 and decreased laterally. The residential SSL is approximately 1,290,000 times the maximum concentration. Lateral extent of 2-butanone is defined and further sampling for vertical extent is not warranted.

Dibenzofuran was detected in one sample at a concentration of 0.093 mg/kg. Concentrations decreased with depth at location 00-604290 and decreased laterally. Lateral and vertical extent of dibenzofuran are defined.

Toluene was detected in one sample at a concentration of 0.00044 mg/kg. Concentrations increased with depth at location 00-604290 and decreased laterally. The residential SSL is approximately 11,900,000 times the maximum concentration. Lateral extent of toluene is defined and further sampling for vertical extent is not warranted.

Trichlorobenzene[1,2,4-] was detected in one sample at a concentration of 0.048 mg/kg. Concentrations increased with depth at location 00-604287 and decreased laterally. The residential SSL is approximately 6250 times the maximum concentration. Lateral extent of 1,2,4-trichlorobenzene is defined and further sampling for vertical extent is not warranted.

Summary of Nature and Extent

The lateral and vertical extent of organic COPCs is defined or no further sampling for extent is warranted at SWMU 61-007.

11.2.5 Summary of Human Health Risk Screening

Industrial Scenario

The total excess cancer risk for the industrial scenario is 2×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.0001, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-1.0 ft depth interval.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.0003, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-10.0 ft depth interval.

Residential Scenario

The total excess cancer risk for the residential scenario is 4×10^{-5}, which is greater than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.001, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-10.0 ft depth interval.

Based on the risk-screening assessment results, no potential unacceptable noncarcinogenic risks or doses exist for the industrial, construction worker, and residential scenarios at SWMU 61-007 and no potential unacceptable carcinogenic risks exist for the industrial and construction worker scenarios. Potential unacceptable carcinogenic risk exists for the residential scenario.

11.2.6 Summary of Ecological Risk Screening

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for SWMU 61-007.

12.0 CONCLUSIONS

12.1 Nature and Extent of Contamination

Based on the evaluation of the sampling data, the nature and extent of contamination have been defined, and/or no further sampling for extent is warranted, for the 21 sites investigated during the Phase II investigations for Upper Los Alamos Canyon Aggregate Area. Three additional sites could not be investigated, and sampling to define nature and extent is needed when access is available. Summaries of the nature and extent of contamination for the 24 sites at former TA-00, former TA-01, TA-03, former TA-32, TA-43, and TA-61 included in this report are presented below.

12.1.1 Former TA-00

The nature and extent of contamination have been defined, and/or no further sampling for extent is warranted, for the following sites at former TA-00:

- SWMU 00-017, Industrial Waste Lines
- AOC C-00-044, Soil Contamination

12.1.2 Former TA-01

The nature and extent of contamination have been defined, and/or no further sampling for extent is warranted, for the following sites at former TA-01:

- SWMU 01-001(a), Septic Tank 134
- SWMU 01-001(d3), Soil Contamination from Septic Tank 138
- SWMU 01-001(f), Septic Tank 140
- SWMU 01-001(g), Septic Tank 141
- SWMU 01-001(o), Sanitary Waste Line
- SWMU 01-001(s2), Septic System Waste Line
- SWMU 01-002(a2)-00, Industrial Waste Line
- SWMU 01-003(a), Bailey Bridge Landfill
- AOC 01-003(b2), Surface Disposal Site
- SWMU 01-003(d), Surface Disposal Site
- SWMU 01-006(a), Drainlines and Outfall
- AOC 01-006(e), Drainlines and Outfall
- SWMU 01-007(c), Soil Contamination

The nature and extent of contamination have not been defined, and further sampling is warranted for three sites at former TA-01. These sites are located beneath structures and were not accessible for sampling. Sampling to define nature and extent is needed at the following sites when the sites are accessible (i.e., the structures are no longer present):

- SWMU 01-001(d2), Soil Contamination from Septic Tank 138
- SWMU 01-006(h2), Drainlines and Outfall
- SWMU 01-006(h3), Drainlines and Outfall

12.1.3 TA-03

The nature and extent of contamination have been defined, and/or no further sampling for extent is warranted, for the following sites at TA-03:

- SWMU 03-038(a), Former Waste Neutralization and Pumping Building
- SWMU 03-038(b), Waste Holding Tank
- SWMU 03-055(c), Outfall

12.1.4 Former TA-32

The nature and extent of contamination have been defined, and/or no further sampling for extent is warranted, for the following site at former TA-32:

- SWMU 32-002(b2), Soil Contamination from Former Septic System

12.1.5 TA-43

The nature and extent of contamination have been defined, and/or no further sampling for extent is warranted, for the following site at TA-43:

- AOC C-43-001, Storm Drain Outfall

12.1.6 TA-61

The nature and extent of contamination have been defined, and/or no further sampling for extent is warranted, for the following site at TA-61:

- SWMU 61-007, Transformer Site

12.2 Summary of Risk-Screening Assessments

Twenty-one SWMUs/AOCs were evaluated for potential risk by human health and ecological risk-screening assessments. Three additional sites do not have investigation data and risk screening assessments could not be performed.

12.2.1 Human Health Risk-Screening Assessment

There were no potential unacceptable risks for any of the sites evaluated under the industrial scenario. The total excess cancer risks were less than the target risk level of 1×10^{-5}, HIs were less than the target level of 1, and doses were less than the target dose limit of 25 mrem/yr at all sites. SWMUs 01-001(s2), 01-007(c), 03-038(a), and 03-038(b) and AOC 01-006(e) were not evaluated under the industrial scenario because no samples were collected in the 0.0–1.0 ft bgs depth interval.

The recreational scenario was applicable at SWMU 01-001(f). There was no potential unacceptable risk for this site under the recreational scenario. The total excess cancer risks were less than 1×10^{-5}, the HI was less than 1, and the dose was less than 25 mrem/yr.

Fourteen SWMUs/AOCs had total excess cancer risks and HIs below or equivalent to the target risk levels and doses below target dose limits under the residential scenario. Four sites had cancer risk above 1×10^{-5}, five sites had HIs greater than 1, and one site had a dose greater than 25 mrem/yr. The sites with cancer risk greater than 1×10^{-5} were SWMUs 01-001(f) (PCBs and PAHs), 01-003(a) (PCBs and PAHs), 03-055(c) (PAHs), and 61-007 (PCBs). The sites with HIs greater than 1 were SWMU 00-017 (thallium), 01-001(d3) (antimony and mercury), 01-001(f) (PCBs), 01-003(a) (PCBs and PAHs), and 01-003(d) (antimony). The site with a dose greater than 25 mrem/yr was SWMU 01-001(d3) (plutonium-239/240).

Twenty SWMUs/AOCs had total excess cancer risks and HIs below or equivalent to the target risk levels and doses below target dose limits under the construction worker scenario. One site had an HI greater than 1. The site with an HI greater than 1 was SWMU 01-001(f) (PCBs).

Some sites in the Upper Los Alamos Canyon Aggregate Area are not accessible by the public and are not planned for release by DOE in the foreseeable future. SWMU 01-006(a), SWMU 01-001(f), and SWMU 01-001(g) all have publicly owned land as part of the SWMU. An as low as reasonably achievable (ALARA) evaluation for radiological exposure to the public is not currently required for the sites on DOE property. Should DOE's plans for releasing these areas change, an ALARA evaluation will be conducted at that time.

12.2.2 Ecological Risk-Screening Assessment

Ecological risk was evaluated for 21 sites. Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and screening levels to background concentrations, no potential ecological risks exist for the Upper Los Alamos Canyon Aggregate Area sites.

13.0 RECOMMENDATIONS

The determination of site status is based on the results of the risk-screening assessments and the nature and extent evaluation. Depending upon the decision scenario used, the sites are recommended as corrective actions complete either with or without controls or for additional action. The residential scenario is the only scenario under which corrective action complete without controls is applicable; that is, no additional corrective actions or conditions are necessary. The other decision scenarios (industrial and recreational) result in corrective action complete with controls; that is, some type of institutional controls must be in place to ensure land use remains consistent with site cleanup levels. The current and reasonably foreseeable future land use for the Upper Los Alamos Canyon Aggregate Area is industrial and possibly recreational for SWMU 01-001(f).

13.1 Additional Field Characterization and Remediation Activities

SWMUs 01-001(d2) and 01-006(h2), and 01-006(h3) are on private property and access for sampling was not given by the property owner. Therefore, sampling could not be performed. Sampling should be performed in the future if access is available.

13.2 Recommendations for Corrective Actions Complete

Fourteen sites have been found to pose no potential unacceptable risks or doses to human health under the industrial, construction worker, and residential scenarios and to ecological receptors and are appropriate for corrective actions complete without controls (Table 13.2-1). They include the following:

- AOC C-00-044, Soil Contamination
- SWMU 01-001(a), Septic Tank 134
- SWMU 01-001(g), Septic Tank 141

- SWMU 01-001(o), Sanitary Waste Line
- SWMU 01-001(s2), Septic System Waste Line
- SWMU 01-002(a2)-00, Industrial Waste Line
- AOC 01-003(b2), Surface Disposal Site
- SWMU 01-006(a), Drainlines and Outfall
- AOC 01-006(e), Drainlines and Outfall
- SWMU 01-007(c), Soil Contamination
- SWMU 03-038(a), Former Waste Neutralization and Pumping Building
- SWMU 03-038(b), Waste Holding Tank
- SWMU 32-002(b2), Soil Contamination from Former Septic System
- AOC C-43-001, Storm Drain Outfall

Seven sites have been found to pose no potential unacceptable risks to human health under the industrial and recreational scenarios (where applicable) and to ecological receptors, but may pose unacceptable risks under the residential scenario. SWMU 01-001(f) also poses an unacceptable risk under the construction worker scenario. These sites are appropriate for corrective actions complete with controls (Table 13.2-1). They include the following:

- SWMU 00-017, Industrial Waste Lines
- SWMU 01-001(d3), Soil Contamination from Septic Tank 138
- SWMU 01-001(f), Septic Tank 140
- SWMU 01-003(a), Bailey Bridge Landfill
- SWMU 01-003(d), Surface Disposal Site
- SWMU 03-055(c), Outfall
- SWMU 61-007, Transformer Site

13.3 Schedule for Recommended Activities

Sampling for SWMUs 01-001(d2), 01-006(h2), and 01-006(h3) is contingent upon removal of structures and cannot be scheduled at this time.

14.0 REFERENCES AND MAP DATA SOURCES

14.1 References

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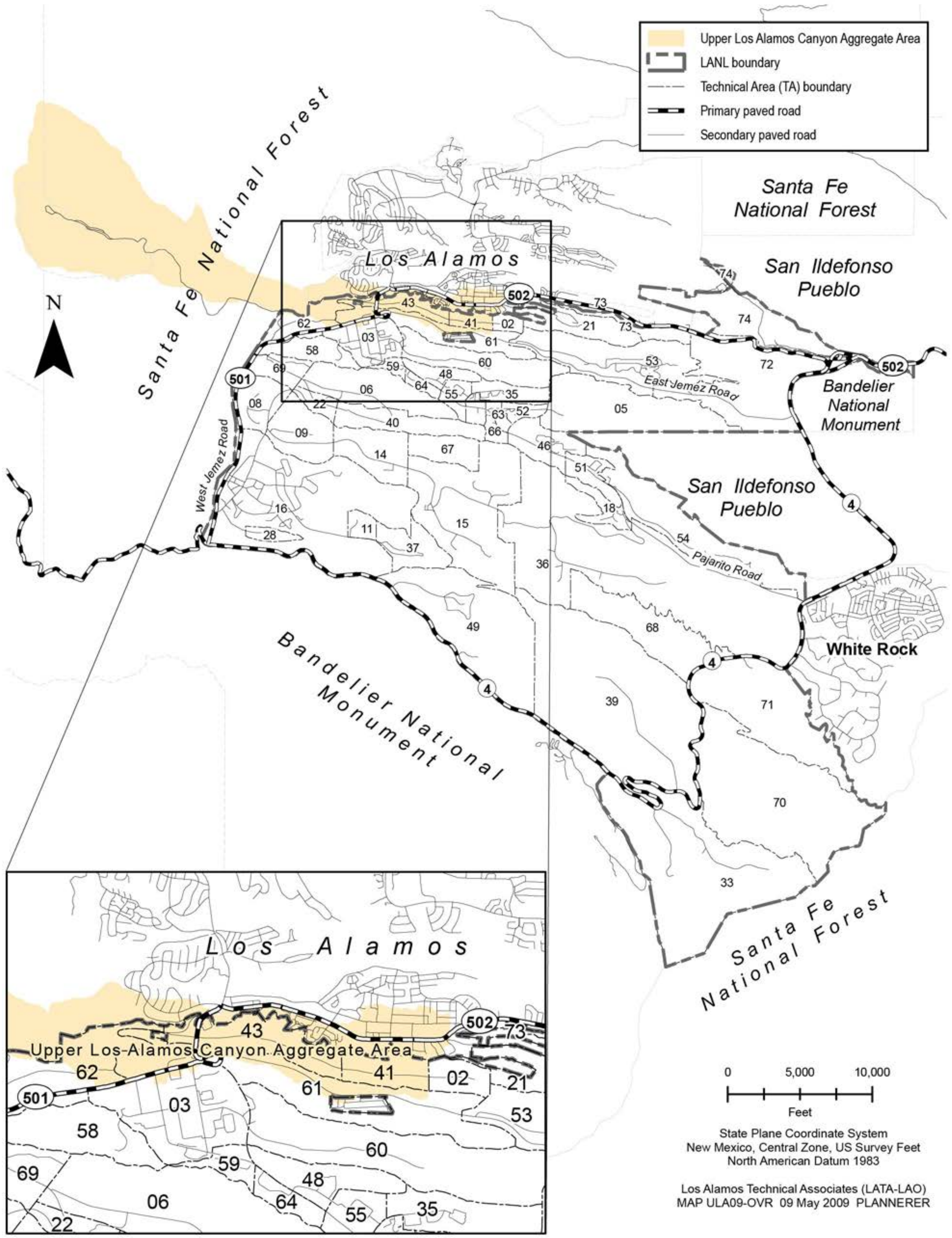

Figure 1.0-1 Location of Upper Los Alamos Canyon Aggregate Area with respect to Laboratory technical areas

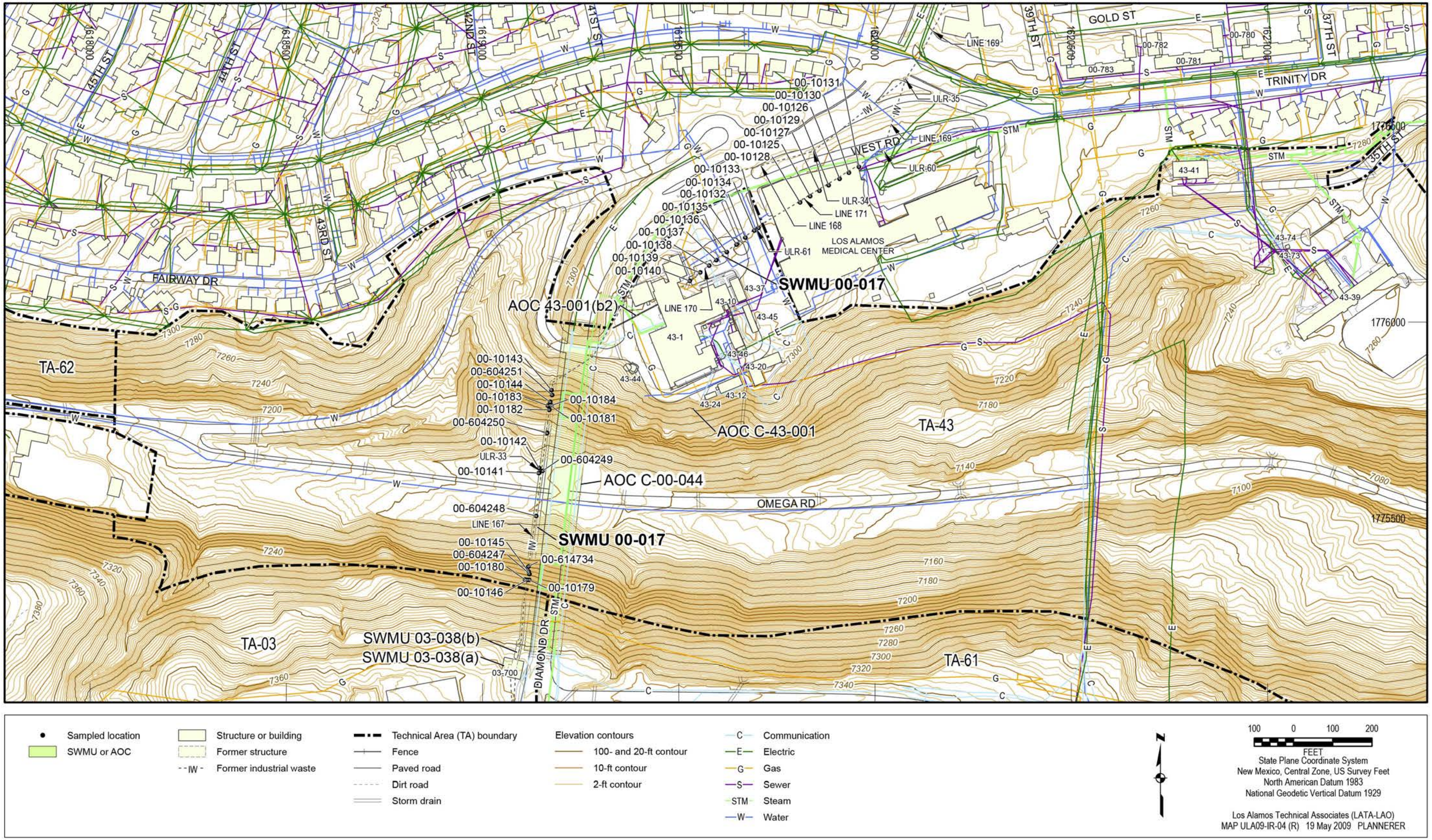

Figure 6.2-1 Site map of SWMU 00-017

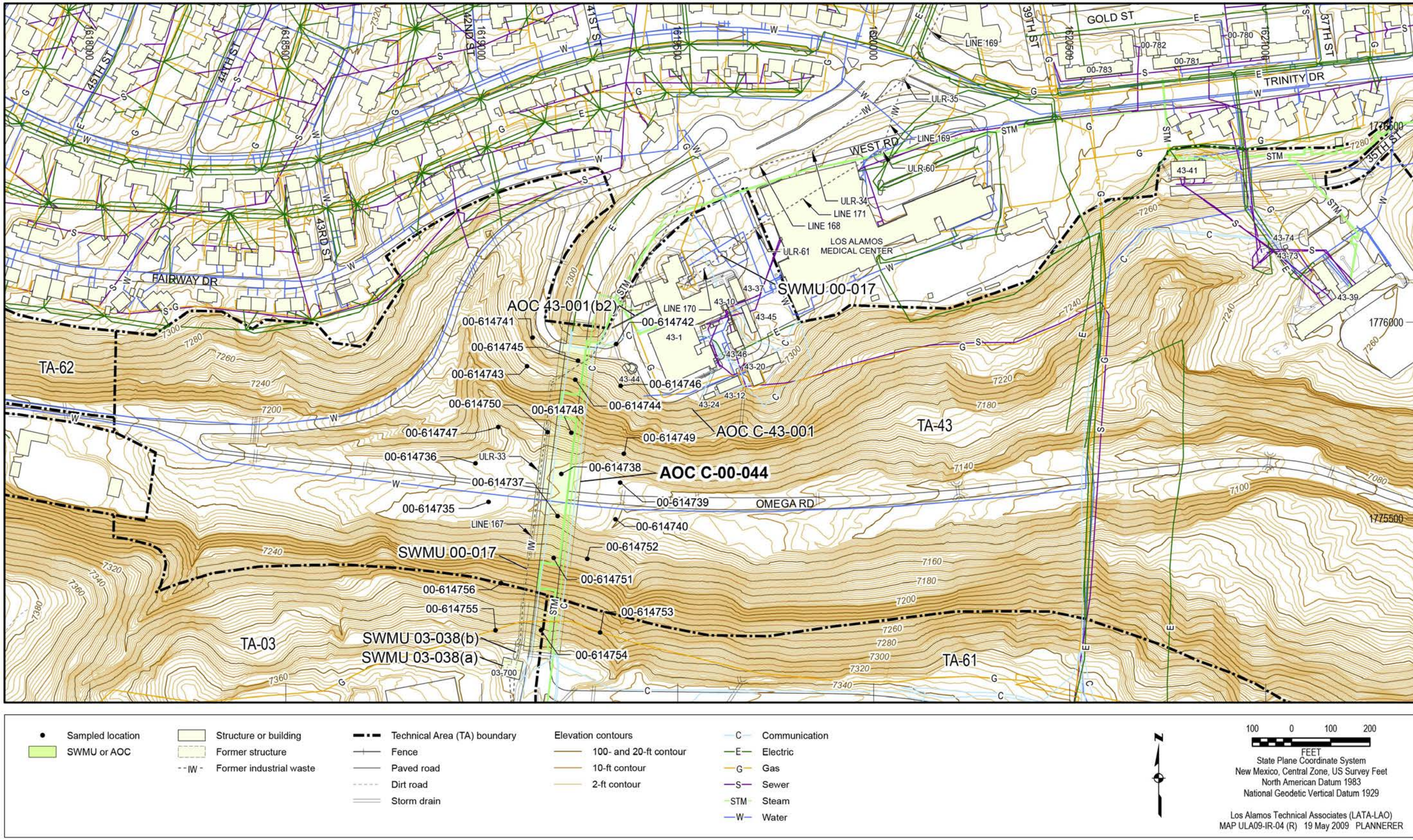

Figure 6.3-1 Site map of AOC C-00-044

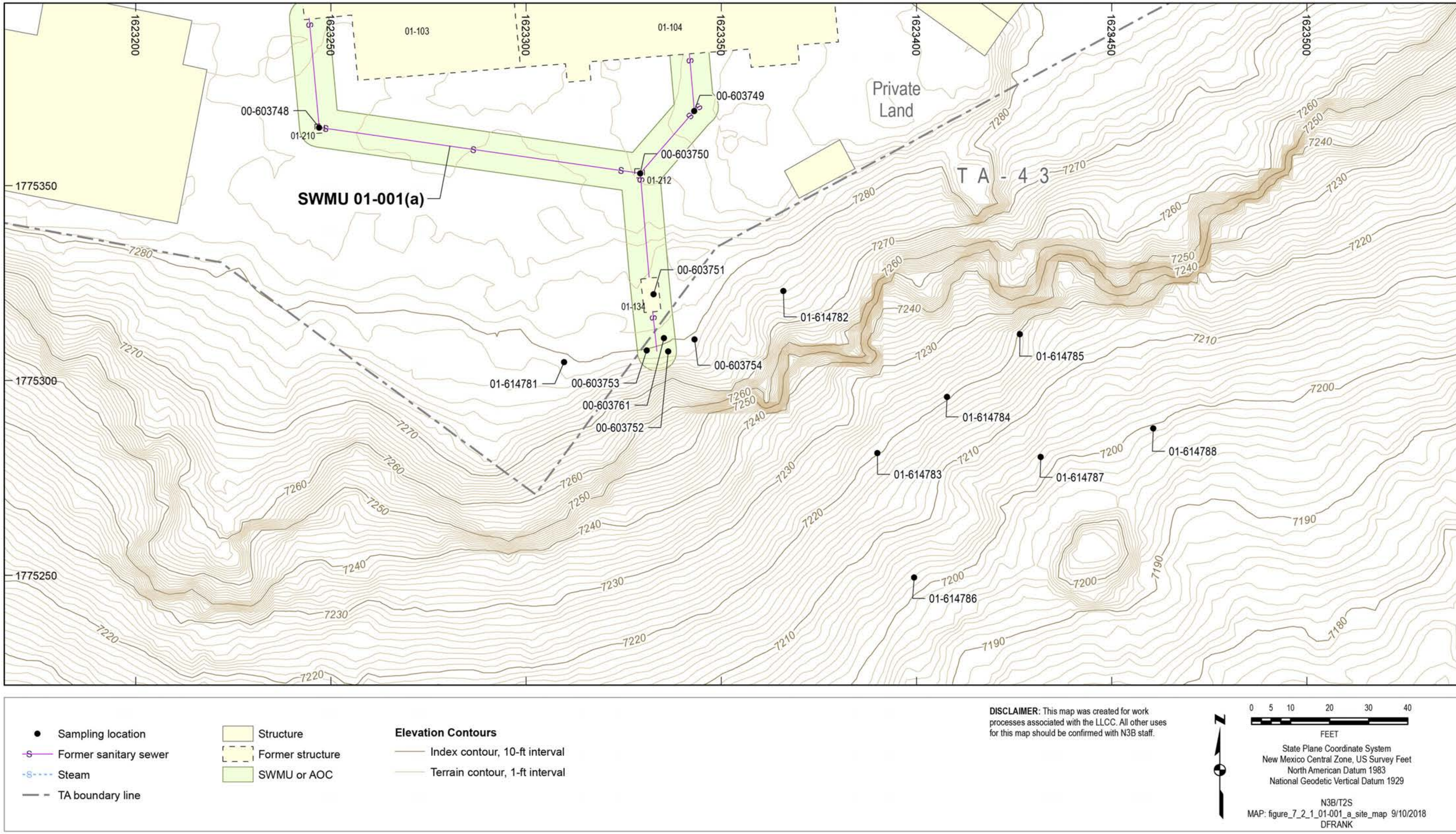

Figure 7.2-1 Site map of SWMU 01-001(a)

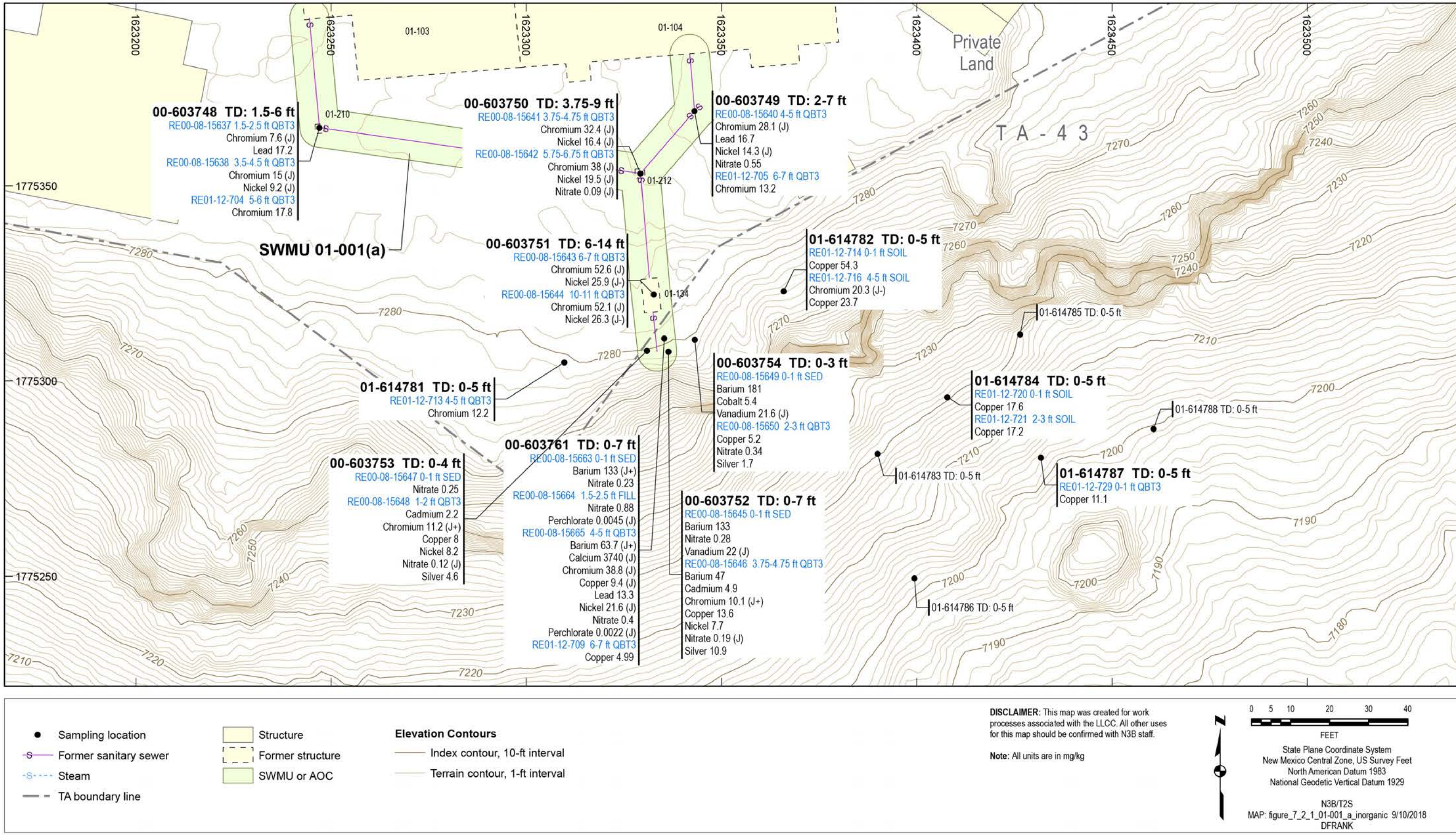

Figure 7.2-2 Inorganic chemicals detected or detected above BVs at SWMU 01-001(a)

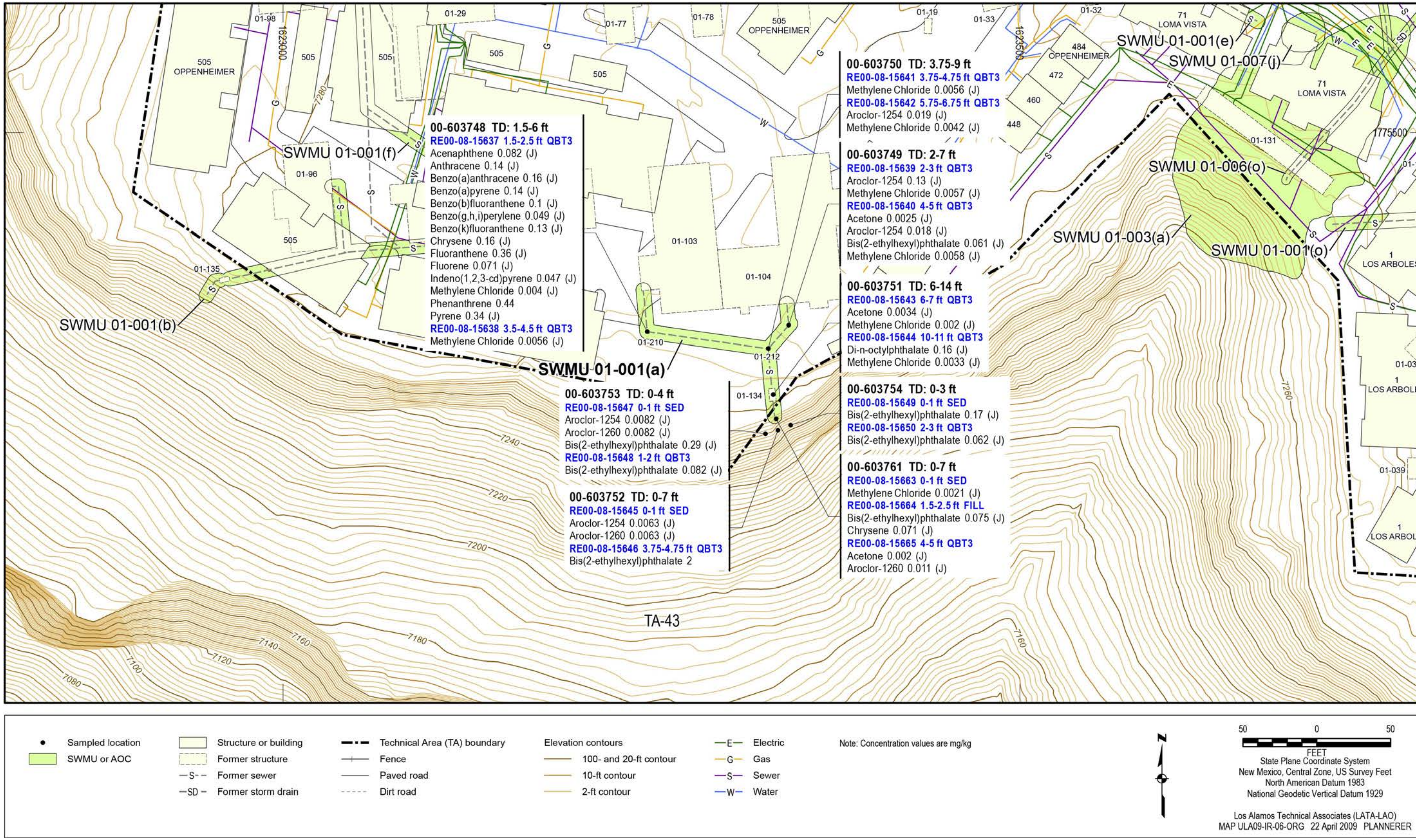

Figure 7.2-3 Organic chemicals detected at SWMU 01-001(a)

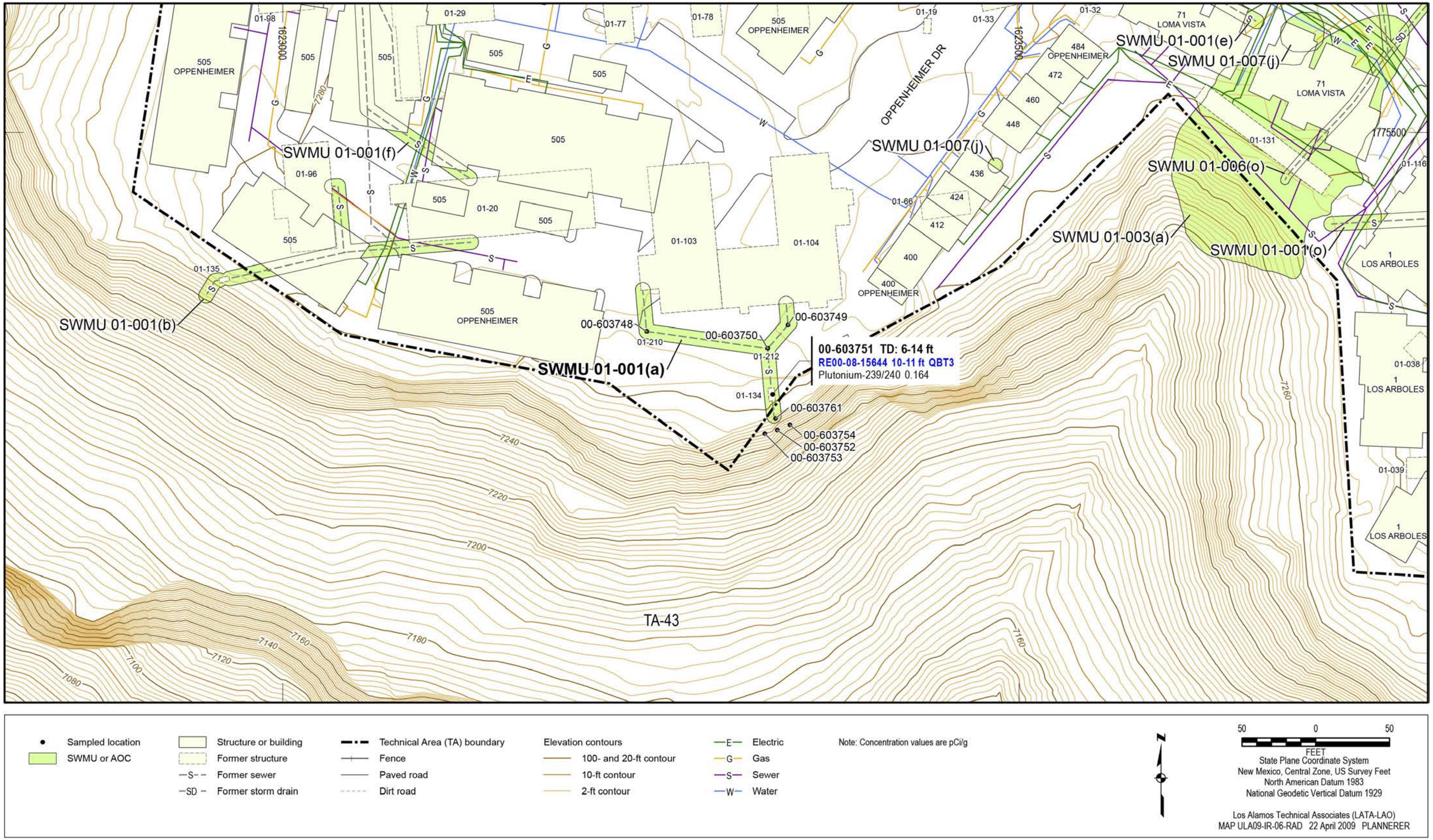

Figure 7.2-4 Radionuclides detected or detected above BVs/FVs at SWMU 01-001(a)

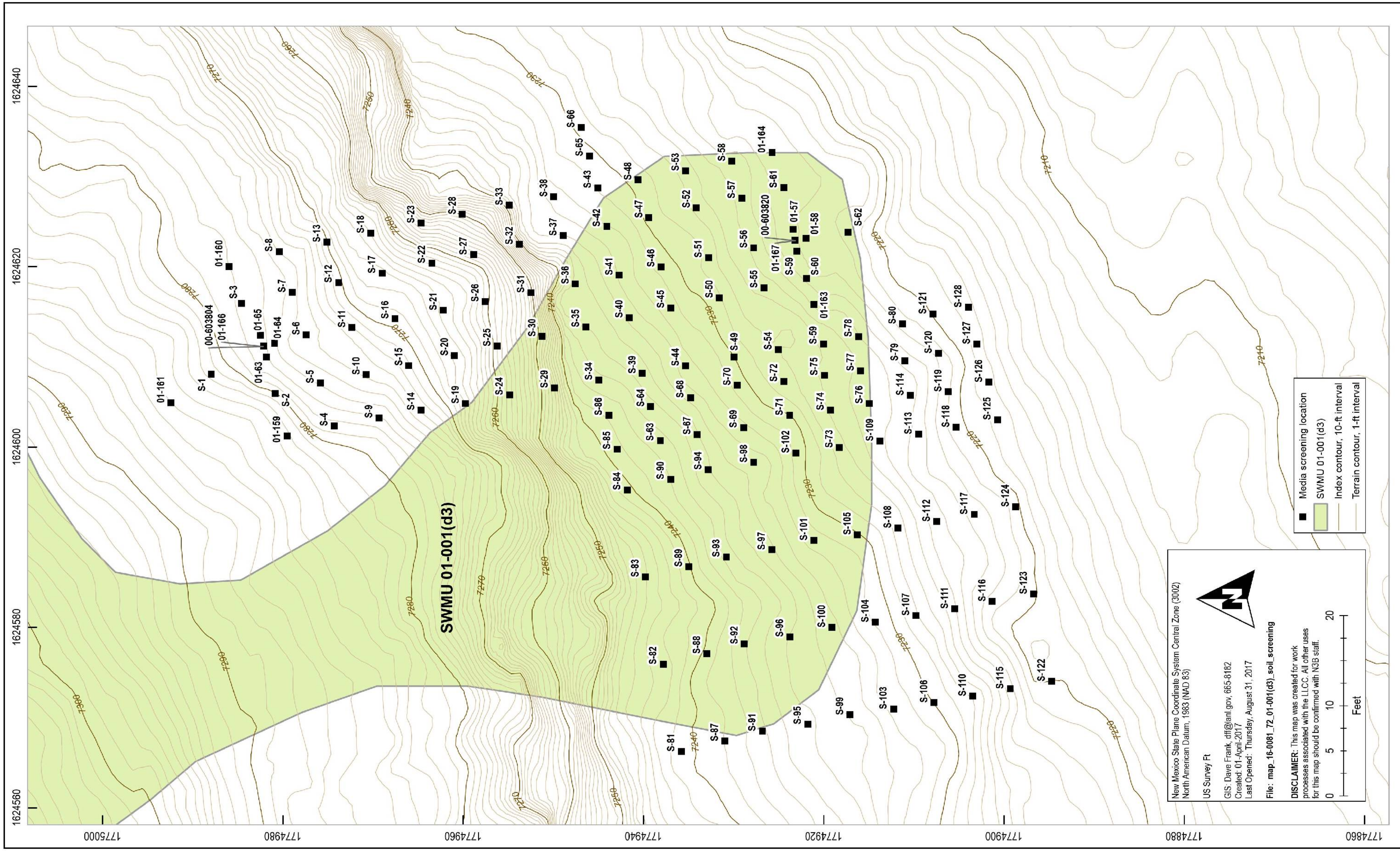

Figure 7.4-1 Radiological soil screening locations at SWMU 01-001(d3)

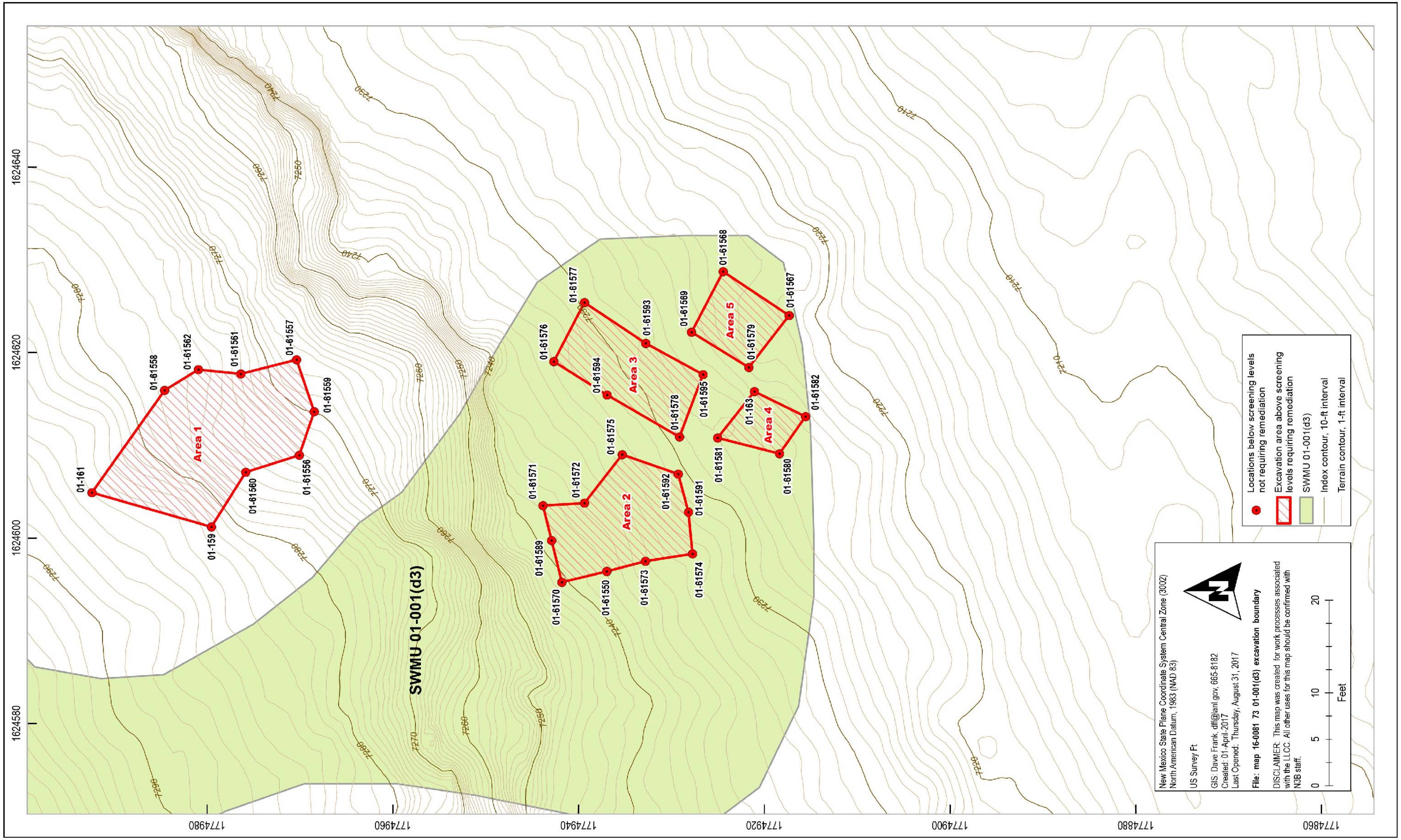

Figure 7.4-2 Final remediation areas at SWMU 01-001(d3)

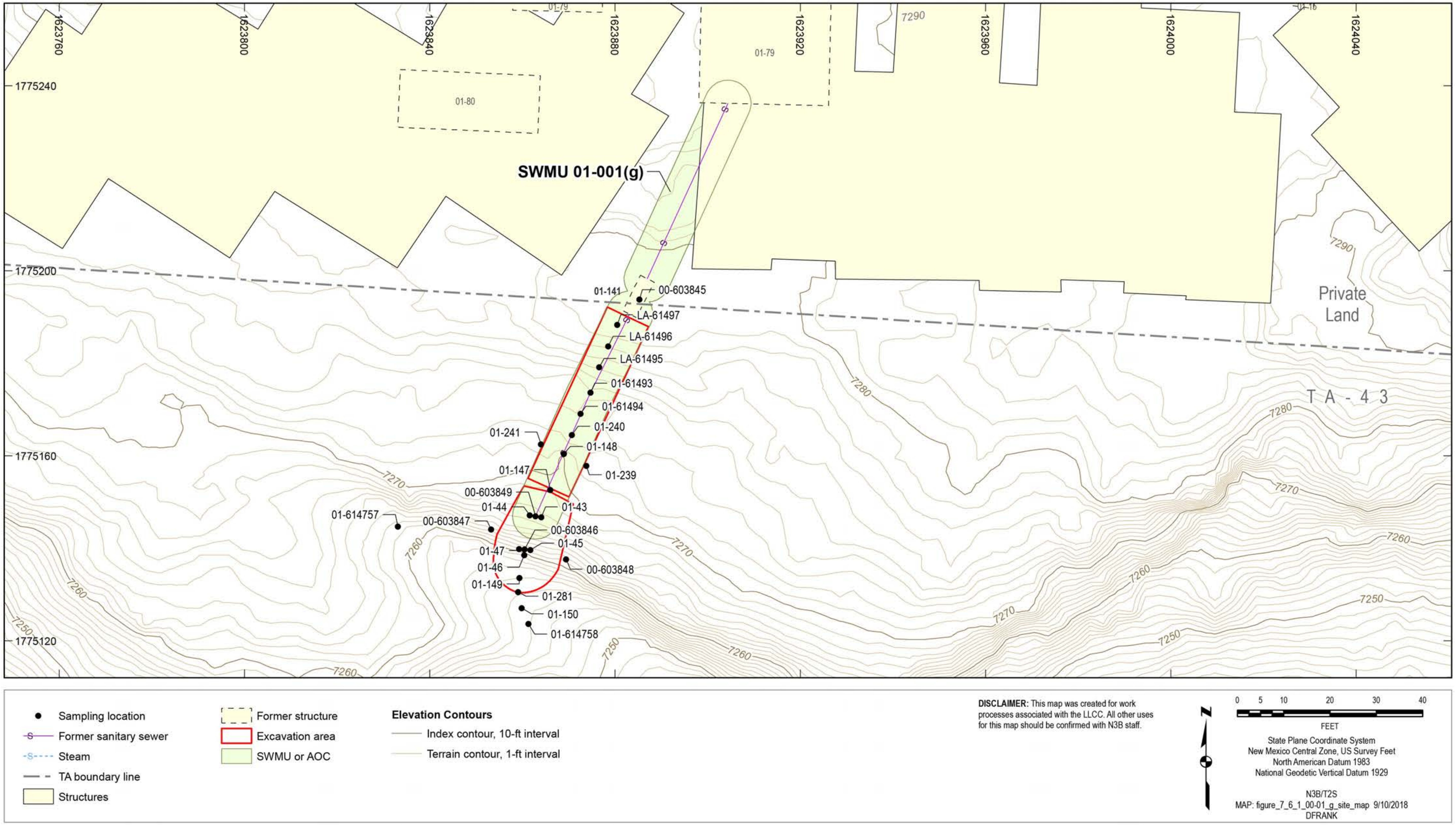

Figure 7.6-1 Site map of SWMU 01-001(g)

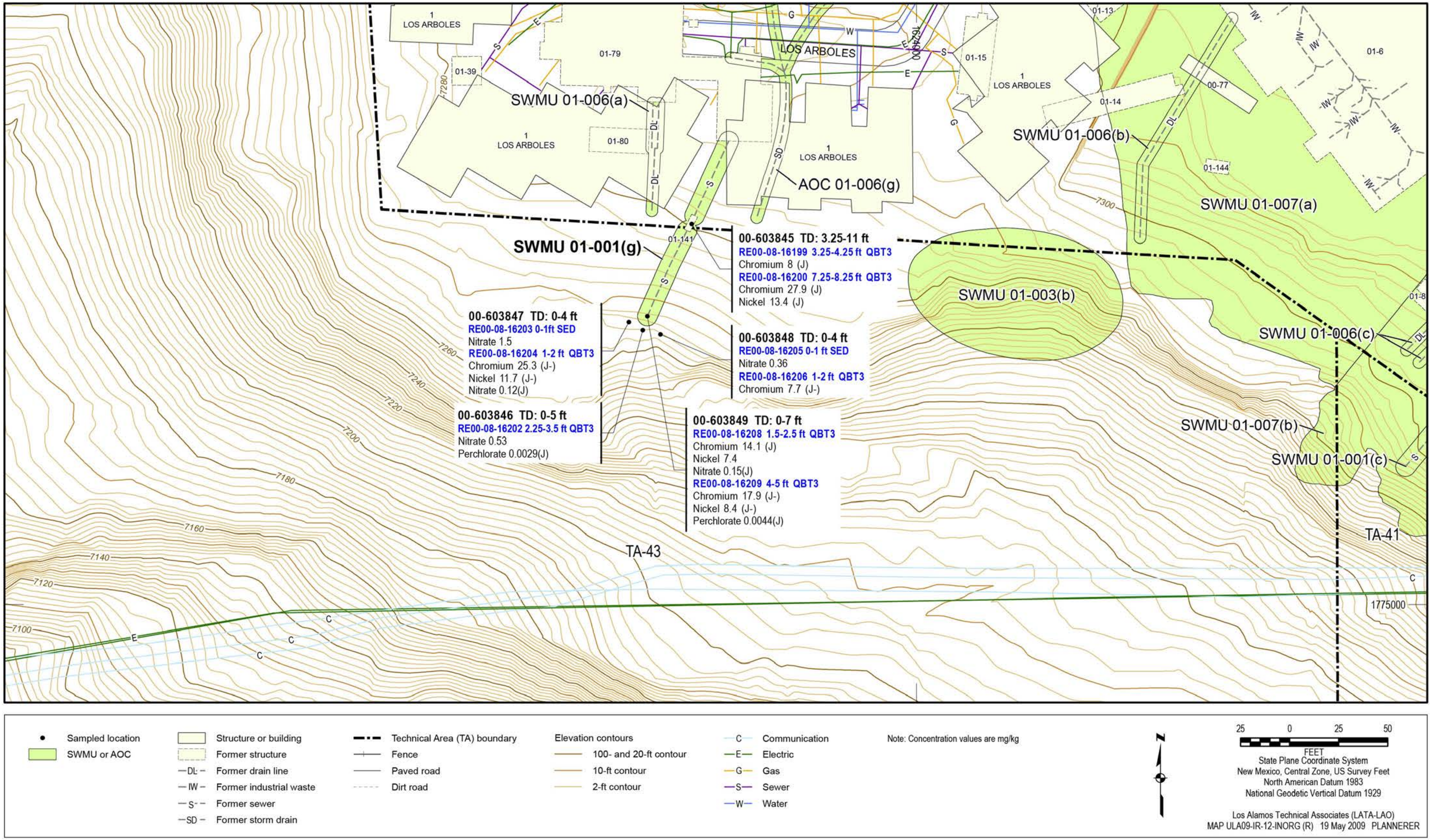

Figure 7.6-2 Inorganic chemicals detected or detected above BVs at SWMU 01-001(g)

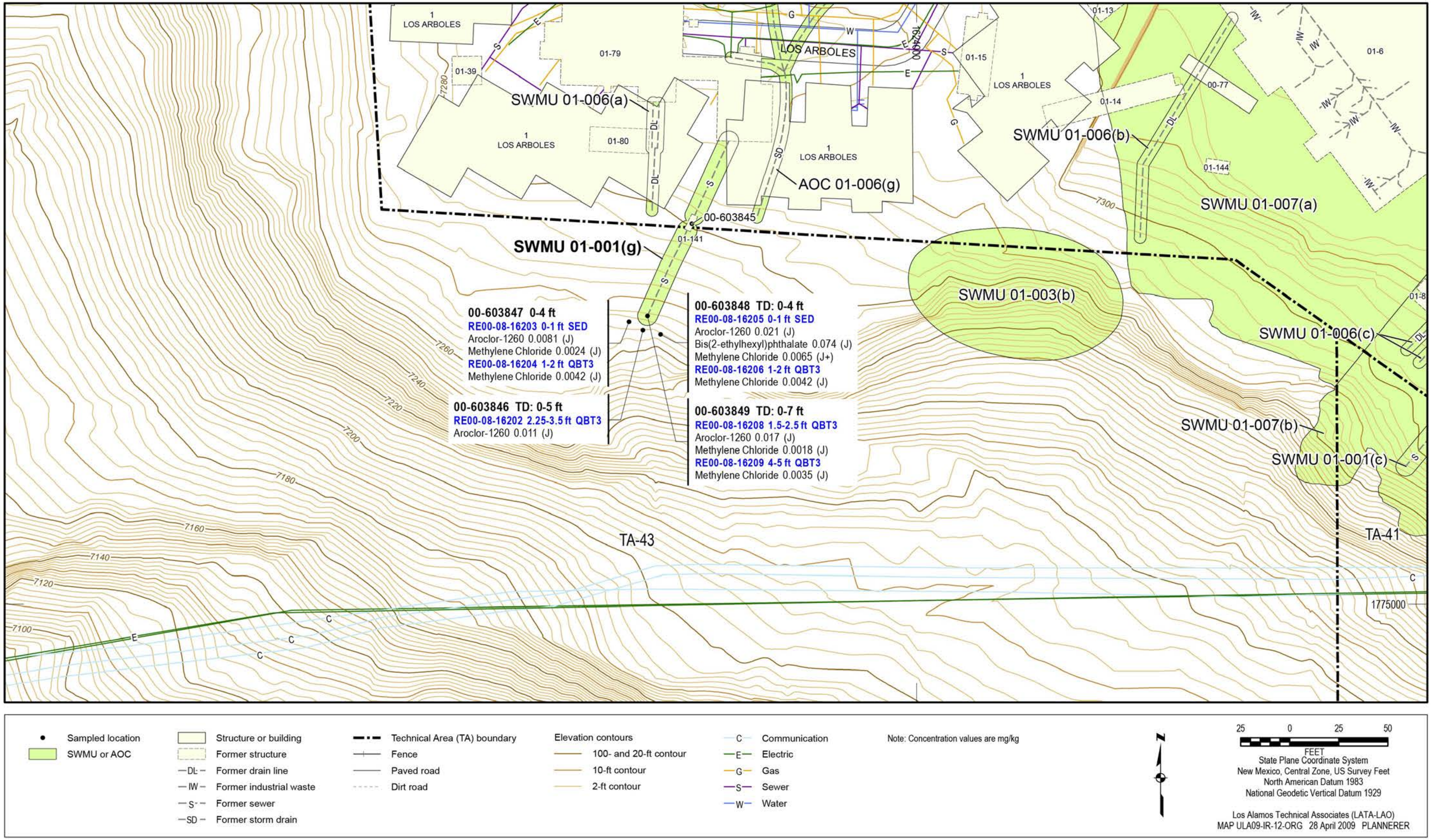

Figure 7.6-3 Organic chemicals detected at SWMU 01-001(g)

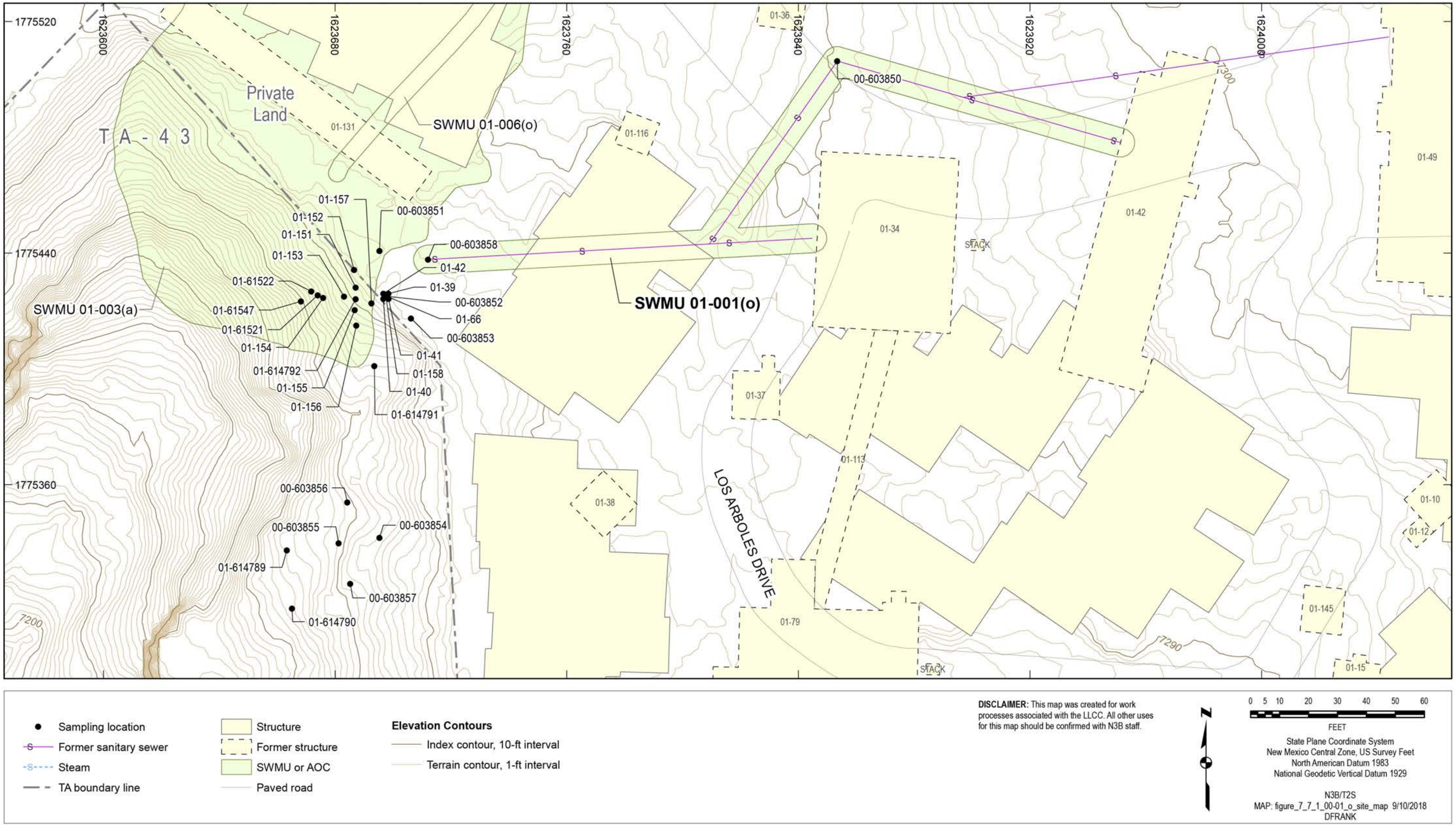

Figure 7.7-1 Site map of SWMU 01-001(o)

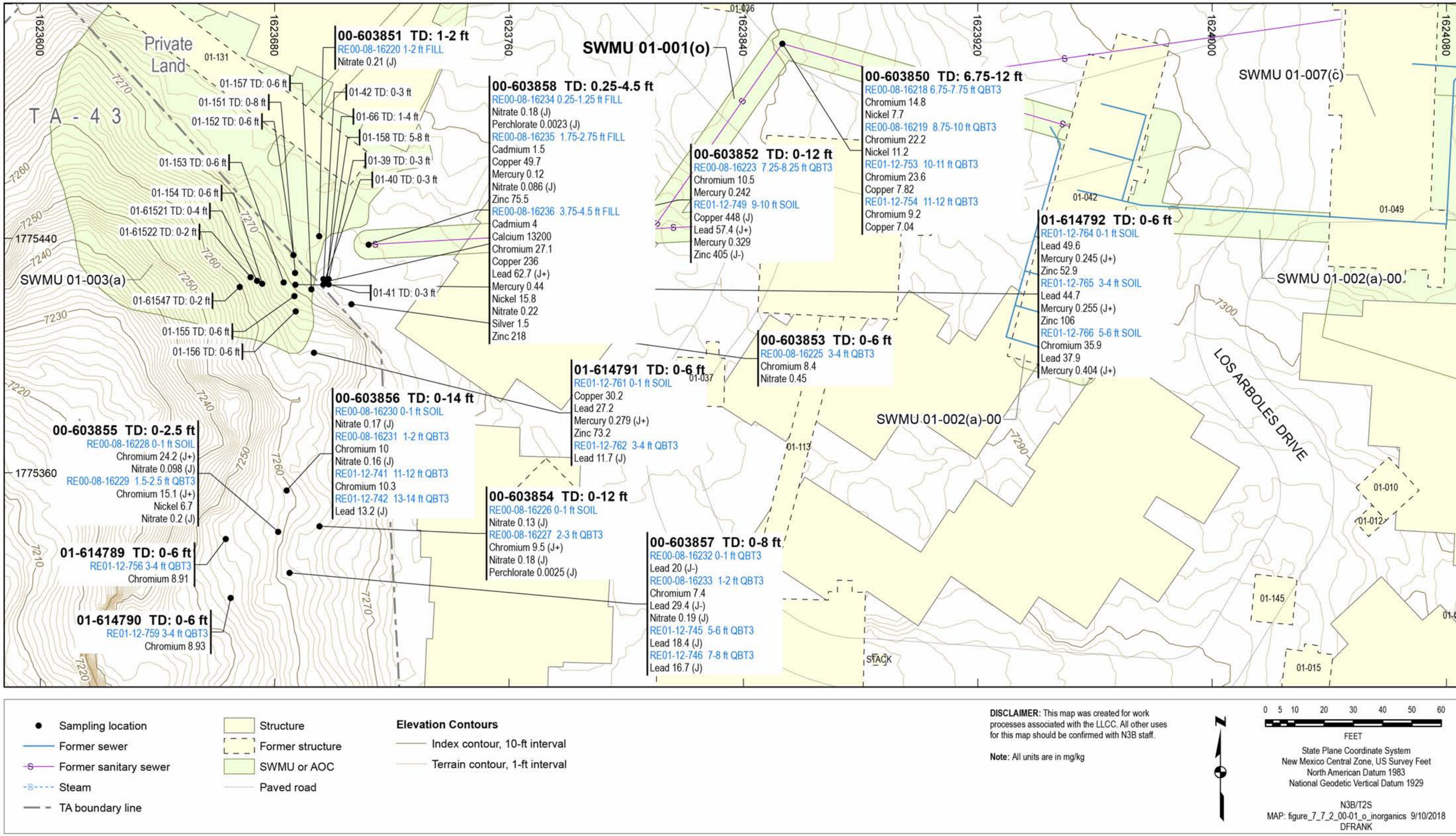

Figure 7.7-2 Inorganic chemicals detected or detected above BVs at SWMU 01-001(o)

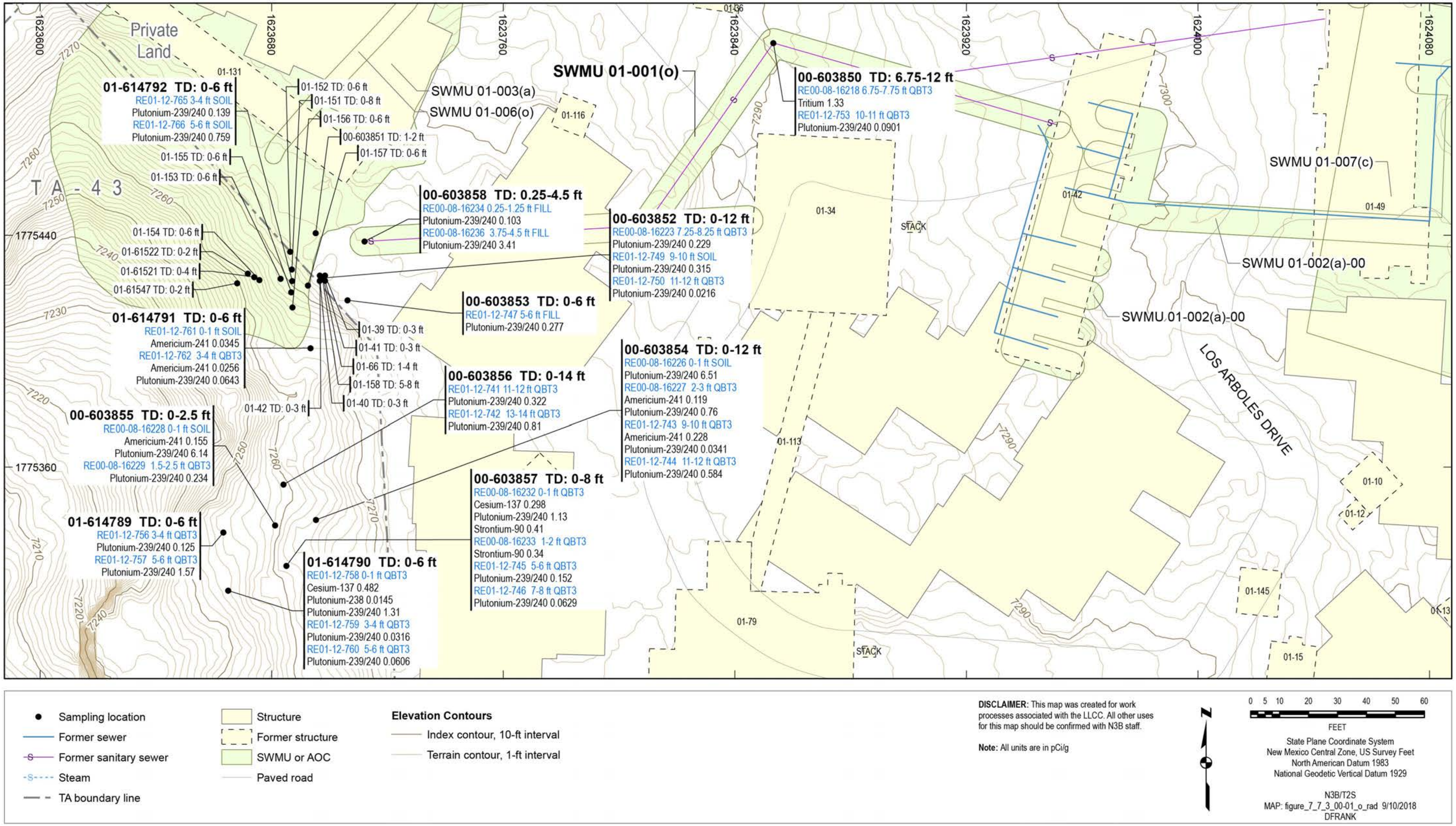

Figure 7.7-3 Radionuclides detected or detected above BVs/FVs at SWMU 01-001(o)

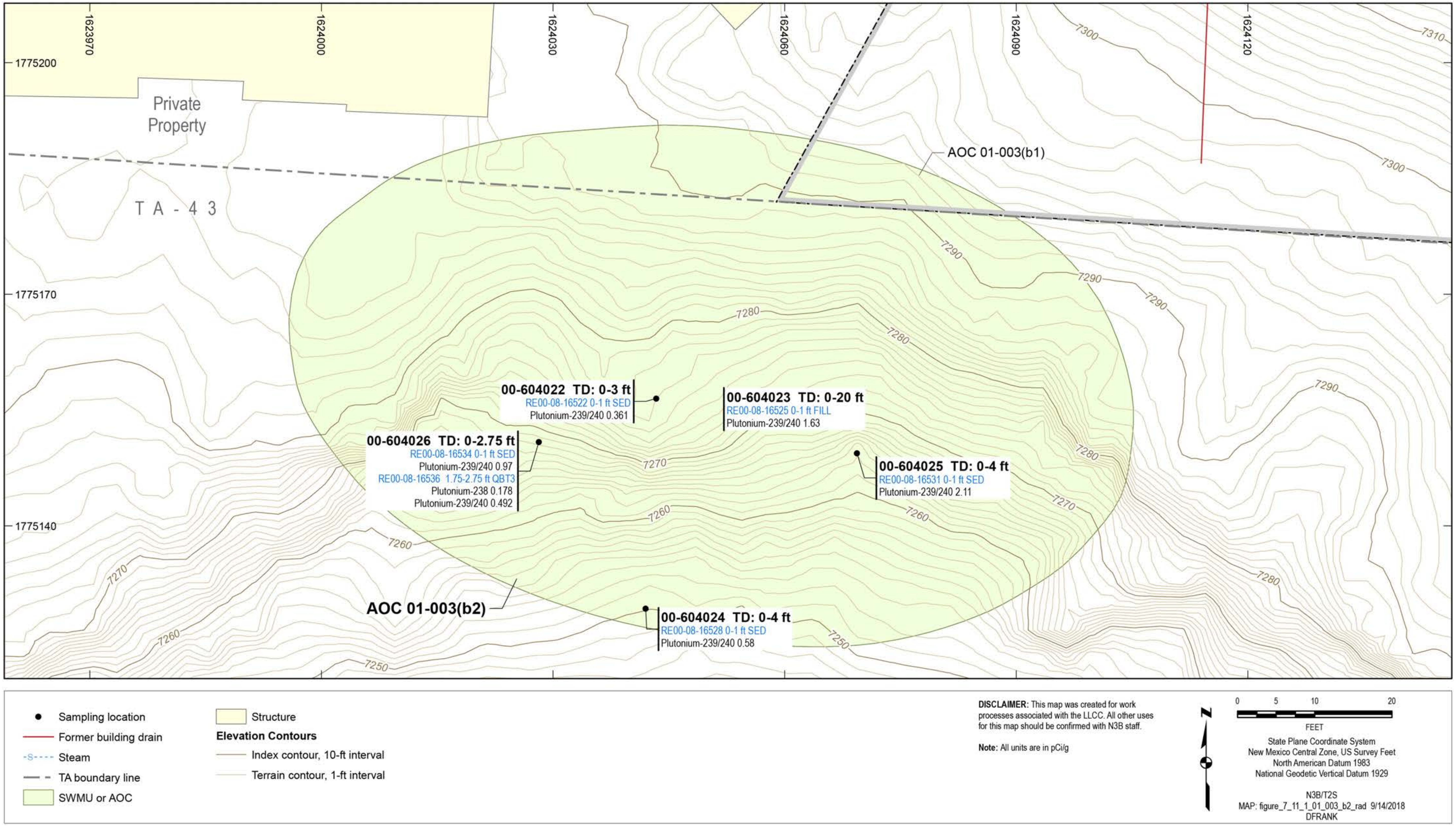

Figure 7.11-1 Radionuclides detected or detected above BVs/FVs at AOC 01-003(b2)

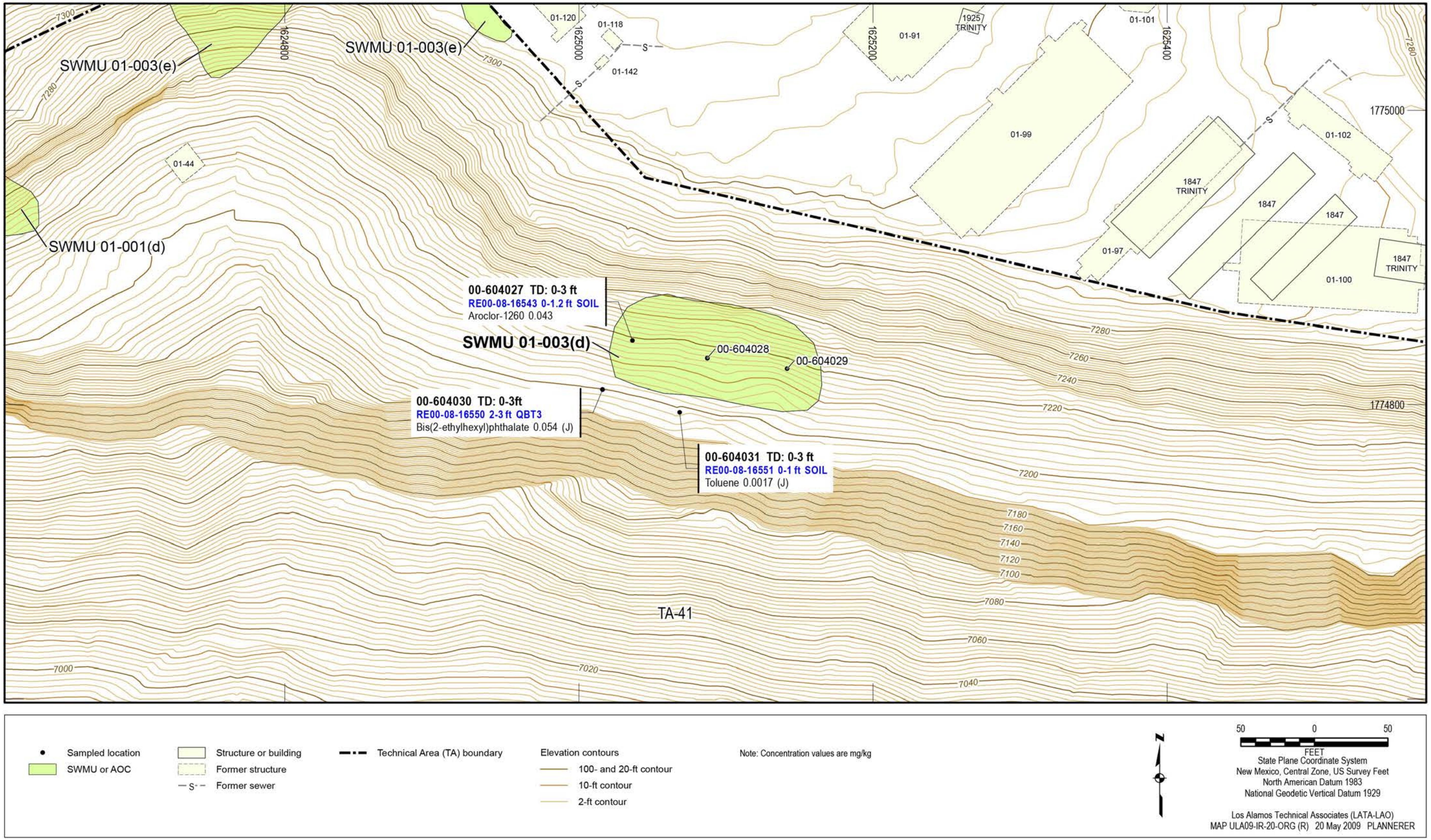

Figure 7.12-1 Organic chemicals detected at SWMU 01-003(d)

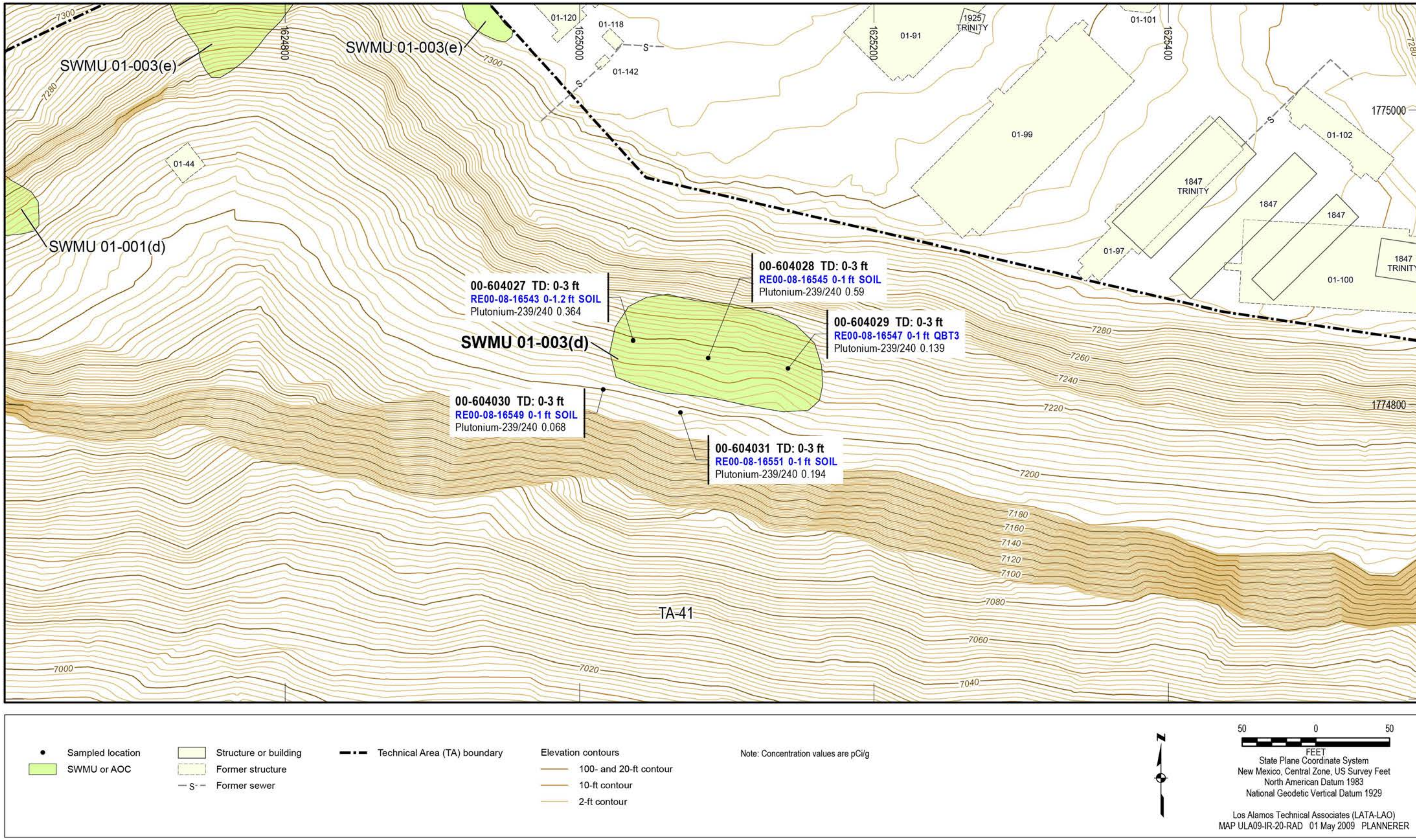

Figure 7.12-2 Radionuclides detected or detected above BVs/FVs at SWMU 01-003(d)

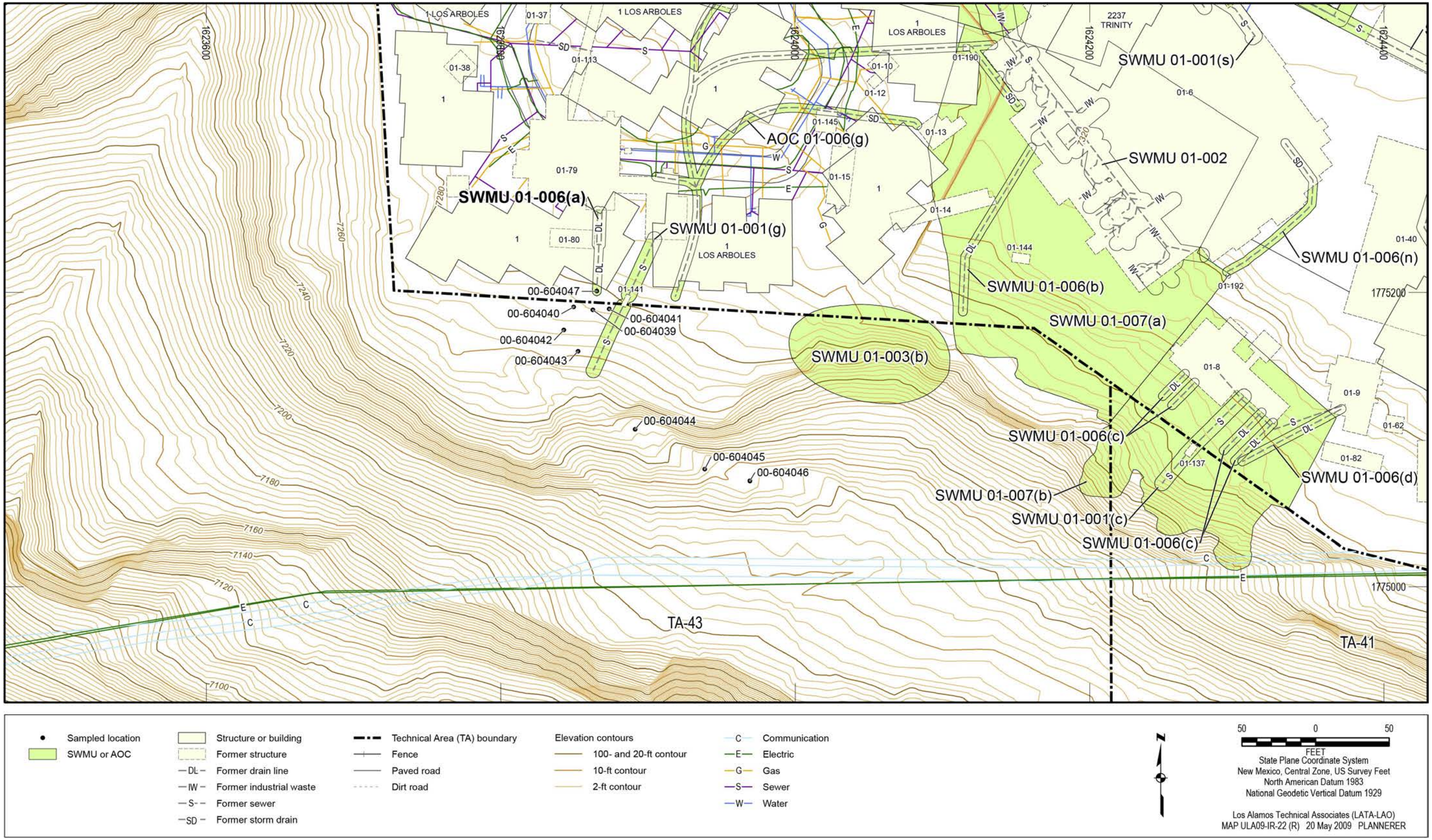

Figure 7.13-1 Site map of SWMU 01-006(a)

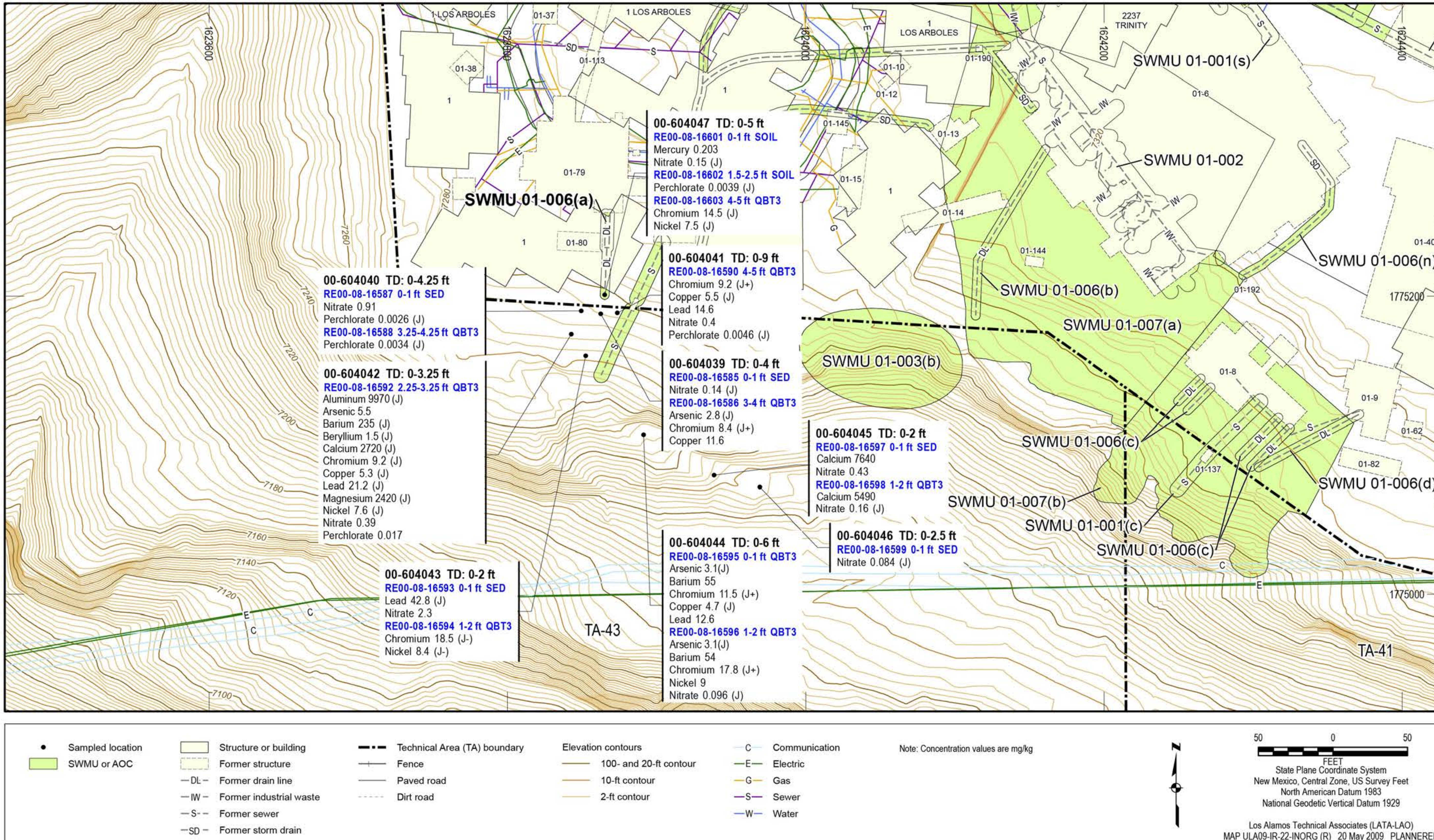

Figure 7.13-2 Inorganic chemicals detected or detected above BVs at SWMU 01-006(a)

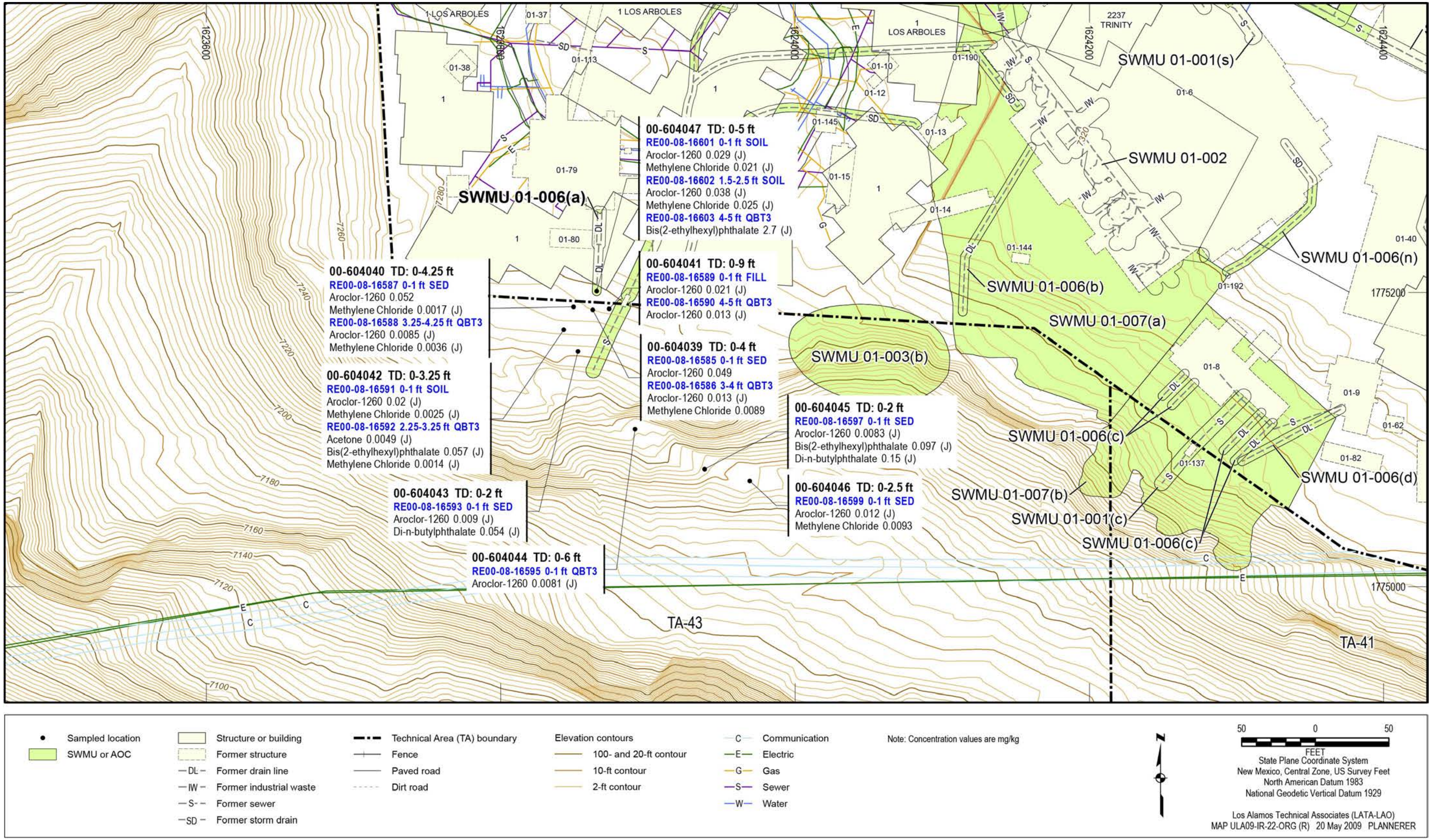

Figure 7.13-3 Organic chemicals detected at SWMU 01-006(a)

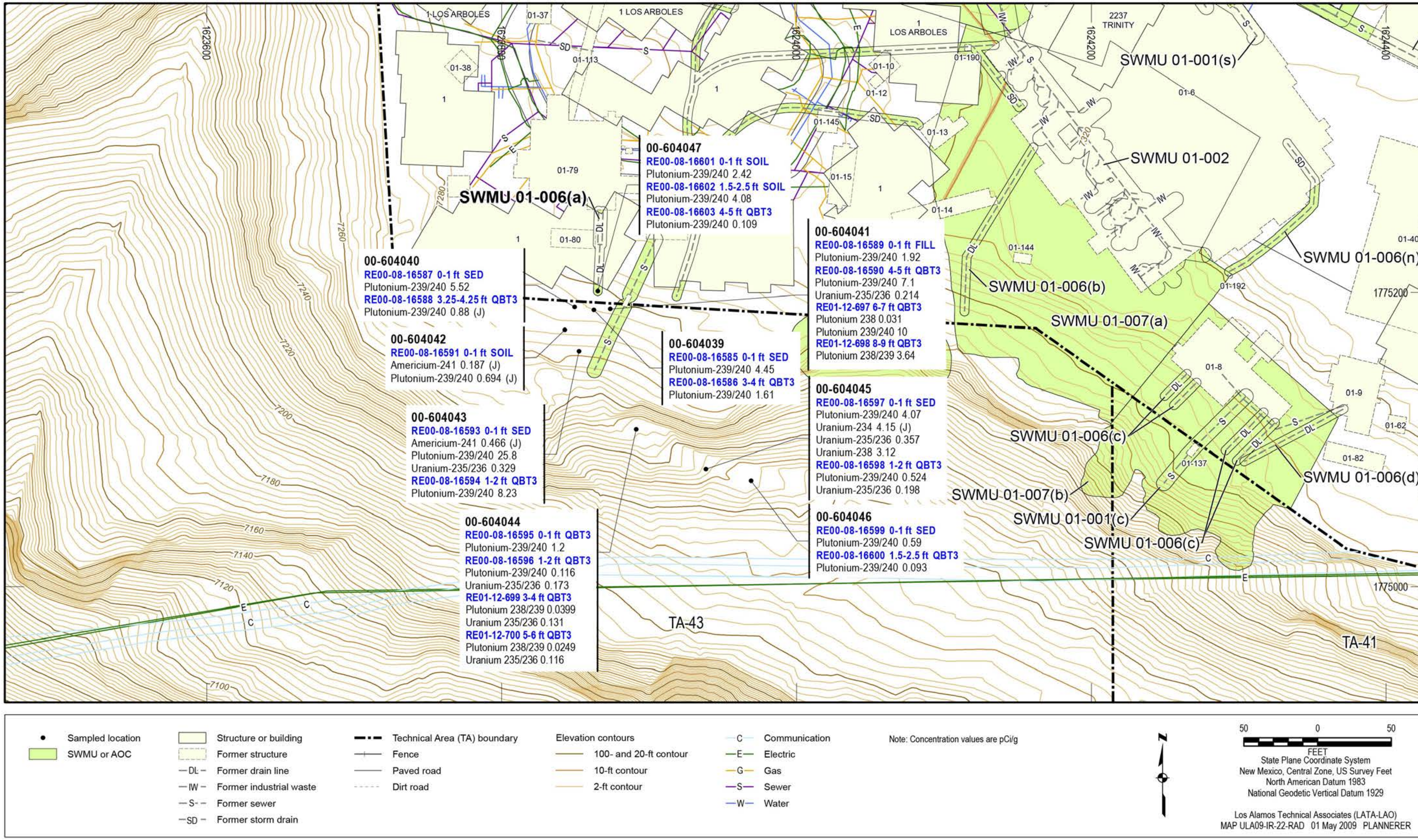

Figure 7.13-4 Radionuclides detected or detected above BVs/FVs at SWMU 01-006(a)

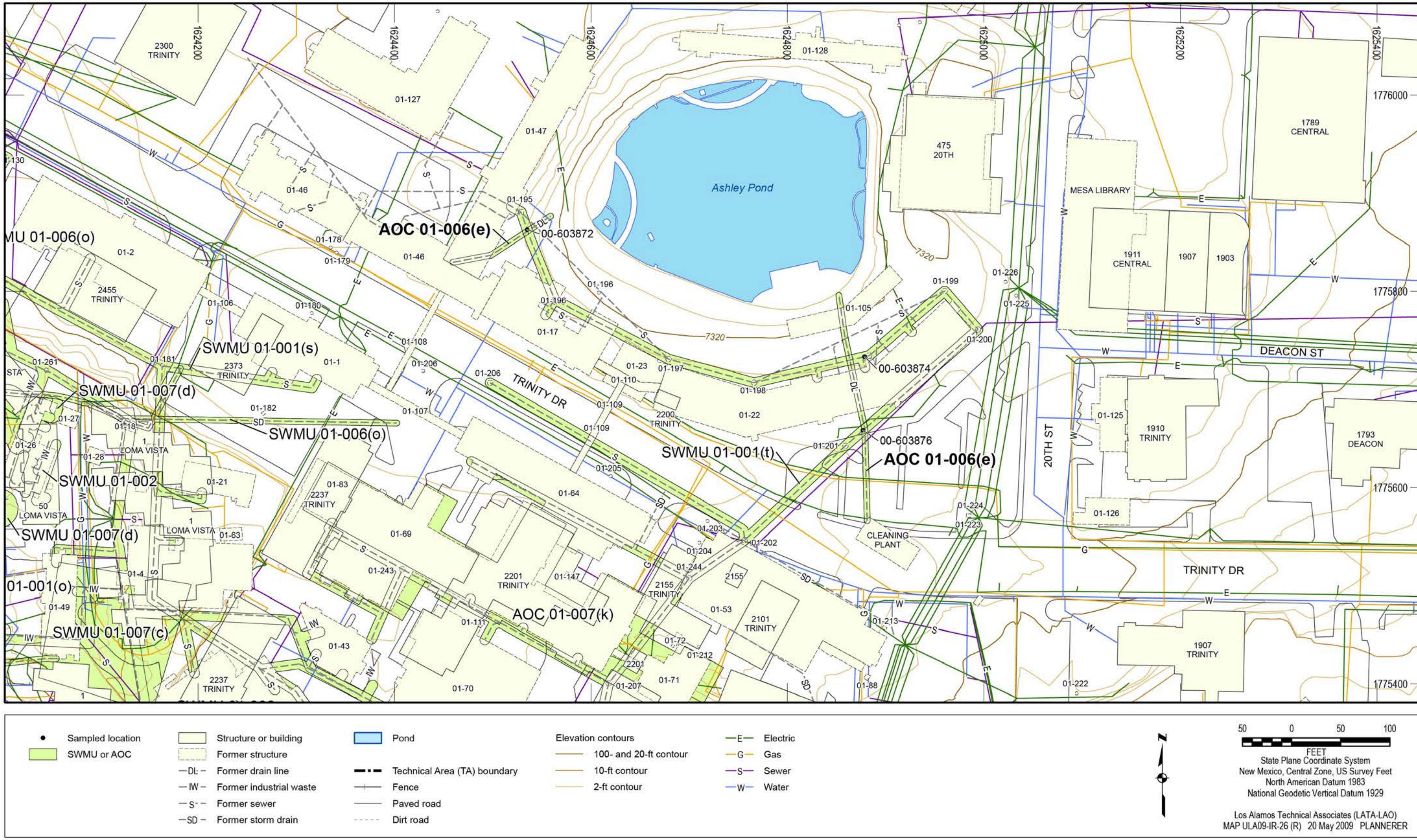

Figure 7.14-1 Site map of AOC 01-006(e)

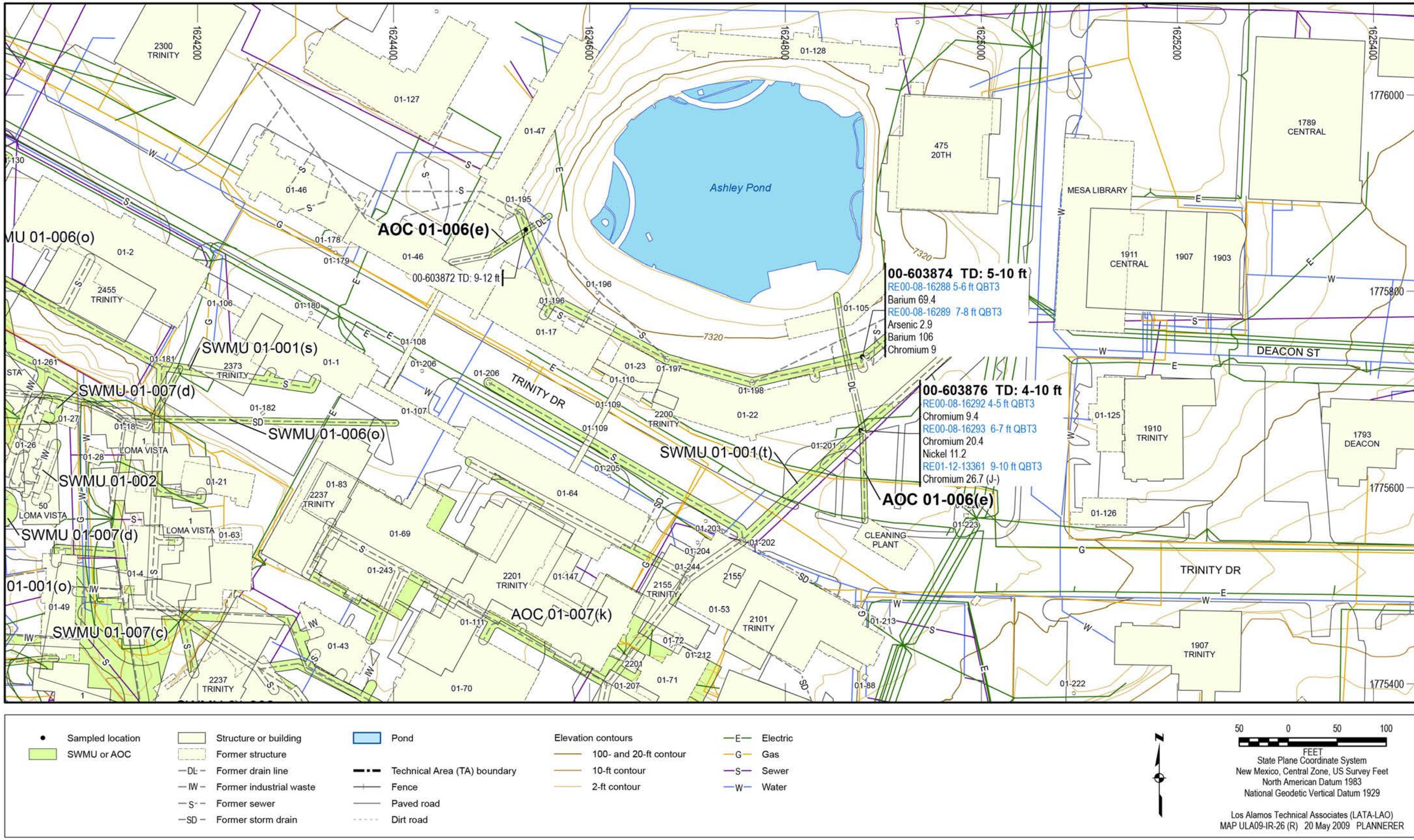

Figure 7.14-2 Inorganic chemicals detected or detected above BVs at AOC 01-006(e)

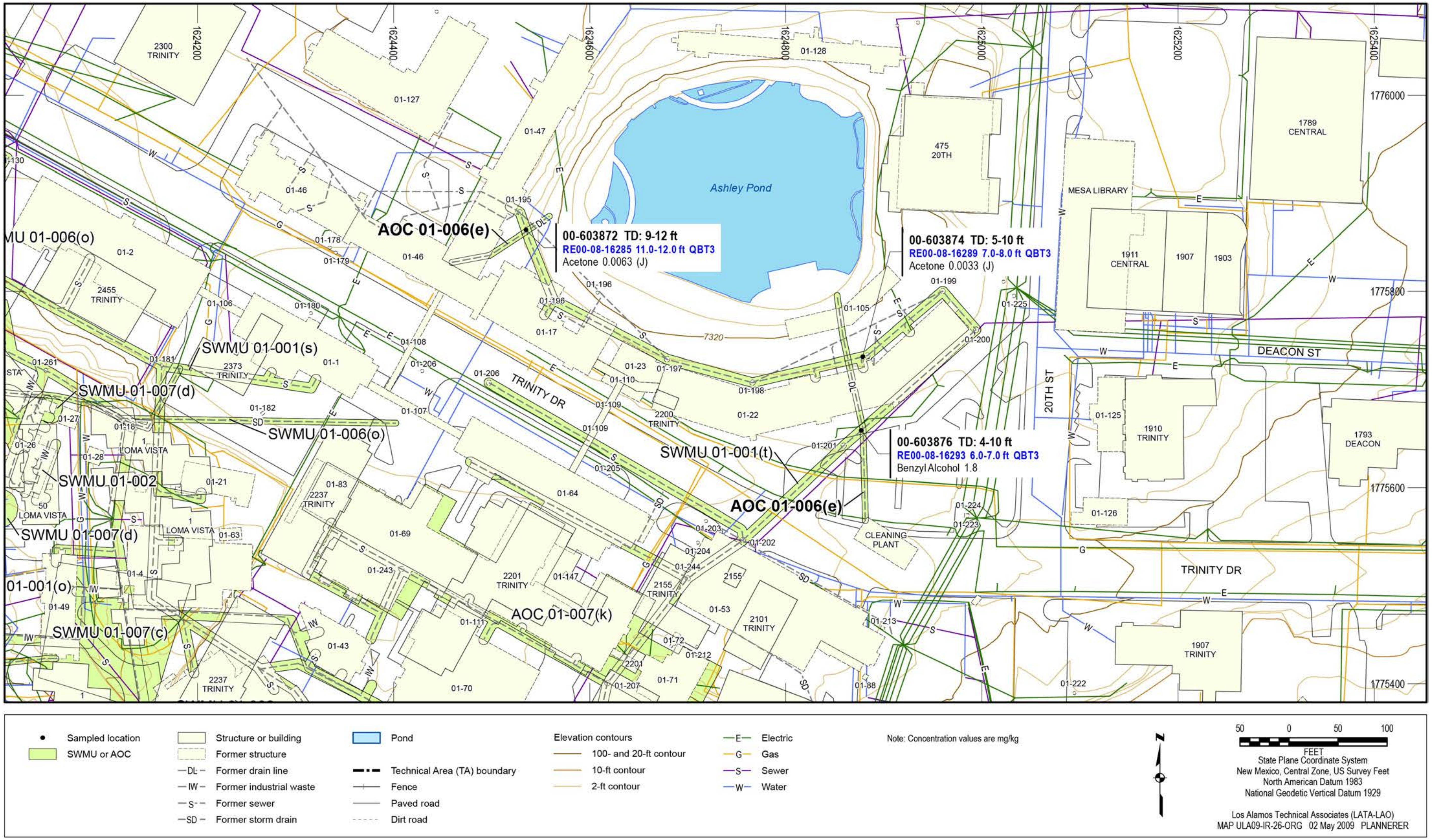

Figure 7.14-3 Organic chemicals detected at AOC 01-006(e)

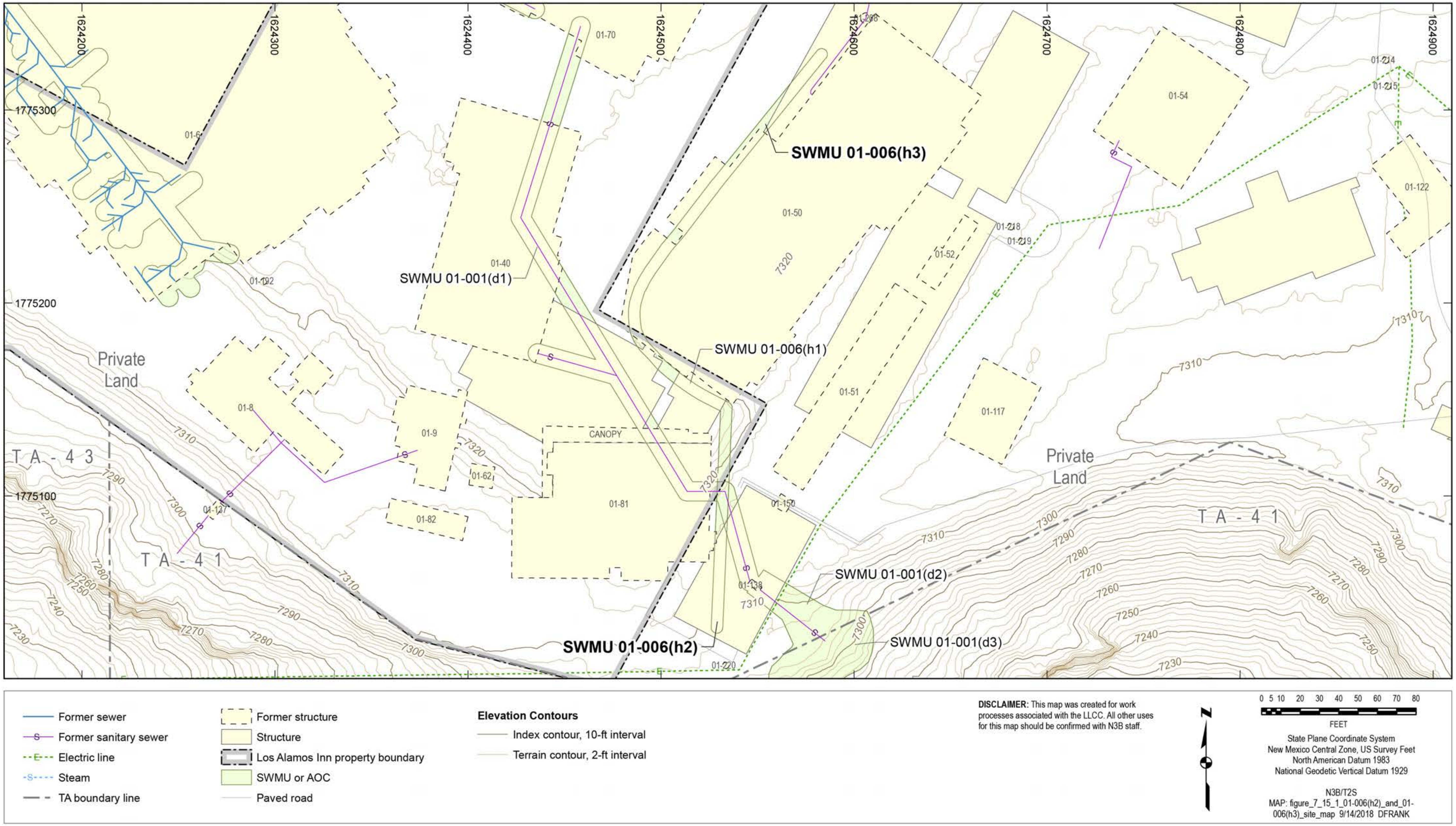

Figure 7.15-1 Site map of SWMUs 01-006(h2) and 01-006(h3)

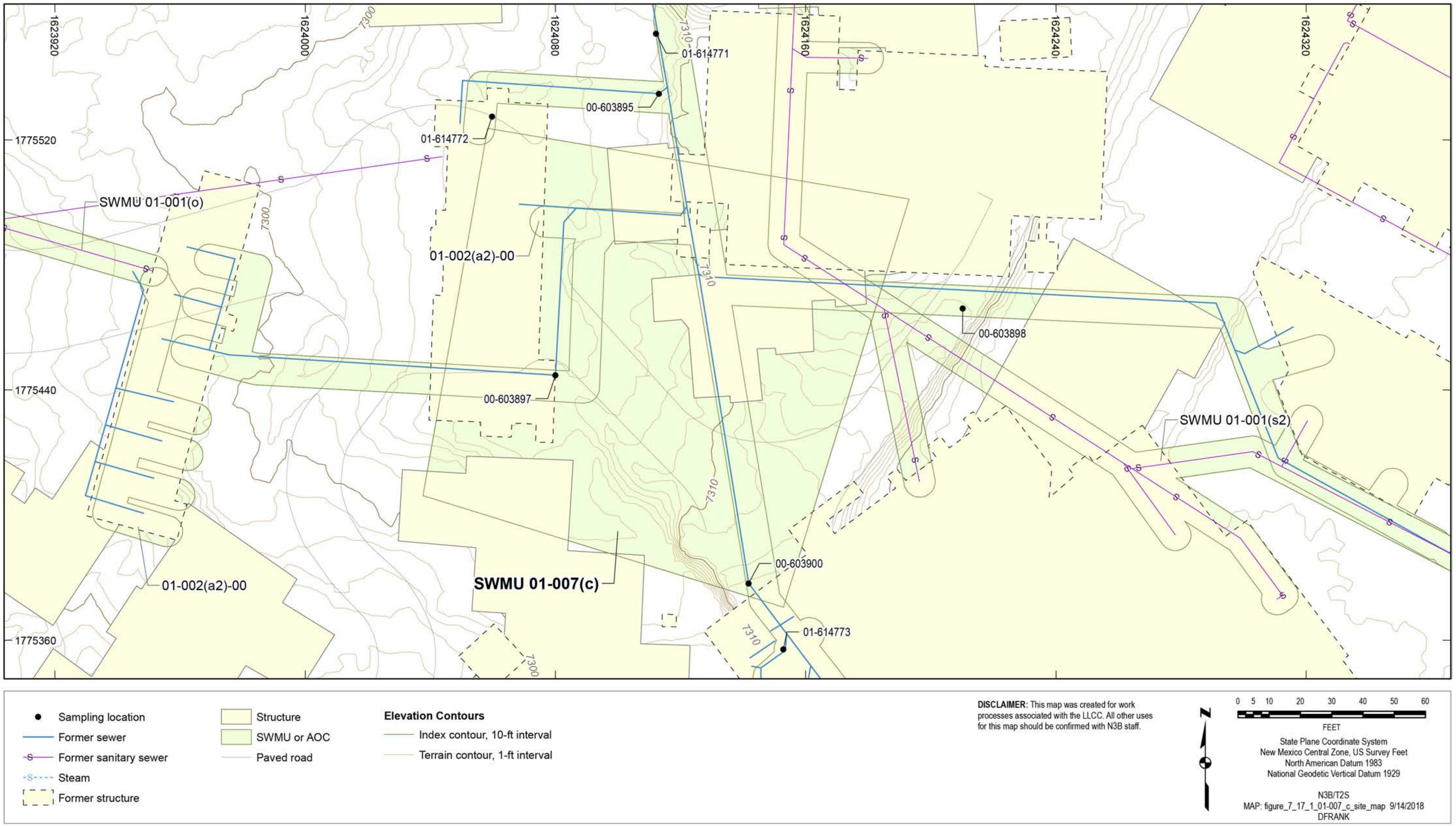

Figure 7.17-1 Site map of SWMU 01-007(c)

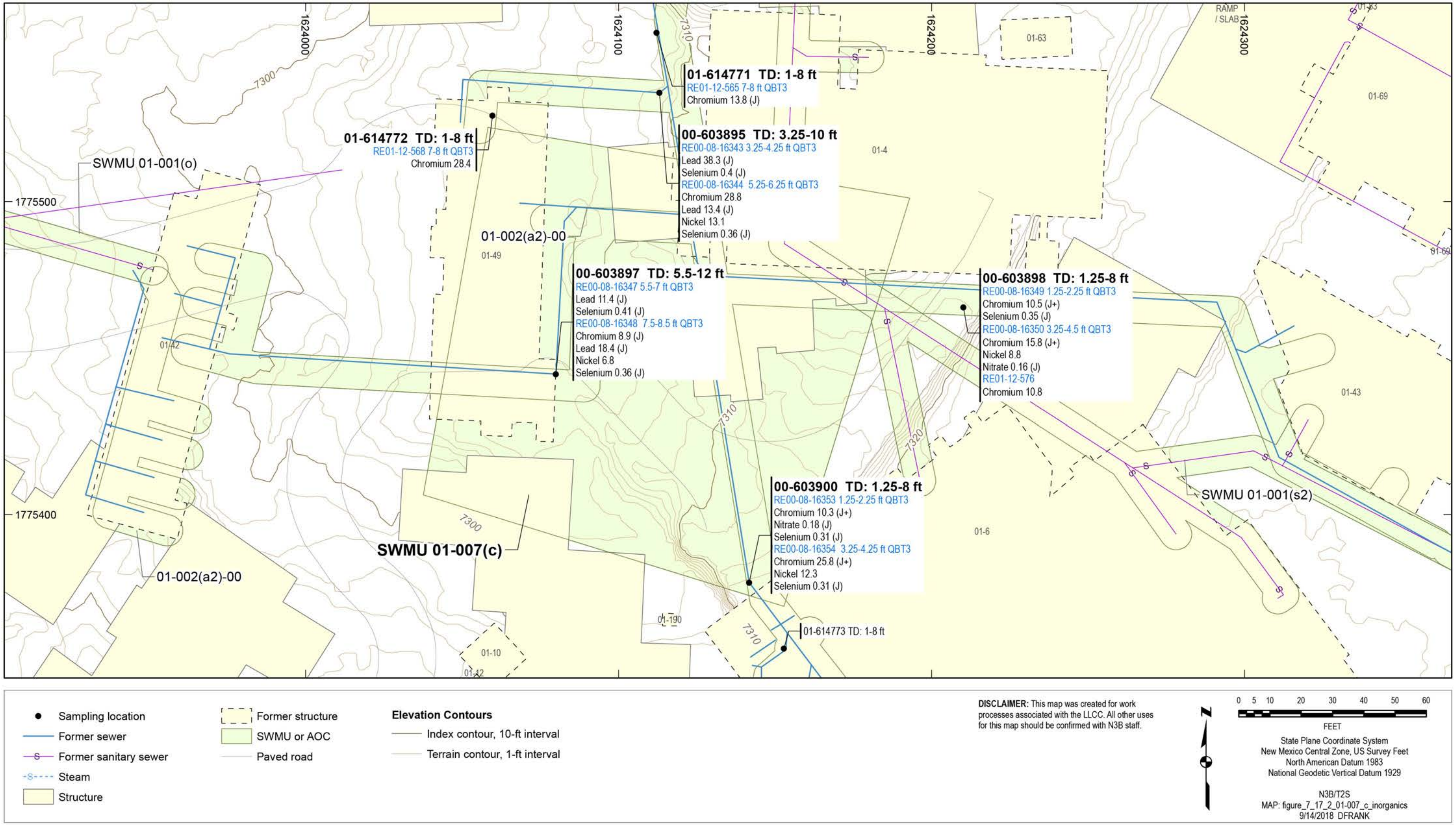

Figure 7.17-2 Inorganic chemicals detected or detected above BVs at SWMU 01-007(c)

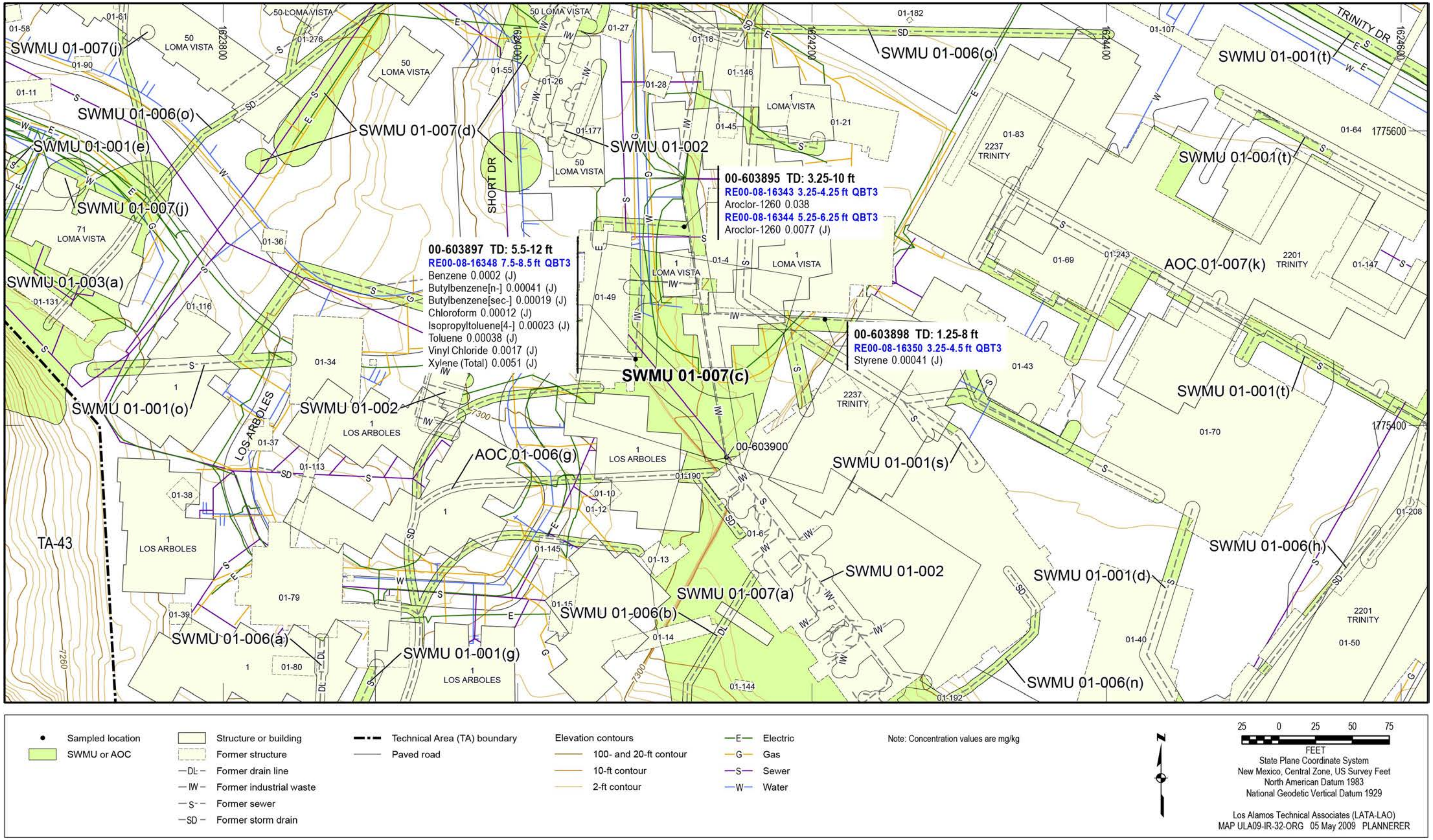

Figure 7.17-3 Organic chemicals detected at SWMU 01-007(c)

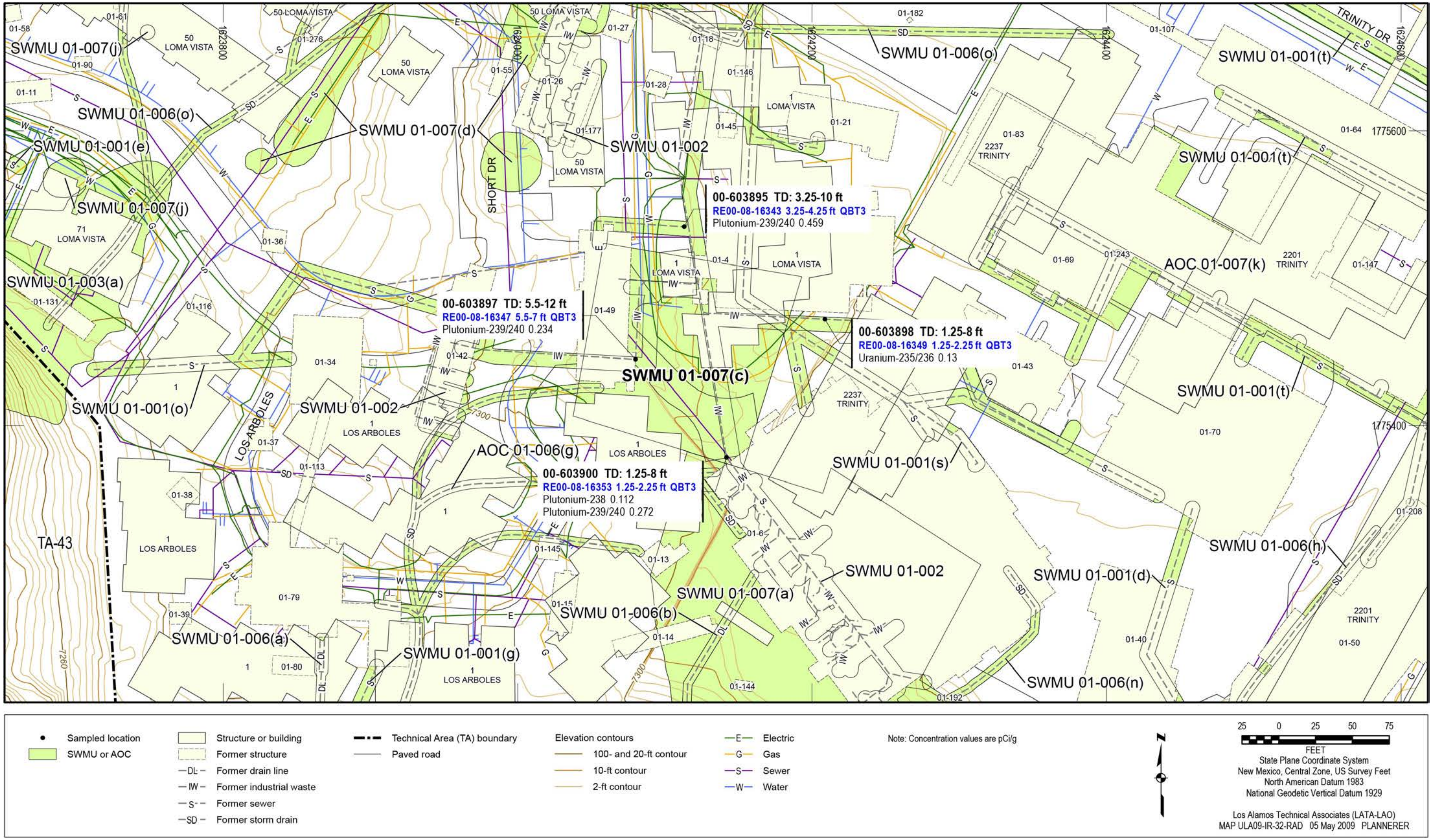

Figure 7.17-4 Radionuclides detected or detected above BVs/FVs at SWMU 01-007(c)

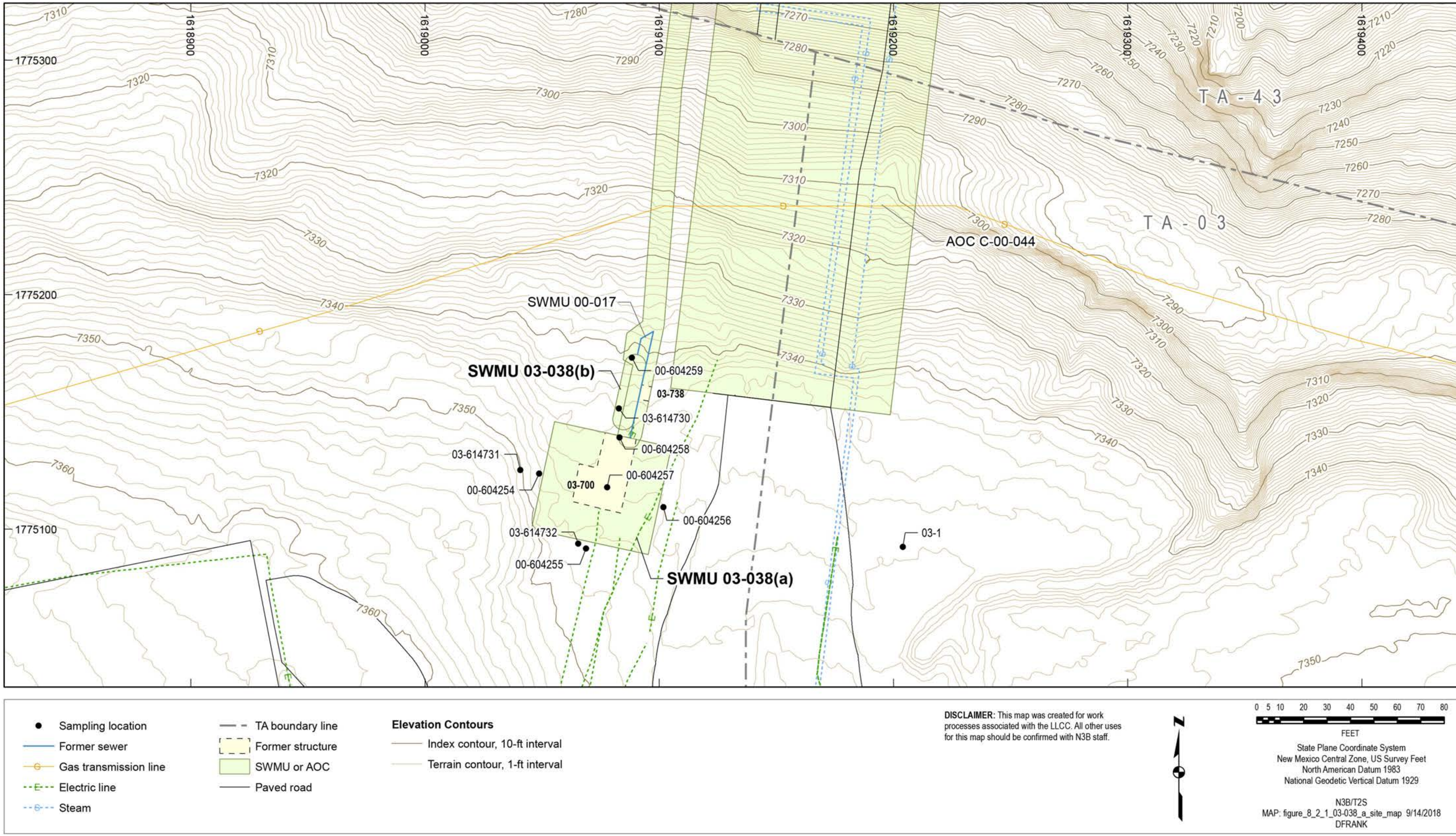

Figure 8.2-1 Site map of SWMUs 03-038(a) and 03-038(b)

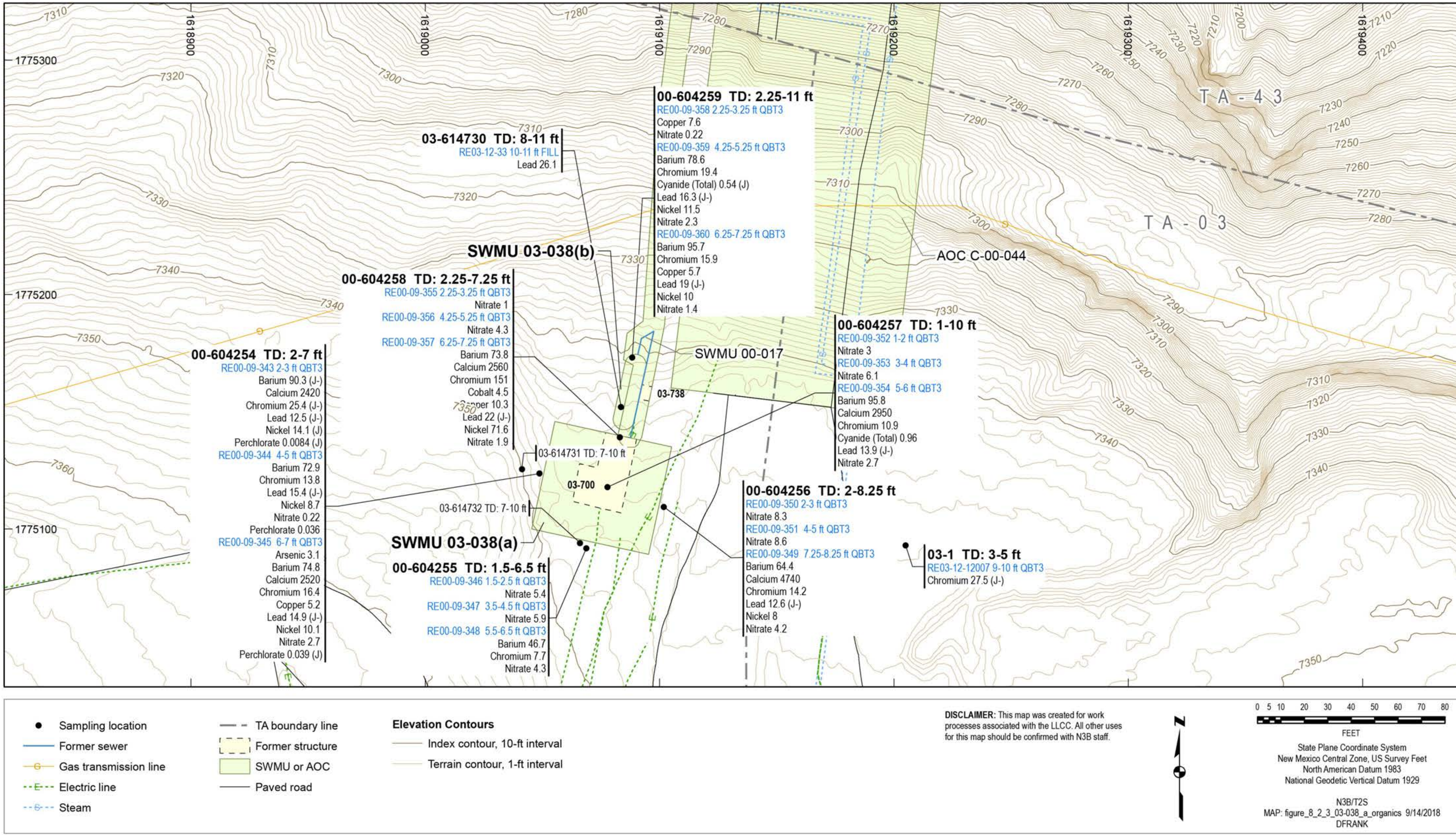

Figure 8.2-2 Inorganic chemicals detected or detected above BVs at SWMUs 03-038(a) and 03-038(b)

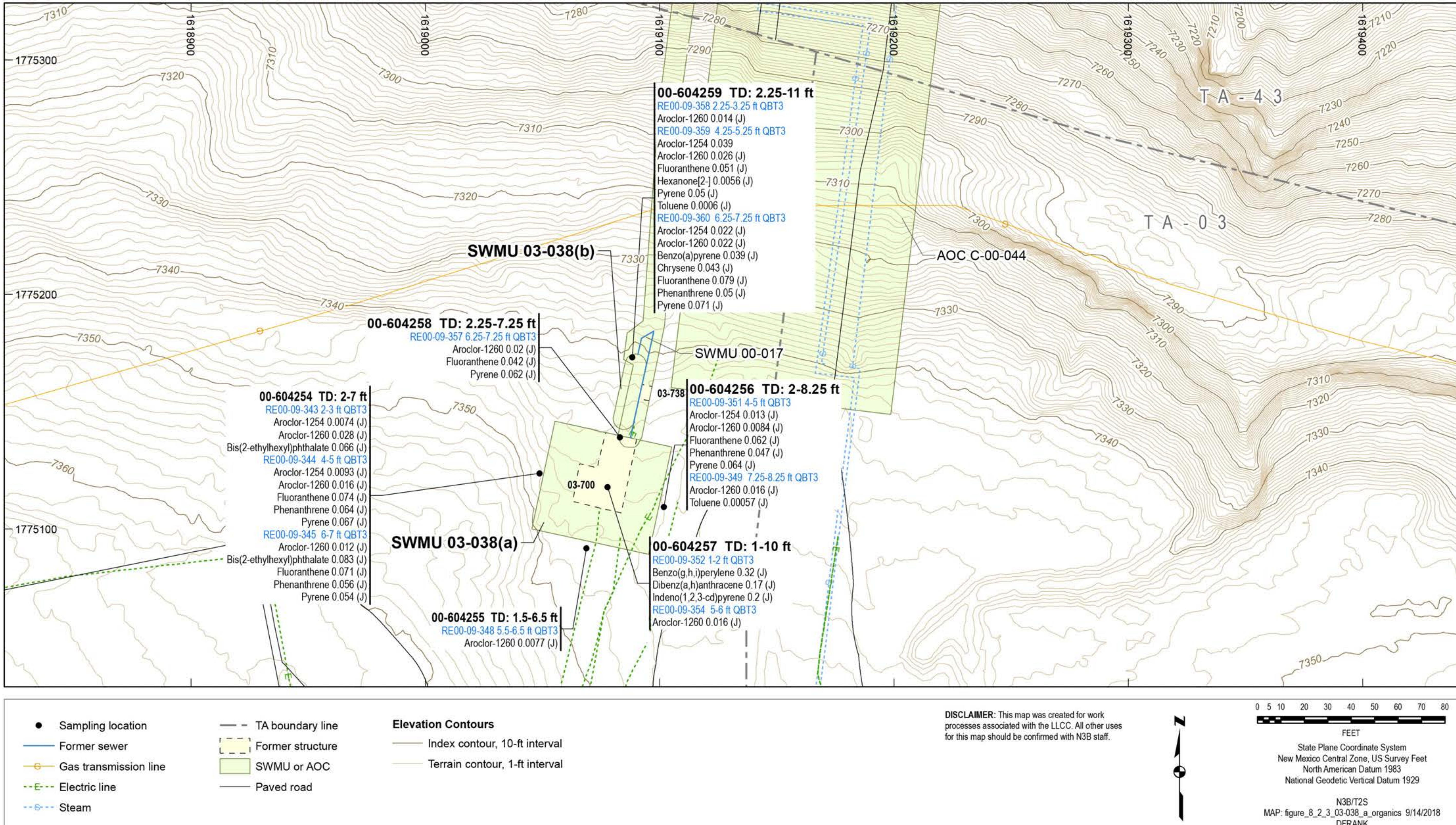

Figure 8.2-3 Organic chemicals detected at SWMUs 03-038(a) and 03-038(b)

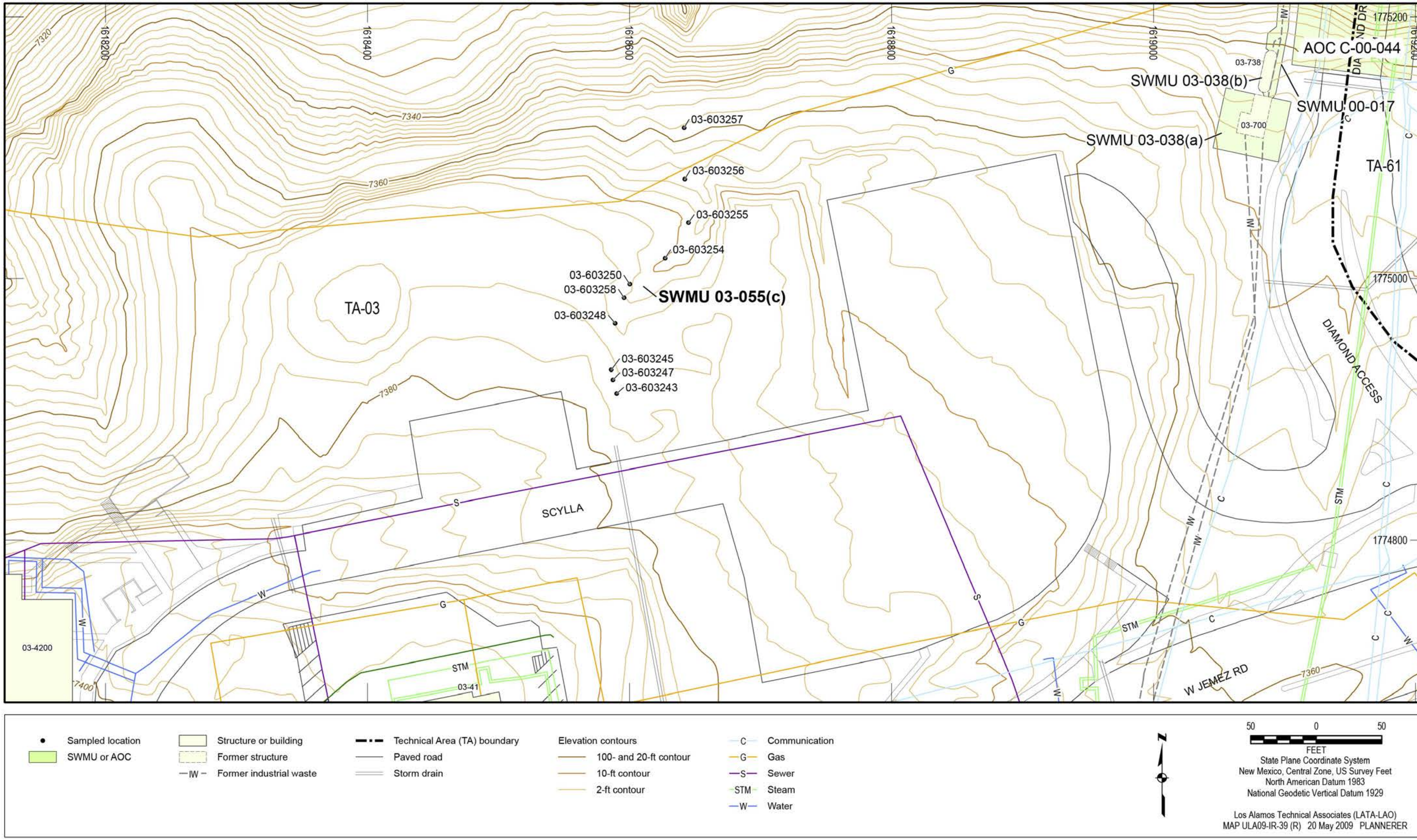

Figure 8.4-1 Site map of SWMU 03-055(c)

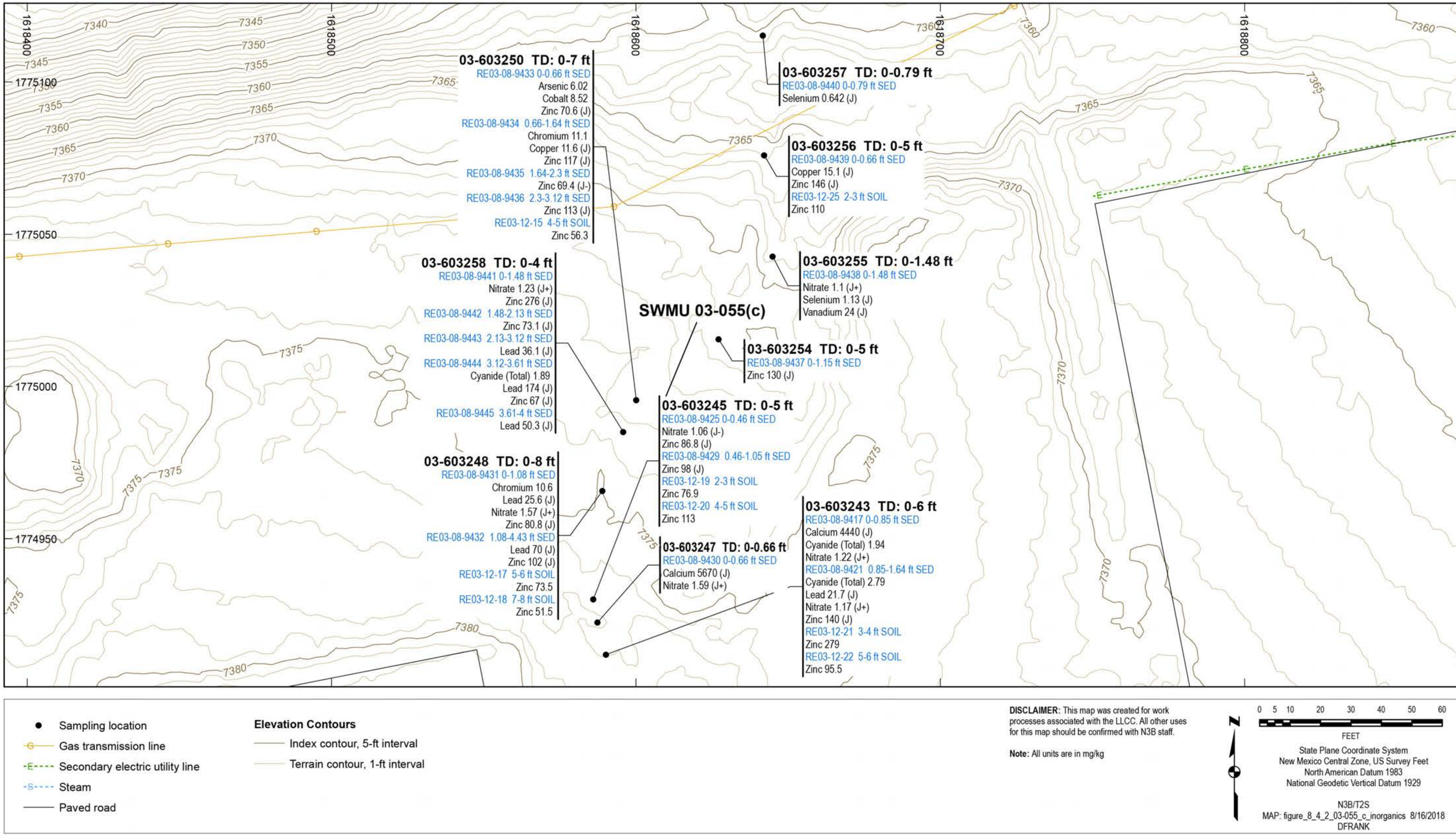

Figure 8.4-2 Inorganic chemicals detected or detected above BVs at SWMU 03-055(c)

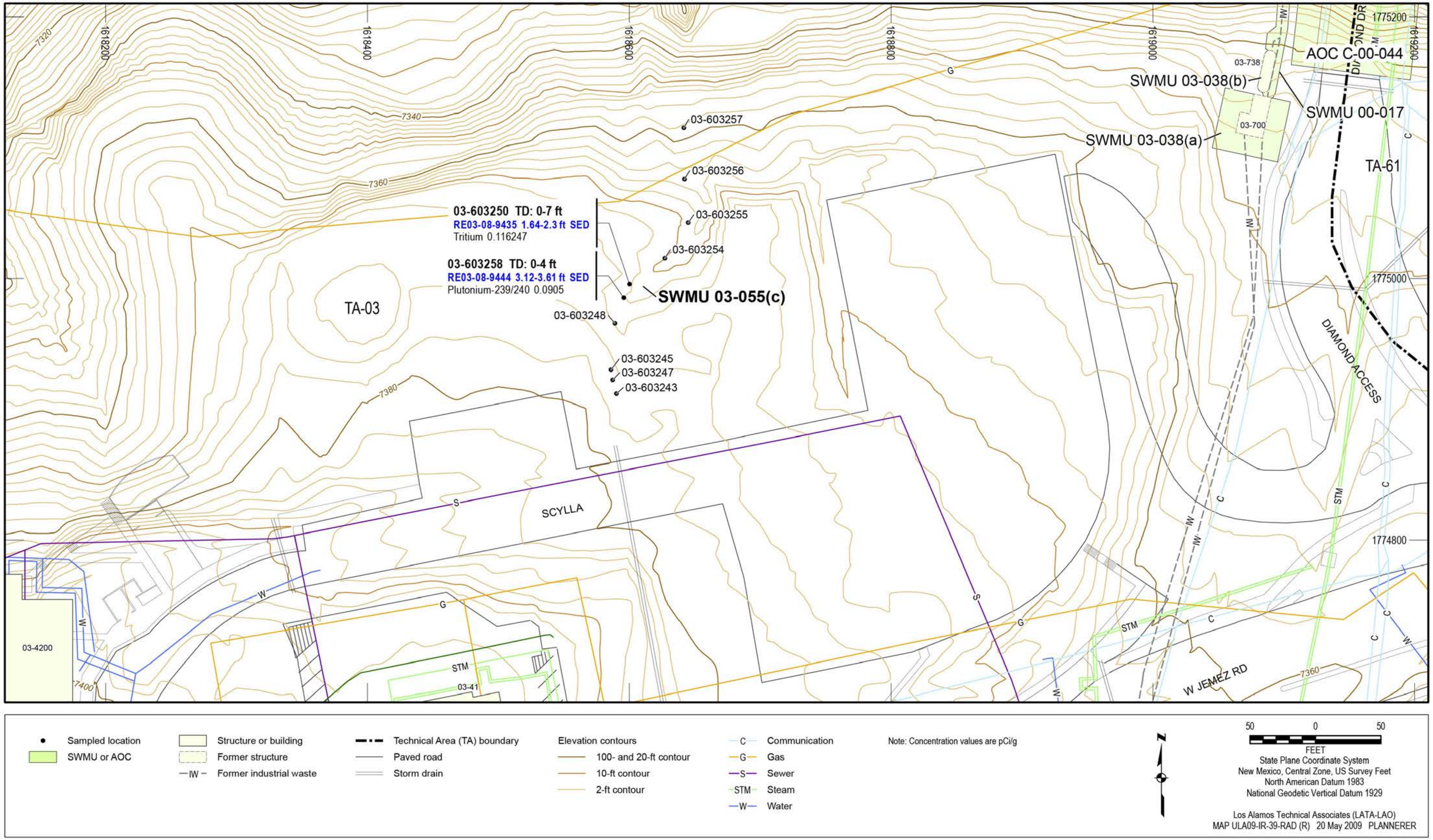

Figure 8.4-3 Radionuclides detected or detected above BVs/FVs at SWMU 03-055(c)

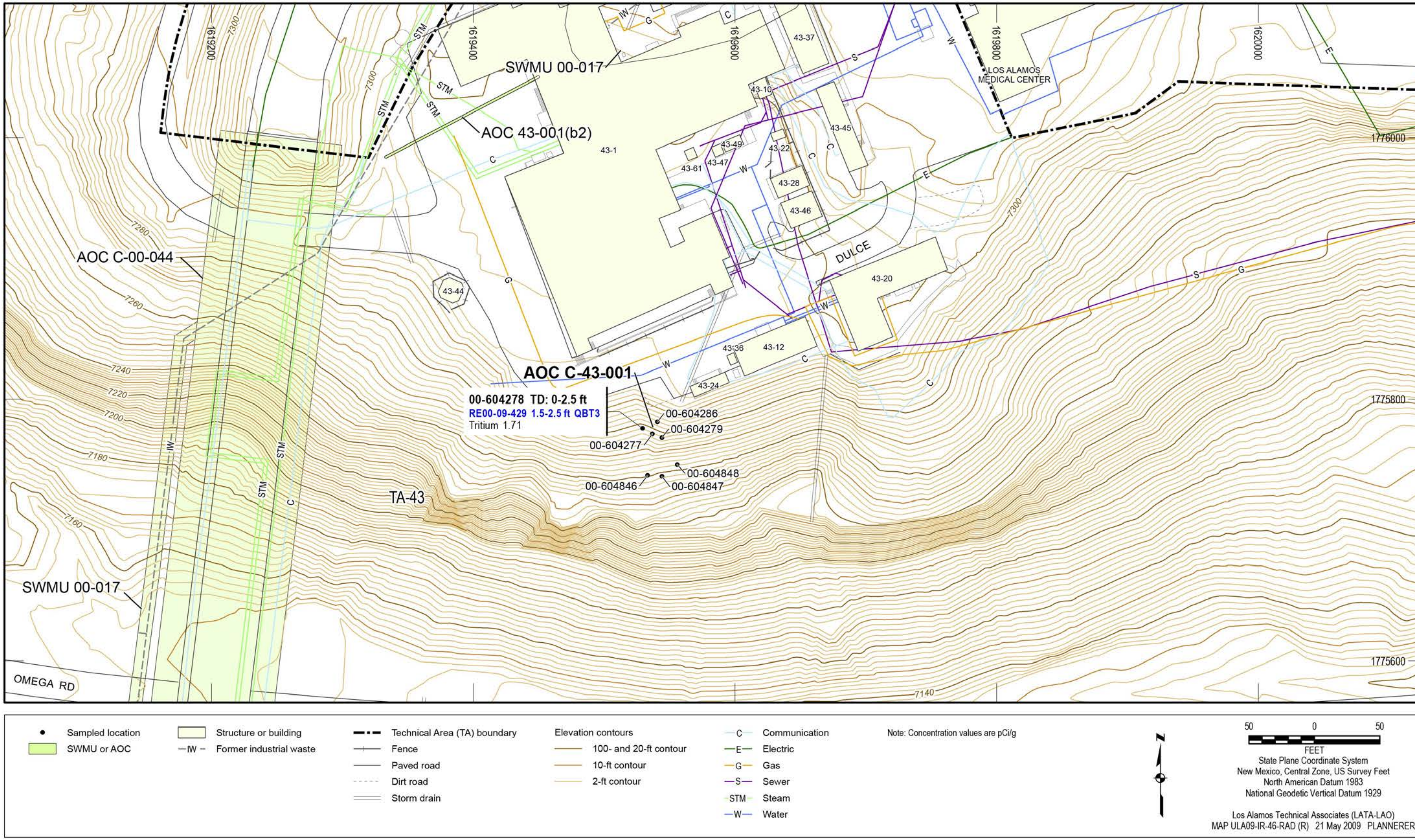

Figure 10.2-1 Radionuclides detected or detected above BVs/FVs at AOC C-43-001

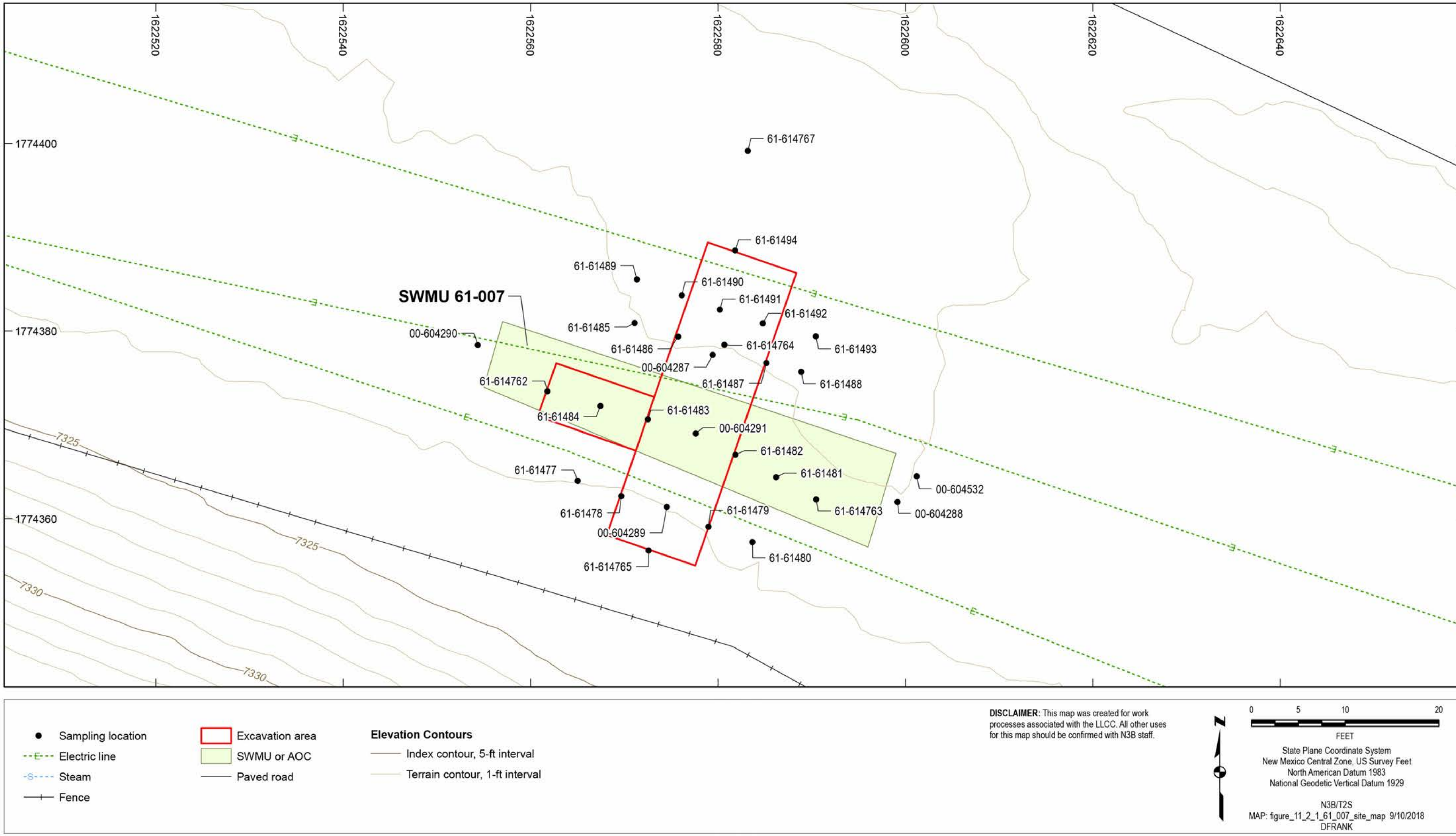

Figure 11.1-1 Site map of SWMU 61-007

Table 1.1-1
Sites under Investigation in Upper Los Alamos Canyon Aggregate Area

SWMU/AOC	Brief Description	2010–2017 Phase II Investigation	Current Status
TA-00			
SWMU 00-017	Industrial waste lines	Sampled	Phase II investigation report (section 6.2)
AOC C-00-044	Soil contamination from lead paint chips	Sampled	Phase II investigation report (section 6.3)
TA-01			
SWMU 01-001(a)	Former septic tank 134	Sampled	Phase II investigation report (section 7.2)
SWMU 01-001(d2)	Soil contamination associated with former septic tank 138	Not sampled	Phase II investigation report (section 7.3)
SWMU 01-001(d3)	Area of the outfall from former septic tank 138 (Hillside 138)	Soil removal, sampled	Phase II investigation report (section 7.4)
SWMU 01-001(f)	Former location of septic tank 140, its associated inlet and outlet drainlines, and outfall	Soil removal, sampled	Phase II investigation report (section 7.5)
SWMU 01-001(g)	Former septic tank 141	Soil removal, sampled	Phase II investigation report (section 7.6)
SWMU 01-001(o)	Former sanitary waste line	Sampled	Phase II investigation report (section 7.7)
SWMU 01-001(s2)	Former sanitary waste line	Sampled	Phase II investigation report (section 7.8)
SWMU 01-002(a2)-00	Portion of former industrial waste line	Not sampled	Phase II investigation report (section 7.9)
SWMU 01-003(a)	Bailey Bridge landfill	Sampled	Phase II investigation report (section 7.10)
AOC 01-003(b2)	Portion of former surface disposal area	Sampled	Phase II investigation report (section 7.11)
SWMU 01-003(d)	Surface disposal site (Can Dump site)	Soil removal, sampled	Phase II investigation report (section 7.12)
SWMU 01-006(a)	Cooling tower drainline and outfall	Sampled	Phase II investigation report (section 7.13)
AOC 01-006(e)	Drainlines and outfalls to Ashley Pond	Sampled	Phase II investigation report (section 7.14)
SWMU 01-006(h2)	Portion of former storm water drainage system	Not sampled	Phase II investigation report (section 7.15)
SWMU 01-006(h3)	Portion of former storm water drainage system	Not sampled	Phase II investigation report (section 7.16)
SWMU 01-007(c)	Radiological soil contamination	Sampled	Phase II investigation report (section 7.17)

Table 1.1-1 (continued)

SWMU/AOC	Brief Description	2010–2017 Phase II Investigation	Current Status
TA-03			
SWMU 03-038(a)	Former acid-neutralizing and pumping building	Sampled	Phase II investigation report (section 8.2)
SWMU 03-038(b)	Former steel 28,500-gal. acid waste holding tank	Sampled	Phase II investigation report (section 8.3)
SWMU 03-055(c)	Outfall	Sampled	Phase II investigation report (section 8.4)
TA-32			
SWMU 32-002(b2)	Portion of former septic system	Soil removal, sampled	Phase II investigation report (section 9.2)
TA-43			
AOC C-43-001	Storm drain outfall	Sampled	Phase II investigation report (section 10.2)
TA-61			
SWMU 61-007	Transformer staging area	Soil removal, sampled	Phase II investigation report (section 11.2)

Table 3.1-1
Surveyed Coordinates for Locations Sampled in 2012–2017

SWMU or AOC	Location ID	Easting (ft)	Northing (ft)
00-017	00-10143	1619175.340	1775826.500
00-017	00-10144	1619172.350	1775796.280
00-017	00-10182	1619170.030	1775776.880
00-017	00-604250	1619164.230	1775717.270
00-017	00-614734	1619116.780	1775374.760
C-00-044	00-614735	1619012.317	1775537.972
C-00-044	00-614736	1618978.763	1775636.946
C-00-044	00-614737	1619189.833	1775501.961
C-00-044	00-614738	1619199.343	1775609.901
C-00-044	00-614739	1619350.837	1775587.796
C-00-044	00-614740	1619338.530	1775493.627
C-00-044	00-614741	1619125.531	1775960.499
C-00-044	00-614742	1619340.801	1775943.888
C-00-044	00-614743	1619111.146	1775886.393
C-00-044	00-614744	1619235.101	1775852.144
C-00-044	00-614745	1619242.518	1775901.171
C-00-044	00-614746	1619351.893	1775835.978
C-00-044	00-614747	1619037.266	1775730.146
C-00-044	00-614748	1619225.430	1775716.386
C-00-044	00-614749	1619360.343	1775661.889
C-00-044	00-614750	1619164.230	1775717.270
C-00-044	00-614751	1619179.913	1775394.272
C-00-044	00-614752	1619266.171	1775391.558
C-00-044	00-614753	1619298.856	1775203.361
C-00-044	00-614754	1619147.513	1775209.049
C-00-044	00-614755	1619030.314	1775208.912
C-00-044	00-614756	1619043.901	1775329.406
01-001(a)	00-603748	1623247.010	1775364.900
01-001(a)	00-603749	1623343.130	1775369.180
01-001(a)	00-603750	1623329.290	1775353.210
01-001(a)	00-603751	1623332.711	1775322.155
01-001(a)	00-603752	1623336.424	1775307.465
01-001(a)	00-603753	1623330.905	1775307.714
01-001(a)	00-603761	1623335.355	1775310.916
01-001(a)	01-614781	1623309.791	1775304.760
01-001(a)	01-614782	1623365.931	1775323.035
01-001(a)	01-614783	1623390.041	1775281.455
01-001(a)	01-614784	1623407.830	1775295.835
01-001(a)	01-614785	1623426.564	1775311.950
01-001(a)	01-614786	1623399.406	1775249.494

Table 3.1-1 (continued)

SWMU or AOC	Location ID	Easting (ft)	Northing (ft)
01-001(a)	01-614786	1623399.406	1775249.494
01-001(a)	01-614787	1623431.894	1775280.410
01-001(a)	01-614788	1623460.713	1775287.746
01-001(d3)	00-603800	1624593.659	1775017.583
01-001(d3)	00-603801	1624582.235	1775007.662
01-001(d3)	00-603802	1624594.851	1775028.917
01-001(d3)	00-603803	1624508.880	1774955.953
01-001(d3)	00-603804	1624611.190	1774982.146
01-001(d3)	00-603806	1624532.630	1774888.009
01-001(d3)	00-603807	1624683.248	1774942.725
01-001(d3)	00-603809	1624644.160	1774861.520
01-001(d3)	00-603811	1624559.260	1774761.460
01-001(d3)	00-603812	1624657.524	1774757.650
01-001(d3)	00-603814	1624553.975	1774685.983
01-001(d3)	00-603815	1624662.203	1774686.585
01-001(d3)	00-603816	1624728.441	1774671.277
01-001(d3)	00-603817	1624542.852	1774613.230
01-001(d3)	00-603818	1624644.767	1774609.021
01-001(d3)	00-603819	1624711.507	1774596.996
01-001(d3)	00-603820	1624622.930	1774923.170
01-001(d3)	00-603821	1624584.940	1775025.098
01-001(d3)	01-167	1624622.930	1774923.170
01-001(d3)	01-236	1624604.250	1775031.695
01-001(d3)	01-238	1624574.348	1775001.981
01-001(d3)	01-57	1624624.161	1774923.387
01-001(d3)	01-59	1624621.699	1774922.953
01-001(d3)	01-60	1624581.211	1775006.945
01-001(d3)	01-61	1624582.952	1775006.638
01-001(d3)	01-614759	1624629.659	1774887.521
01-001(d3)	01-614760	1624467.693	1774960.462
01-001(d3)	01-614761	1624702.789	1774573.546
01-001(d3)	00-603809	1624644.160	1774861.520
01-001(d3)	01-159	1624601.216	1774979.539
01-001(d3)	01-160	1624620.001	1774985.945
01-001(d3)	01-161	1624604.923	1774992.405
01-001(d3)	01-162	1624582.235	1775007.662
01-001(d3)	01-163	1624615.815	1774921.077
01-001(d3)	01-164	1624632.639	1774925.719
01-001(d3)	01-165	1624624.512	1774912.074
01-001(d3)	01-166	1624611.190	1774982.146
01-001(d3)	01-58	1624623.147	1774921.939
01-001(d3)	01-614759	1624629.659	1774887.521

Table 3.1-1 (continued)

SWMU or AOC	Location ID	Easting (ft)	Northing (ft)
01-001(d3)	01-61523	1624611.671	1774920.129
01-001(d3)	01-61535	1624618.106	1774947.540
01-001(d3)	01-61536	1624619.061	1774942.678
01-001(d3)	01-61537	1624619.981	1774938.026
01-001(d3)	01-61538	1624621.023	1774932.765
01-001(d3)	01-61539	1624622.222	1774927.846
01-001(d3)	01-61540	1624624.009	1774917.340
01-001(d3)	01-61541	1624608.071	1774987.939
01-001(d3)	01-61542	1624612.429	1774977.401
01-001(d3)	01-61543	1624610.788	1774981.377
01-001(d3)	01-61544	1624613.262	1774972.331
01-001(d3)	01-61548	1624605.048	1774906.381
01-001(d3)	01-61549	1624599.044	1774920.701
01-001(d3)	01-61550	1624596.426	1774936.958
01-001(d3)	01-61551	1624582.884	1774901.292
01-001(d3)	01-61552	1624580.619	1774914.257
01-001(d3)	01-61553	1624577.489	1774933.154
01-001(d3)	01-61556	1624608.955	1774970.075
01-001(d3)	01-61557	1624619.244	1774970.354
01-001(d3)	01-61558	1624615.936	1774984.553
01-001(d3)	01-61559	1624613.643	1774968.477
01-001(d3)	01-61560	1624607.099	1774975.821
01-001(d3)	01-61561	1624617.720	1774976.352
01-001(d3)	01-61562	1624618.163	1774980.924
01-001(d3)	01-61563	1624612.592	1774977.135
01-001(d3)	01-61564	1624612.589	1774972.926
01-001(d3)	01-61565	1624607.860	1774980.460
01-001(d3)	01-61566	1624608.071	1774987.939
01-001(d3)	01-61567	1624624.009	1774917.340
01-001(d3)	01-61568	1624628.748	1774924.432
01-001(d3)	01-61569	1624622.222	1774927.846
01-001(d3)	01-61570	1624595.259	1774941.792
01-001(d3)	01-61571	1624603.509	1774943.833
01-001(d3)	01-61572	1624603.790	1774939.355
01-001(d3)	01-61573	1624597.510	1774932.792
01-001(d3)	01-61574	1624598.301	1774927.750
01-001(d3)	01-61575	1624609.009	1774935.300
01-001(d3)	01-61576	1624619.061	1774942.678
01-001(d3)	01-61577	1624625.415	1774939.380
01-001(d3)	01-61578	1624610.900	1774929.128
01-001(d3)	01-61579	1624618.421	1774921.682
01-001(d3)	01-61580	1624609.101	1774918.378

Table 3.1-1 (continued)

SWMU or AOC	Location ID	Easting (ft)	Northing (ft)
01-001(d3)	01-61581	1624610.814	1774925.022
01-001(d3)	01-61582	1624613.127	1774915.574
01-001(d3)	01-61583	1624616.543	1774931.567
01-001(d3)	01-61584	1624619.981	1774938.026
01-001(d3)	01-61585	1624611.671	1774920.129
01-001(d3)	01-61586	1624605.584	1774934.558
01-001(d3)	01-61587	1624601.211	1774933.501
01-001(d3)	01-61588	1624600.688	1774938.160
01-001(d3)	01-61589	1624599.759	1774942.917
01-001(d3)	01-61590	1624596.426	1774936.958
01-001(d3)	01-61591	1624602.812	1774928.154
01-001(d3)	01-61592	1624606.922	1774929.278
01-001(d3)	01-61593	1624621.023	1774932.765
01-001(d3)	01-61594	1624615.432	1774936.949
01-001(d3)	01-61595	1624617.637	1774926.602
01-001(d3)	01-61596	1624609.520	1774981.730
01-001(d3)	01-61597	1624611.953	1774979.977
01-001(d3)	01-61598	1624613.418	1774982.480
01-001(d3)	01-61599	1624610.792	1774982.773
01-001(d3)	01-63	1624609.984	1774981.821
01-001(d3)	01-64	1624611.517	1774980.938
01-001(d3)	01-65	1624612.406	1774982.471
01-001(f)	00-603830	1622831.648	1775740.220
01-001(f)	00-603835	1622810.650	1775733.530
01-001(f)	00-603836	1622775.280	1775714.430
01-001(f)	01-611286	1622392.000	1775299.200
01-001(f)	01-611287	1622410.000	1775275.800
01-001(f)	01-611288	1622420.700	1775267.600
01-001(f)	01-611289	1622429.500	1775247.500
01-001(f)	01-611290	1622431.900	1775276.700
01-001(f)	01-611291	1622413.100	1775288.000
01-001(f)	01-611292	1622411.600	1775301.800
01-001(f)	01-611293	1622426.800	1775304.500
01-001(f)	01-611294	1622431.500	1775317.000
01-001(f)	01-611295	1622452.600	1775250.400
01-001(f)	01-611296	1622487.300	1775238.000
01-001(f)	01-611297	1622465.800	1775235.300
01-001(f)	01-612620	1622887.860	1775700.080
01-001(f)	01-612621	1622883.220	1775688.680
01-001(f)	01-612622	1622881.390	1775702.300
01-001(f)	01-612623	1622877.570	1775691.390
01-001(f)	01-612624	1622850.530	1775716.410

Table 3.1-1 (continued)

SWMU or AOC	Location ID	Easting (ft)	Northing (ft)
01-001(f)	01-612625	1622845.000	1775720.690
01-001(f)	01-612626	1622837.810	1775726.570
01-001(f)	01-612627	1622835.590	1775719.070
01-001(f)	01-612628	1622827.900	1775728.780
01-001(f)	01-612629	1622825.560	1775722.110
01-001(f)	01-612630	1622816.390	1775729.800
01-001(f)	01-612631	1622807.020	1775728.620
01-001(f)	01-612632	1622752.560	1775702.110
01-001(f)	01-613697	1622818.397	1775723.137
01-001(f)	01-614683	1622807.100	1775719.500
01-001(f)	LA-610960	1622658.800	1775183.100
01-001(f)	LA-610964	1622609.000	1775203.100
01-001(f)	LA-610966	1622590.000	1775221.100
01-001(f)	LA-611125	1622506.440	1775468.560
01-001(f)	LA-611126	1622503.750	1775451.380
01-001(f)	LA-611127	1622379.730	1775281.790
01-001(f)	LA-611128	1622367.120	1775296.610
01-001(f)	LA-611129	1622522.190	1775492.190
01-001(f)	LA-611130	1622523.000	1775507.460
01-001(f)	LA-611131	1622532.810	1775517.890
01-001(f)	LA-611132	1622533.020	1775531.710
01-001(f)	LA-611133	1622558.050	1775547.810
01-001(f)	LA-611134	1622576.940	1775562.600
01-001(f)	LA-611135	1622566.350	1775578.090
01-001(f)	LA-611136	1622580.570	1775590.730
01-001(f)	LA-611137	1622577.160	1775574.800
01-001(f)	LA-611139	1622614.670	1775618.250
01-001(f)	LA-611140	1622596.190	1775637.490
01-001(f)	LA-611141	1622635.380	1775622.570
01-001(f)	LA-611142	1622618.240	1775631.980
01-001(f)	LA-611143	1622639.530	1775645.260
01-001(f)	LA-611144	1622655.600	1775663.350
01-001(f)	LA-611145	1622736.400	1775685.840
01-001(f)	LA-611150	1622532.990	1775501.550
01-001(f)	LA-611151	1622532.360	1775499.600
01-001(f)	LA-611152	1622526.740	1775503.870
01-001(f)	LA-611153	1622520.000	1775507.430
01-001(f)	LA-611154	1622538.280	1775535.730
01-001(f)	LA-611155	1622530.230	1775530.980
01-001(f)	LA-611156	1622550.500	1775547.470
01-001(f)	LA-611157	1622561.550	1775536.990
01-001(f)	LA-611158	1622737.030	1775705.300

Table 3.1-1 (continued)

SWMU or AOC	Location ID	Easting (ft)	Northing (ft)
01-001(f)	LA-611160	1622737.570	1775706.950
01-001(f)	LA-611162	1622739.770	1775683.010
01-001(f)	LA-611164	1622855.030	1775712.890
01-001(f)	LA-611165	1622849.760	1775721.100
01-001(f)	LA-611166	1622845.410	1775714.470
01-001(f)	LA-611167	1622840.790	1775726.270
01-001(f)	LA-611168	1622837.650	1775716.060
01-001(f)	LA-611169	1622831.920	1775726.620
01-001(f)	LA-611170	1622828.680	1775716.420
01-001(f)	LA-611171	1622824.520	1775729.230
01-001(f)	LA-611172	1622819.110	1775721.770
01-001(f)	LA-611173	1622812.680	1775727.130
01-001(f)	LA-611174	1622804.180	1775726.260
01-001(f)	LA-611175	1622790.250	1775723.360
01-001(f)	LA-611176	1622778.550	1775719.960
01-001(f)	LA-611177	1622770.450	1775710.930
01-001(f)	LA-611178	1622753.210	1775701.930
01-001(f)	LA-611179	1622730.800	1775700.550
01-001(f)	LA-611180	1622718.860	1775690.240
01-001(f)	LA-611181	1622713.040	1775685.020
01-001(f)	LA-611182	1622697.610	1775679.750
01-001(f)	LA-611183	1622677.580	1775678.880
01-001(f)	LA-611184	1622677.440	1775669.210
01-001(f)	LA-611185	1622667.170	1775669.800
01-001(f)	LA-611186	1622432.650	1775335.450
01-001(f)	LA-611187	1622439.860	1775348.460
01-001(f)	LA-611188	1622453.060	1775368.280
01-001(f)	LA-611189	1622466.500	1775369.130
01-001(f)	LA-611190	1622455.480	1775383.920
01-001(f)	LA-611191	1622466.870	1775385.210
01-001(f)	LA-611192	1622472.610	1775392.410
01-001(f)	LA-611193	1622475.510	1775397.730
01-001(f)	LA-611194	1622477.510	1775400.270
01-001(f)	01-123	1622757.666	1775714.020
01-001(f)	01-124	1622713.480	1775689.495
01-001(f)	01-125	1622667.170	1775669.800
01-001(f)	01-126	1622626.343	1775640.176
01-001(f)	01-127	1622591.845	1775605.679
01-001(f)	01-128	1622562.857	1775565.429
01-001(f)	01-129	1622537.838	1775520.456
01-001(f)	01-130	1622518.291	1775472.388
01-001(f)	01-131	1622490.908	1775427.825

Table 3.1-1 (continued)

SWMU or AOC	Location ID	Easting (ft)	Northing (ft)
01-001(f)	01-132	1622466.870	1775385.210
01-001(f)	01-133	1622436.844	1775347.690
01-001(f)	01-134	1622805.474	1775695.372
01-001(f)	01-135	1622812.884	1775688.217
01-001(f)	01-136	1622820.539	1775683.626
01-001(f)	01-137	1775676.718	1622806.752
01-001(f)	01-138	1622586.223	1775192.220
01-001(f)	01-139	1622628.898	1775178.677
01-001(f)	01-140	1622545.337	1775494.009
01-001(g)	00-603845	1623885.237	1775193.788
01-001(g)	00-603846	1623860.510	1775139.740
01-001(g)	00-603847	1623853.249	1775144.047
01-001(g)	00-603848	1623869.403	1775137.649
01-001(g)	00-603849	1623862.846	1775146.926
01-001(g)	01-147	1623866.038	1775152.622
01-001(g)	01-148	1623868.960	1775160.364
01-001(g)	01-149	1623859.331	1775133.607
01-001(g)	01-150	1623859.867	1775127.030
01-001(g)	01-239	1623873.780	1775157.820
01-001(g)	01-240	1623870.700	1775164.460
01-001(g)	01-241	1623864.020	1775162.470
01-001(g)	01-281	1623859.080	1775130.500
01-001(g)	01-43	1623864.077	1775146.709
01-001(g)	01-44	1623861.615	1775147.143
01-001(g)	01-45	1623861.759	1775139.630
01-001(g)	01-46	1623860.401	1775138.495
01-001(g)	01-47	1623859.266	1775139.850
01-001(g)	01-614757	1623833.097	1775144.687
01-001(g)	01-614758	1623861.331	1775123.662
01-001(g)	01-61493	1623874.683	1775173.632
01-001(g)	01-61494	1623872.541	1775169.109
01-001(g)	LA-61495	1623876.609	1775179.170
01-001(g)	LA-61496	1623878.534	1775183.632
01-001(g)	LA-61497	1623880.508	1775188.325
01-001(o)	00-603850	1623853.410	1775506.360
01-001(o)	00-603852	1623697.567	1775425.136
01-001(o)	00-603853	1623706.240	1775417.510
01-001(o)	00-603854	1623695.316	1775341.742
01-001(o)	00-603856	1623684.172	1775353.960
01-001(o)	00-603857	1623685.180	1775325.820
01-001(o)	01-151	1623687.048	1775428.146
01-001(o)	01-152	1623686.523	1775434.282

Table 3.1-1 (continued)

SWMU or AOC	Location ID	Easting (ft)	Northing (ft)
01-001(o)	01-153	1623683.132	1775424.987
01-001(o)	01-154	1623675.864	1775424.559
01-001(o)	01-155	1623686.794	1775420.317
01-001(o)	01-156	1623687.288	1775415.050
01-001(o)	01-157	1623692.582	1775422.665
01-001(o)	01-158	1623697.565	1775424.924
01-001(o)	01-39	1623698.451	1775426.020
01-001(o)	01-40	1623696.683	1775424.252
01-001(o)	01-41	1623698.451	1775424.252
01-001(o)	01-42	1623696.684	1775426.023
01-001(o)	01-614789	1623663.352	1775337.343
01-001(o)	01-614790	1623665.078	1775317.262
01-001(o)	01-614791	1623693.528	1775400.993
01-001(o)	01-614792	1623687.114	1775424.132
01-001(o)	01-61521	1623674.013	1775425.467
01-001(o)	01-61522	1623671.773	1775426.784
01-001(o)	01-61547	1623668.180	1775423.393
01-001(o)	01-66	1623697.960	1775425.066
01-001(s2)	01-8	1622675.030	1776355.561
01-001(s2)	01-9	1622667.433	1776323.272
01-001(s2)	01-10	1622868.764	1776314.409
01-001(s2)	01-11	1622865.598	1776285.285
01-001(s2)	01-48	1623841.566	1776011.380
01-001(s2)	03-603859	1622672.930	1776342.310
01-001(s2)	03-603860	1622866.580	1776300.010
01-003(a)	00-603912	1623475.744	1775085.296
01-003(a)	00-603913	1623483.799	1775020.043
01-003(a)	00-603917	1623484.788	1774859.208
01-003(a)	00-603918	1623666.562	1775451.244
01-003(a)	00-603919	1623621.514	1775413.565
01-003(a)	01-170	1623637.689	1775491.811
01-003(a)	01-171	1623620.751	1775492.658
01-003(a)	01-172	1623629.053	1775484.579
01-003(a)	01-18	1624115.164	1775186.309
01-003(a)	01-181	1623633.308	1775453.219
01-003(a)	01-182	1623629.519	1775429.785
01-003(a)	01-183	1623613.610	1775404.100
01-003(a)	01-184	1623593.196	1775370.166
01-003(a)	01-23	1623602.697	1775386.070
01-003(a)	01-237	1623627.883	1775500.875
01-003(a)	01-24	1623603.951	1775384.817
01-003(a)	01-25	1623630.032	1775490.469

Table 3.1-1 (continued)

SWMU or AOC	Location ID	Easting (ft)	Northing (ft)
01-003(a)	01-256	1623591.720	1775367.200
01-003(a)	01-257	1623590.380	1775362.170
01-003(a)	01-26	1623628.270	1775490.315
01-003(a)	01-27	1623628.116	1775492.077
01-003(a)	01-28	1623622.721	1775413.241
01-003(a)	01-29	1623621.190	1775412.358
01-003(a)	01-30	1623620.307	1775413.889
01-003(a)	01-32	1623579.181	1775344.586
01-003(a)	01-33	1623580.587	1775342.755
01-003(a)	01-34	1623576.840	1775341.520
01-003(a)	01-614797	1623473.960	1774836.399
01-003(a)	01-614798	1623477.226	1774850.262
01-003(a)	01-614799	1623448.912	1774851.506
01-003(a)	01-614800	1623511.568	1774824.608
01-003(a)	00-603902	1623629.074	1775491.273
01-003(a)	00-603903	1623607.040	1775474.400
01-003(a)	00-603904	1623603.947	1775386.067
01-003(a)	00-603905	1623579.503	1775343.384
01-003(a)	00-603906	1623602.544	1775330.717
01-003(a)	00-603908	1623562.460	1775291.228
01-003(a)	00-603910	1623521.937	1775194.888
01-003(a)	00-603911	1623485.507	1775134.142
01-003(b2)	00-604023	1624048.963	1775177.042
01-003(b2)	00-604024	1624042.018	1775129.297
01-003(b2)	01-193	1624048.976	1775192.108
01-003(b2)	01-194	1624048.776	1775185.787
01-003(b2)	01-195	1624055.772	1775176.559
01-003(b2)	01-196	1624062.641	1775176.192
01-003(b2)	01-197	1624046.198	1775168.497
01-003(b2)	01-198	1624046.198	1775160.684
01-003(b2)	01-199	1624039.978	1775178.119
01-003(b2)	01-200	1624032.657	1775178.392
01-003(b2)	01-242	1624051.670	1775176.710
01-003(b2)	01-243	1624046.250	1775177.460
01-003(b2)	01-244	1624048.980	1775179.830
01-003(b2)	01-245	1624048.440	1775174.410
01-003(b2)	01-246	1624062.550	1775180.420
01-003(b2)	01-247	1624048.770	1775194.520
01-003(b2)	01-248	1624046.590	1775192.020
01-003(b2)	01-249	1624048.850	1775190.040
01-003(b2)	01-250	1624064.870	1775176.290
01-003(b2)	01-251	1624060.500	1775171.630

Table 3.1-1 (continued)

SWMU or AOC	Location ID	Easting (ft)	Northing (ft)
01-003(b2)	01-252	1624056.180	1775176.290
01-003(b2)	01-253	1624053.270	1775192.120
01-003(b2)	01-61499	1624054.947	1775190.828
01-003(b2)	01-61500	1624056.911	1775187.455
01-003(b2)	01-61503	1624053.400	1775178.748
01-003(b2)	01-61504	1624048.291	1775179.030
01-003(b2)	01-61505	1624049.258	1775195.202
01-003(b2)	01-61506	1624064.109	1775177.407
01-003(b2)	01-61513	1624036.739	1775177.955
01-003(b2)	01-61514	1624036.934	1775179.224
01-003(b2)	01-61506	1624064.109	1775177.407
01-003(b2)	01-61507	1624504.741	1775115.235
01-003(b2)	01-61508	1624490.908	1775137.825
01-003(b2)	01-61509	1624473.631	1775165.214
01-003(b2)	01-61510	1624437.297	1775172.714
01-003(b2)	LA-61516	1624042.189	1775197.498
01-003(b2)	LA-61517	1624041.250	1775178.363
01-003(b2)	LA-61518	1624054.984	1775190.250
01-003(b2)	LA-61519	1624028.386	1775178.405
01-003(b2)	LA-61520	1624023.765	1775178.745
01-003(d)	00-604032	1625136.349	1774784.960
01-003(d)	01-185	1625136.491	1774801.794
01-003(d)	01-186	1625136.382	1774792.137
01-003(d)	01-187	1625145.949	1774783.190
01-003(d)	01-188	1625154.086	1774782.648
01-003(d)	01-189	1625129.129	1774782.889
01-003(d)	01-190	1625120.340	1774782.238
01-003(d)	01-191	1625136.491	1774771.087
01-003(d)	01-192	1625134.624	1774696.043
01-003(d)	01-614775	1625017.655	1774806.911
01-003(d)	01-614776	1625071.306	1774790.652
01-003(d)	01-614777	1625136.829	1774778.981
01-003(d)	01-614778	1625188.496	1774778.738
01-003(d)	01-61515	1625133.308	1774781.839
01-006(a)	00-604041	1623873.580	1775188.630
01-006(a)	00-604044	1623891.200	1775107.090
01-006(e)	00-603874	1624878.310	1775733.240
01-006(e)	00-603876	1624875.828	1775654.025
01-007(c)	00-603895	1624113.090	1775534.850
01-007(c)	00-603897	1624080.020	1775444.800
01-007(c)	00-603898	1624210.172	1775466.137
01-007(c)	00-603900	1624141.810	1775378.170

Table 3.1-1 (continued)

SWMU or AOC	Location ID	Easting (ft)	Northing (ft)
01-007(c)	01-614771	1624112.213	1775554.017
01-007(c)	01-614772	1624059.805	1775527.469
01-007(c)	01-614773	1624152.891	1775357.104
03-038(a,b)	00-604257	1619077.783	1775117.895
03-038(a,b)	00-604259	1619088.427	1775173.156
03-038(a,b)	03-1	1619204.110	1775092.427
03-038(a,b)	03-614730	1619082.895	1775151.503
03-038(a,b)	03-614731	1619040.812	1775125.303
03-038(a,b)	03-614732	1619065.544	1775093.779
03-055(c)	03-603243	1618590.150	1774911.870
03-055(c)	03-603245	1618586.000	1774930.080
03-055(c)	03-603248	1618589.030	1774965.730
03-055(c)	03-603250	1618600.110	1774995.540
03-055(c)	03-603254	1618627.140	1775015.510
03-055(c)	03-603256	1618642.110	1775075.920
32-002(b2)	00-603589	1627017.550	1774882.320
32-002(b2)	00-603590	1627031.870	1774865.950
32-002(b2)	00-603591	1627051.920	1774847.940
32-002(b2)	00-603592	1627070.750	1774825.850
32-002(b2)	00-603594	1627101.030	1774777.960
32-002(b2)	00-603595	1627101.030	1774790.650
32-002(b2)	32-06312	1627075.130	1774696.060
32-002(b2)	32-06313	1627073.060	1774675.710
32-002(b2)	32-06315	1627076.020	1774635.550
32-002(b2)	32-06325	1627013.180	1774372.650
32-002(b2)	32-614811	1627069.957	1774696.224
32-002(b2)	32-614812	1627075.166	1774701.042
32-002(b2)	32-614813	1627080.634	1774696.094
32-002(b2)	32-614814	1627075.296	1774690.886
32-002(b2)	32-614815	1627073.213	1774680.599
32-002(b2)	32-614816	1627078.681	1774675.391
32-002(b2)	32-614817	1627073.082	1774670.443
32-002(b2)	32-614818	1627068.004	1774675.782
32-002(b2)	32-61482	1627062.887	1774694.377
32-002(b2)	32-61483	1627055.492	1774695.274
32-002(b2)	32-61484	1627060.251	1774673.980
32-002(b2)	32-61485	1627050.501	1774672.487
32-002(b2)	32-61486	1627070.220	1774662.466
32-002(b2)	32-61487	1627071.551	1774656.862
32-002(b2)	32-61488	1627088.517	1774674.506
32-002(b2)	32-61489	1627098.027	1774673.572
32-002(b2)	32-61490	1627090.525	1774694.759

Table 3.1-1 (continued)

SWMU or AOC	Location ID	Easting (ft)	Northing (ft)
32-002(b2)	32-61491	1627099.546	1774694.623
32-002(b2)	32-61492	1627112.646	1774706.136
32-002(b2)	32-61493	1627122.576	1774703.011
32-002(b2)	32-61494	1627094.487	1774715.890
32-002(b2)	32-61495	1627085.864	1774716.115
32-002(b2)	32-61496	1627073.735	1774717.567
32-002(b2)	32-61497	1627079.466	1774717.252
32-002(b2)	32-61498	1627034.754	1774672.893
32-002(b2)	32-61499	1627035.188	1774662.910
32-002(b2)	32-61500	1627035.405	1774654.664
32-002(b2)	32-61501	1627070.561	1774646.417
32-002(b2)	32-61502	1627071.528	1774636.013
32-002(b2)	32-61503	1627049.294	1774642.511
32-002(b2)	32-61504	1627071.772	1774632.001
32-002(b2)	32-61505	1627050.813	1774661.391
32-002(b2)	32-61506	1627043.434	1774672.676
32-002(b2)	32-61507	1627033.886	1774644.898
32-002(b2)	32-61508	1627049.945	1774652.060
32-002(b2)	32-61509	1627069.910	1774650.975
32-002(b2)	32-61510	1627070.561	1774641.209
32-002(b2)	32-614812	1627075.166	1774701.042
32-002(b2)	32-614814	1627075.296	1774690.886
32-002(b2)	32-614815	1627073.213	1774680.599
32-002(b2)	32-614817	1627073.082	1774670.443
32-002(b2)	32-61530	1627063.320	1774635.610
32-002(b2)	32-61531	1627076.690	1774645.500
32-002(b2)	32-61532	1627071.245	1774630.563
32-002(b2)	32-61533	1627076.420	1774661.170
32-002(b2)	32-61534	1627067.740	1774687.430
32-002(b2)	32-61535	1627071.772	1774632.001
32-002(b2)	32-61536	1627080.110	1774686.130
32-002(b2)	32-61540	1626999.926	1774670.442
32-002(b2)	32-06315	1627076.020	1774635.550
32-002(b2)	32-06325	1627013.180	1774372.650
C-43-001	01-258	1619510.870	1775727.790
C-43-001	01-259	1619525.740	1775727.240
C-43-001	01-260	1619519.810	1775727.180
C-43-001	01-261	1619523.110	1775732.870
C-43-001	01-262	1619531.460	1775728.770
C-43-001	01-263	1619534.310	1775734.520
C-43-001	01-265	1619537.050	1775729.050
C-43-001	01-267	1619552.880	1775727.830

Table 3.1-1 (continued)

SWMU or AOC	Location ID	Easting (ft)	Northing (ft)
C-43-001	01-268	1619534.050	1775722.620
C-43-001	01-269	1619558.790	1775725.840
C-43-001	01-270	1619522.150	1775721.580
C-43-001	01-273	1619551.930	1775724.940
C-43-001	01-274	1619569.770	1775720.530
C-43-001	01-278	1619555.130	1775722.240
C-43-001	01-280	1619558.700	1775714.990
C-43-001	43-614768	1619522.569	1775727.108
C-43-001	43-614769	1619534.264	1775729.053
C-43-001	43-614770	161955.580	1775724.190
C-43-001	43-61478	1619612.949	1775720.217
C-43-001	43-61479	1619586.994	1775719.956
C-43-001	43-61480	1619507.453	1775729.648
C-43-001	43-61481	1619470.292	1775721.602
C-43-001	43-61482	1619525.884	1775742.439
C-43-001	43-61483	1619544.692	1775740.395
C-43-001	43-61484	1619564.714	1775739.017
C-43-001	43-61485	1619571.580	1775560.816
C-43-001	43-61486	1619538.160	1775561.354
C-43-001	43-61487	1619497.235	1775561.421
C-43-001	43-61488	1619512.168	1775650.425
C-43-001	43-61489	1619539.946	1775646.779
C-43-001	43-61490	1619563.383	1775646.779
C-43-001	43-61491	1619476.247	1775598.759
C-43-001	43-61492	1619525.847	1775601.241
C-43-001	43-61493	1619558.191	1775599.188
61-007	00-604287	1622579.430	1774377.480
61-007	00-604289	1622574.550	1774361.290
61-007	00-604291	1622577.620	1774369.110
61-007	61-614762	1622561.816	1774373.596
61-007	61-614763	1622590.483	1774362.107
61-007	61-614764	1622580.684	1774378.547
61-007	61-614765	1622572.595	1774356.654
61-007	61-614767	1622583.175	1774399.246
61-007	61-61477	1622565.036	1774364.070
61-007	61-61478	1622569.697	1774362.430
61-007	61-61479	1622578.994	1774359.174
61-007	61-61480	1622583.682	1774357.560
61-007	61-61481	1622586.208	1774364.461
61-007	61-61482	1622581.885	1774366.831
61-007	61-61483	1622572.536	1774370.581
61-007	61-61484	1622567.458	1774372.039

Table 3.1-1 (continued)

SWMU or AOC	Location ID	Easting (ft)	Northing (ft)
61-007	61-61485	1622571.104	1774380.893
61-007	61-61486	1622575.765	1774379.435
61-007	61-61487	1622585.166	1774376.622
61-007	61-61488	1622588.886	1774375.660
61-007	61-61489	1622571.351	1774385.516
61-007	61-61490	1622576.143	1774383.826
61-007	61-61491	1622580.217	1774382.316
61-007	61-61492	1622584.789	1774380.835
61-007	61-61493	1622590.441	1774379.446
61-007	61-61494	1622581.833	1774388.610

Table 6.2-1
Samples Collected and Analyses Requested at SWMU 00-017

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Pesticides	Strontium-90	SVOCs	VOCs	Cyanide (total)
RE00-98-0050	00-10125	18.5–19	FILL	—[a]	—	4651R-1[b]	4651R-1	4651R-1	4651R-1	4650R	4649R	4649R	—	—	4649R	4649R	4650R
RE00-98-0052	00-10125	19–19.5	QBT4	—	—	4651R	4651R-1	4651R-1	4651R-1	4650R	4649R	4649R	—	—	4649R	4649R	4650R
RE00-98-0053	00-10126	20–20.6	FILL	—	—	4651R	4651R-1	4651R-1	4651R-1	4650R	4649R	4649R	—	—	4649R	4649R	4650R
RE00-98-0054	00-10126	22.5–25	QBT4	—	—	4702R	4702R	4702R	4702R	4701R	4700R	4700R	—	—	4700R	4700R	4701R
RE00-98-0056	00-10127	19–21.5	QBT4	—	—	4665R	4665R	4665R	4665R	4664R	4663R	4663R	—	—	4663R	4663R	4664R
RE00-98-0057	00-10127	22.5–25	QBT4	—	—	4665R	4665R	4665R	4665R	4664R	4663R	4663R	—	—	4663R	4663R	4664R
RE00-98-0059	00-10128	19–21.5	FILL	—	—	4665R	4665R	4665R	4665R	4664R	4663R	4663R	—	—	4663R	4663R	4664R
RE00-98-0060	00-10128	22.5–25	QBT4	—	—	4665R	4665R	4665R	4665R	4664R	4663R	4663R	—	—	4663R	4663R	4664R
RE00-98-0062	00-10129	19.5–22	FILL	—	—	4702R	4702R	4702R	4702R	4701R	4700R	4700R	—	—	4700R	4700R	4701R
RE00-98-0063	00-10129	22.5–25	QBT4	—	—	4702R	4702R	4702R	4702R	4701R	4700R	4700R	—	—	4700R	4700R	4701R
RE00-98-0065	00-10130	19.5–22	FILL	—	—	4702R	4702R	4702R	4702R	4701R	4700R	4700R	—	—	4700R	4700R	4701R
RE00-98-0066	00-10130	24–26.5	QBT4	—	—	4702R	4702R	4702R	4702R	4701R	4700R	4700R	—	—	4700R	4700R	4701R
RE00-98-0068	00-10131	20.5–23	FILL	—	—	4702R	4702R	4702R	4702R	4701R	4700R	4700R	—	—	4700R	4700R	4701R
RE00-98-0069	00-10131	25–27.5	QBT4	—	—	4702R	4702R	4702R	4702R	4701R	4700R	4700R	—	—	4700R	4700R	4701R
RE00-98-0072	00-10132	16–18.5	FILL	—	—	4921R	4921R	4921R	4921R	4920R	4919R	4919R	—	—	4919R	4919R	4920R
RE00-98-0073	00-10132	20–22.5	QBT4	—	—	4921R	4921R	4921R	4921R	4920R	4919R	4919R	—	—	4919R	4919R	4920R
RE00-98-0074	00-10133	15–17.5	ALLH	—	—	4921R	4921R	4921R	4921R	4920R	4919R	4919R	—	—	4919R	4919R	4920R
RE00-98-0076	00-10133	18.5–21	QBT4	—	—	4921R	4921R	4921R	4921R	4920R	4919R	4919R	—	—	4919R	4919R	4920R
RE00-98-0078	00-10134	15–17.5	ALLH	—	—	4921R	4921R	4921R	4921R	4920R	4919R	4919R	—	—	4919R	4919R	4920R
RE00-98-0079	00-10134	20–22.5	QBT4	—	—	4921R	4921R	4921R	4921R	4920R	4919R	4919R	—	—	4919R	4919R	4920R
RE00-98-0083	00-10135	14–15.5	ALLH	—	—	4921R	4921R	4921R	4921R	4920R	4919R	4919R	—	—	4919R	4919R	4920R
RE00-98-0084	00-10135	20–22.5	QBT4	—	—	4921R	4921R	4921R	4921R	4920R	4919R	4919R	—	—	4919R	4919R	4920R
RE00-98-0085	00-10136	12.5–14.5	QBT4	—	—	4921R	4921R	4921R	4921R	4920R	4919R	4919R	—	—	4919R	4919R	4920R
RE00-98-0086	00-10136	14.5–16	QBT4	—	—	4921R	4921R	4921R	4921R	4920R	4919R	4919R	—	—	4919R	4919R	4920R
RE00-98-0087	00-10137	12.5–15	ALLH	—	—	4921R	4921R	4921R	4921R	4920R	4919R	4919R	—	—	4919R	4919R	4920R
RE00-98-0088	00-10137	16–18.5	QBT4	—	—	4921R	4921R	4921R	4921R	4920R	4919R	4919R	—	—	4919R	4919R	4920R
RE00-98-0089	00-10138	12.5–15	ALLH	—	—	4921R	4921R	4921R	4921R	4920R	4919R	4919R	—	—	4919R	4919R	4920R
RE00-98-0090	00-10138	15–17.5	QBT4	—	—	4921R	4921R	4921R	4921R	4920R	4919R	4919R	—	—	4919R	4919R	4920R
RE00-98-0091	00-10139	13–15	ALLH	—	—	4921R	4921R	4921R	4921R	4920R	4919R	4919R	—	—	4919R	4919R	4920R
RE00-98-0092	00-10139	15–17.5	QBT4	—	—	4921R	—	4921R	4921R	4920R	4919R	4919R	—	—	4919R	4919R	4920R
RE00-98-0093	00-10140	12.5–15	ALLH	—	—	4921R	4921R	4921R	4921R	4920R	4919R	4919R	—	—	4919R	4919R	4920R

Table 6.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Pesticides	Strontium-90	SVOCs	VOCs	Cyanide (total)
RE00-98-0094	00-10140	16–18.5	QBT4	—	—	—	4921R	4921R	4921R	4920R	4919R	4919R	—	—	4919R	4919R	4920R
RE00-98-0095	00-10141	7.5–9	ALLH	—	—	4945R	4945R	4945R-1	4945R	4944R	4943R	4943R	—	—	4943R	4943R	4944R
RE00-98-0097	00-10142	5–9	ALLH	—	—	4945R	4945R	4945R-1	4945R	4944R	4943R	4943R	—	—	4943R	4943R	4944R
RE00-98-0099	00-10143	0.1–0.7	SED	—	—	4928R	4928R	4928R	4928R	4918R	4955R	4955R	—	—	4955R	4955R	4918R
RE00-12-50	00-10143	2–3	SED	—	—	—	—	—	—	12-288	—	—	—	—	—	—	—
RE00-98-0101	00-10144	1-2	SED	—	—	4928R-1	4928R-1	4928R	4928R	4918R	4955R	4955R	—	—	4955R	4955R	4918R
RE00-12-51	00-10144	3-4	SED	—	—	—	—	—	—	12-236	—	–	—	—	—	—	—
RE00-98-0103	00-10145	0.3–1	SED	—	—	4928R	4928R	4928R	4928R	4918R	4955R	4955R	—	—	4955R	4955R	4918R
RE00-98-0105	00-10146	0.2–1	SED	—	—	4928R	4928R	4928R	4928R	4918R	4955R	4955R	—	—	4955R	–	4918R
RE00-99-0003	00-10179	0.1–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-99-0004	00-10180	0.1–0.4	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-99-0005	00-10181	0.1–0.8	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-99-0006	00-10182	0.2–0.8	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-12-52	00-10182	2–3	QBT3	—	—	—	—	—	—	12-236	—	—	—	—	—	—	—
RE00-99-0007	00-10183	0.1–0.3	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-99-0008	00-10184	0.1–0.6	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-09-310	00-604247	0–1	SED	09-710	09-710	09-710	09-710	09-710	09-710	09-710	—	—	09-710	09-710	—	—	09-710
RE00-09-311	00-604247	2–3	SED	09-710	09-710	09-710	09-710	09-710	09-710	09-710	—	—	09-710	09-710	—	—	09-710
RE00-09-312	00-604247	4–5	SED	09-710	09-710	09-710	09-710	09-710	09-710	09-710	—	—	09-710	09-710	—	—	09-710
RE00-09-313	00-604248	1.25–2.25	QBT2	09-646	09-645	09-646	09-646	09-646	09-646	09-645	—	—	09-645	09-646	—	—	09-645
RE00-09-314	00-604248	3.25–4.25	QBT2	09-646	09-645	09-646	09-646	09-646	09-646	09-645	—	—	09-645	09-646	—	—	09-645
RE00-09-315	00-604248	5.25–6.25	QBT2	09-646	09-645	09-646	09-646	09-646	09-646	09-645	—	—	09-645	09-646	—	—	09-645
RE00-09-316	00-604249	2–3	QBT2	09-646	09-645	09-646	09-646	09-646	09-646	09-645	—	—	09-645	09-646	—	—	09-645
RE00-09-317	00-604249	4–5	QBT2	09-646	09-645	09-646	09-646	09-646	09-646	09-645	—	—	09-645	09-646	—	—	09-645
RE00-09-318	00-604249	6–7	QBT2	09-646	09-645	09-646	09-646	09-646	09-646	09-645	—	—	09-645	09-646	—	—	09-645
RE00-09-319	00-604250	1.5–2.5	QBT3	09-646	09-645	09-646	09-646	09-646	09-646	09-645	—	—	09-645	09-646	—	—	09-645
RE00-09-320	00-604250	3.5–4.5	QBT3	09-646	09-645	09-646	09-646	09-646	09-646	09-645	—	—	09-645	09-646	—	—	09-645
RE00-09-321	00-604250	5.5–6.5	QBT3	09-646	09-645	09-646	09-646	09-646	09-646	09-645	—	—	09-645	09-646	—	—	09-645
RE00-12-53	00-604250	8–9	ALLH	—	—	—	—	—	—	12-236	—	—	—	—	—	—	—
RE00-09-322	00-604251	2.75–3.75	QBT3	09-646	09-645	09-646	09-646	09-646	09-646	09-645	—	—	09-645	09-646	—	—	09-645
RE00-09-323	00-604251	4.75–5.75	QBT3	09-646	09-645	09-646	09-646	09-646	09-646	09-645	—	—	09-645	09-646	—	—	09-645
RE00-09-324	00-604251	6.75–7.75	QBT3	09-646	09-645	09-646	09-646	09-646	09-646	09-645	—	—	09-645	09-646	—	—	09-645
RE00-12-48	00-614734	5–6	QBT3	—	—	—	—	—	—	12-288	—	—	—	—	—	—	—
RE00-12-49	00-614734	7–8	QBT3	—	—	—	—	—	—	12-288	—	—	—	—	—	—	—

[a] — = Analysis not requested.

[b] Analytical request number.

Table 6.2-2
Inorganic Chemicals Detected or Detected above BVs at SWMU 00-017

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Iron	Lead	Magnesium	Mercury	Nickel	Nitrate	Perchlorate	Selenium	Silver	Thallium	Vanadium
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**21,500**	**22.3**	**4610**	**15.4**	**na[b]**	**na**	**21,500**	**1.52**	**1**	**0.73**	**39.6**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**14,500**	**11.2**	**1690**	**0.1**	**6.58**	**na**	**na**	**0.3**	**1**	**1.1**	**17**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**13,800**	**19.7**	**2370**	**0.1**	**9.38**	**na**	**na**	**0.3**	**1**	**0.73**	**19.7**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**1110**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**908,000**	**800**	**na**	**389**	**25,700**	**2,080,000**	**908**	**6490**	**6490**	**13**	**6530**
Construction Worker SSL[c]				**41,400**	**142**	**41.2**	**4,390**	**148**	**72.1**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**24,800**	**800**	**na**	**77.1**	**12,400**	**991,000**	**434**	**3100**	**3100**	**3.54**	**614**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**70.5**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**54,800**	**400**	**na**	**23.5**	**1560**	**125,000**	**54.8**	**391**	**391**	**0.782**	**394**
RE00-98-0050	00-10125	18.5–19	FILL	—[e]	14 (UJ)	—	—	—	0.68 (U)	—	34	—	—	0.68 (U)	—	—	—	3.4	—	NA[f]	NA	—	2.7 (U)	—	—
RE00-98-0052	00-10125	19–19.5	QBT4	10,000	13 (UJ)	4.5	72	—	—	—	—	—	—	0.63 (U)	—	—	1900	0.13 (U)	—	NA	NA	0.63 (U)	2.5 (U)	—	—
RE00-98-0053	00-10126	20–20.6	FILL	—	13 (UJ)	—	—	—	0.63 (U)	—	—	—	—	1.6	—	—	—	0.18	—	NA	NA	—	2.5 (U)	—	—
RE00-98-0054	00-10126	22.5–25	QBT4	15,000	13 (UJ)	—	—	—	—	—	—	—	—	0.63 (U)	—	—	—	0.13 (U)	—	NA	NA	1.3 (U)	2.5 (U)	—	—
RE00-98-0056	00-10127	19–21.5	QBT4	—	13 (UJ)	2.9	—	—	—	—	—	—	—	0.63 (U)	—	—	—	0.13 (U)	—	NA	NA	0.63 (U)	2.5 (U)	—	—
RE00-98-0057	00-10127	22.5–25	QBT4	—	13 (UJ)	3	—	—	—	—	—	—	—	0.64 (U)	—	—	—	0.13 (U)	—	NA	NA	0.64 (U)	2.6 (U)	—	—
RE00-98-0059	00-10128	19–21.5	FILL	—	13 (UJ)	—	—	—	0.63 (U)	—	—	—	—	0.63 (U)	—	—	—	0.13 (U)	—	NA	NA	—	2.5 (U)	—	—
RE00-98-0060	00-10128	22.5–25	QBT4	—	12 (UJ)	3.9	—	—	—	—	—	—	—	0.62 (U)	—	—	—	0.12 (U)	—	NA	NA	0.62 (U)	2.5 (U)	—	—
RE00-98-0062	00-10129	19.5–22	FILL	—	12 (UJ)	—	—	—	0.61 (U)	—	—	—	—	0.61 (U)	—	—	—	0.12 (U)	—	NA	NA	—	2.4 (U)	—	—
RE00-98-0063	00-10129	22.5–25	QBT4	—	12 (UJ)	2.9	—	—	—	—	—	—	—	0.61 (U)	—	—	—	0.12 (U)	—	NA	NA	1.2 (U)	2.4 (U)	—	—
RE00-98-0065	00-10130	19.5–22	FILL	—	12 (UJ)	—	—	—	0.58 (U)	—	—	—	—	0.58 (U)	—	—	—	0.16	—	NA	NA	—	2.3 (U)	—	—
RE00-98-0066	00-10130	24–26.5	QBT4	—	12 (UJ)	—	—	—	—	—	—	—	—	0.58 (U)	—	—	—	0.12 (U)	—	NA	NA	1.2 (U)	2.3 (U)	—	—
RE00-98-0068	00-10131	20.5–23	FILL	—	13 (UJ)	—	—	—	0.66 (U)	—	—	—	—	0.66 (U)	—	—	—	2.9	—	NA	NA	—	2.6 (U)	—	—
RE00-98-0069	00-10131	25–27.5	QBT4	—	14 (UJ)	3.8	—	—	—	—	—	—	—	0.68 (U)	—	—	—	0.14 (U)	—	NA	NA	1.4 (U)	2.7 (U)	—	—
RE00-98-0072	00-10132	16–18.5	FILL	—	12 (UJ)	—	—	—	0.62 (U)	—	—	—	—	0.62 (U)	—	—	—	0.12 (U)	—	NA	NA	—	2.5 (U)	2.5 (U)	—
RE00-98-0073	00-10132	20–22.5	QBT4	16,000	13 (UJ)	4	110	—	—	—	8.7	5.8	7	0.63 (U)	—	17	2200	0.13 (U)	—	NA	NA	1.3 (U)	2.5 (U)	2.5 (U)	18
RE00-98-0074	00-10133	15–17.5	SOIL	—	13 (UJ)	—	—	—	0.65 (U)	—	—	—	—	0.65 (U)	—	—	—	0.89	—	NA	NA	—	2.6 (U)	2.6 (U)	—
RE00-98-0076	00-10133	18.5–21	QBT4	—	12 (UJ)	—	—	—	—	—	—	—	—	0.6 (U)	—	—	—	—	—	NA	NA	1.2 (U)	2.4 (U)	2.4 (U)	—
RE00-98-0078	00-10134	15–17.5	SOIL	—	13 (UJ)	—	—	—	0.63 (U)	—	—	—	—	0.63 (U)	—	—	—	0.13 (U)	—	NA	NA	—	2.5 (U)	2.5 (U)	—
RE00-98-0079	00-10134	20–22.5	QBT4	12,000	13 (UJ)	4.4	—	—	—	—	7.2	—	—	0.64 (U)	16,000	—	1700	0.13 (U)	—	NA	NA	1.3 (U)	2.6 (U)	2.6 (U)	—
RE00-98-0083	00-10135	14–15.5	SOIL	—	12 (UJ)	—	—	—	0.62 (U)	—	—	—	—	0.62 (U)	—	—	—	0.12 (U)	—	NA	NA	—	2.5 (U)	2.5 (U)	—
RE00-98-0084	00-10135	20–22.5	QBT4	19,000	13 (UJ)	3.7	120	1.3	—	2600	9.9	6.2	8.2	0.64 (U)	15,000	17	2600	0.13 (U)	7.4	NA	NA	1.3 (U)	2.6 (U)	2.6 (U)	—
RE00-98-0085	00-10136	12.5–14.5	QBT4	19,000	12 (UJ)	4	110	1.3	—	—	11	6.6	10	0.62 (U)	17,000	19	2700	0.12 (U)	7.8	NA	NA	1.2 (U)	2.5 (U)	2.5 (U)	19
RE00-98-0086	00-10136	14.5–16	QBT4	19,000	13 (UJ)	4.3	130	1.4	—	—	10	7.2	9.9	0.63 (U)	17,000	21	2700	0.13 (U)	7.9	NA	NA	1.3 (U)	2.5 (U)	2.5 (U)	20

Table 6.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Iron	Lead	Magnesium	Mercury	Nickel	Nitrate	Perchlorate	Selenium	Silver	Thallium	Vanadium
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**21,500**	**22.3**	**4610**	**15.4**	**na[b]**	**na**	**21,500**	**1.52**	**1**	**0.73**	**39.6**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**14,500**	**11.2**	**1690**	**0.1**	**6.58**	**na**	**na**	**0.3**	**1**	**1.1**	**17**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**13,800**	**19.7**	**2370**	**0.1**	**9.38**	**na**	**na**	**0.3**	**1**	**0.73**	**19.7**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**1110**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**908,000**	**800**	**na**	**389**	**25,700**	**2,080,00**	**908**	**6490**	**6490**	**13**	**6530**
Construction Worker SSL[c]				**41,400**	**142**	**41.2**	**4,390**	**148**	**72.1**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**24,800**	**800**	**na**	**77.1**	**12,400**	**991,000**	**434**	**3100**	**3100**	**3.54**	**614**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**70.5**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**54,800**	**400**	**na**	**23.5**	**1560**	**125,000**	**54.8**	**391**	**391**	**0.782**	**394**
RE00-98-0087	00-10137	12.5–15	SOIL	—	12 (UJ)	—	—	—	0.6 (U)	—	—	—	—	0.6 (U)	—	—	—	0.12 (U)	—	NA	NA	—	2.4 (U)	2.4 (U)	—
RE00-98-0088	00-10137	16–18.5	QBT4	17,000	13 (UJ)	3.7	120	—	—	2300	9.3	6.2	7.4	0.64 (U)	15,000	18	2500	0.13 (U)	7.1	NA	NA	1.3 (U)	2.6 (U)	2.6 (U)	—
RE00-98-0089	00-10138	12.5–15	SOIL	—	12 (UJ)	—	—	—	0.6 (U)	—	—	—	—	0.6 (U)	—	—	—	0.12 (U)	—	NA	NA	—	2.4 (U)	2.4 (U)	—
RE00-98-0090	00-10138	15–17.5	QBT4	19,000	13 (UJ)	3.7	78	1.4	—	2500	10	7	8.8	0.63 (U)	16,000	15	2700	0.13 (U)	8.8	NA	NA	1.3 (U)	2.5 (U)	2.5 (U)	—
RE00-98-0091	00-10139	13–15	SOIL	—	12 (UJ)	—	—	—	0.6 (U)	—	—	—	—	0.6 (U)	—	—	—	0.12 (U)	—	NA	NA	—	2.4 (U)	2.4 (U)	—
RE00-98-0092	00-10139	15–17.5	QBT4	21,000	12 (UJ)	3.8	130	1.6	—	2800	12	6	9.4	0.62 (U)	17,000	14	3000	0.12 (U)	7.7	NA	NA	1.2 (U)	2.5 (U)	2.5 (U)	20
RE00-98-0093	00-10140	12.5–15	SOIL	—	13 (UJ)	—	—	—	0.64 (U)	—	—	—	—	0.64 (U)	—	—	—	0.13 (U)	—	NA	NA	—	2.6 (U)	2.6 (U)	—
RE00-98-0094	00-10140	16–18.5	QBT4	—	12 (UJ)	3	—	—	—	—	—	—	—	0.6 (U)	—	—	—	0.12 (U)	—	NA	NA	1.2 (U)	2.4 (U)	2.4 (U)	—
RE00-98-0095	00-10141	7.5–9	SOIL	—	—	—	—	—	0.56 (U)	—	—	—	—	0.56 (U)	—	—	—	0.11 (U)	—	NA	NA	—	2.2 (U)	2.2 (U)	—
RE00-98-0097	00-10142	5–9	SOIL	—	—	—	—	—	0.54 (U)	—	—	—	—	0.54 (U)	—	—	—	0.11 (U)	—	NA	NA	—	2.2 (U)	2.2 (U)	—
RE00-98-0099	00-10143	0.1–0.7	SED	—	12 (UJ)	—	—	—	0.59 (U)	—	—	—	—	—	—	74	—	0.12 (U)	—	NA	NA	1.2 (U)	2.4 (U)	2.4 (U)	—
RE00-12-50	00-10143	2-3	SED	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-98-0101	00-10144	1–2	SED	—	12 (UJ)	—	—	—	0.59 (U)	—	—	—	—	—	—	450	—	0.12 (U)	—	NA	NA	1.2 (U)	2.4 (U)	2.4 (U)	—
RE00-12-51	00-10144	3–4	SED	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	128	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-98-0103	00-10145	0.3–1	SED	—	12 (UJ)	—	—	—	0.6 (U)	—	—	—	—	—	—	93	—	0.12 (U)	—	NA	NA	1.2 (U)	2.4 (U)	2.4 (U)	—
RE00-98-0105	00-10146	0.2–1	SED	—	11 (UJ)	—	—	—	0.57 (U)	—	—	—	—	—	—	53	—	0.11 (U)	—	NA	NA	1.1 (U)	2.3 (U)	2.3 (U)	—
RE00-99-0004	00-10180	0.1–0.4	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	53	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-99-0005	00-10181	0.1–0.8	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-99-0006	00-10182	0.2–0.8	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-12-52	00-10182	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-99-0007	00-10183	0.1–0.3	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	31	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-99-0008	00-10184	0.1–0.6	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	28	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-09-310	00-604247	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	—	27.8	—	—	—	—	—	0.59 (U)	—	—	—
RE00-09-311	00-604247	2–3	SED	—	—	—	—	—	0.49	—	—	—	—	—	—	20.4	—	—	—	—	—	0.56 (U)	1.2	—	—
RE00-09-312	00-604247	4–5	SED	—	—	—	—	—	—	—	—	—	—	—	—	40.8	—	—	—	—	—	0.54 (U)	—	—	—
RE00-09-313	00-604248	1.25–2.25	QBT2	—	—	—	—	—	—	—	13.8 (J-)	—	—	0.53 (U)	—	112 (J-)	—	—	7.1 (J)	0.3	—	—	—	—	—
RE00-09-314	00-604248	3.25–4.25	QBT2	—	—	—	107 (J-)	—	—	—	11.3 (J-)	—	—	0.52 (U)	—	50 (J-)	—	—	6.6 (J)	0.59	—	—	—	—	—
RE00-09-315	00-604248	5.25–6.25	QBT2	—	—	—	61.9 (J-)	—	—	—	13.6 (J-)	—	—	0.54 (U)	—	16.2 (J-)	—	—	7.5 (J)	0.51	—	—	—	—	—
RE00-09-316	00-604249	2–3	QBT2	—	—	—	—	—	—	—	10.7 (J-)	—	—	0.62 (U)	—	—	—	—	—	5.2	—	—	—	—	—

Table 6.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Iron	Lead	Magnesium	Mercury	Nickel	Nitrate	Perchlorate	Selenium	Silver	Thallium	Vanadium
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**21,500**	**22.3**	**4610**	**15.4**	**na**[b]	**na**	**21,500**	**1.52**	**1**	**0.73**	**39.6**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**14,500**	**11.2**	**1690**	**0.1**	**6.58**	**na**	**na**	**0.3**	**1**	**1.1**	**17**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**13,800**	**19.7**	**2370**	**0.1**	**9.38**	**na**	**na**	**0.3**	**1**	**0.73**	**19.7**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**1110**	**na**	**505**[d]	**388**	**51,900**	**62.8**	**908,000**	**800**	**na**	**389**	**25,700**	**2,080,00**	**908**	**6490**	**6490**	**13**	**6530**
Construction Worker SSL[c]				**41,400**	**142**	**41.2**	**4,390**	**148**	**72.1**	**na**	**134**[d]	**36.7**	**14,200**	**12**	**24,800**	**800**	**na**	**77.1**	**12,400**	**991,000**	**434**	**3100**	**3100**	**3.54**	**614**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**70.5**	**na**	**96.6**[d]	**23.4**	**3130**	**11.1**	**54,800**	**400**	**na**	**23.5**	**1560**	**125,000**	**54.8**	**391**	**391**	**0.782**	**394**
RE00-09-317	00-604249	4–5	QBT2	—	—	—	—	—	—	—	—	—	—	0.6 (U)	—	13.8 (J-)	—	—	—	0.17 (J)	—	—	—	—	—
RE00-09-318	00-604249	6–7	QBT2	—	—	—	—	—	—	—	16.3 (J-)	—	—	0.61 (U)	—	—	—	—	8.5 (J)	0.17 (J)	—	—	—	—	—
RE00-09-319	00-604250	1.5–2.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	34 (J-)	—	—	—	—	—	—	—	—	—
RE00-09-320	00-604250	3.5-4.5	QBT3	—	—	—	—	—	—	2240	8.2 (J-)	—	—	0.52 (U)	—	13.9 (J-)	—	—	—	0.26	—	0.37 (J)	—	—	—
RE00-09-321	00-604250	5.5–6.5	QBT3	—	—	—	—	—	—	—	9.5 (J-)	—	—	0.53 (U)	—	43.3 (J-)	—	—	—	0.6	—	—	—	—	—
RE00-12-53	00-604250	8–9	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-09-322	00-604251	2.75–3.75	QBT3	—	—	—	—	—	—	—	15.9 (J-)	—	—	0.53 (U)	—	20.3 (J-)	—	—	8.1 (J)	—	—	—	—	—	—
RE00-09-323	00-604251	4.75–5.75	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	28.5 (J-)	—	—	—	—	—	—	—	—	—
RE00-09-324	00-604251	6.75–7.75	QBT3	—	—	—	—	—	—	—	23.6 (J-)	—	—	0.54 (U)	—	20 (J-)	—	—	11.7 (J)	0.45	0.0079	—	—	—	—
RE00-12-48	00-614734	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-12-49	00-614734	7–8	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] BVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SSLs are from NMED (2017, 602273) unless otherwise noted.

[d] SSL for total chromium.

[e] — = Not detected or not detected above BV.

[f] NA = Not analyzed.

Table 6.2-3
Organic Chemicals Detected at SWMU 00-017

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1254
Industrial SSL*				**11.0**
Construction Worker SSL*				**4.91**
Residential SSL*				**1.14**
RE00-98-0050	00-10125	18.5–19	FILL	0.11

Note: Results are in mg/kg.

* SSLs are from NMED (2017, 602273) unless otherwise noted.

Table 6.2-4
Radionuclides Detected or Detected above BVs/FVs at SWMU 00-017

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239/240	Tritium	Uranium-235/236
Soil Background Value[a]				**0.013**	**1.65**	**0.023**	**0.054**	**na[b]**	**0.2**
Qbt 2,3,4 Background Value[a]				**na**	**na**	**na**	**na**	**na**	**0.09**
Sediment Background Value[a]				**0.04**	**0.9**	**0.006**	**0.068**	**0.093**	**0.2**
Construction Worker SAL[c]				**230**	**37**	**230**	**200**	**1,600,000**	**130**
Industrial SAL[c]				**1000**	**41**	**1300**	**1200**	**2,400,000**	**160**
Residential SAL[c]				**83**	**12**	**84**	**79**	**1700**	**42**
RE00-98-0050	00-10125	18.5–19	FILL	—[d]	3.27	0.165	12.85	—	—
RE00-98-0052	00-10125	19–19.5	QBT4	—	—	—	1.015	0.07	—
RE00-98-0053	00-10126	20–20.6	FILL	—	—	—	0.791	—	—
RE00-98-0054	00-10126	22.5–25	QBT4	—	—	—	—	—	0.1
RE00-98-0059	00-10128	19–21.5	FILL	—	—	—	0.068	—	—
RE00-98-0065	00-10130	19.5–22	FILL	—	—	0.062	3.25	—	—
RE00-98-0068	00-10131	20.5–23	FILL	—	—	0.066	2.82	—	—
RE00-98-0072	00-10132	16–18.5	FILL	—	—	—	0.176	—	—
RE00-98-0074	00-10133	15–17.5	SOIL	—	—	—	1.267	—	—
RE00-98-0089	00-10138	12.5–15	SOIL	—	—	—	—	0.22	—
RE00-98-0091	00-10139	13–15	SOIL	—	—	—	—	0.18	—
RE00-98-0095	00-10141	7.5–9	SOIL	—	—	—	—	0.09	—
RE00-98-0097	00-10142	5–9	SOIL	—	—	—	0.073	0.13	—
RE00-98-0099	00-10143	0.1–0.7	SED	—	—	—	—	0.17	—
RE00-98-0101	00-10144	1–2	SED	—	—	—	0.147	—	—
RE00-98-0103	00-10145	0.3–1	SED	—	—	—	0.107	0.13	—
RE00-98-0105	00-10146	0.2–1	SED	—	—	—	0.212	—	—
RE00-09-312	00-604247	4–5	SED	—	—	—	0.253	—	—
RE00-09-318	00-604249	6–7	QBT2	0.587	—	—	2.39	—	0.172
RE00-09-319	00-604250	1.5–2.5	QBT3	—	0.125	—	—	—	—
RE00-09-322	00-604251	2.75–3.75	QBT3	0.206	—	—	1.12	—	—
RE00-09-323	00-604251	4.75–5.75	QBT3	—	—	—	0.326	—	—
RE00-09-324	00-604251	6.75–7.75	QBT3	—	—	—	0.235	—	—

Notes: Results are in pCi/g.

[a] BVs/FVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SALs are from LANL (2015, 600929).

[d] — = Not detected or not detected above BV/FV.

Table 6.3-1
Samples Collected and Analyses Requested at AOC C-00-044

Sample ID	Location ID	Depth (ft)	Media	TAL Metals	SVOCs
RE00-12-56	00-614735	0–1	ALLH	12-126[a]	12-125
RE00-12-57	00-614735	2–3	ALLH	12-126	12-125
RE00-12-58	00-614736	0–1	ALLH	12-126	12-125
RE00-12-59	00-614736	2–3	ALLH	12-126	12-125
RE00-12-60	00-614737	0–1	ALLH	12-126	12-125
RE00-12-61	00-614737	2–3	ALLH	12-126	12-125
RE00-12-62	00-614738	0–1	ALLH	12-126	12-125
RE00-12-63	00-614738	2–3	ALLH	12-126	12-125
RE00-12-64	00-614739	0–1	ALLH	12-126	12-125
RE00-12-65	00-614739	2–3	ALLH	12-126	12-125
RE00-12-66	00-614740	0–1	ALLH	12-126	12-125
RE00-12-67	00-614740	2–3	ALLH	12-126	12-125
RE00-12-68	00-614741	0–1	ALLH	12-126	12-125
RE00-12-69	00-614741	2–3	ALLH	12-126	12-125
RE00-12-70	00-614742	0–1	ALLH	12-134	12-134
RE00-12-71	00-614742	2–3	ALLH	12-134	12-134
RE00-12-72	00-614743	0–1	ALLH	12-134	12-134
RE00-12-73	00-614743	2–3	ALLH	12-134	12-134
RE00-12-74	00-614744	0–1	SED	12-134	12-134
RE00-12-75	00-614744	2–3	QBT3	12-134	12-134
RE00-12-76	00-614745	0–1	ALLH	12-134	12-134
RE00-12-77	00-614745	2–3	ALLH	12-134	12-134
RE00-12-78	00-614746	0–1	ALLH	12-134	12-134
RE00-12-79	00-614746	2–3	ALLH	12-134	12-134
RE00-12-80	00-614747	0–1	SED	12-135	12-135
RE00-12-81	00-614747	2–3	SED	12-135	12-135
RE00-12-82	00-614748	0–1	ALLH	12-135	12-135
RE00-12-83	00-614748	2–3	ALLH	12-135	12-135
RE00-12-84	00-614749	0–1	SED	12-135	12-135
RE00-12-85	00-614749	2–3	QBT3	12-135	12-135
RE00-12-86	00-614750	0–1	ALLH	12-135	12-135
RE00-12-87	00-614750	2–3	QBT3	12-135	12-135
RE00-12-88	00-614751	0–1	ALLH	12-142	12-141
RE00-12-89	00-614751	2–3	ALLH	12-142	12-141

Table 6.3-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	TAL Metals	SVOCs
RE00-13-37928	00-614751	4–5	QBT3	2013-1475	—[b]
RE00-13-37929	00-614751	6–7	QBT3	2013-1475	—
RE00-12-90	00-614752	0–1	ALLH	12-142	12-141
RE00-12-91	00-614752	2–3	ALLH	12-142	12-141
RE00-12-92	00-614753	0–1	ALLH	12-142	12-141
RE00-12-93	00-614753	2–3	ALLH	12-142	12-141
RE00-12-94	00-614754	0-1	ALLH	12-142	12-141
RE00-12-95	00-614754	2–3	ALLH	12-142	12-141
RE00-12-96	00-614755	0–1	ALLH	12-142	12-141
RE00-12-97	00-614755	2–3	ALLH	12-142	12-141
RE00-12-98	00-614756	0–1	ALLH	12-164	12-164
RE00-12-99	00-614756	2–3	ALLH	12-164	12-164

[a] Analytical request number.

[b] — = Analysis not requested.

Table 6.3-2
Inorganic Chemicals Detected or Detected Above BVs at AOC C-00-044

Sample ID	Location ID	Depth (ft)	Media	Antimony	Cadmium	Lead	Manganese	Mercury	Selenium	Sodium	Zinc
Soil Background Value[a]				**0.83**	**0.4**	**22.3**	**671**	**0.1**	**1.52**	**915**	**48.8**
Qbt 2,3,4 Background Value[a]				**0.5**	**1.63**	**11.2**	**482**	**0.1**	**0.3**	**2770**	**63.5**
Sediment Background Value[a]				**0.83**	**0.4**	**19.7**	**543**	**0.1**	**0.3**	**1470**	**60.2**
Industrial SSL[b]				**519**	**1110**	**800**	**160,000**	**389**	**6490**	**na[c]**	**389,000**
Construction Worker SSL[b]				**142**	**72.1**	**800**	**464**	**77.1**	**3100**	**na**	**186,000**
Residential SSL[b]				**31.3**	**70.5**	**400**	**10,500**	**23.5**	**391**	**na**	**23,500**
RE00-12-56	00-614735	0–1	SOIL	0.991 (U)	—[d]	27.7	737	—	—	—	54.7
RE00-12-57	00-614735	2–3	SOIL	1.05 (U)	—	—	—	—	—	—	—
RE00-12-58	00-614736	0–1	SOIL	1 (U)	—	27.6	—	—	—	—	—
RE00-12-59	00-614736	2–3	SOIL	0.991 (U)	—	—	—	—	—	—	—
RE00-12-60	00-614737	0–1	SOIL	1.03 (U)	—	60.2	—	—	—	—	—
RE00-12-61	00-614737	2–3	SOIL	1 (U)	—	—	—	—	—	—	—
RE00-12-62	00-614738	0–1	SOIL	1.07 (U)	—	44.7	—	—	—	—	74.4
RE00-12-63	00-614738	2–3	SOIL	1.03 (U)	—	23.8	—	0.116	—	—	49
RE00-12-64	00-614739	0–1	SOIL	1.05 (U)	—	26.9	—	—	—	—	—
RE00-12-65	00-614739	2–3	SOIL	1.02 (U)	—	—	—	—	—	—	—
RE00-12-66	00-614740	0–1	SOIL	1.02 (U)	—	—	—	—	—	—	—
RE00-12-67	00-614740	2–3	SOIL	0.995 (U)	—	—	—	—	—	—	—
RE00-12-68	00-614741	0–1	SOIL	0.991 (U)	—	35.6	—	—	—	—	—
RE00-12-69	00-614741	2–3	SOIL	0.989 (U)	—	—	—	—	—	—	—
RE00-12-70	00-614742	0–1	SOIL	1.02 (U)	—	—	—	—	—	—	—
RE00-12-71	00-614742	2–3	SOIL	1.16 (U)	—	—	—	—	—	—	—
RE00-12-72	00-614743	0–1	SOIL	0.915 (U)	—	—	—	—	—	—	—
RE00-12-73	00-614743	2–3	SOIL	0.963 (U)	—	—	—	—	—	—	—
RE00-12-74	00-614744	0–1	SED	—	—	61.4 (J)	—	—	0.984 (U)	—	—
RE00-12-75	00-614744	2–3	QBT3	0.994 (U)	—	—	—	—	0.985 (U)	—	—
RE00-12-76	00-614745	0–1	SOIL	1.01 (U)	—	38.1 (J)	—	—	—	10300	—
RE00-12-77	00-614745	2–3	SOIL	1.03 (U)	—	—	—	—	—	1080	—
RE00-12-78	00-614746	0–1	SOIL	1.04 (U)	—	—	—	—	—	—	—
RE00-12-79	00-614746	2–3	SOIL	1.13 (U)	—	—	—	—	—	1290	—
RE00-12-80	00-614747	0–1	SED	1.16 (U)	—	144	—	—	1.19 (U)	—	—

Table 6.3-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Cadmium	Lead	Manganese	Mercury	Selenium	Sodium	Zinc
Soil Background Value[a]				**0.83**	**0.4**	**22.3**	**671**	**0.1**	**1.52**	**915**	**48.8**
Qbt 2,3,4 Background Value[a]				**0.5**	**1.63**	**11.2**	**482**	**0.1**	**0.3**	**2770**	**63.5**
Sediment Background Value[a]				**0.83**	**0.4**	**19.7**	**543**	**0.1**	**0.3**	**1470**	**60.2**
Industrial SSL[b]				**519**	**1110**	**800**	**160,000**	**389**	**6490**	**na[c]**	**389,000**
Construction Worker SSL[b]				**142**	**72.1**	**800**	**464**	**77.1**	**3100**	**na**	**186,000**
Residential SSL[b]				**31.3**	**70.5**	**400**	**10,500**	**23.5**	**391**	**na**	**23,500**
RE00-12-81	00-614747	2–3	SED	1.02 (U)	—	29 (J)	—	—	1.02 (U)	—	—
RE00-12-82	00-614748	0–1	SOIL	0.903 (U)	—	195 (J)	—	—	—	—	—
RE00-12-83	00-614748	2–3	SOIL	0.908 (U)	—	99.3 (J)	—	—	—	—	—
RE00-12-84	00-614749	0–1	SED	1.02 (U)	—	50.1 (J)	—	—	0.999 (U)	—	85.4
RE00-12-85	00-614749	2–3	QBT3	1.04 (U)	—	—	—	—	0.967 (U)	—	—
RE00-12-86	00-614750	0–1	SOIL	1.17 (U)	—	69.1 (J)	—	—	—	—	—
RE00-12-87	00-614750	2–3	QBT3	0.977 (U)	—	—	—	—	0.981 (U)	—	—
RE00-12-88	00-614751	0–1	SOIL	0.933 (U)	0.467 (U)	186	—	—	—	—	—
RE00-12-89	00-614751	2–3	SOIL	0.915 (U)	0.458 (U)	334	—	—	—	—	—
RE00-13-37928	00-614751	4–5	QBT3	NA[e]	NA	27	NA	NA	NA	NA	NA
RE00-13-37929	00-614751	6–7	QBT3	NA	NA	—	NA	NA	NA	NA	NA
RE00-12-90	00-614752	0–1	SOIL	1.06 (U)	0.53 (U)	57.9	—	—	—	—	—
RE00-12-91	00-614752	2–3	SOIL	0.879 (U)	0.439 (U)	—	—	—	—	—	—
RE00-12-92	00-614753	0–1	SOIL	1.21 (U)	0.603 (U)	—	—	—	—	2520	50.5
RE00-12-93	00-614753	2–3	SOIL	1.2 (U)	0.599 (U)	—	—	—	—	1930	55.5
RE00-12-94	00-614754	0–1	SOIL	1.92 (U)	0.536 (U)	115	—	—	—	1030	55.9
RE00-12-95	00-614754	2–3	SOIL	1.14 (U)	0.571 (U)	—	—	—	—	—	—
RE00-12-96	00-614755	0–1	SOIL	1.03 (U)	0.517 (U)	26.7	—	—	—	—	—
RE00-12-97	00-614755	2–3	SOIL	0.985 (U)	0.493 (U)	—	—	—	—	—	—
RE00-12-98	00-614756	0–1	SOIL	1.1 (U)	—	40.4	—	—	—	—	—
RE00-12-99	00-614756	2–3	SOIL	1.02 (U)	—	—	—	—	—	—	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] BVs are from LANL (1998, 059730).

[b] SSLs are from NMED (2017, 602273) unless otherwise noted.

[c] na = Not available.

[d] — = Not detected or not detected above BV.

[e] NA = Not analyzed.

Table 6.3-3
Organic Chemicals Detected at AOC C-00-044

Sample ID	Location ID	Depth (ft)	Media	Acenaphthene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Butylbenzylphthalate	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Pyrene
Industrial SSL[a]				**50,500**	**253,000**	**32.3**	**23.6**	**32.3**	**25300**	**323**	**1830**	**12,000**	**3230**	**3.23**	**33,700**	**33,700**	**32.3**	**3370**	**33,700**	**16,800**	**25,300**
Construction Worker SSL[a]				**15,100**	**75,300**	**240**	**106**	**240**	**7530**	**2310**	**5380**	**13,100**	**8880**	**8.88**	**11,500**	**10,000**	**240**	**1000**	**10,000**	**5020**	**7530**
Residential SSL[a]				**3480**	**17,400**	**1.53**	**1.12**	**1.53**	**1740**	**15.3**	**380**	**2900**	**153**	**0.153**	**2320**	**2320**	**1.53**	**232**	**2320**	**1160**	**1740**
RE00-12-56	00-614735	0–1	SOIL	—[b]	—	0.0168 (J)	0.0159 (J)	0.0229 (J)	—	0.0132 (J)	—	—	—	—	0.019 (J)	—	—	—	—	—	0.0216 (J)
RE00-12-58	00-614736	0–1	SOIL	—	—	0.0151 (J)	0.0165 (J)	0.0228 (J)	0.014 (J)	—	—	—	0.0137 (J)	—	0.0235 (J)	—	0.014 (J)	—	—	—	0.0203 (J)
RE00-12-62	00-614738	0–1	SOIL	0.0198 (J)	0.0317 (J)	0.104	0.0969	0.144	0.0809	0.0477	—	0.383	0.114	—	0.177	0.0172 (J)	0.0611	—	0.0153 (J)	0.162	0.454
RE00-12-63	00-614738	2–3	SOIL	0.0249 (J)	0.0355 (J)	0.0984	0.0995	0.163	0.0413	0.064	—	—	0.108	—	0.208	0.0208 (J)	0.0366	—	0.0216 (J)	0.18	0.248
RE00-12-64	00-614739	0–1	SOIL	—	0.0154 (J)	0.0863	0.106	0.159	0.0474	0.0702	—	—	0.0937	—	0.167	—	0.0442	—	—	0.0951	0.233
RE00-12-65	00-614739	2–3	SOIL	0.028 (J)	0.0332 (J)	0.103	0.104	0.141	0.053	0.0431	—	—	0.108	—	0.236	0.0215 (J)	0.0537	—	0.0373	0.157	0.167 (J)
RE00-12-66	00-614740	0–1	SOIL	—	—	0.0397	0.0338 (J)	0.0669	0.0132 (J)	0.022 (J)	—	0.138 (J)	0.0327 (J)	—	0.0742	—	0.0118 (J)	—	—	0.0525	0.0672
RE00-12-68	00-614741	0–1	SOIL	—	0.0123 (J)	0.0365	0.0345	0.0515	0.0181 (J)	0.0184 (J)	—	0.325 (J)	0.0358	—	0.069	—	0.015 (J)	—	—	0.0621	0.113
RE00-12-69	00-614741	2–3	SOIL	0.354	0.0119 (J)	0.0262 (J)	—	—	—	—	—	0.119 (J)	0.0235 (J)	—	0.0439	—	—	—	—	0.0487	0.111
RE00-12-70	00-614742	0–1	SOIL	0.171	0.287	0.523	0.472	0.601	0.308 (J)	0.227	—	—	0.532	0.0855	1.4	0.152	0.268 (J)	0.0394	0.0978	1.16	1.14
RE00-12-71	00-614742	2–3	SOIL	—	0.0118 (J)	0.0306 (J)	0.024 (J)	0.0263 (J)	0.022 (J)	—	—	—	0.0232 (J)	—	0.0566	—	0.0161 (J)	—	—	0.0475	0.053 (J)
RE00-12-72	00-614743	0–1	SOIL	—	—	0.0139 (J)	0.0115 (J)	—	0.0118 (J)	0.0201 (J)	—	—	—	—	0.0174 (J)	—	—	—	—	—	0.0167 (J)
RE00-12-74	00-614744	0–1	SED	0.0145 (J)	0.0293 (J)	0.101	0.0987	0.141	0.058	0.0445	—	2.55 (J)	0.0949	—	0.231	0.0152 (J)	0.059	—	0.0145 (J)	0.145	0.212 (J)
RE00-12-75	00-614744	2–3	QBT3	—	—	—	—	—	—	—	—	0.117 (J)	—	—	—	—	—	—	—	—	—
RE00-12-76	00-614745	0–1	SOIL	0.0976	0.153	0.276	0.305	0.394	0.197 (J)	0.147	—	0.7	0.28	—	0.6	0.0907	0.176 (J)	0.0343 (J)	0.0875	0.634	0.823
RE00-12-77	00-614745	2–3	SOIL	—	—	—	—	—	—	—	—	0.134 (J)	-	—	—	—	—	—	—	—	—
RE00-12-78	00-614746	0–1	SOIL	—	0.011 (J)	0.0392	0.0348 (J)	0.0469	0.0282 (J)	0.0161 (J)	—	—	0.0289 (J)	0.015 (J)	0.0645	—	0.0253 (J)	—	—	0.0454	0.0579 (J)
RE00-12-79	00-614746	2–3	SOIL	—	—	—	0.0206 (J)	0.024 (J)	0.0191 (J)	—	—	—	—	—	0.0202 (J)	—	—	—	—	0.0126 (J)	0.0221 (J)
RE00-12-80	00-614747	0–1	SED	—	0.0818 (J)	0.247	0.204	0.247	0.108 (J)	0.174 (J)	—	1 (J)	0.221	—	0.395	—	0.106 (J)	—	—	0.365	0.497
RE00-12-82	00-614748	0–1	SOIL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.177
RE00-12-83	00-614748	2–3	SOIL	—	—	0.0134 (J)	—	—	0.0144 (J)	—	—	—	—	—	0.0164 (J)	—	0.0103 (J)	—	—	0.011 (J)	0.0291 (J)
RE00-12-84	00-614749	0–1	SED	0.0656 (J)	0.129 (J)	0.498	0.47	0.652	0.322 (J)	0.246	—	—	0.493	—	0.879	0.0549 (J)	0.303 (J)	—	—	0.661	1.31
RE00-12-86	00-614750	0–1	SOIL	—	—	0.0122 (J)	—	—	0.0133 (J)	—	—	0.286 (J)	—	—	0.0126 (J)	—	—	—	—	—	0.0259 (J)
RE00-12-88	00-614751	0–1	SOIL	—	—	0.0183 (J)	0.0152 (J)	0.0266 (J)	—	—	—	—	0.02 (J)	—	0.0279 (J)	—	—	—	—	—	0.0269 (J)
RE00-12-89	00-614751	2–3	SOIL	—	—	0.0476 (J)	0.0386 (J)	0.0649 (J)	0.0214 (J)	—	—	—	0.0421 (J)	—	0.0593 (J)	—	—	—	—	—	0.0593 (J)
RE00-12-90	00-614752	0–1	SOIL	—	—	0.0275 (J)	0.029 (J)	0.0312 (J)	0.0152 (J)	0.0141 (J)	—	—	0.0232 (J)	—	0.0547	—	0.012 (J)	—	—	0.0395	0.0489

Table 6.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Acenaphthene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Butylbenzylphthalate	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Pyrene
Industrial SSL[a]				**50,500**	**253,000**	**32.3**	**23.6**	**32.3**	**25300**	**323**	**1830**	**12,000**	**3230**	**3.23**	**33,700**	**33,700**	**32.3**	**3370**	**33,700**	**16,800**	**25,300**
Construction Worker SSL[a]				**15,100**	**75,300**	**240**	**106**	**240**	**7530**	**2310**	**5380**	**13,100**	**8880**	**8.88**	**11,500**	**10,000**	**240**	**1000**	**10,000**	**5020**	**7530**
Residential SSL[a]				**3480**	**17,400**	**1.53**	**1.12**	**1.53**	**1740**	**15.3**	**380**	**2900**	**153**	**0.153**	**2320**	**2320**	**1.53**	**232**	**2320**	**1160**	**1740**
RE00-12-92	00-614753	0–1	SOIL	—	—	—	—	—	—	—	—	—	—	—	0.0126 (J)	—	—	—	—	—	—
RE00-12-94	00-614754	0–1	SOIL	—	—	—	—	—	—	—	0.945	6.38	—	—	—	—	—	—	—	—	—
RE00-12-96	00-614755	0–1	SOIL	—	—	0.0182 (J)	0.0139 (J)	0.0233 (J)	0.012 (J)	—	—	—	0.0113 (J)	—	0.0303 (J)	—	—	—	—	0.0182 (J)	0.0273 (J)
RE00-12-98	00-614756	0–1	SOIL	—	—	—	—	—	—	—	—	—	—	—	0.0116 (J)	—	—	—	—	—	—
RE00-12-92	00-614753	0–1	SOIL	—	—	—	—	—	—	—	—	—	—	—	0.0126 (J)	—	—	—	—	—	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] SSLs are from NMED (2017, 602273) unless otherwise noted.

[b] — = Not detected.

Table 7.2-1
Samples Collected and Analyses Requested at SWMU 01-001(a)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RE00-08-15637	00-603748	1.5–2.5	QBT3	09-561[a]	09-560	09-561	09-561	09-561	09-561	09-560	09-559	09-560	09-561	09-559	09-559	09-560
RE00-08-15638	00-603748	3.5–4.5	QBT3	09-561	09-560	09-561	09-561	09-561	09-561	09-560	09-559	09-560	09-561	09-559	09-559	09-560
RE01-12-704	00-603748	5–6	QBT3	—[b]	—	—	—	—	—	12-608	—	—	—	12-608	—	—
RE00-08-15639	00-603749	2–3	QBT3	09-561	09-560	09-561	09-561	09-561	09-561	09-560	09-559	09-560	09-561	09-559	09-559	09-560
RE00-08-15640	00-603749	4–5	QBT3	09-561	09-560	09-561	09-561	09-561	09-561	09-560	09-559	09-560	09-561	09-559	09-559	09-560
RE01-12-705	00-603749	6–7	QBT3	—	—	—	—	—	—	12-619	—	—	—	12-619	—	—
RE00-08-15641	00-603750	3.75–4.75	QBT3	09-561	09-560	09-561	09-561	09-561	09-561	09-560	09-559	09-560	09-561	09-559	09-559	09-560
RE00-08-15642	00-603750	5.75–6.75	QBT3	09-561	09-560	09-561	09-561	09-561	09-561	09-560	09-559	09-560	09-561	09-559	09-559	09-560
RE01-12-706	00-603750	8–9	QBT3	—	—	—	—	—	—	12-619	—	—	—	12-619	—	—
RE00-08-15644	00-603751	10–11	QBT3	09-578	09-578	09-578	09-578	09-578	09-578	09-578	09-578	09-578	09-578	09-578	09-578	09-578

Table 7.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RE01-12-707	00-603751	13–14	QBT3	—	—	—	—	—	—	12-454	—	—	—	12-454	—	—
RE00-08-15643	00-603751	6–7	QBT3	09-578	09-578	09-578	09-578	09-578	09-578	09-578	09-578	09-578	09-578	09-578	09-578	09-578
RE00-08-15645	00-603752	0–1	SED	09-708	09-707	09-708	09-708	09-708	09-708	09-707	09-706	09-707	09-708	09-706	09-706	09-707
RE00-08-15646	00-603752	3.75–4.75	QBT3	09-708	09-707	09-708	09-708	09-708	09-708	09-707	09-706	09-707	09-708	09-706	09-706	09-707
RE01-12-708	00-603752	6–7	QBT3	—	—	—	—	—	—	12-368	—	—	—	—	—	—
RE00-08-15647	00-603753	0–1	SED	09-708	09-707	09-708	09-708	09-708	09-708	09-707	09-706	09-707	09-708	09-706	09-706	09-707
RE00-08-15648	00-603753	1–2	QBT3	09-708	09-707	09-708	09-708	09-708	09-708	09-707	09-706	09-707	09-708	09-706	09-706	09-707
RE01-12-710	00-603753	3–4	QBT3	—	—	—	—	—	—	12-423	—	—	—	—	—	—
RE00-08-15649	00-603754	0–1	SED	09-708	09-707	09-708	09-708	09-708	09-708	09-707	09-706	09-707	09-708	09-706	09-706	09-707
RE00-08-15650	00-603754	2–3	QBT3	09-708	09-707	09-708	09-708	09-708	09-708	09-707	09-706	09-707	09-708	09-706	09-706	09-707
RE00-08-15663	00-603761	0–1	SED	09-585	09-585	09-585	09-585	09-585	09-585	09-585	09-585	09-585	09-585	09-585	09-585	09-585
RE00-08-15664	00-603761	1.5–2.5	FILL	09-585	09-585	09-585	09-585	09-585	09-585	09-585	09-585	09-585	09-585	09-585	09-585	09-585
RE00-08-15665	00-603761	4–5	QBT3	09-585	09-585	09-585	09-585	09-585	09-585	09-585	09-585	09-585	09-585	09-585	09-585	09-585
RE01-12-709	00-603761	6–7	QBT3	—	—	—	—	—	—	12-423	—	—	—	12-423	—	—
RE01-12-711	01-614781	0–1	ALLH	—	—	—	—	—	—	12-368	—	—	—	12-367	—	—
RE01-12-712	01-614781	2–3	QBT3	—	—	—	—	—	—	12-368	—	—	—	12-367	—	—
RE01-12-713	01-614781	4–5	QBT3	—	—	—	—	—	—	12-368	—	—	—	12-367	—	—
RE01-12-714	01-614782	0–1	ALLH	—	—	—	—	—	—	12-379	—	—	—	12-379	—	—
RE01-12-715	01-614782	2–3	ALLH	—	—	—	—	—	—	12-379	—	—	—	12-379	—	—
RE01-12-716	01-614782	4–5	ALLH	—	—	—	—	—	—	12-379	—	—	—	12-379	—	—
RE01-12-717	01-614783	0–1	ALLH	—	—	—	—	—	—	12-388	—	—	—	12-389	—	—
RE01-12-718	01-614783	2–3	ALLH	—	—	—	—	—	—	12-388	—	—	—	12-389	—	—
RE01-12-719	01-614783	4–5	QBT3	—	—	—	—	—	—	12-388	—	—	—	12-389	—	—
RE01-12-720	01-614784	0–1	ALLH	—	—	—	—	—	—	12-368	—	—	—	12-367	—	—
RE01-12-721	01-614784	2–3	ALLH	—	—	—	—	—	—	12-368	—	—	—	12-367	—	—
RE01-12-722	01-614784	4–5	ALLH	—	—	—	—	—	—	12-368	—	—	—	12-367	—	—
RE01-12-723	01-614785	0–1	ALLH	—	—	—	—	—	—	12-388	—	—	—	12-389	—	—
RE01-12-724	01-614785	2–3	ALLH	—	—	—	—	—	—	12-388	—	—	—	12-389	—	—
RE01-12-725	01-614785	4–5	ALLH	—	—	—	—	—	—	12-388	—	—	—	12-389	—	—
RE01-12-726	01-614786	0–1	ALLH	—	—	—	—	—	—	12-368	—	—	—	12-367	—	—
RE01-12-727	01-614786	2–3	QBT3	—	—	—	—	—	—	12-368	—	—	—	12-367	—	—
RE01-12-728	01-614786	4–5	QBT3	—	—	—	—	—	—	12-368	—	—	—	12-367	—	—

Table 7.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RE01-12-729	01-614787	0–1	QBT3	—	—	—	—	—	—	12-388	—	—	—	12-389	—	—
RE01-12-730	01-614787	2–3	QBT3	—	—	—	—	—	—	12-388	—	—	—	12-389	—	—
RE01-12-731	01-614787	4–5	QBT3	—	—	—	—	—	—	12-388	—	—	—	12-389	—	—
RE01-12-732	01-614788	0–1	ALLH	—	—	—	—	—	—	12-388	—	—	—	12-389	—	—
RE01-12-733	01-614788	2–3	QBT3	—	—	—	—	—	—	12-388	—	—	—	12-389	—	—
RE01-12-734	01-614788	4–5	QBT3	—	—	—	—	—	—	12-388	—	—	—	12-389	—	—

[a] Analytical request number.

[b] — = Analysis not requested.

Table 7.2-2
Inorganic Chemicals Detected or Detected above BVs at SWMU 01-001(a)

Sample ID	Location ID	Depth (ft)	Media	Barium	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Nickel	Nitrate	Perchlorate	Selenium	Silver	Vanadium
Soil Background Value[a]				**295**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**15.4**	**na[b]**	**na**	**1.52**	**1**	**39.6**
Qbt 2,3,4 Background Value[a]				**46**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**6.58**	**na**	**na**	**0.3**	**1**	**17**
Sediment Background Value[a]				**127**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**9.38**	**na**	**na**	**0.3**	**1**	**19.7**
Industrial SSL[c]				**255,000**	**1110**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**25,700**	**2,080,000**	**908**	**6490**	**6490**	**6530**
Construction Worker SSL[c]				**4,390**	**72.1**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**12,400**	**991,000**	**434**	**3100**	**3100**	**614**
Residential SSL[c]				**15,600**	**70.5**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**1560**	**125,000**	**54.8**	**391**	**391**	**394**
RE00-08-15637	00-603748	1.5–2.5	QBT3	—[e]	—	—	7.6 (J)	—	—	—	17.2	—	—	—	0.59 (U)	—	—
RE00-08-15638	00-603748	3.5–4.5	QBT3	—	—	—	15 (J)	—	—	—	—	9.2 (J)	—	—	0.59 (U)	—	—
RE01-12-704	00-603748	5–6	QBT3	—	—	NA[f]	17.8	—	—	NA	NA	—	NA	NA	NA	2.72 (U)	—
RE00-08-15639	00-603749	2–3	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.59 (U)	—	—
RE00-08-15640	00-603749	4–5	QBT3	—	—	—	28.1 (J)	—	—	-	16.7	14.3 (J)	0.55	-	0.64 (U)	—	—
RE01-12-705	00-603749	6–7	QBT3	—	—	NA	13.2	—	—	NA	NA	—	NA	NA	NA	2.61 (U)	—
RE00-08-15641	00-603750	3.75–4.75	QBT3	—	—	—	32.4 (J)	—	—	—	—	16.4 (J)	—	—	—	—	—
RE00-08-15642	00-603750	5.75–6.75	QBT3	—	—	—	38 (J)	—	—	—	—	19.5 (J)	0.09 (J)	—	—	—	—
RE01-12-706	00-603750	8–9	QBT3	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	2.82 (U)	—
RE00-08-15643	00-603751	6–7	QBT3	—	—	—	52.6 (J)	—	—	0.51 (U)	—	25.9 (J-)	—	—	—	—	—

Table 7.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Barium	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Nickel	Nitrate	Perchlorate	Selenium	Silver	Vanadium
Soil Background Value[a]				**295**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**15.4**	**na[b]**	**na**	**1.52**	**1**	**39.6**
Qbt 2,3,4 Background Value[a]				**46**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**6.58**	**na**	**na**	**0.3**	**1**	**17**
Sediment Background Value[a]				**127**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**9.38**	**na**	**na**	**0.3**	**1**	**19.7**
Industrial SSL[c]				**255,000**	**1110**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**25,700**	**2,080,000**	**908**	**6490**	**6490**	**6530**
Construction Worker SSL[c]				**4,390**	**72.1**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**12,400**	**991,000**	**434**	**3100**	**3100**	**614**
Residential SSL[c]				**15,600**	**70.5**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**1560**	**125,000**	**54.8**	**391**	**391**	**394**
RE00-08-15644	00-603751	10–11	QBT3	—	—	—	52.1 (J)	—	—	—	—	26.3 (J-)	—	—	—	—	—
RE01-12-707	00-603751	13–14	QBT3	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—
RE00-08-15645	00-603752	0–1	SED	133	—	—	—	—	—	—	—	—	0.28	—	0.58 (U)	—	22 (J)
RE00-08-15646	00-603752	3.75–4.75	QBT3	47	4.9	—	10.1 (J+)	—	13.6	—	—	7.7	0.19 (J)	—	—	10.9	-
RE01-12-708	00-603752	6–7	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	NA
RE00-08-15647	00-603753	0–1	SED	—	—	—	—	—	—	—	—	—	0.25	—	—	—	—
RE00-08-15648	00-603753	1–2	QBT3	—	2.2	-	11.2 (J+)	-	8	-	-	8.2	0.12 (J)	—	—	4.6	—
RE01-12-710	00-603753	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—	NA
RE00-08-15649	00-603754	0–1	SED	181	—	—	—	5.4	—	—	—	—	—	—	0.59 (U)	—	21.6 (J)
RE00-08-15650	00-603754	2–3	QBT3	—	—	—	—	—	5.2	0.54 (U)	—	—	0.34	—	—	1.7	-
RE00-08-15663	00-603761	0–1	SED	133 (J+)	—	—	—	—	—	—	—	—	0.23	—	0.59 (U)	—	—
RE00-08-15664	00-603761	1.5–2.5	FILL	—	—	—	—	—	—	0.54 (U)	—	—	0.88	0.0045 (J)	—	—	—
RE00-08-15665	00-603761	4–5	QBT3	63.7 (J+)	—	3740 (J)	38.8 (J)	—	9.4 (J)	0.52 (U)	13.3	21.6 (J)	0.4	0.0022 (J)	0.52 (U)	—	—
RE01-12-709	00-603761	6–7	QBT3	—	—	NA	—	—	4.99	NA	NA	—	NA	NA	NA	—	—
RE01-12-711	01-614781	0–1	SOIL	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—
RE01-12-712	01-614781	2–3	QBT3	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—
RE01-12-713	01-614781	4-5	QBT3	—	—	NA	12.2	—	—	NA	NA	—	NA	NA	NA	—	—
RE01-12-714	01-614782	0–1	SOIL	—	0.519 (U)	NA	—	—	54.3	NA	NA	—	NA	NA	NA	—	—
RE01-12-715	01-614782	2–3	SOIL	—	0.473 (U)	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—
RE01-12-716	01-614782	4–5	SOIL	—	0.462 (U)	NA	20.3 (J-)	—	23.7	NA	NA	—	NA	NA	NA	—	—
RE01-12-717	01-614783	0–1	SOIL	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—
RE01-12-718	01-614783	2–3	SOIL	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—
RE01-12-719	01-614783	4–5	QBT3	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—
RE01-12-720	01-614784	0–1	SOIL	—	—	NA	—	—	17.6	NA	NA	—	NA	NA	NA	—	—
RE01-12-721	01-614784	2–3	SOIL	—	—	NA	—	—	17.2	NA	NA	—	NA	NA	NA	—	—
RE01-12-722	01-614784	4–5	SOIL	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—
RE01-12-723	01-614785	0–1	SOIL	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—

Table 7.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Barium	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Nickel	Nitrate	Perchlorate	Selenium	Silver	Vanadium
Soil Background Value[a]				**295**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**15.4**	**na[b]**	**na**	**1.52**	**1**	**39.6**
Qbt 2,3,4 Background Value[a]				**46**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**6.58**	**na**	**na**	**0.3**	**1**	**17**
Sediment Background Value[a]				**127**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**9.38**	**na**	**na**	**0.3**	**1**	**19.7**
Industrial SSL[c]				**255,000**	**1110**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**25,700**	**2,080,000**	**908**	**6490**	**6490**	**6530**
Construction Worker SSL[c]				**4,390**	**72.1**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**12,400**	**991,000**	**434**	**3100**	**3100**	**614**
Residential SSL[c]				**15,600**	**70.5**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**1560**	**125,000**	**54.8**	**391**	**391**	**394**
RE01-12-724	01-614785	2–3	SOIL	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—
RE01-12-725	01-614785	4–5	SOIL	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—
RE01-12-726	01-614786	0–1	SOIL	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—
RE01-12-727	01-614786	2–3	QBT3	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—
RE01-12-728	01-614786	4–5	QBT3	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—
RE01-12-729	01-614787	0–1	QBT3	—	—	NA	—	—	11.1	NA	NA	—	NA	NA	NA	—	—
RE01-12-730	01-614787	2–3	QBT3	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—
RE01-12-731	01-614787	4–5	QBT3	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—
RE01-12-732	01-614788	0–1	SOIL	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—
RE01-12-733	01-614788	2–3	QBT3	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—
RE01-12-734	01-614788	4–5	QBT3	—	—	NA	—	—	—	NA	NA	—	NA	NA	NA	—	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] BVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SSLs are from NMED (2017, 602273) unless otherwise noted.

[d] SSL for total chromium.

[e] — = Not detected or not detected above BV.

[f] NA = Not analyzed.

Table 7.2-3
Organic Chemicals Detected at SWMU 01-001(a)

Sample ID	Location ID	Depth (ft)	Media	Acenaphthene	Acetone	Anthracene	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Chrysene	Di-n-octylphthalate	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylene Chloride	Phenanthrene	Pyrene
Industrial SSL[a]				**50,500**	**959,000**	**253,000**	**11.0**	**11.1**	**32.3**	**23.6**	**32.3**	**25,300[b]**	**323**	**1830**	**3230**	**8200[c]**	**33,700**	**33,700**	**32.3**	**5110**	**25,300**	**25,300**
Construction Worker SSL[a]				**15,100**	**241,000**	**75,300**	**4.91**	**85.3**	**240**	**106**	**240**	**7530[b]**	**2310**	**5380**	**23,100**	**2400[d]**	**10,000**	**10,000**	**240**	**118**	**7530**	**7530**
Residential SSL[a]				**3480**	**66,300**	**17,400**	**1.14**	**2.43**	**1.53**	**1.12**	**1.53**	**1740[b]**	**15.3**	**380**	**153**	**630[c]**	**2320**	**2320**	**1.53**	**409**	**1740**	**1740**
RE00-08-15637	00-603748	1.5–2.5	QBT3	0.082 (J)	—[e]	0.14 (J)	—	—	0.16 (J)	0.14 (J)	0.1 (J)	0.049 (J)	0.13 (J)	—	0.16 (J)	—	0.36 (J)	0.071 (J)	0.047 (J)	0.004 (J)	0.44	0.34 (J)
RE00-08-15638	00-603748	3.5–4.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0056 (J)	—	—
RE00-08-15639	00-603749	2–3	QBT3	—	—	—	0.13 (J)	—	—	—	—	—	—	—	—	—	—	—	—	0.0057 (J)	—	—
RE00-08-15640	00-603749	4–5	QBT3	—	0.0025 (J)	—	0.018 (J)	—	—	—	—	—	—	0.061 (J)	—	—	—	—	—	0.0058 (J)	—	—
RE00-08-15641	00-603750	3.75-4.75	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0056 (J)	—	—
RE00-08-15642	00-603750	5.75–6.75	QBT3	—	—	—	0.019 (J)	—	—	—	—	—	—	—	—	—	—	—	—	0.0042 (J)	—	—
RE00-08-15643	00-603751	6-7	QBT3	—	0.0034 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.002 (J)	—	—
RE00-08-15644	00-603751	10–11	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.16 (J)	—	—	—	0.0033 (J)	—	—
RE00-08-15645	00-603752	0-1	SED	—	—	—	0.0063 (J)	0.0063 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-15646	00-603752	3.75–4.75	QBT3	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—
RE00-08-15647	00-603753	0–1	SED	—	—	—	0.0082 (J)	0.0082 (J)	—	—	—	—	—	0.29 (J)	—	—	—	—	—	—	—	—
RE00-08-15648	00-603753	1–2	QBT3	—	—	—	—	—	—	—	—	—	—	0.082 (J)	—	—	—	—	—	—	—	—
RE00-08-15649	00-603754	0–1	SED	—	—	—	—	—	—	—	—	—	—	0.17 (J)	—	—	—	—	—	—	—	—
RE00-08-15650	00-603754	2–3	QBT3	—	—	—	—	—	—	—	—	—	—	0.062 (J)	—	—	—	—	—	—	—	—
RE00-08-15663	00-603761	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0021 (J)	—	—
RE00-08-15664	00-603761	1.5–2.5	FILL	—	—	—	—	—	—	—	—	—	—	0.075 (J)	0.071 (J)	—	—	—	—	—	—	—
RE00-08-15665	00-603761	4–5	QBT3	—	0.002 (J)	—	—	0.011 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] SSLs are from NMED (2017, 602273) unless otherwise noted.

[b] Pyrene used as a surrogate based on structural similarity.

[c] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

[d] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

[e] — = Not detected.

Table 7.2-4
Radionuclides Detected or Detected above BVs/FVs at SWMU 01-001(a)

Sample ID	Location ID	Depth (ft)	Media	Plutonium-239/240
Soil Background Value				**0.054**
Qbt 2,3,4 Background Value				**na[a]**
Sediment Background Value				**0.068**
Construction Worker SAL[b]				**200**
Industrial SAL[b]				**1200**
Residential SAL[b]				**79**
RE00-08-15644	00-603751	10–11	QBT3	0.164

Note: Results are in pCi/g.
[a] na = Not available.
[b] SALs are from LANL (2015, 600929).

Table 7.4-1
Samples Collected and Analyses Requested at SWMU 01-001(d3)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Mercury	Hexavalent Chromium	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RE00-08-15790	00-603800	0–1	SED	09-152[a]	09-151	09-152	09-152	09-152	09-152	09-151	—[b]	—	09-150	09-151	09-152	09-150	09-150	09-151
RE00-08-15791	00-603800	2.75–3.75	QBT3	09-152	09-151	09-152	09-152	09-152	09-152	09-151	—	—	09-150	09-151	09-152	09-150	09-150	09-151
RE01-12-125	00-603800	6–7	QBT3	—	—	12-549	—	12-549	—	12-549	—	—	—	—	—	—	—	—
RE00-08-15792	00-603801	0–1	SED	09-152	09-151	09-152	09-152	09-152	09-152	09-151	—	—	09-150	09-151	09-152	09-150	09-150	09-151
RE00-08-15793	00-603801	2.5–3.5	QBT3	09-152	09-151	09-152	09-152	09-152	09-152	09-151	—	—	09-150	09-151	09-152	09-150	09-150	09-151
RE01-12-126	00-603801	5–6	QBT3	—	—	12-549	—	12-549	—	12-549	—	—	—	—	—	—	—	—
RE01-12-10445	00-603801	7–8	QBT3	—	—	—	—	12-1036	—	—	12-1036	—	—	—	—	—	—	—
RE00-08-15794	00-603802	0–1	SED	09-152	09-151	09-152	09-152	09-152	09-152	09-151	—	—	09-150	09-151	09-152	09-150	09-150	09-151
RE00-08-15795	00-603802	3.75–4.75	QBT3	09-152	09-151	09-152	09-152	09-152	09-152	09-151	—	—	09-150	09-151	09-152	09-150	09-150	09-151
RE01-12-124	00-603802	6–7	QBT3	—	—	12-549	—	12-549	—	12-549	—	—	—	—	—	—	—	—
RE01-13-38291	00-603802	7–8	QBT3	—	—	—	—	—	—	—	2013-1842	—	—	—	—	—	—	—
RE01-13-38293	00-603802	9–10	QBT3	—	—	—	—	—	—	—	2013-1842	—	—	—	—	—	—	—
RE01-13-38292	00-603802	11–12	QBT3	—	—	—	—	—	—	—	2013-1842	—	—	—	—	—	—	—
RE00-08-15796	00-603803	0–1	SED	09-152	09-151	09-152	09-152	09-152	09-152	09-151	—	—	09-150	09-151	09-152	09-150	09-150	09-151
RE00-08-15797	00-603803	1–2	QBT3	09-152	09-151	09-152	09-152	09-152	09-152	09-151	—	—	09-150	09-151	09-152	09-150	09-150	09-151
RE01-12-127	00-603803	4–5	QBT3	—	—	12-552	—	12-552	—	12-552	—	—	—	—	—	—	—	—
RE00-08-15798	00-603804	0–1	SED	09-152	09-151	09-152	09-152	09-152	09-152	09-151	—	—	09-150	09-151	09-152	09-150	09-150	09-151
RE00-08-15799	00-603804	1–2	QBT3	09-152	09-151	09-152	09-152	09-152	09-152	09-151	—	—	09-150	09-151	09-152	09-150	09-150	09-151
RE01-12-10446	00-603804	3–4	QBT3	—	—	—	—	12-1041	—	—	12-1041	—	—	—	—	—	—	—
RE00-08-15800	00-603805	0–1	QBT3	09-152	09-151	09-152	09-152	09-152	09-152	09-151	—	—	09-150	09-151	09-152	09-150	09-150	09-151

Table 7.4-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Mercury	Hexavalent Chromium	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RE00-08-15801	00-603805	1–2	QBT3	09-152	09-151	09-152	09-152	09-152	09-152	09-151	—	—	09-150	09-151	09-152	09-150	09-150	09-151
RE00-08-15802	00-603806	0–1.25	SED	09-132	09-131	09-132	09-132	09-132	09-132	09-131	—	—	09-130	09-131	09-132	09-130	09-130	09-131
RE00-08-15803	00-603806	1.25–2.25	QBT3	09-132	09-131	09-132	09-132	09-132	09-132	09-131	—	—	09-130	09-131	09-132	09-130	09-130	09-131
RE01-12-129	00-603806	4–5	QBT3	—	—	12-547	—	12-547	—	12-547	12-547	—	—	—	—	—	—	—
RE00-08-15804	00-603807	0–1	ALLH	09-132	09-131	09-132	09-132	09-132	09-132	09-131	—	—	09-130	09-131	09-132	09-130	09-130	09-131
RE00-08-15805	00-603807	1–2	QBT3	09-132	09-131	09-132	09-132	09-132	09-132	09-131	—	—	09-130	09-131	09-132	09-130	09-130	09-131
RE01-12-128	00-603807	4–5	QBT3	—	—	12-547	—	12-547	—	12-547	12-547	—	—	—	—	—	—	—
RE00-08-15806	00-603808	0–1.25	QBT3	09-132	09-131	09-132	09-132	09-132	09-132	09-131	—	—	09-130	09-131	09-132	09-130	09-130	09-131
RE00-08-15807	00-603808	1.25–2.25	QBT3	09-132	09-131	09-132	09-132	09-132	09-132	09-131	—	—	09-130	09-131	09-132	09-130	09-130	09-131
RE00-08-15808	00-603809	0–1	ALLH	09-132	09-131	09-132	09-132	09-132	09-132	09-131	—	—	09-130	09-131	09-132	09-130	09-130	09-131
RE00-08-15809	00-603809	1–2	QBT3	09-132	09-131	09-132	09-132	09-132	09-132	09-131	—	—	09-130	09-131	09-132	09-130	09-130	09-131
RE00-08-15810	00-603810	0–1	ALLH	09-132	09-131	09-132	09-132	09-132	09-132	09-131	—	—	09-130	09-131	09-132	09-130	09-130	09-131
RE00-08-15811	00-603810	1.75–2.75	QBT3	09-132	09-131	09-132	09-132	09-132	09-132	09-131	—	—	09-130	09-131	09-132	09-130	09-130	09-131
RE00-08-15812	00-603811	0–1	SED	09-200	09-199	09-200	09-200	09-200	09-200	09-199	—	—	09-198	09-199	09-200	09-198	09-198	09-199
RE00-08-15813	00-603811	1.25–2.25	QBT1G	09-200	09-199	09-200	09-200	09-200	09-200	09-199	—	—	09-198	09-199	09-200	09-198	09-198	09-199
RE01-12-130	00-603811	4–5	QBT1V	—	—	12-581	—	12-581	—	12-581	12-581	—	—	—	—	—	—	—
RE00-08-15814	00-603812	0–1	SED	09-200	09-199	09-200	09-200	09-200	09-200	09-199	—	—	09-198	09-199	09-200	09-198	09-198	09-199
RE00-08-15815	00-603812	1–2	QBT1G	09-200	09-199	09-200	09-200	09-200	09-200	09-199	—	—	09-198	09-199	09-200	09-198	09-198	09-199
RE01-12-131	00-603812	4–5	QBT1V	—	—	12-581	—	12-581	—	12-581	12-581	—	—	—	—	—	—	—
RE00-08-15816	00-603813	0–1	QBT1G	09-193	09-192	09-193	09-193	09-193	09-193	09-192	—	—	09-191	09-192	09-193	09-191	09-191	09-192
RE00-08-15817	00-603813	1-2	QBT1G	09-193	09-192	09-193	09-193	09-193	09-193	09-192	—	—	09-191	09-192	09-193	09-191	09-191	09-192
RE00-08-15818	00-603814	0–1	SED	09-193	09-192	09-193	09-193	09-193	09-193	09-192	—	—	09-191	09-192	09-193	09-191	09-191	09-192
RE00-08-15819	00-603814	1–2	QBT1G	09-200	09-199	09-200	09-200	09-200	09-200	09-199	—	—	09-198	09-199	09-200	09-198	09-198	09-199
RE01-12-132	00-603814	4–5	QBT1G	—	—	12-574	—	12-574	—	12-574	12-574	—	—	—	—	—	—	—
RE00-08-15820	00-603815	0–1	SED	09-193	09-192	09-193	09-193	09-193	09-193	09-192	—	—	09-191	09-192	09-193	09-191	09-191	09-192
RE00-08-15821	00-603815	1.25–2.25	QBT1G	09-193	09-192	09-193	09-193	09-193	09-193	09-192	—	—	09-191	09-192	09-193	09-191	09-191	09-192
RE01-12-133	00-603815	4–5	QBT1G	—	—	12-574	—	12-574	—	12-574	12-574	—	—	—	—	—	—	—
RE00-08-15822	00-603816	0–1	SED	09-193	09-192	09-193	09-193	09-193	09-193	09-192	—	—	09-191	09-192	09-193	09-191	09-191	09-192
RE00-08-15823	00-603816	1–2	QBT1G	09-193	09-192	09-193	09-193	09-193	09-193	09-192	—	—	09-191	09-192	09-193	09-191	09-191	09-192
RE01-12-134	00-603816	4–5	QBT1G	—	—	12-581	—	12-581	—	12-581	12-581	—	—	—	—	—	—	—
RE00-08-15824	00-603817	0-1	SED	09-193	09-192	09-193	09-193	09-193	09-193	09-192	—	—	09-191	09-192	09-193	09-191	09-191	09-192
RE00-08-15825	00-603817	1.25–2.25	QBT1G	09-193	09-192	09-193	09-193	09-193	09-193	09-192	—	—	09-191	09-192	09-193	09-191	09-191	09-192
RE01-12-135	00-603817	4–5	QCT	—	—	12-600	—	12-600	—	12-600	12-600	—	—	—	—	—	—	—
RE00-08-15826	00-603818	0–1	SED	09-193	09-192	09-193	09-193	09-193	09-193	09-192	—	—	09-191	09-192	09-193	09-191	09-191	09-192
RE00-08-15827	00-603818	1–1.75	QBT1G	09-193	09-192	09-193	09-193	09-193	09-193	09-192	—	—	09-191	09-192	09-193	09-191	09-191	09-192
RE01-12-136	00-603818	4–5	QCT	—	—	12-600	—	12-600	—	12-600	12-600	—	—	—	—	—	—	—

Table 7.4-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Mercury	Hexavalent Chromium	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RE00-08-15828	00-603819	0–1	SED	09-193	09-192	09-193	09-193	09-193	09-193	09-192	—	—	09-191	09-192	09-193	09-191	09-191	09-192
RE00-08-15829	00-603819	1–2	QBT1G	09-193	09-192	09-193	09-193	09-193	09-193	09-192	—	—	09-191	09-192	09-193	09-191	09-191	09-192
RE01-12-137	00-603819	4-5	QCT	—	—	12-600	—	12-600	—	12-600	12-600	—	—	—	—	—	—	—
RE00-08-15830	00-603820	0–1.25	ALLH	09-132	09-131	09-132	09-132	09-132	09-132	09-131	—	—	09-130	09-131	09-132	09-130	09-130	09-131
RE00-08-15831	00-603820	1.5–2.5	QBT3	09-132	09-131	09-132	09-132	09-132	09-132	09-131	—	—	09-130	09-131	09-132	09-130	09-130	09-131
RE00-08-15832	00-603820	4–5	QBT3	09-132	09-131	09-132	09-132	09-132	09-132	09-131	—	—	09-130	09-131	09-132	09-130	09-130	09-131
RE01-12-10448	00-603820	6–7	QBT3	—	—	—	—	12-1044	—	—	—	—	—	—	—	—	—	—
RE00-08-15833	00-603821	0–1	SED	09-200	09-199	09-200	09-200	09-200	09-200	09-199	—	—	09-198	09-199	09-200	09-198	09-198	09-199
RE00-08-15834	00-603821	1.5–2.25	SED	09-200	09-199	09-200	09-200	09-200	09-200	09-199	—	—	09-198	09-199	09-200	09-198	09-198	09-199
RE00-08-15835	00-603821	4–5	QBT3	09-200	09-199	09-200	09-200	09-200	09-200	09-199	—	—	09-198	09-199	09-200	09-198	09-198	09-199
RE01-12-123	00-603821	6–7	QBT3	—	—	12-549	—	12-549	—	12-549	—	—	—	—	—	—	—	—
RE01-13-38204	01-159	0–1	QBT3	—	—	—	—	2013-1819	—	—	2013-1819	—	—	—	—	—	—	—
RE01-13-38259	01-159	11–12	QBT3	—	—	—	—	2013-1819	—	—	2013-1819	—	—	—	—	—	—	—
RE01-13-38215	01-159	3–4	QBT3	—	—	—	—	2013-1819	—	—	2013-1819	—	—	—	—	—	—	—
RE01-13-38226	01-159	6–7	QBT3	—	—	—	—	2013-1819	—	—	2013-1819	—	—	—	—	—	—	—
RE01-13-38237	01-159	9–10	QBT3	—	—	—	—	2013-1819	—	—	2013-1819	—	—	—	—	—	—	—
RE01-13-38205	01-160	0–1	ALLH	—	—	—	—	2013-1819	—	—	2013-1819	—	—	—	—	—	—	—
RE01-13-38249	01-160	11-12	QBT3	—	—	—	—	2013-1819	—	—	2013-1819	—	—	—	—	—	—	—
RE01-13-38216	01-160	3–4	QBT3	—	—	—	—	2013-1819	—	—	2013-1819	—	—	—	—	—	—	—
RE01-13-38227	01-160	6–7 ft	QBT3	—	—	—	—	2013-1819	—	—	2013-1819	—	—	—	—	—	—	—
RE01-13-38238	01-160	9–10	QBT3	—	—	—	—	2013-1819	—	—	2013-1819	—	—	—	—	—	—	—
RE01-13-38206	01-161	0–1	ALLH	—	—	—	—	2013-1842	—	—	2013-1842	—	—	—	—	—	—	—
RE01-13-38250	01-161	11–12	QBT3	—	—	—	—	2013-1842	—	—	2013-1842	—	—	—	—	—	—	—
RE01-13-38217	01-161	3-4	QBT3	—	—	—	—	2013-1842	—	—	2013-1842	—	—	—	—	—	—	—
RE01-13-38228	01-161	6-7	QBT3	—	—	—	—	2013-1842	—	—	2013-1842	—	—	—	—	—	—	—
RE01-13-38239	01-161	9–10	QBT3	—	—	—	—	2013-1842	—	—	2013-1842	—	—	—	—	—	—	—
RE01-13-38218	01-162	12–13	QBT3	—	—	—	—	2013-2010	—	—	2013-2010	—	—	—	—	—	—	—
RE01-13-38229	01-162	15–16	QBT3	—	—	—	—	2013-2010	—	—	2013-2010	—	—	—	—	—	—	—
RE01-13-38240	01-162	17–18	QBT3	—	—	—	—	2013-2070	—	—	2013-2070	—	—	—	—	—	—	—
RE01-13-38251	01-162	19–20	QBT3	—	—	—	—	2013-2070	—	—	2013-2070	—	—	—	—	—	—	—
RE01-13-38207	01-162	9–10	QBT3	—	—	—	—	2013-2010	—	—	2013-2010	—	—	—	—	—	—	—
RE01-13-38208	01-163	0–1	ALLH	—	—	—	—	2013-2070	—	—	—	—	—	—	—	—	—	—
RE01-13-38252	01-163	11–12	QBT3	—	—	—	—	2013-2070	—	—	—	—	—	—	—	—	—	—
RE01-13-38219	01-163	3–4	QBT3	—	—	—	—	2013-2070	—	—	—	—	—	—	—	—	—	—
RE01-13-38230	01-163	6–7	QBT3	—	—	—	—	2013-2070	—	—	—	—	—	—	—	—	—	—
RE01-13-38241	01-163	9–10	QBT3	—	—	—	—	2013-2070	—	—	—	—	—	—	—	—	—	—

Table 7.4-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Mercury	Hexavalent Chromium	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RE01-13-38209	01-164	0–1	ALLH	—	—	—	—	2013-2070	—	—	—	—	—	—	—	—	—	—
RE01-13-38253	01-164	11–12	QBT3	—	—	—	—	2013-2070	—	—	—	—	—	—	—	—	—	—
RE01-13-38220	01-164	3-4	QBT3	—	—	—	—	2013-2070	—	—	—	—	—	—	—	—	—	—
RE01-13-38231	01-164	6–7	QBT3	—	—	—	—	2013-2070	—	—	—	—	—	—	—	—	—	—
RE01-13-38242	01-164	9-10	QBT3	—	—	—	—	2013-2070	—	—	—	—	—	—	—	—	—	—
RE01-13-38210	01-165	0–1	ALLH	—	—	—	—	2013-2070	—	—	—	—	—	—	—	—	—	—
RE01-13-38254	01-165	11–12	QBT3	—	—	—	—	2013-2070	—	—	—	—	—	—	—	—	—	—
RE01-13-38221	01-165	3–4	QBT3	—	—	—	—	2013-2070	—	—	—	—	—	—	—	—	—	—
RE01-13-38232	01-165	6–7	QBT3	—	—	—	—	2013-2070	—	—	—	—	—	—	—	—	—	—
RE01-13-38243	01-165	9–10	QBT3	—	—	—	—	2013-2070	—	—	—	—	—	—	—	—	—	—
RE01-13-38244	01-166	11–12	QBT3	—	—	—	—	2013-1819	—	—	2013-1819	—	—	—	—	—	—	—
RE01-13-38211	01-166	5–6	QBT3	—	—	—	—	2013-1819	—	—	2013-1819	—	—	—	—	—	—	—
RE01-13-38222	01-166	7–8	QBT3	—	—	—	—	2013-1819	—	—	2013-1819	—	—	—	—	—	—	—
RE01-13-38233	01-166	9–10	QBT3	—	—	—	—	2013-1819	—	—	2013-1819	—	—	—	—	—	—	—
RE01-13-38234	01-167	11–12	QBT3	—	—	—	—	2013-2070	—	—	—	—	—	—	—	—	—	—
RE01-13-38212	01-167	7–8	QBT3	—	—	—	—	2013-2070	—	—	—	—	—	—	—	—	—	—
RE01-13-38223	01-167	9–10	QBT3	—	—	—	—	2013-2070	—	—	—	—	—	—	—	—	—	—
RE01-13-38554	01-236	0–1	ALLH	—	—	—	—	—	—	—	2013-1842	—	—	—	—	—	—	—
RE01-13-38559	01-236	11–12	QBT3	—	—	—	—	—	—	—	2013-1842	—	—	—	—	—	—	—
RE01-13-38555	01-236	3–4	ALLH	—	—	—	—	—	—	—	2013-1842	—	—	—	—	—	—	—
RE01-13-38556	01-236	6–7	QBT3	—	—	—	—	—	—	—	2013-1842	—	—	—	—	—	—	—
RE01-13-38557	01-236	8–9	QBT3	—	—	—	—	—	—	—	2013-1842	—	—	—	—	—	—	—
RE01-13-38558	01-236	9–10	QBT3	—	—	—	—	—	—	—	2013-1842	—	—	—	—	—	—	—
RE01-13-38203	01-238	0–1	ALLH	—	—	—	—	2013-2010	—	—	2013-2010	—	—	—	—	—	—	—
RE01-13-38247	01-238	12–13	QBT3	—	—	—	—	2013-2070	—	—	2013-2070	—	—	—	—	—	—	—
RE01-13-38258	01-238	15–16	QBT3	—	—	—	—	2013-2070	—	—	2013-2070	—	—	—	—	—	—	—
RE01-13-38269	01-238	17–18	QBT3	—	—	—	—	2013-2070	—	—	2013-2070	—	—	—	—	—	—	—
RE01-13-38280	01-238	19-20	QBT3	—	—	—	—	2013-2070	—	—	2013-2070	—	—	—	—	—	—	—
RE01-13-38214	01-238	3–4	ALLH	—	—	—	—	2013-2010	—	—	2013-2010	—	—	—	—	—	—	—
RE01-13-38225	01-238	6–7	QBT3	—	—	—	—	2013-2010	—	—	2013-2010	—	—	—	—	—	—	—
RE01-13-38236	01-238	9–10	QBT3	—	—	—	—	2013-2010	—	—	2013-2010	—	—	—	—	—	—	—
RE01-12-10453	20821	0–1	ALLH	—	—	—	—	12-1043	—	—	—	—	—	—	—	—	—	—
RE01-12-10456	20821	3–4	QBT3	—	—	—	—	12-1043	—	—	—	—	—	—	—	—	—	—
RE01-12-10454	21186	0–1	ALLH	—	—	—	—	12-1043	—	—	—	—	—	—	—	—	—	—
RE01-12-10457	21186	3–4	QBT3	—	—	—	—	12-1043	—	—	—	—	—	—	—	—	—	—
RE01-12-10455	21551	0-1	ALLH	—	—	—	—	12-1043	—	—	—	—	—	—	—	—	—	—

Table 7.4-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Mercury	Hexavalent Chromium	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RE01-12-10458	21551	3–4	QBT3	—	—	—	—	12-1043	—	—	—	—	—	—	—	—	—	—
RE01-12-10463	21916	0–1	ALLH	—	—	—	—	12-1036	—	—	12-1036	—	—	—	—	—	—	—
RE01-12-10469	21916	4–5	QBT3	—	—	—	—	12-1036	—	—	12-1036	—	—	—	—	—	—	—
RE01-12-10464	22282	0–1	ALLH	—	—	—	—	12-1036	—	—	12-1036	—	—	—	—	—	—	—
RE01-12-10470	22282	4–5	QBT3	—	—	—	—	12-1036	—	—	12-1036	—	—	—	—	—	—	—
RE01-12-523	01-614759	0–1	ALLH	—	—	12-547	—	12-547	—	12-547	—	—	—	—	—	—	—	—
RE01-12-524	01-614759	2–3	QBT3	—	—	12-547	—	12-547	—	12-547	—	—	—	—	—	—	—	—
RE01-12-525	01-614760	0–1	ALLH	—	—	12-552	—	12-552	—	12-552	—	—	—	—	—	—	—	—
RE01-12-526	01-614760	2–3	QBT3	—	—	12-552	—	12-552	—	12-552	—	—	—	—	—	—	—	—
RE01-12-527	01-614761	0–1	ALLH	—	—	12-574	—	12-574	—	12-574	—	—	—	—	—	—	—	—
RE01-12-528	01-614761	2–3	ALLH	—	—	12-574	—	12-574	—	12-574	—	—	—	—	—	—	—	—
RE01-12-10465	22647	0–1	ALLH	—	—	—	—	12-1036	—	—	12-1036	—	—	—	—	—	—	—
RE01-12-10471	22647	4–5	QBT3	—	—	—	—	12-1036	—	—	12-1036	—	—	—	—	—	—	—
RE01-12-10466	23012	0–1	ALLH	—	—	—	—	12-1041	—	—	12-1041	—	—	—	—	—	—	—
RE01-12-10472	23012	1–2	QBT3	—	—	—	—	12-1041	—	—	12-1041	—	—	—	—	—	—	—
RE01-12-10467	23377	0–1	ALLH	—	—	—	—	12-1041	—	—	12-1041	—	—	—	—	—	—	—
RE01-12-10473	23377	1–2	QBT3	—	—	—	—	12-1041	—	—	12-1041	—	—	—	—	—	—	—
RE01-12-10468	23743	0–1	ALLH	—	—	—	—	12-1041	—	—	12-1041	—	—	—	—	—	—	—
RE01-12-10474	23743	1–2	QBT3	—	—	—	—	12-1041	—	—	12-1041	—	—	—	—	—	—	—
RELA-17-139312	00-603809	0–1	QBT3	—	—	—	—	—	—	—	—	2017-1778	—	—	—	—	—	—
RELA-17-139313	00-603809	1–2	QBT3	—	—	—	—	—	—	—	—	2017-1778	—	—	—	—	—	—
RELA-17-139293	01-159	0–1	QBT3	—	—	—	—	2017-1737	—	—	2017-1737	2017-1737	—	—	—	—	—	—
RELA-17-139294	01-159	1–2	QBT3	—	—	—	—	2017-1737	—	—	2017-1737	2017-1737	—	—	—	—	—	—
RELA-17-139316	01-160	0–0.5	ALLH	—	—	—	—	—	—	—	—	2017-1713	—	—	—	—	—	—
RELA-17-139319	01-160	1–2	QBT3	—	—	—	—	—	—	—	—	2017-1713	—	—	—	—	—	—
RELA-17-139295	01-161	0-1	ALLH	—	—	—	—	2017-1713	—	—	2017-1713	2017-1713	—	—	—	—	—	—
RELA-17-139296	01-161	1–2	QBT3	—	—	—	—	2017-1713	—	—	2017-1713	2017-1713	—	—	—	—	—	—
RELA-17-139310	01-163	0–1	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139311	01-163	1–2	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139317	01-164	0–1	ALLH	—	—	—	—	—	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139320	01-164	1–2	QBT3	—	—	—	—	—	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139318	01-165	0–1	QBT3	—	—	—	—	—	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139321	01-165	1–2	QBT3	—	—	—	—	—	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-131601	01-166	3–4	QBT3	—	—	—	—	2017-1304	—	—	2017-1304	—	—	—	—	—	—	—
RELA-17-131602	01-166	4–5	QBT3	—	—	—	—	2017-1304	—	—	2017-1304	—	—	—	—	—	—	—
RELA-17-139306	20821	3–4	QBT3	—	—	—	—	2017-1899	—	—	—	—	—	—	—	—	—	—

Table 7.4-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Mercury	Hexavalent Chromium	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RELA-17-139307	20821	4–5	QBT3	—	—	—	—	2017-1899	—	—	—	—	—	—	—	—	—	—
RELA-17-139308	21186	3.74–4.74	QBT3	—	—	—	—	2017-1899	—	—	—	—	—	—	—	—	—	—
RELA-17-139309	21186	4.74–5.74	QBT3	—	—	—	—	2017-1899	—	—	—	—	—	—	—	—	—	—
RELA-17-139314	01-614759	0–1	QBT3	—	—	—	—	—	—	—	—	2017-1778	—	—	—	—	—	—
RELA-17-139315	01-614759	1–2	QBT3	—	—	—	—	—	—	—	—	2017-1778	—	—	—	—	—	—
RELA-17-131563	01-61523	0–1	ALLH	—	—	—	—	2017-1234	—	—	—	—	—	—	—	—	—	—
RELA-17-131564	01-61523	3–4	QBT3	—	—	—	—	2017-1304	—	—	—	—	—	—	—	—	—	—
RELA-17-131577	01-61535	0–3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RELA-17-131578	01-61536	0–3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RELA-17-131579	01-61537	0–3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RELA-17-131580	01-61538	0–3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RELA-17-131581	01-61539	0–3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RELA-17-131582	01-61540	0–3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RELA-17-131583	01-61541	0–3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RELA-17-131584	01-61542	0–3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RELA-17-131585	01-61543	0–3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RELA-17-131586	01-61544	0–3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RELA-17-134177	01-61548	0–3	ALLH	2017-1497	2017-1497	2017-1497	2017-1497	2017-1497	2017-1497	2017-1497	—	—	2017-1497	—	—	2017-1497	2017-1497	2017-1497
RELA-17-134178	01-61549	0–3	QBT3	2017-1497	2017-1497	2017-1497	2017-1497	2017-1497	2017-1497	2017-1497	—	—	2017-1497	—	—	2017-1497	2017-1497	2017-1497
RELA-17-134179	01-61550	0–3	QBT3	2017-1497	2017-1497	2017-1497	2017-1497	2017-1497	2017-1497	2017-1497	—	—	2017-1497	—	—	2017-1497	2017-1497	2017-1497
RELA-17-134180	01-61551	0–3	ALLH	2017-1528	2017-1528	2017-1528	2017-1528	2017-1528	2017-1528	2017-1528	—	—	2017-1528	—	—	2017-1528	2017-1528	2017-1528
RELA-17-134181	01-61552	0–3	ALLH	2017-1528	2017-1528	2017-1528	2017-1528	2017-1528	2017-1528	2017-1528	—	—	2017-1528	—	—	2017-1528	2017-1528	2017-1528
RELA-17-134182	01-61553	0–3	ALLH	2017-1528	2017-1528	2017-1528	2017-1528	2017-1528	2017-1528	2017-1528	—	—	2017-1528	—	—	2017-1528	2017-1528	2017-1528
RELA-17-139204	01-61556	0–1	QBT3	—	—	—	—	2017-1737	—	—	2017-1737	2017-1737	—	—	—	—	—	—
RELA-17-139208	01-61556	1–2	QBT3	—	—	—	—	2017-1737	—	—	2017-1737	2017-1737	—	—	—	—	—	—
RELA-17-139205	01-61557	0–0.83	ALLH	—	—	—	—	2017-1737	—	—	2017-1737	2017-1737	—	—	—	—	—	—
RELA-17-139209	01-61557	1–2	QBT3	—	—	—	—	2017-1737	—	—	2017-1737	2017-1737	—	—	—	—	—	—
RELA-17-139206	01-61558	0–1	ALLH	—	—	—	—	2017-1713	—	—	2017-1713	2017-1713	—	—	—	—	—	—
RELA-17-139210	01-61558	1–2	QBT3	—	—	—	—	2017-1713	—	—	2017-1713	2017-1713	—	—	—	—	—	—
RELA-17-139207	01-61559	0–1	QBT3	—	—	—	—	2017-1737	—	—	2017-1737	2017-1737	—	—	—	—	—	—
RELA-17-139211	01-61559	1–2	QBT3	—	—	—	—	2017-1737	—	—	2017-1737	2017-1737	—	—	—	—	—	—
RELA-17-139214	01-61560	0–0.5	ALLH	—	—	—	—	2017-1737	—	—	2017-1737	—	—	—	—	—	—	—
RELA-17-139221	01-61560	1–2	QBT3	—	—	—	—	2017-1737	—	—	2017-1737	—	—	—	—	—	—	—
RELA-17-139215	01-61561	0–1	ALLH	—	—	—	—	2017-1713	—	—	2017-1713	—	—	—	—	—	—	—
RELA-17-139222	01-61561	1-2	QBT3	—	—	—	—	2017-1713	—	—	2017-1713	—	—	—	—	—	—	—
RELA-17-139216	01-61562	0–0.66	ALLH	—	—	—	—	2017-1713	—	—	2017-1713	—	—	—	—	—	—	—

Table 7.4-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Mercury	Hexavalent Chromium	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RELA-17-139223	01-61562	1–1.66	QBT3	—	—	—	—	2017-1713	—	—	2017-1713	—	—	—	—	—	—	—
RELA-17-139217	01-61563	3–4	QBT3	—	—	—	—	2017-1801	—	—	2017-1801	—	—	—	—	—	—	—
RELA-17-139224	01-61563	4–5	QBT3	—	—	—	—	2017-1801	—	—	2017-1801	—	—	—	—	—	—	—
RELA-17-139218	01-61564	3–4	QBT3	—	—	—	—	2017-1801	—	—	2017-1801	—	—	—	—	—	—	—
RELA-17-139225	01-61564	4–5	QBT3	—	—	—	—	2017-1801	—	—	2017-1801	—	—	—	—	—	—	—
RELA-17-139219	01-61565	3–4	QBT3	—	—	—	—	2017-1801	—	—	2017-1801	—	—	—	—	—	—	—
RELA-17-139226	01-61565	4–5	QBT3	—	—	—	—	2017-1801	—	—	2017-1801	—	—	—	—	—	—	—
RELA-17-139220	01-61566	3–4	QBT3	—	—	—	—	2017-1816	—	—	2017-1816	—	—	—	—	—	—	—
RELA-17-139227	01-61566	4–5	QBT3	—	—	—	—	2017-1816	—	—	2017-1816	—	—	—	—	—	—	—
RELA-17-139230	01-61567	0–1	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139246	01-61567	1–2	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139231	01-61568	0–1	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139247	01-61568	1–2	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139232	01-61569	0–1	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139248	01-61569	1–2	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139233	01-61570	0–1	QBT3	—	—	—	—	2017-1769	—	—	—	2017-1769	—	—	—	—	—	—
RELA-17-139249	01-61570	1–2	QBT3	—	—	—	—	2017-1769	—	—	—	2017-1769	—	—	—	—	—	—
RELA-17-139234	01-61571	0–1	QBT3	—	—	—	—	2017-1769	—	—	—	2017-1769	—	—	—	—	—	—
RELA-17-139250	01-61571	1–2	QBT3	—	—	—	—	2017-1769	—	—	—	2017-1769	—	—	—	—	—	—
RELA-17-139235	01-61572	0–1	QBT3	—	—	—	—	2017-1769	—	—	—	2017-1769	—	—	—	—	—	—
RELA-17-139251	01-61572	1–2	QBT3	—	—	—	—	2017-1769	—	—	—	2017-1769	—	—	—	—	—	—
RELA-17-139236	01-61573	0–1	QBT3	—	—	—	—	2017-1769	—	—	—	2017-1769	—	—	—	—	—	—
RELA-17-139252	01-61573	1–2	QBT3	—	—	—	—	2017-1769	—	—	—	2017-1769	—	—	—	—	—	—
RELA-17-139237	01-61574	0–1	ALLH	—	—	—	—	2017-1769	—	—	—	2017-1769	—	—	—	—	—	—
RELA-17-139253	01-61574	1–2	QBT3	—	—	—	—	2017-1769	—	—	—	2017-1769	—	—	—	—	—	—
RELA-17-139238	01-61575	0–1	QBT3	—	—	—	—	2017-1778	—	—	—	2017-1778	—	—	—	—	—	—
RELA-17-139254	01-61575	1–2	QBT3	—	—	—	—	2017-1778	—	—	—	2017-1778	—	—	—	—	—	—
RELA-17-139239	01-61576	0–1	ALLH	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139255	01-61576	1-2	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139240	01-61577	0–1	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139256	01-61577	1–2	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139241	01-61578	0–1	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139257	01-61578	1–2	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139242	01-61579	0–1	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139258	01-61579	1–2	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139243	01-61580	0–1	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—

Table 7.4-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Mercury	Hexavalent Chromium	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RELA-17-139259	01-61580	1–2	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139244	01-61581	0–1	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139260	01-61581	1–2	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139245	01-61582	0–1	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139261	01-61582	1–2	QBT3	—	—	—	—	2017-1751	—	—	—	2017-1751	—	—	—	—	—	—
RELA-17-139265	01-61583	3–4	QBT3	—	—	—	—	2017-1816	—	—	—	—	—	—	—	—	—	—
RELA-17-139278	01-61583	4–5	QBT3	—	—	—	—	2017-1816	—	—	—	—	—	—	—	—	—	—
RELA-17-139266	01-61584	3–4	QBT3	—	—	—	—	2017-1816	—	—	—	—	—	—	—	—	—	—
RELA-17-139279	01-61584	4–5	QBT3	—	—	—	—	2017-1816	—	—	—	—	—	—	—	—	—	—
RELA-17-139267	01-61585	4–5	QBT3	—	—	—	—	2017-1899	—	—	—	—	—	—	—	—	—	—
RELA-17-139280	01-61585	5–6	QBT3	—	—	—	—	2017-1899	—	—	—	—	—	—	—	—	—	—
RELA-17-139268	01-61586	3–4	QBT3	—	—	—	—	2017-1899	—	—	—	—	—	—	—	—	—	—
RELA-17-139281	01-61586	4–5	QBT3	—	—	—	—	2017-1899	—	—	—	—	—	—	—	—	—	—
RELA-17-139269	01-61587	3–4	QBT3	—	—	—	—	2017-1899	—	—	—	—	—	—	—	—	—	—
RELA-17-139282	01-61587	4–5	QBT3	—	—	—	—	2017-1899	—	—	—	—	—	—	—	—	—	—
RELA-17-139270	01-61588	3-4	QBT3	—	—	—	—	2017-1899	—	—	—	—	—	—	—	—	—	—
RELA-17-139283	01-61588	4–5	QBT3	—	—	—	—	2017-1899	—	—	—	—	—	—	—	—	—	—
RELA-17-139271	01-61589	0–1	QBT3	—	—	—	—	2017-1769	—	—	—	—	—	—	—	—	—	—
RELA-17-139284	01-61589	1-2	QBT3	—	—	—	—	2017-1769	—	—	—	—	—	—	—	—	—	—
RELA-17-139272	01-61590	0-1	ALLH	—	—	—	—	2017-1769	—	—	—	—	—	—	—	—	—	—
RELA-17-139285	01-61590	1-2	QBT3	—	—	—	—	2017-1769	—	—	—	—	—	—	—	—	—	—
RELA-17-139273	01-61591	0–1	QBT3	—	—	—	—	2017-1769	—	—	—	—	—	—	—	—	—	—
RELA-17-139286	01-61591	1–2	QBT3	—	—	—	—	2017-1769	—	—	—	—	—	—	—	—	—	—
RELA-17-139274	01-61592	0–1	QBT3	—	—	—	—	2017-1778	—	—	—	—	—	—	—	—	—	—
RELA-17-139287	01-61592	1–2	QBT3	—	—	—	—	2017-1778	—	—	—	—	—	—	—	—	—	—
RELA-17-139275	01-61593	0–1	QBT3	—	—	—	—	2017-1751	—	—	—	—	—	—	—	—	—	—
RELA-17-139288	01-61593	1–2	QBT3	—	—	—	—	2017-1751	—	—	—	—	—	—	—	—	—	—
RELA-17-139276	01-61594	0–1	QBT3	—	—	—	—	2017-1751	—	—	—	—	—	—	—	—	—	—
RELA-17-139289	01-61594	1–2	QBT3	—	—	—	—	2017-1751	—	—	—	—	—	—	—	—	—	—
RELA-17-139277	01-61595	0–1	QBT3	—	—	—	—	2017-1751	—	—	—	—	—	—	—	—	—	—
RELA-17-139290	01-61595	1-2	QBT3	—	—	—	—	2017-1751	—	—	—	—	—	—	—	—	—	—
RELA-17-139297	01-61596	3-4	QBT3	—	—	—	—	2017-1816	—	—	2017-1816	2017-1816	—	—	—	—	—	—
RELA-17-139298	01-61596	4-5	QBT3	—	—	—	—	2017-1816	—	—	2017-1816	2017-1816	—	—	—	—	—	—
RELA-17-139330	01-61597	3-4	QBT3	—	—	—	—	2017-1816	—	—	2017-1816	2017-1816	—	—	—	—	—	—
RELA-17-139331	01-61597	4-5	QBT3	—	—	—	—	2017-1816	—	—	2017-1816	2017-1816	—	—	—	—	—	—
RELA-17-139300	01-61598	3–4	QBT3	—	—	—	—	2017-1816	—	—	2017-1816	2017-1816	—	—	—	—	—	—

Table 7.4-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Mercury	Hexavalent Chromium	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RELA-17-139301	01-61598	4–5	QBT3	—	—	—	—	2017-1816	—	—	2017-1816	2017-1816	—	—	—	—	—	—
RELA-17-139302	01-61599	3–4	QBT3	—	—	—	—	2017-1816	—	—	2017-1816	2017-1816	—	—	—	—	—	—
RELA-17-139303	01-61599	4–5	QBT3	—	—	—	—	2017-1816	—	—	2017-1816	2017-1816	—	—	—	—	—	—
RELA-17-131595	23012	3–4	QBT3	—	—	—	—	2017-1304	—	—	2017-1304	—	—	—	—	—	—	—
RELA-17-131598	23012	4-5	QBT3	—	—	—	—	2017-1304	—	—	2017-1304	—	—	—	—	—	—	—
RELA-17-131596	23377	3–4	QBT3	—	—	—	—	2017-1304	—	—	2017-1304	—	—	—	—	—	—	—
RELA-17-131599	23377	4–5	QBT3	—	—	—	—	2017-1304	—	—	2017-1304	—	—	—	—	—	—	—
RELA-17-131597	23743	3–4	QBT3	—	—	—	—	2017-1304	—	—	2017-1304	—	—	—	—	—	—	—
RELA-17-131600	23743	4–5	QBT3	—	—	—	—	2017-1304	—	—	2017-1304	—	—	—	—	—	—	—

[a] Analytical request number.

[b] — = Analysis not requested.

Table 7.4-2
Inorganic Chemicals Detected or Detected above BVs at SWMU 01-001(d3)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Chromium hexavalent ion	Cobalt	Copper	Cyanide (Total)	Iron
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**na[b]**	**8.64**	**14.7**	**0.5**	**21,500**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**na**	**3.14**	**4.66**	**0.5**	**14,500**
Qbt 1v Background Value[a]				**8170**	**0.5**	**1.81**	**26.5**	**1.7**	**0.4**	**3700**	**2.24**	**na**	**1.78**	**3.26**	**0.5**	**9900**
Qbt 1g, Qct, Qbo Background Value[a]				**3560**	**0.5**	**0.56**	**25.7**	**1.44**	**0.4**	**1900**	**2.6**	**na**	**8.89**	**3.96**	**0.5**	**3700**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**na**	**4.73**	**11.2**	**0.82**	**13,800**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**1110**	**na**	**505[d]**	**72.1**	**388**	**51,900**	**62.8**	**908,000**
Construction Worker SSL[c]				**41,400**	**142**	**41.2**	**4,390**	**148**	**72.1**	**na**	**134[d]**	**40.2**	**37**	**14,200**	**12**	**24,800**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**70.5**	**na**	**96.6[d]**	**3.05**	**23**	**3130**	**11.1**	**54,800**
RE00-08-15790	00-603800	0–1	SED	—[e]	—	—	144	—	—	—	—	NA[f]	—	—	—	—
RE00-08-15791	00-603800	2.75–3.75	QBT3	—	—	—	—	—	—	—	9.9 (J)	NA	—	7.8	—	—
RE01-12-125	00-603800	6–7	QBT3	—	0.882 (U)	—	—	—	—	—	—	NA	—	—	NA	—
RE01-12-126	00-603801	5–6	QBT3	—	0.949 (U)	—	—	—	—	—	29.6	NA	—	14.9	NA	—
RE01-12-10445	00-603801	7-8	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-08-15794	00-603802	0–1	SED	—	—	—	167	—	—	—	—	NA	5.2	—	—	—
RE00-08-15795	00-603802	3.75–4.75	QBT3	—	—	3.3	—	—	—	—	9.4 (J)	NA	—	6.6	—	21,600
RE01-12-124	00-603802	6–7	QBT3	—	0.743 (U)	—	—	—	—	—	11.6	NA	—	26.4	NA	—
RE01-13-38291	00-603802	7–8	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 7.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Chromium hexavalent ion	Cobalt	Copper	Cyanide (Total)	Iron
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**na[b]**	**8.64**	**14.7**	**0.5**	**21,500**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**na**	**3.14**	**4.66**	**0.5**	**14,500**
Qbt 1v Background Value[a]				**8170**	**0.5**	**1.81**	**26.5**	**1.7**	**0.4**	**3700**	**2.24**	**na**	**1.78**	**3.26**	**0.5**	**9900**
Qbt 1g, Qct, Qbo Background Value[a]				**3560**	**0.5**	**0.56**	**25.7**	**1.44**	**0.4**	**1900**	**2.6**	**na**	**8.89**	**3.96**	**0.5**	**3700**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**na**	**4.73**	**11.2**	**0.82**	**13,800**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**1110**	**na**	**505[d]**	**72.1**	**388**	**51,900**	**62.8**	**908,000**
Construction Worker SSL[c]				**41,400**	**142**	**41.2**	**4,390**	**148**	**72.1**	**na**	**134[d]**	**40.2**	**37**	**14,200**	**12**	**24,800**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**70.5**	**na**	**96.6[d]**	**3.05**	**23**	**3130**	**11.1**	**54,800**
RE01-13-38293	00-603802	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38292	00-603802	11–12	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-08-15796	00-603803	0–1	SED	—	—	—	—	—	0.41	—	—	NA	—	18.2	—	—
RE00-08-15797	00-603803	1–2	QBT3	—	—	—	—	—	—	—	12.7	NA	—	5.7	—	—
RE01-12-127	00-603803	4–5	QBT3	—	0.923 (U)	—	—	—	—	—	—	NA	—	—	NA	—
RE01-12-10446	00-603804	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-08-15800	00-603805	0–1	QBT3	—	—	—	—	—	—	—	22.2	NA	—	30	—	—
RE00-08-15801	00-603805	1–2	QBT3	—	—	—	—	—	—	—	43.1	NA	—	11.6 (J)	—	—
RE00-08-15802	00-603806	0–1.25	SED	—	—	—	—	—	—	—	—	NA	—	—	—	—
RE00-08-15803	00-603806	1.25–2.25	QBT3	—	—	—	—	—	—	—	—	NA	—	7	—	—
RE01-12-129	00-603806	4–5	QBT3	—	0.952 (U)	—	—	—	—	—	—	NA	—	—	NA	—
RE00-08-15804	00-603807	0–1	SOIL	—	—	—	—	—	0.7 (J)	—	—	NA	—	42.1	—	—
RE00-08-15805	00-603807	1-2	QBT3	—	—	—	—	—	—	—	—	NA	—	5	—	—
RE01-12-128	00-603807	4–5	QBT3	—	0.974 (U)	—	—	—	—	—	—	NA	—	—	NA	—
RE00-08-15806	00-603808	0–1.25	QBT3	—	—	—	—	—	—	—	—	NA	—	—	—	—
RE00-08-15807	00-603808	1.25–2.25	QBT3	—	—	—	—	—	—	—	—	NA	—	—	—	—
RE00-08-15809	00-603809	1–2	QBT3	—	—	—	—	—	—	—	—	NA	—	—	—	—
RE00-08-15810	00-603810	0–1	SOIL	—	—	—	—	—	—	—	—	NA	—	—	—	—
RE00-08-15811	00-603810	1.75–2.75	QBT3	—	—	—	—	1.9	—	—	9.9	NA	—	5.7	—	—
RE00-08-15812	00-603811	0–1	SED	—	—	—	—	—	—	—	—	NA	—	—	—	—
RE00-08-15813	00-603811	1.25–2.25	QBT1G	—	—	0.91 (J-)	—	—	—	—	4.4 (J-)	NA	—	—	—	6670
RE01-12-130	00-603811	4–5	QBT1V	—	—	—	—	—	—	—	2.38	NA	—	—	NA	—
RE00-08-15814	00-603812	0–1	SED	—	—	—	—	—	—	—	—	NA	—	—	—	—
RE00-08-15815	00-603812	1–2	QBT1G	—	—	0.59 (J)	—	—	—	—	8.9	NA	—	—	—	5590
RE01-12-131	00-603812	4–5	QBT1V	—	—	—	—	—	—	—	—	NA	—	—	NA	—
RE00-08-15816	00-603813	0–1	QBT1G	—	—	1.2 (J-)	—	1.6 (J-)	—	—	9.3 (J-)	NA	—	—	—	7340
RE00-08-15817	00-603813	1–2	QBT1G	—	—	0.65 (J-)	—	—	—	—	11 (J-)	NA	—	—	—	6320
RE00-08-15818	00-603814	0–1	SED	—	—	—	—	—	—	—	—	NA	—	—	—	—
RE00-08-15819	00-603814	1–2	QBT1G	—	—	0.87 (J-)	—	—	—	—	15.8 (J-)	NA	—	—	0.51 (U)	7120
RE01-12-132	00-603814	4–5	QBT1G	—	0.891 (U)	—	—	—	0.446 (U)	3670	3.02	NA	—	—	NA	5880

Table 7.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Chromium hexavalent ion	Cobalt	Copper	Cyanide (Total)	Iron
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**na[b]**	**8.64**	**14.7**	**0.5**	**21,500**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**na**	**3.14**	**4.66**	**0.5**	**14,500**
Qbt 1v Background Value[a]				**8170**	**0.5**	**1.81**	**26.5**	**1.7**	**0.4**	**3700**	**2.24**	**na**	**1.78**	**3.26**	**0.5**	**9900**
Qbt 1g, Qct, Qbo Background Value[a]				**3560**	**0.5**	**0.56**	**25.7**	**1.44**	**0.4**	**1900**	**2.6**	**na**	**8.89**	**3.96**	**0.5**	**3700**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**na**	**4.73**	**11.2**	**0.82**	**13,800**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**1110**	**na**	**505[d]**	**72.1**	**388**	**51,900**	**62.8**	**908,000**
Construction Worker SSL[c]				**41,400**	**142**	**41.2**	**4,390**	**148**	**72.1**	**na**	**134[d]**	**40.2**	**37**	**14,200**	**12**	**24,800**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**70.5**	**na**	**96.6[d]**	**3.05**	**23**	**3130**	**11.1**	**54,800**
RE00-08-15820	00-603815	0–1	SED	—	—	—	—	—	—	—	—	NA	—	—	—	—
RE00-08-15821	00-603815	1.25–2.25	QBT1G	—	—	0.71 (J-)	—	—	—	—	6.4 (J-)	NA	—	—	—	6250
RE01-12-133	00-603815	4–5	QBT1G	12,000	1.07 (U)	0.684 (J)	48.1	—	0.533 (U)	10,200	4.93	NA	—	5.1	NA	6740
RE00-08-15822	00-603816	0–1	SED	—	—	—	—	—	—	—	—	NA	—	—	—	—
RE00-08-15823	00-603816	1–2	QBT1G	7210	—	1 (J-)	30.2 (J-)	1.6 (J-)	—	—	10.9 (J-)	NA	—	—	—	7720
RE01-12-134	00-603816	4–5	QBT1G	—	0.96 (U)	—	—	—	0.48 (U)	—	—	NA	—	—	NA	6430
RE00-08-15824	00-603817	0–1	SED	—	—	—	—	—	—	—	—	NA	—	—	—	—
RE00-08-15825	00-603817	1.25–2.25	QBT1G	—	—	0.77 (J-)	—	—	—	—	—	NA	—	—	—	5020
RE01-12-135	00-603817	4–5	QCT	7400	1.04 (U)	0.603 (J)	28	2.24	0.52 (U)	—	3.06	NA	—	4.5	NA	5930
RE00-08-15826	00-603818	0–1	SED	—	—	—	—	—	—	—	—	NA	—	—	—	—
RE00-08-15827	00-603818	1–1.75	QBT1G	—	—	0.64 (J-)	—	—	—	—	7.1 (J-)	NA	—	—	—	5210
RE01-12-136	00-603818	4–5	QCT	4200	1.03 (U)	—	—	—	0.516 (U)	—	3.16	NA	—	—	NA	6390
RE00-08-15828	00-603819	0–1	SED	—	—	—	—	—	—	—	—	NA	—	—	—	—
RE00-08-15829	00-603819	1–2	QBT1G	—	—	0.61 (J-)	26.1 (J-)	—	—	—	27.1 (J-)	NA	—	—	—	—
RE01-12-137	00-603819	4–5	QCT	6440	1.02 (U)	—	26.8	—	0.51 (U)	—	5.66	NA	—	—	NA	5420
RE00-08-15832	00-603820	4–5	QBT3	—	—	—	—	—	—	—	—	NA	—	—	—	—
RE01-12-10448	00-603820	6–7	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-08-15833	00-603821	0–1	SED	—	—	—	—	—	—	—	—	NA	—	—	—	—
RE00-08-15834	00-603821	1.5–2.25	SED	—	—	—	—	—	—	—	—	NA	—	13.3 (J-)	—	—
RE00-08-15835	00-603821	4–5	QBT3	—	—	—	—	—	—	—	16.3 (J-)	NA	—	4.8 (J-)	—	—
RE01-12-123	00-603821	6–7	QBT3	—	1.31 (U)	—	—	—	—	—	—	NA	—	—	NA	—
RE01-13-38204	01-159	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38215	01-159	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38226	01-159	6–7	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38237	01-159	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38259	01-159	11–12	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38205	01-160	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38216	01-160	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38227	01-160	6–7	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38238	01-160	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 7.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Chromium hexavalent ion	Cobalt	Copper	Cyanide (Total)	Iron
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**na[b]**	**8.64**	**14.7**	**0.5**	**21,500**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**na**	**3.14**	**4.66**	**0.5**	**14,500**
Qbt 1v Background Value[a]				**8170**	**0.5**	**1.81**	**26.5**	**1.7**	**0.4**	**3700**	**2.24**	**na**	**1.78**	**3.26**	**0.5**	**9900**
Qbt 1g, Qct, Qbo Background Value[a]				**3560**	**0.5**	**0.56**	**25.7**	**1.44**	**0.4**	**1900**	**2.6**	**na**	**8.89**	**3.96**	**0.5**	**3700**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**na**	**4.73**	**11.2**	**0.82**	**13,800**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**1110**	**na**	**505[d]**	**72.1**	**388**	**51,900**	**62.8**	**908,000**
Construction Worker SSL[c]				**41,400**	**142**	**41.2**	**4,390**	**148**	**72.1**	**na**	**134[d]**	**40.2**	**37**	**14,200**	**12**	**24,800**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**70.5**	**na**	**96.6[d]**	**3.05**	**23**	**3130**	**11.1**	**54,800**
RE01-13-38249	01-160	11–12	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38206	01-161	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38217	01-161	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38228	01-161	6–7	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38239	01-161	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38250	01-161	11–12	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38207	01-162	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38218	01-162	12–13	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38229	01-162	15–16	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38240	01-162	17–18	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38251	01-162	19–20	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38211	01-166	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38222	01-166	7–8	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38233	01-166	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38244	01-166	11–12	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38212	01-167	7–8	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38223	01-167	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38234	01-167	11–12	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38554	01-236	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38555	01-236	3–4	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38556	01-236	6–7	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38557	01-236	8-9	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38558	01-236	9-10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38559	01-236	11-12	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38203	01-238	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38214	01-238	3–4	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38225	01-238	6–7	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38236	01-238	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38247	01-238	12–13	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38258	01-238	15–16	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 7.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Chromium hexavalent ion	Cobalt	Copper	Cyanide (Total)	Iron
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**na[b]**	**8.64**	**14.7**	**0.5**	**21,500**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**na**	**3.14**	**4.66**	**0.5**	**14,500**
Qbt 1v Background Value[a]				**8170**	**0.5**	**1.81**	**26.5**	**1.7**	**0.4**	**3700**	**2.24**	**na**	**1.78**	**3.26**	**0.5**	**9900**
Qbt 1g, Qct, Qbo Background Value[a]				**3560**	**0.5**	**0.56**	**25.7**	**1.44**	**0.4**	**1900**	**2.6**	**na**	**8.89**	**3.96**	**0.5**	**3700**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**na**	**4.73**	**11.2**	**0.82**	**13,800**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**1110**	**na**	**505[d]**	**72.1**	**388**	**51,900**	**62.8**	**908,000**
Construction Worker SSL[c]				**41,400**	**142**	**41.2**	**4,390**	**148**	**72.1**	**na**	**134[d]**	**40.2**	**37**	**14,200**	**12**	**24,800**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**70.5**	**na**	**96.6[d]**	**3.05**	**23**	**3130**	**11.1**	**54,800**
RE01-13-38269	01-238	17–18	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38280	01-238	19–20	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-10463	01-60	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-10469	01-60	4–5	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-10464	01-61	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-10470	01-61	4–5	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-523	01-614759	0–1	SOIL	—	—	—	—	—	0.529 (U)	—	—	NA	—	—	NA	—
RE01-12-524	01-614759	2–3	QBT3	—	0.972 (U)	—	—	—	—	—	—	NA	—	—	NA	—
RE01-12-525	01-614760	0–1	SOIL	—	1.01 (U)	—	—	—	0.507 (U)	—	—	NA	—	—	NA	—
RE01-12-526	01-614760	2–3	QBT3	—	1.01 (U)	—	—	—	—	—	—	NA	—	—	NA	—
RE01-12-527	01-614761	0–1	SOIL	—	1.12 (U)	—	—	—	0.56 (U)	—	—	NA	—	—	NA	—
RE01-12-528	01-614761	2–3	SOIL	—	0.938 (U)	—	—	—	0.469 (U)	—	—	NA	—	—	NA	—
RE01-12-10465	01-62	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-10471	01-62	4–5	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139312	00-603809	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-139313	00-603809	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-139293	01-159	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.177 (J-)	NA	NA	NA	NA
RELA-17-139294	01-159	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.202 (J)	NA	NA	NA	NA
RELA-17-139316	01-160	0–0.5	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-139319	01-160	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.559	NA	NA	NA	NA
RELA-17-139295	01-161	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	5.62	NA	NA	NA	NA
RELA-17-139296	01-161	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-139310	01-163	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-139311	01-163	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-139317	01-164	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	0.907 (J+)	NA	NA	NA	NA
RELA-17-139320	01-164	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-139318	01-165	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-139321	01-165	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.348	NA	NA	NA	NA
RELA-17-131601	01-166	3–4	QBT3	NA	NA	—	342	NA	4.83 (J)	NA	—	NA	NA	NA	NA	NA
RELA-17-131602	01-166	4–5	QBT3	NA	NA	—	251	NA	—	NA	—	NA	NA	NA	NA	NA

Table 7.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Chromium hexavalent ion	Cobalt	Copper	Cyanide (Total)	Iron
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**na[b]**	**8.64**	**14.7**	**0.5**	**21,500**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**na**	**3.14**	**4.66**	**0.5**	**14,500**
Qbt 1v Background Value[a]				**8170**	**0.5**	**1.81**	**26.5**	**1.7**	**0.4**	**3700**	**2.24**	**na**	**1.78**	**3.26**	**0.5**	**9900**
Qbt 1g, Qct, Qbo Background Value[a]				**3560**	**0.5**	**0.56**	**25.7**	**1.44**	**0.4**	**1900**	**2.6**	**na**	**8.89**	**3.96**	**0.5**	**3700**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**na**	**4.73**	**11.2**	**0.82**	**13,800**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**1110**	**na**	**505[d]**	**72.1**	**388**	**51,900**	**62.8**	**908,000**
Construction Worker SSL[c]				**41,400**	**142**	**41.2**	**4,390**	**148**	**72.1**	**na**	**134[d]**	**40.2**	**37**	**14,200**	**12**	**24,800**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**70.5**	**na**	**96.6[d]**	**3.05**	**23**	**3130**	**11.1**	**54,800**
RELA-17-139314	01-614759	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.718	NA	NA	NA	NA
RELA-17-139315	01-614759	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-131564	01-61523	3–4	QBT3	NA	NA	—	323	NA	—	NA	31.3 (J)	NA	NA	NA	NA	NA
RELA-17-131577	01-61535	0–3	QBT3	NA	NA	—	287	NA	—	NA	—	NA	NA	NA	NA	NA
RELA-17-131578	01-61536	0–3	QBT3	NA	NA	—	270	NA	—	NA	—	NA	NA	NA	NA	NA
RELA-17-131580	01-61538	0–3	QBT3	NA	NA	—	348	NA	—	NA	61.1 (J)	NA	NA	NA	NA	NA
RELA-17-131581	01-61539	0–3	QBT3	NA	NA	—	415	NA	—	NA	124	NA	NA	NA	NA	NA
RELA-17-131582	01-61540	0–3	QBT3	NA	NA	—	479	NA	—	NA	58.6 (J)	NA	NA	NA	NA	NA
RELA-17-134177	01-61548	0–3	SOIL	—	0.986 (U)	—	156	—	—	—	—	NA	—	—	—	—
RELA-17-134178	01-61549	0–3	QBT3	—	0.995 (U)	—	270	—	—	—	—	NA	—	—	—	—
RELA-17-134179	01-61550	0–3	QBT3	—	0.992 (U)	—	405	—	4.02 (J)	—	89.7 (J)	NA	—	20.1	—	—
RELA-17-134180	01-61551	0–3	SOIL	—	0.962 (U)	—	176	—	—	—	—	NA	—	—	—	—
RELA-17-134181	01-61552	0–3	SOIL	—	0.946 (U)	—	513	—	—	—	—	NA	—	—	—	—
RELA-17-134182	01-61553	0–3	SOIL	—	0.982 (U)	—	369	—	—	—	—	NA	—	—	—	—
RELA-17-139204	01-61556	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.22 (J)	NA	NA	NA	NA
RELA-17-139208	01-61556	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	1.01	NA	NA	NA	NA
RELA-17-139205	01-61557	0–0.83	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	5.59	NA	NA	NA	NA
RELA-17-139209	01-61557	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.529	NA	NA	NA	NA
RELA-17-139206	01-61558	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	0.376 (J)	NA	NA	NA	NA
RELA-17-139210	01-61558	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.226 (J)	NA	NA	NA	NA
RELA-17-139207	01-61559	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.19 (J)	NA	NA	NA	NA
RELA-17-139211	01-61559	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-139214	01-61560	0–0.5	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139221	01-61560	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139215	01-61561	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139222	01-61561	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139216	01-61562	0–0.66	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139223	01-61562	1–1.66	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139217	01-61563	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139224	01-61563	4–5	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 7.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Chromium hexavalent ion	Cobalt	Copper	Cyanide (Total)	Iron
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**na[b]**	**8.64**	**14.7**	**0.5**	**21,500**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**na**	**3.14**	**4.66**	**0.5**	**14,500**
Qbt 1v Background Value[a]				**8170**	**0.5**	**1.81**	**26.5**	**1.7**	**0.4**	**3700**	**2.24**	**na**	**1.78**	**3.26**	**0.5**	**9900**
Qbt 1g, Qct, Qbo Background Value[a]				**3560**	**0.5**	**0.56**	**25.7**	**1.44**	**0.4**	**1900**	**2.6**	**na**	**8.89**	**3.96**	**0.5**	**3700**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**na**	**4.73**	**11.2**	**0.82**	**13,800**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**1110**	**na**	**505[d]**	**72.1**	**388**	**51,900**	**62.8**	**908,000**
Construction Worker SSL[c]				**41,400**	**142**	**41.2**	**4,390**	**148**	**72.1**	**na**	**134[d]**	**40.2**	**37**	**14,200**	**12**	**24,800**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**70.5**	**na**	**96.6[d]**	**3.05**	**23**	**3130**	**11.1**	**54,800**
RELA-17-139218	01-61564	3-4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139225	01-61564	4–5	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139219	01-61565	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139226	01-61565	4–5	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139220	01-61566	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139227	01-61566	4–5	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139230	01-61567	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-139246	01-61567	1-2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	1.92	NA	NA	NA	NA
RELA-17-139231	01-61568	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-139247	01-61568	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-139232	01-61569	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	2.71	NA	NA	NA	NA
RELA-17-139248	01-61569	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.353 (J)	NA	NA	NA	NA
RELA-17-139233	01-61570	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	6.45 (J-)	NA	NA	NA	NA
RELA-17-139249	01-61570	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	1.37 (J-)	NA	NA	NA	NA
RELA-17-139234	01-61571	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.405 (J)	NA	NA	NA	NA
RELA-17-139250	01-61571	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	1.13	NA	NA	NA	NA
RELA-17-139235	01-61572	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	1.12	NA	NA	NA	NA
RELA-17-139251	01-61572	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	1.35	NA	NA	NA	NA
RELA-17-139236	01-61573	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.242 (J)	NA	NA	NA	NA
RELA-17-139252	01-61573	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.488	NA	NA	NA	NA
RELA-17-139237	01-61574	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	1.44	NA	NA	NA	NA
RELA-17-139253	01-61574	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	1.94	NA	NA	NA	NA
RELA-17-139238	01-61575	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-139254	01-61575	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-139239	01-61576	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-139255	01-61576	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.658	NA	NA	NA	NA
RELA-17-139240	01-61577	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	2.16	NA	NA	NA	NA
RELA-17-139256	01-61577	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-139241	01-61578	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.758	NA	NA	NA	NA
RELA-17-139257	01-61578	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.742	NA	NA	NA	NA

Table 7.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Chromium hexavalent ion	Cobalt	Copper	Cyanide (Total)	Iron
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**na[b]**	**8.64**	**14.7**	**0.5**	**21,500**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**na**	**3.14**	**4.66**	**0.5**	**14,500**
Qbt 1v Background Value[a]				**8170**	**0.5**	**1.81**	**26.5**	**1.7**	**0.4**	**3700**	**2.24**	**na**	**1.78**	**3.26**	**0.5**	**9900**
Qbt 1g, Qct, Qbo Background Value[a]				**3560**	**0.5**	**0.56**	**25.7**	**1.44**	**0.4**	**1900**	**2.6**	**na**	**8.89**	**3.96**	**0.5**	**3700**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**na**	**4.73**	**11.2**	**0.82**	**13,800**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**1110**	**na**	**505[d]**	**72.1**	**388**	**51,900**	**62.8**	**908,000**
Construction Worker SSL[c]				**41,400**	**142**	**41.2**	**4,390**	**148**	**72.1**	**na**	**134[d]**	**40.2**	**37**	**14,200**	**12**	**24,800**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**70.5**	**na**	**96.6[d]**	**3.05**	**23**	**3130**	**11.1**	**54,800**
RELA-17-139242	01-61579	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	2.97	NA	NA	NA	NA
RELA-17-139258	01-61579	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.714	NA	NA	NA	NA
RELA-17-139243	01-61580	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.297 (J)	NA	NA	NA	NA
RELA-17-139259	01-61580	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.594	NA	NA	NA	NA
RELA-17-139244	01-61581	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	1.05	NA	NA	NA	NA
RELA-17-139260	01-61581	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	1.38	NA	NA	NA	NA
RELA-17-139245	01-61582	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-139261	01-61582	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA
RELA-17-139297	01-61596	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.331	NA	NA	NA	NA
RELA-17-139298	01-61596	4–5	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.43	NA	NA	NA	NA
RELA-17-139330	01-61597	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.795	NA	NA	NA	NA
RELA-17-139331	01-61597	4–5	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	1.04	NA	NA	NA	NA
RELA-17-139300	01-61598	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	1.11	NA	NA	NA	NA
RELA-17-139301	01-61598	4–5	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.487	NA	NA	NA	NA
RELA-17-139302	01-61599	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.491	NA	NA	NA	NA
RELA-17-139303	01-61599	4–5	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	0.45	NA	NA	NA	NA
RELA-17-131595	01-63	3–4	QBT3	NA	NA	—	249	NA	—	NA	—	NA	NA	NA	NA	NA
RELA-17-131598	01-63	4–5	QBT3	NA	NA	—	343	NA	—	NA	—	NA	NA	NA	NA	NA
RELA-17-131596	01-64	3–4	QBT3	NA	NA	—	423	NA	3.66 (J)	NA	88.8 (J)	NA	NA	NA	NA	NA
RELA-17-131599	01-64	4–5	QBT3	NA	NA	—	276	NA	—	NA	—	NA	NA	NA	NA	NA
RELA-17-131597	01-65	3–4	QBT3	NA	NA	—	157	NA	4.99 (J)	NA	—	NA	NA	NA	NA	NA
RELA-17-131600	01-65	4–5	QBT3	NA	NA	—	218	NA	—	NA	—	NA	NA	NA	NA	NA

Table 7.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Lead	Magnesium	Manganese	Mercury	Nickel	Nitrate	Perchlorate	Potassium	Selenium	Silver	Sodium	Vanadium	Zinc
Soil Background Value[a]				**22.3**	**4610**	**671**	**0.1**	**15.4**	**na**	**na**	**3460**	**1.52**	**1**	**915**	**0.73**	**48.8**
Qbt 2,3,4 Background Value[a]				**11.2**	**1690**	**482**	**0.1**	**6.58**	**na**	**na**	**3500**	**0.3**	**1**	**2770**	**1.1**	**63.5**
Qbt 1v Background Value[a]				**18.4**	**780**	**408**	**0.1**	**2**	**na**	**na**	**6670**	**0.3**	**1**	**6330**	**4.48**	**84.6**
Qbt 1g, Qct, Qbo Background Value[a]				**13.5**	**739**	**189**	**0.1**	**2**	**na**	**na**	**2390**	**0.3**	**1**	**4350**	**4.59**	**40**
Sediment Background Value[a]				**19.7**	**2370**	**543**	**0.1**	**9.38**	**na**	**na**	**2690**	**0.3**	**1**	**1470**	**0.73**	**60.2**
Industrial SSL[b]				**800**	**na**	**160,000**	**389**	**25,700**	**2,080,000**	**908**	**na**	**6490**	**6490**	**na**	**6530**	**186,000**
Construction Worker SSL[b]				**800**	**na**	**464**	**77.1**	**12,400**	**991,000**	**434**	**na**	**3100**	**3100**	**na**	**614**	**106,000**
Residential SSL[b]				**400**	**na**	**10,500**	**23.5**	**1560**	**125,000**	**55**	**na**	**391**	**391**	**na**	**394**	**23,500**
RE00-08-15790	00-603800	0–1	SED	—	—	—	2.39 (J+)	—	6.8	0.0029 (J)	—	0.54 (U)	—	—	—	—
RE00-08-15791	00-603800	2.75–3.75	QBT3	—	—	—	2.2 (J+)	—	1.7	0.002 (J)	—	—	—	—	—	—
RE01-12-125	00-603800	6–7	QBT3	—	—	—	0.273	—	NA	NA	—	0.372 (J)	—	—	—	—
RE01-12-126	00-603801	5–6	QBT3	29	—	—	17.4	—	NA	NA	—	0.625 (J)	—	—	—	—
RE01-12-10445	00-603801	7–8	QBT3	NA	NA	NA	25.5	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-08-15794	00-603802	0–1	SED	—	—	—	0.244 (J+)	—	1.8	0.0033 (J)	—	0.54 (U)	—	—	—	—
RE00-08-15795	00-603802	3.75–4.75	QBT3	28.8	—	765	—	6.8 (J-)	12.2	—	—	—	—	—	—	168 (J-)
RE01-12-124	00-603802	6–7	QBT3	31.2	—	—	17.6	—	NA	NA	—	0.562 (J)	1.49	—	—	116
RE01-13-38291	00-603802	7–8	QBT3	NA	NA	NA	2.32 (J+)	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38293	00-603802	9–10	QBT3	NA	NA	NA	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38292	00-603802	11–12	QBT3	NA	NA	NA	1.71	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-08-15796	00-603803	0–1	SED	36.7	—	—	0.612 (J+)	—	0.73	—	—	—	—	—	—	—
RE00-08-15797	00-603803	1–2	QBT3	12.7	—	—	0.115 (J+)	—	—	—	—	0.51 (U)	—	—	—	—
RE01-12-127	00-603803	4–5	QBT3	—	—	—	—	—	NA	NA	—	0.348 (J)	—	—	—	—
RE01-12-10446	00-603804	3-4	QBT3	NA	NA	NA	3.57 (J-)	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-08-15800	00-603805	0–1	QBT3	18.9	—	—	4.31 (J+)	10.3 (J-)	0.67	—	—	0.53 (U)	1.9	—	—	77 (J-)
RE00-08-15801	00-603805	1–2	QBT3	—	—	—	—	19.5 (J-)	0.63	—	—	—	—	—	—	—
RE00-08-15802	00-603806	0–1.25	SED	19.8	—	—	—	—	0.19 (J)	—	—	—	—	—	—	—
RE00-08-15803	00-603806	1.25–2.25	QBT3	13.4	—	—	0.124	—	—	—	—	—	—	—	—	—
RE01-12-129	00-603806	4–5	QBT3	—	—	—	—	—	NA	NA	—	0.94 (U)	—	—	—	—
RE00-08-15804	00-603807	0–1	SOIL	44.9	—	—	0.865	—	1.4	—	—	—	8	—	—	59.8 (J-)
RE00-08-15805	00-603807	1–2	QBT3	—	—	—	1.11	—	0.2	—	—	—	—	—	—	—
RE01-12-128	00-603807	4–5	QBT3	—	—	—	0.715	—	NA	NA	—	0.341 (J)	—	—	—	—
RE00-08-15806	00-603808	0–1.25	QBT3	14.5	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-15807	00-603808	1.25–2.25	QBT3	—	—	—	—	—	—	—	—	0.35 (J)	—	—	—	—
RE00-08-15808	00-603809	0–1	SOIL	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-15809	00-603809	1–2	QBT3	—	—	—	—	—	—	—	—	0.48 (J)	—	—	—	—
RE00-08-15810	00-603810	0–1	SOIL	—	—	—	0.199	—	—	—	—	—	—	—	—	—
RE00-08-15811	00-603810	1.75–2.75	QBT3	—	—	—	—	7	—	—	—	0.62	—	—	—	—

Table 7.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Lead	Magnesium	Manganese	Mercury	Nickel	Nitrate	Perchlorate	Potassium	Selenium	Silver	Sodium	Vanadium	Zinc
Soil Background Value[a]				**22.3**	**4610**	**671**	**0.1**	**15.4**	**na**	**na**	**3460**	**1.52**	**1**	**915**	**0.73**	**48.8**
Qbt 2,3,4 Background Value[a]				**11.2**	**1690**	**482**	**0.1**	**6.58**	**na**	**na**	**3500**	**0.3**	**1**	**2770**	**1.1**	**63.5**
Qbt 1v Background Value[a]				**18.4**	**780**	**408**	**0.1**	**2**	**na**	**na**	**6670**	**0.3**	**1**	**6330**	**4.48**	**84.6**
Qbt 1g, Qct, Qbo Background Value[a]				**13.5**	**739**	**189**	**0.1**	**2**	**na**	**na**	**2390**	**0.3**	**1**	**4350**	**4.59**	**40**
Sediment Background Value[a]				**19.7**	**2370**	**543**	**0.1**	**9.38**	**na**	**na**	**2690**	**0.3**	**1**	**1470**	**0.73**	**60.2**
Industrial SSL[b]				**800**	**na**	**160,000**	**389**	**25,700**	**2,080,000**	**908**	**na**	**6490**	**6490**	**na**	**6530**	**186,000**
Construction Worker SSL[b]				**800**	**na**	**464**	**77.1**	**12,400**	**991,000**	**434**	**na**	**3100**	**3100**	**na**	**614**	**106,000**
Residential SSL[b]				**400**	**na**	**10,500**	**23.5**	**1560**	**125,000**	**55**	**na**	**391**	**391**	**na**	**394**	**23,500**
RE00-08-15812	00-603811	0–1	SED	—	—	—	—	—	0.29	—	—	—	—	—	—	89
RE00-08-15813	00-603811	1.25–2.25	QBT1G	—	—	—	—	2.7 (J-)	—	—	—	0.31 (J+)	—	—	—	—
RE01-12-130	00-603811	4–5	QBT1V	—	—	—	0.0124	—	NA	NA	—	—	—	—	—	—
RE00-08-15814	00-603812	0–1	SED	—	—	—	—	—	3.9	—	—	—	—	—	—	—
RE00-08-15815	00-603812	1–2	QBT1G	—	—	372 (J-)	—	4	0.38	—	—	—	—	—	—	61.4
RE01-12-131	00-603812	4–5	QBT1V	—	—	—	—	—	NA	NA	—	—	—	—	—	—
RE00-08-15816	00-603813	0–1	QBT1G	18.4 (J-)	—	507	0.411 (J)	4.3 (J-)	0.9	0.022 (J)	—	0.4 (J+)	—	—	—	—
RE00-08-15817	00-603813	1–2	QBT1G	—	—	453	—	5.6 (J-)	0.24	0.035 (J)	—	0.35 (J+)	—	—	—	—
RE00-08-15818	00-603814	0–1	SED	—	—	—	—	—	0.65	—	—	—	—	—	—	—
RE00-08-15819	00-603814	1–2	QBT1G	—	—	309	—	7.7 (J-)	0.17 (J)	—	—	0.34 (J+)	—	—	—	45.4
RE01-12-132	00-603814	4–5	QBT1G	—	—	207	—	—	NA	NA	—	0.955 (UJ)	2.23 (U)	—	—	42
RE00-08-15820	00-603815	0–1	SED	—	—	—	—	—	0.2	—	—	0.32 (J+)	—	—	—	—
RE00-08-15821	00-603815	1.25–2.25	QBT1G	—	—	316	—	3.5 (J-)	—	—	—	0.34 (J+)	—	—	—	—
RE01-12-133	00-603815	4–5	QBT1G	13.6	2840 (J+)	211	—	5.26	NA	NA	—	1.05 (UJ)	2.67 (U)	—	8.16	—
RE00-08-15822	00-603816	0–1	SED	—	—	—	—	—	0.17 (J)	—	—	0.32 (J+)	—	—	—	—
RE00-08-15823	00-603816	1–2	QBT1G	14 (J-)	—	261	—	5.9 (J-)	—	—	—	0.36 (J+)	—	—	—	—
RE01-12-134	00-603816	4–5	QBT1G	—	—	—	—	—	NA	NA	—	0.944 (UJ)	2.4 (U)	—	—	—
RE00-08-15824	00-603817	0–1	SED	—	—	—	—	—	0.23	—	—	—	—	—	—	—
RE00-08-15825	00-603817	1.25–2.25	QBT1G	—	—	194	—	—	—	—	—	—	—	—	—	—
RE01-12-135	00-603817	4–5	QCT	—	1340 (J+)	228	—	3.03	NA	NA	—	0.458 (U)	2.6 (U)	—	7.14	41.7
RE00-08-15826	00-603818	0–1	SED	—	—	—	—	—	0.54	—	—	—	—	—	—	—
RE00-08-15827	00-603818	1–1.75	QBT1G	—	—	193	—	4.2 (J-)	0.16 (J)	—	—	—	—	—	—	—
RE01-12-136	00-603818	4–5	QCT	—	—	219	—	2.6	NA	NA	—	0.523 (U)	2.58 (U)	—	6.15	—
RE00-08-15828	00-603819	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-15829	00-603819	1–2	QBT1G	—	—	—	—	14.6 (J-)	—	—	—	0.52 (U)	—	—	4.8 (J)	—
RE01-12-137	00-603819	4–5	QCT	—	—	194	—	3.39	NA	NA	—	0.486 (U)	2.55 (U)	—	5.19	—
RE00-08-15832	00-603820	4–5	QBT3	—	—	—	0.132	—	—	—	—	—	—	—	—	—
RE01-12-10448	00-603820	6–7	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-08-15833	00-603821	0–1	SED	20.9 (J+)	—	—	0.48	—	0.47	0.0051 (J)	—	0.53 (U)	—	—	—	—

Table 7.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Lead	Magnesium	Manganese	Mercury	Nickel	Nitrate	Perchlorate	Potassium	Selenium	Silver	Sodium	Vanadium	Zinc
Soil Background Value[a]				**22.3**	**4610**	**671**	**0.1**	**15.4**	**na**	**na**	**3460**	**1.52**	**1**	**915**	**0.73**	**48.8**
Qbt 2,3,4 Background Value[a]				**11.2**	**1690**	**482**	**0.1**	**6.58**	**na**	**na**	**3500**	**0.3**	**1**	**2770**	**1.1**	**63.5**
Qbt 1v Background Value[a]				**18.4**	**780**	**408**	**0.1**	**2**	**na**	**na**	**6670**	**0.3**	**1**	**6330**	**4.48**	**84.6**
Qbt 1g, Qct, Qbo Background Value[a]				**13.5**	**739**	**189**	**0.1**	**2**	**na**	**na**	**2390**	**0.3**	**1**	**4350**	**4.59**	**40**
Sediment Background Value[a]				**19.7**	**2370**	**543**	**0.1**	**9.38**	**na**	**na**	**2690**	**0.3**	**1**	**1470**	**0.73**	**60.2**
Industrial SSL[b]				**800**	**na**	**160,000**	**389**	**25,700**	**2,080,000**	**908**	**na**	**6490**	**6490**	**na**	**6530**	**186,000**
Construction Worker SSL[b]				**800**	**na**	**464**	**77.1**	**12,400**	**991,000**	**434**	**na**	**3100**	**3100**	**na**	**614**	**106,000**
Residential SSL[b]				**400**	**na**	**10,500**	**23.5**	**1560**	**125,000**	**55**	**na**	**391**	**391**	**na**	**394**	**23,500**
RE00-08-15834	00-603821	1.5–2.25	SED	36 (J-)	—	—	2.72	—	43.7	0.016	—	—	—	—	—	—
RE00-08-15835	00-603821	4–5	QBT3	—	—	—	0.218	10 (J-)	2.2	0.01	—	—	—	—	—	—
RE01-12-123	00-603821	6–7	QBT3	—	—	—	0.489	—	NA	NA	—	0.565 (J)	—	—	—	—
RE01-13-38204	01-159	0–1	QBT3	NA	NA	NA	1.06	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38215	01-159	3–4	QBT3	NA	NA	NA	0.312	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38226	01-159	6–7	QBT3	NA	NA	NA	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38237	01-159	9–10	QBT3	NA	NA	NA	1.05	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38259	01-159	11–12	QBT3	NA	NA	NA	0.699	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38205	01-160	0–1	SOIL	NA	NA	NA	28.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38216	01-160	3–4	QBT3	NA	NA	NA	1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38227	01-160	6–7	QBT3	NA	NA	NA	1.85	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38238	01-160	9–10	QBT3	NA	NA	NA	1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38249	01-160	11–12	QBT3	NA	NA	NA	0.937	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38206	01-161	0–1	SOIL	NA	NA	NA	15.5	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38217	01-161	3–4	QBT3	NA	NA	NA	0.163	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38228	01-161	6–7	QBT3	NA	NA	NA	0.159	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38239	01-161	9–10	QBT3	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38250	01-161	11–12	QBT3	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38207	01-162	9–10	QBT3	NA	NA	NA	13.1	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38218	01-162	12–13	QBT3	NA	NA	NA	18.1	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38229	01-162	15–16	QBT3	NA	NA	NA	16.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38240	01-162	17–18	QBT3	NA	NA	NA	1.87	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38251	01-162	19–20	QBT3	NA	NA	NA	3.19	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38211	01-166	5–6	QBT3	NA	NA	NA	0.632	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38222	01-166	7–8	QBT3	NA	NA	NA	0.492	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38233	01-166	9–10	QBT3	NA	NA	NA	0.439	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38244	01-166	11–12	QBT3	NA	NA	NA	0.32	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38212	01-167	7–8	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38223	01-167	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 7.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Lead	Magnesium	Manganese	Mercury	Nickel	Nitrate	Perchlorate	Potassium	Selenium	Silver	Sodium	Vanadium	Zinc
Soil Background Value[a]				**22.3**	**4610**	**671**	**0.1**	**15.4**	**na**	**na**	**3460**	**1.52**	**1**	**915**	**0.73**	**48.8**
Qbt 2,3,4 Background Value[a]				**11.2**	**1690**	**482**	**0.1**	**6.58**	**na**	**na**	**3500**	**0.3**	**1**	**2770**	**1.1**	**63.5**
Qbt 1v Background Value[a]				**18.4**	**780**	**408**	**0.1**	**2**	**na**	**na**	**6670**	**0.3**	**1**	**6330**	**4.48**	**84.6**
Qbt 1g, Qct, Qbo Background Value[a]				**13.5**	**739**	**189**	**0.1**	**2**	**na**	**na**	**2390**	**0.3**	**1**	**4350**	**4.59**	**40**
Sediment Background Value[a]				**19.7**	**2370**	**543**	**0.1**	**9.38**	**na**	**na**	**2690**	**0.3**	**1**	**1470**	**0.73**	**60.2**
Industrial SSL[b]				**800**	**na**	**160,000**	**389**	**25,700**	**2,080,000**	**908**	**na**	**6490**	**6490**	**na**	**6530**	**186,000**
Construction Worker SSL[b]				**800**	**na**	**464**	**77.1**	**12,400**	**991,000**	**434**	**na**	**3100**	**3100**	**na**	**614**	**106,000**
Residential SSL[b]				**400**	**na**	**10,500**	**23.5**	**1560**	**125,000**	**55**	**na**	**391**	**391**	**na**	**394**	**23,500**
RE01-13-38234	01-167	11–12	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38554	01-236	0–1	SOIL	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38555	01-236	3–4	SOIL	NA	NA	NA	0.368	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38556	01-236	6–7	QBT3	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38557	01-236	8–9	QBT3	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38558	01-236	9–10	QBT3	NA	NA	NA	0.166	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38559	01-236	11–12	QBT3	NA	NA	NA	0.112	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38203	01-238	0–1	SOIL	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38214	01-238	3–4	SOIL	NA	NA	NA	2.72	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38225	01-238	6–7	QBT3	NA	NA	NA	0.287	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38236	01-238	9–10	QBT3	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38247	01-238	12–13	QBT3	NA	NA	NA	0.288	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38258	01-238	15–16	QBT3	NA	NA	NA	0.391	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38269	01-238	17–18	QBT3	NA	NA	NA	0.131	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38280	01-238	19–20	QBT3	NA	NA	NA	0.205	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-10463	01-60	0–1	SOIL	NA	NA	NA	2.01	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-10469	01-60	4–5	QBT3	NA	NA	NA	29.9	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-10464	01-61	0–1	SOIL	NA	NA	NA	0.189	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-10470	01-61	4–5	QBT3	NA	NA	NA	159	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-523	01-614759	0–1	SOIL	—	—	—	—	—	NA	NA	—	—	—	—	—	—
RE01-12-524	01-614759	2–3	QBT3	—	—	—	—	—	NA	NA	—	0.987 (U)	—	—	—	—
RE01-12-525	01-614760	0–1	SOIL	22.5	—	—	0.239	—	NA	NA	—	—	—	—	—	—
RE01-12-526	01-614760	2–3	QBT3	—	—	—	—	—	NA	NA	—	0.96 (U)	—	—	—	—
RE01-12-527	01-614761	0–1	SOIL	—	—	—	—	—	NA	NA	—	—	2.8 (U)	—	—	—
RE01-12-528	01-614761	2–3	SOIL	—	—	—	—	—	NA	NA	—	—	2.34 (U)	—	—	—
RE01-12-10465	01-62	0–1	SOIL	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-10471	01-62	4–5	QBT3	NA	NA	NA	33.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139312	00-603809	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139313	00-603809	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 7.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Lead	Magnesium	Manganese	Mercury	Nickel	Nitrate	Perchlorate	Potassium	Selenium	Silver	Sodium	Vanadium	Zinc
Soil Background Value[a]				**22.3**	**4610**	**671**	**0.1**	**15.4**	**na**	**na**	**3460**	**1.52**	**1**	**915**	**0.73**	**48.8**
Qbt 2,3,4 Background Value[a]				**11.2**	**1690**	**482**	**0.1**	**6.58**	**na**	**na**	**3500**	**0.3**	**1**	**2770**	**1.1**	**63.5**
Qbt 1v Background Value[a]				**18.4**	**780**	**408**	**0.1**	**2**	**na**	**na**	**6670**	**0.3**	**1**	**6330**	**4.48**	**84.6**
Qbt 1g, Qct, Qbo Background Value[a]				**13.5**	**739**	**189**	**0.1**	**2**	**na**	**na**	**2390**	**0.3**	**1**	**4350**	**4.59**	**40**
Sediment Background Value[a]				**19.7**	**2370**	**543**	**0.1**	**9.38**	**na**	**na**	**2690**	**0.3**	**1**	**1470**	**0.73**	**60.2**
Industrial SSL[b]				**800**	**na**	**160,000**	**389**	**25,700**	**2,080,000**	**908**	**na**	**6490**	**6490**	**na**	**6530**	**186,000**
Construction Worker SSL[b]				**800**	**na**	**464**	**77.1**	**12,400**	**991,000**	**434**	**na**	**3100**	**3100**	**na**	**614**	**106,000**
Residential SSL[b]				**400**	**na**	**10,500**	**23.5**	**1560**	**125,000**	**55**	**na**	**391**	**391**	**na**	**394**	**23,500**
RELA-17-139293	01-159	0–1	QBT3	NA	NA	NA	1.16 (J+)	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139294	01-159	1-2	QBT3	NA	NA	NA	0.452	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139316	01-160	0–0.5	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139319	01-160	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139295	01-161	0–1	SOIL	NA	NA	NA	3.95	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139296	01-161	1–2	QBT3	NA	NA	NA	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139310	01-163	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139311	01-163	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139317	01-164	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139320	01-164	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139318	01-165	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139321	01-165	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-131601	01-166	3–4	QBT3	—	NA	NA	1.05	NA	NA	NA	NA	—	—	NA	NA	NA
RELA-17-131602	01-166	4–5	QBT3	—	NA	NA	0.624	NA	NA	NA	NA	—	—	NA	NA	NA
RELA-17-139314	01-614759	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139315	01-614759	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-131564	01-61523	3–4	QBT3	88.2	NA	NA	10.9	NA	NA	NA	NA	—	—	NA	NA	NA
RELA-17-131577	01-61535	0–3	QBT3	15.4 (J)	NA	NA	1.49 (J)	NA	NA	NA	NA	—	—	NA	NA	NA
RELA-17-131578	01-61536	0–3	QBT3	—	NA	NA	—	NA	NA	NA	NA	—	—	NA	NA	NA
RELA-17-131580	01-61538	0–3	QBT3	132	NA	NA	1.6 (J)	NA	NA	NA	NA	—	—	NA	NA	NA
RELA-17-131581	01-61539	0–3	QBT3	251	NA	NA	2.83	NA	NA	NA	NA	—	—	NA	NA	NA
RELA-17-131582	01-61540	0–3	QBT3	40.1	NA	NA	6.29	NA	NA	NA	NA	—	—	NA	NA	NA
RELA-17-134177	01-61548	0–3	SOIL	—	—	—	—	—	0.597 (J)	NA	—	—	—	—	—	—
RELA-17-134178	01-61549	0–3	QBT3	—	—	—	1.76	—	0.736 (J)	NA	—	—	—	—	—	—
RELA-17-134179	01-61550	0–3	QBT3	108	—	—	29.2	—	0.865 (J)	NA	—	—	4.67 (J)	—	—	80.1
RELA-17-134180	01-61551	0–3	SOIL	—	—	—	—	—	0.464 (J)	NA	—	—	—	—	—	—
RELA-17-134181	01-61552	0–3	SOIL	41.8	—	—	0.73	—	1.34	NA	—	—	—	—	—	—
RELA-17-134182	01-61553	0–3	SOIL	36.6	—	—	5.79	—	0.739 (J)	NA	—	—	—	—	—	—
RELA-17-139204	01-61556	0–1	QBT3	NA	NA	NA	10.9	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 7.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Lead	Magnesium	Manganese	Mercury	Nickel	Nitrate	Perchlorate	Potassium	Selenium	Silver	Sodium	Vanadium	Zinc
Soil Background Value[a]				**22.3**	**4610**	**671**	**0.1**	**15.4**	**na**	**na**	**3460**	**1.52**	**1**	**915**	**0.73**	**48.8**
Qbt 2,3,4 Background Value[a]				**11.2**	**1690**	**482**	**0.1**	**6.58**	**na**	**na**	**3500**	**0.3**	**1**	**2770**	**1.1**	**63.5**
Qbt 1v Background Value[a]				**18.4**	**780**	**408**	**0.1**	**2**	**na**	**na**	**6670**	**0.3**	**1**	**6330**	**4.48**	**84.6**
Qbt 1g, Qct, Qbo Background Value[a]				**13.5**	**739**	**189**	**0.1**	**2**	**na**	**na**	**2390**	**0.3**	**1**	**4350**	**4.59**	**40**
Sediment Background Value[a]				**19.7**	**2370**	**543**	**0.1**	**9.38**	**na**	**na**	**2690**	**0.3**	**1**	**1470**	**0.73**	**60.2**
Industrial SSL[b]				**800**	**na**	**160,000**	**389**	**25,700**	**2,080,000**	**908**	**na**	**6490**	**6490**	**na**	**6530**	**186,000**
Construction Worker SSL[b]				**800**	**na**	**464**	**77.1**	**12,400**	**991,000**	**434**	**na**	**3100**	**3100**	**na**	**614**	**106,000**
Residential SSL[b]				**400**	**na**	**10,500**	**23.5**	**1560**	**125,000**	**55**	**na**	**391**	**391**	**na**	**394**	**23,500**
RELA-17-139208	01-61556	1–2	QBT3	NA	NA	NA	1.79	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139205	01-61557	0–0.83	SOIL	NA	NA	NA	56.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139209	01-61557	1–2	QBT3	NA	NA	NA	13.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139206	01-61558	0–1	SOIL	NA	NA	NA	5	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139210	01-61558	1–2	QBT3	NA	NA	NA	1.46	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139207	01-61559	0–1	QBT3	NA	NA	NA	11.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139211	01-61559	1–2	QBT3	NA	NA	NA	7.98	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139214	01-61560	0-0.5	SOIL	NA	NA	NA	32.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139221	01-61560	1-2	QBT3	NA	NA	NA	1.76	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139215	01-61561	0-1	SOIL	NA	NA	NA	15.9	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139222	01-61561	1–2	QBT3	NA	NA	NA	2.88	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139216	01-61562	0–0.66	SOIL	NA	NA	NA	7.25	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139223	01-61562	1–1.66	QBT3	NA	NA	NA	1.01	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139217	01-61563	3–4	QBT3	NA	NA	NA	9.4 (J)	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139224	01-61563	4–5	QBT3	NA	NA	NA	1.01	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139218	01-61564	3–4	QBT3	NA	NA	NA	8.34	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139225	01-61564	4–5	QBT3	NA	NA	NA	2.47	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139219	01-61565	3–4	QBT3	NA	NA	NA	3.37	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139226	01-61565	4–5	QBT3	NA	NA	NA	1.7	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139220	01-61566	3–4	QBT3	NA	NA	NA	0.232 (J+)	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139227	01-61566	4–5	QBT3	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139230	01-61567	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139246	01-61567	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139231	01-61568	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139247	01-61568	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139232	01-61569	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139248	01-61569	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139233	01-61570	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139249	01-61570	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 7.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Lead	Magnesium	Manganese	Mercury	Nickel	Nitrate	Perchlorate	Potassium	Selenium	Silver	Sodium	Vanadium	Zinc
Soil Background Value[a]				**22.3**	**4610**	**671**	**0.1**	**15.4**	**na**	**na**	**3460**	**1.52**	**1**	**915**	**0.73**	**48.8**
Qbt 2,3,4 Background Value[a]				**11.2**	**1690**	**482**	**0.1**	**6.58**	**na**	**na**	**3500**	**0.3**	**1**	**2770**	**1.1**	**63.5**
Qbt 1v Background Value[a]				**18.4**	**780**	**408**	**0.1**	**2**	**na**	**na**	**6670**	**0.3**	**1**	**6330**	**4.48**	**84.6**
Qbt 1g, Qct, Qbo Background Value[a]				**13.5**	**739**	**189**	**0.1**	**2**	**na**	**na**	**2390**	**0.3**	**1**	**4350**	**4.59**	**40**
Sediment Background Value[a]				**19.7**	**2370**	**543**	**0.1**	**9.38**	**na**	**na**	**2690**	**0.3**	**1**	**1470**	**0.73**	**60.2**
Industrial SSL[b]				**800**	**na**	**160,000**	**389**	**25,700**	**2,080,000**	**908**	**na**	**6490**	**6490**	**na**	**6530**	**186,000**
Construction Worker SSL[b]				**800**	**na**	**464**	**77.1**	**12,400**	**991,000**	**434**	**na**	**3100**	**3100**	**na**	**614**	**106,000**
Residential SSL[b]				**400**	**na**	**10,500**	**23.5**	**1560**	**125,000**	**55**	**na**	**391**	**391**	**na**	**394**	**23,500**
RELA-17-139234	01-61571	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139250	01-61571	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139235	01-61572	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139251	01-61572	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139236	01-61573	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139252	01-61573	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139237	01-61574	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139253	01-61574	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139238	01-61575	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139254	01-61575	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139239	01-61576	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139255	01-61576	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139240	01-61577	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139256	01-61577	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139241	01-61578	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139257	01-61578	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139242	01-61579	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139258	01-61579	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139243	01-61580	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139259	01-61580	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139244	01-61581	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139260	01-61581	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139245	01-61582	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139261	01-61582	1–2	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139297	01-61596	3–4	QBT3	NA	NA	NA	1.87	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139298	01-61596	4–5	QBT3	NA	NA	NA	1.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139330	01-61597	3–4	QBT3	NA	NA	NA	6.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139331	01-61597	4–5	QBT3	NA	NA	NA	16	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139300	01-61598	3–4	QBT3	NA	NA	NA	5.7	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 7.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Lead	Magnesium	Manganese	Mercury	Nickel	Nitrate	Perchlorate	Potassium	Selenium	Silver	Sodium	Vanadium	Zinc
Soil Background Value[a]				**22.3**	**4610**	**671**	**0.1**	**15.4**	**na**	**na**	**3460**	**1.52**	**1**	**915**	**0.73**	**48.8**
Qbt 2,3,4 Background Value[a]				**11.2**	**1690**	**482**	**0.1**	**6.58**	**na**	**na**	**3500**	**0.3**	**1**	**2770**	**1.1**	**63.5**
Qbt 1v Background Value[a]				**18.4**	**780**	**408**	**0.1**	**2**	**na**	**na**	**6670**	**0.3**	**1**	**6330**	**4.48**	**84.6**
Qbt 1g, Qct, Qbo Background Value[a]				**13.5**	**739**	**189**	**0.1**	**2**	**na**	**na**	**2390**	**0.3**	**1**	**4350**	**4.59**	**40**
Sediment Background Value[a]				**19.7**	**2370**	**543**	**0.1**	**9.38**	**na**	**na**	**2690**	**0.3**	**1**	**1470**	**0.73**	**60.2**
Industrial SSL[b]				**800**	**na**	**160,000**	**389**	**25,700**	**2,080,000**	**908**	**na**	**6490**	**6490**	**na**	**6530**	**186,000**
Construction Worker SSL[b]				**800**	**na**	**464**	**77.1**	**12,400**	**991,000**	**434**	**na**	**3100**	**3100**	**na**	**614**	**106,000**
Residential SSL[b]				**400**	**na**	**10,500**	**23.5**	**1560**	**125,000**	**55**	**na**	**391**	**391**	**na**	**394**	**23,500**
RELA-17-139301	01-61598	4–5	QBT3	NA	NA	NA	2.44	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139302	01-61599	3–4	QBT3	NA	NA	NA	8.21	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-139303	01-61599	4–5	QBT3	NA	NA	NA	3.74	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-131595	01-63	3–4	QBT3	14.8 (J)	NA	NA	4.9	NA	NA	NA	NA	—	—	NA	NA	NA
RELA-17-131598	01-63	4–5	QBT3	—	NA	NA	2.39	NA	NA	NA	NA	—	—	NA	NA	NA
RELA-17-131596	01-64	3–4	QBT3	170	NA	NA	20.4	NA	NA	NA	NA	—	—	NA	NA	NA
RELA-17-131599	01-64	4–5	QBT3	21.4	NA	NA	12.3	NA	NA	NA	NA	—	—	NA	NA	NA
RELA-17-131597	01-65	3–4	QBT3	—	NA	NA	0.59	NA	NA	NA	NA	—	—	NA	NA	NA
RELA-17-131600	01-65	4–5	QBT3	—	NA	NA	1.4	NA	NA	NA	NA	—	—	NA	NA	NA

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] BVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SSLs are from NMED (2017, 602273) unless otherwise noted.

[d] SSL for total chromium.

[e] — = Not detected or not detected above BV.

[f] NA = Not analyzed.

Table 7.4-3
Organic Chemicals Detected at SWMU 01-001(d3)

Sample ID	Location ID	Depth (ft)	Media	Acetone	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate
Industrial SSL[a]				**959,000**	**11.0**	**11.1**	**32.3**	**23.6**	**32.3**	**25,300**	**323**	**1830**
Construction Worker SSL[a]				**241,000**	**4.91**	**85.3**	**240**	**106**	**240**	**7530**	**2310**	**5380**
Residential SSL[a]				**66,300**	**1.14**	**2.43**	**1.53**	**1.12**	**1.53**	**1740**	**15.3**	**380**
RE00-08-15790	00-603800	0–1	SED	—[b]	—	0.12	—	—	—	—	—	—
RE00-08-15791	00-603800	2.75–3.75	QBT3	—	—	0.11	0.054 (J)	0.043 (J)	0.043 (J)	—	0.044 (J)	—
RE00-08-15794	00-603802	0–1	SED	—	—	0.014 (J)	—	—	—	—	—	—
RE00-08-15795	00-603802	3.75–4.75	QBT3	—	—	0.055	—	—	—	—	—	—
RE00-08-15796	00-603803	0–1	SED	—	0.59 (J)	0.24	—	—	—	—	—	—
RE00-08-15797	00-603803	1–2	QBT3	—	0.086 (J)	0.035	—	—	—	—	—	—
RE00-08-15802	00-603806	0–1.25	SED	—	—	—	—	0.036 (J)	—	0.062 (J)	—	—
RE00-08-15804	00-603807	0–1	SOIL	—	0.062	0.059	—	—	—	—	—	—
RE00-08-15808	00-603809	0–1	SOIL	—	—	—	—	—	—	—	—	0.88 (J)
RE00-08-15811	00-603810	1.75–2.75	QBT3	0.0073 (J)	—	—	—	—	—	—	—	—
RE00-08-15812	00-603811	0–1	SED	—	0.15 (J)	0.064	—	—	—	—	—	—
RE00-08-15813	00-603811	1.25–2.25	QBT1G	—	0.013 (J)	—	—	—	—	—	—	—
RE00-08-15815	00-603812	1–2	QBT1G	—	—	—	—	—	—	—	—	0.055 (J)
RE00-08-15818	00-603814	0–1	SED	—	0.021 (J)	—	—	—	—	—	—	—
RE00-08-15829	00-603819	1–2	QBT1G	—	—	—	—	—	—	—	—	—
RE00-08-15833	00-603821	0–1	SED	—	—	0.073	—	—	—	—	—	0.1 (J)
RE00-08-15834	00-603821	1.5–2.25	SED	—	—	0.35	—	—	—	—	—	0.074 (J)
RE00-08-15835	00-603821	4–5	QBT3	—	—	0.031 (J)	—	—	—	—	—	—
RELA-17-134179	01-61550	0–3	QBT3	—	0.00681	0.0141	—	—	—	—	—	—
RELA-17-134180	01-61551	0–3	SOIL	—	0.00345	0.00206 (J)	—	—	—	—	—	—
RELA-17-134181	01-61552	0–3	SOIL	—	0.00673	0.00798	—	—	—	—	—	—
RELA-17-134182	01-61553	0–3	SOIL	—	0.00336 (J)	0.00557	—	—	—	—	—	—

Table 7.4-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Chrysene	Di-n-butylphthalate	Fluoranthene	Methylene Chloride	Pentachlorophenol	Phenanthrene	Pyrene	Toluene
Industrial SSL[a]				**959,000**	**11.0**	**11.1**	**32.3**	**23.6**	**32.3**	**25,300**	**323**
Construction Worker SSL[a]				**241,000**	**4.91**	**85.3**	**240**	**106**	**240**	**7530**	**2310**
Residential SSL[a]				**66,300**	**1.14**	**2.43**	**1.53**	**1.12**	**1.53**	**1740**	**15.3**
RE00-08-15790	00-603800	0–1	SED	—	—	—	—	—	—	—	—
RE00-08-15791	00-603800	2.75–3.75	QBT3	0.067 (J-)	—	0.13 (J)	—	—	0.13 (J)	0.1 (J)	—
RE00-08-15794	00-603802	0–1	SED	—	—	—	—	—	—	—	—
RE00-08-15795	00-603802	3.75–4.75	QBT3	—	—	—	—	—	—	—	—
RE00-08-15796	00-603803	0–1	SED	—	0.21 (J)	—	0.0012 (J+)	—	—	—	—
RE00-08-15797	00-603803	1–2	QBT3	—	—	—	—	—	—	—	—
RE00-08-15802	00-603806	0–1.25	SED	0.043 (J)	0.038 (J)	—	—	0.8 (J)	—	—	—
RE00-08-15804	00-603807	0–1	SOIL	—	0.055 (J)	—	—	—	—	—	—
RE00-08-15808	00-603809	0–1	SOIL	—	—	—	—	—	—	—	—
RE00-08-15811	00-603810	1.75–2.75	QBT3	—	—	—	—	—	—	—	—
RE00-08-15812	00-603811	0–1	SED	—	—	—	—	—	—	—	—
RE00-08-15813	00-603811	1.25–2.25	QBT1G	—	—	—	—	—	—	—	—
RE00-08-15815	00-603812	1–2	QBT1G	—	—	—	—	—	—	—	—
RE00-08-15818	00-603814	0–1	SED	—	—	—	—	—	—	—	—
RE00-08-15829	00-603819	1–2	QBT1G	—	—	—	—	—	—	—	0.00083 (J)
RE00-08-15833	00-603821	0–1	SED	—	—	—	—	—	—	—	—
RE00-08-15834	00-603821	1.5–2.25	SED	—	0.081 (J)	—	—	—	—	—	—
RE00-08-15835	00-603821	4–5	QBT3	—	—	—	—	—	—	—	—
RELA-17-134179	01-61550	0–3	QBT3	—	—	—	—	—	—	—	—
RELA-17-134180	01-61551	0–3	SOIL	—	—	—	—	—	—	—	—
RELA-17-134181	01-61552	0–3	SOIL	—	—	—	—	—	—	—	—
RELA-17-134182	01-61553	0–3	SOIL	—	—	—	—	—	—	—	—
RE00-08-15788	00-603799	3.5–5	FILL	—	0.058 (J)	—	—	—	—	—	—
RE00-08-15790	00-603800	0–1	SED	—	—	—	—	—	—	—	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] SSLs are from NMED (2017, 602273) unless otherwise noted.

[b] — = Not detected.

Table 7.4-4
Radionuclides Detected or Detected above BVs/FVs at SWMU 01-001(d3)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239/240	Strontium-90	Uranium-234	Uranium-235/236	Uranium-238
Soil Background Value[a]				**0.013**	**1.65**	**0.023**	**0.054**	**1.31**	**2.59**	**0.2**	**2.29**
Qbt 2,3,4 Background Value[a]				**na[b]**	**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
Qbt 1g, Qct, Qbt 1g Background Value[a]				**na**	**na**	**na**	**na**	**na**	**4**	**0.18**	**3.9**
Sediment Background Value[a]				**0.04**	**0.9**	**0.006**	**0.068**	**1.04**	**2.59**	**0.2**	**2.29**
Construction Worker SAL[c]				**230**	**37**	**230**	**200**	**1400**	**1000**	**130**	**340**
Industrial SAL[c]				**1000**	**41**	**1300**	**1200**	**2400**	**3100**	**160**	**710**
Residential SAL[c]				**83**	**12**	**84**	**79**	**15**	**290**	**42**	**150**
RE00-08-15790	00-603800	0–1	SED	—[d]	—	—	2.66	—	—	—	—
RE00-08-15791	00-603800	2.75–3.75	QBT3	—	—	—	0.611	—	—	—	—
RE01-12-125	00-603800	6–7	QBT3	—	—	—	0.677	NA[e]	NA	NA	NA
RE01-12-126	00-603801	5–6	QBT3	—	0.401	0.0238	35.5	NA	NA	NA	NA
RE01-12-10445	00-603801	7–8	QBT3	NA	NA	—	161	NA	NA	NA	NA
RE00-08-15795	00-603802	3.75–4.75	QBT3	—	—	—	0.296	—	—	—	—
RE01-12-124	00-603802	6–7	QBT3	—	0.128	—	2.04	NA	NA	NA	NA
RE00-08-15796	00-603803	0–1	SED	—	—	—	5.45	—	2.68	—	2.4
RE00-08-15797	00-603803	1–2	QBT3	—	—	—	0.341	—	—	—	—
RE01-12-127	00-603803	4–5	QBT3	—	—	—	0.0275	NA	NA	NA	NA
RE01-12-10446	00-603804	3–4	QBT3	NA	NA	—	27.3	NA	NA	NA	NA
RE00-08-15800	00-603805	0–1	QBT3	—	—	—	0.328	—	—	—	—
RE00-08-15801	00-603805	1–2	QBT3	—	—	—	0.175	—	—	—	—
RE00-08-15802	00-603806	0–1.25	SED	—	—	—	0.302	—	—	—	—
RE00-08-15803	00-603806	1.25–2.25	QBT3	—	0.181	—	0.133	—	—	—	—
RE00-08-15804	00-603807	0–1	SOIL	—	—	—	2.74	—	—	—	—
RE00-08-15805	00-603807	1–2	QBT3	—	—	—	0.251	—	—	—	—
RE01-12-128	00-603807	4–5	QBT3	—	—	—	0.0488	NA	NA	NA	NA
RE00-08-15808	00-603809	0–1	SOIL	—	—	—	0.561	—	—	—	—
RE00-08-15810	00-603810	0–1	SOIL	—	—	—	0.462	—	—	—	—
RE00-08-15812	00-603811	0–1	SED	—	—	—	0.5	—	—	—	—
RE00-08-15814	00-603812	0–1	SED	—	—	—	0.236	—	—	—	—
RE00-08-15816	00-603813	0–1	QBT1G	—	0.436	—	14.6	—	—	—	—
RE00-08-15817	00-603813	1–2	QBT1G	—	—	—	1.39	—	—	—	—

Table 7.4-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239/240	Strontium-90	Uranium-234	Uranium-235/236	Uranium-238
Soil Background Value[a]				**0.013**	**1.65**	**0.023**	**0.054**	**1.31**	**2.59**	**0.2**	**2.29**
Qbt 2,3,4 Background Value[a]				**na[b]**	**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
Qbt 1g, Qct, Qbt 1g Background Value[a]				**na**	**na**	**na**	**na**	**na**	**4**	**0.18**	**3.9**
Sediment Background Value[a]				**0.04**	**0.9**	**0.006**	**0.068**	**1.04**	**2.59**	**0.2**	**2.29**
Construction Worker SAL[c]				**230**	**37**	**230**	**200**	**1400**	**1000**	**130**	**340**
Industrial SAL[c]				**1000**	**41**	**1300**	**1200**	**2400**	**3100**	**160**	**710**
Residential SAL[c]				**83**	**12**	**84**	**79**	**15**	**290**	**42**	**150**
RE00—08-15818	00-603814	0–1	SED	—	—	—	0.103	—	—	—	—
RE00-08-15822	00-603816	0–1	SED	—	—	—	0.095	—	—	—	—
RE01-12-134	00-603816	4–5	QBT1G	—	—	—	0.034	NA	NA	NA	NA
RE00—08-15827	00-603818	1–1.75	QBT1G	—	0.232	—	—	—	—	—	—
RE00-08-15829	00-603819	1–2	QBT1G	—	0.229	—	—	—	—	—	—
RE01-12-137	00-603819	4–5	QCT	—	0.0537	—	0.0386	NA	NA	NA	NA
RE00-08-15832	00-603820	4–5	QBT3	—	0.692	—	20.4	0.278	—	—	—
RE01-12-10448	00-603820	6–7	QBT3	NA	NA	—	73 (J)	NA	NA	NA	NA
RE00-08-15833	00-603821	0–1	SED	—	—	—	0.495	—	—	—	—
RE00-08-15834	00-603821	1.5–2.25	SED	—	—	—	3.23	—	—	—	—
RE00-08-15835	00-603821	4–5	QBT3	—	—	—	0.202	—	—	—	—
RE01-12-123	00-603821	6–7	QBT3	—	—	—	0.589	NA	NA	NA	NA
RE01-13-38204	01-159	0–1	QBT3	NA	NA	0.0191	12.1 (J)	NA	NA	NA	NA
RE01-13-38215	01-159	3–4	QBT3	NA	NA	—	0.357	NA	NA	NA	NA
RE01-13-38226	01-159	6–7	QBT3	NA	NA	—	0.148	NA	NA	NA	NA
RE01-13-38237	01-159	9–10	QBT3	NA	NA	—	0.0899	NA	NA	NA	NA
RE01-13-38259	01-159	11–12	QBT3	NA	NA	—	0.17	NA	NA	NA	NA
RE01-13-38205	01-160	0–1	SOIL	NA	NA	—	19.7	NA	NA	NA	NA
RE01-13-38216	01-160	3–4	QBT3	NA	NA	—	1.53	NA	NA	NA	NA
RE01-13-38227	01-160	6–7	QBT3	NA	NA	—	1.47	NA	NA	NA	NA
RE01-13-38238	01-160	9–10	QBT3	NA	NA	—	1.45	NA	NA	NA	NA
RE01-13-38249	01-160	11–12	QBT3	NA	NA	—	0.553	NA	NA	NA	NA
RE01-13-38206	01-161	0–1	SOIL	NA	NA	—	55.4	NA	NA	NA	NA
RE01-13-38217	01-161	3–4	QBT3	NA	NA	—	0.334 (J)	NA	NA	NA	NA
RE01-13-38228	01-161	6–7	QBT3	NA	NA	—	0.818	NA	NA	NA	NA
RE01-13-38239	01-161	9–10	QBT3	NA	NA	—	0.438	NA	NA	NA	NA
RE01-13-38250	01-161	11–12	QBT3	NA	NA	—	0.302	NA	NA	NA	NA
RE01-13-38207	01-162	9–10	QBT3	NA	NA	0.082	38.8	NA	NA	NA	NA

Table 7.4-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239/240	Strontium-90	Uranium-234	Uranium-235/236	Uranium-238
Soil Background Value[a]				**0.013**	**1.65**	**0.023**	**0.054**	**1.31**	**2.59**	**0.2**	**2.29**
Qbt 2,3,4 Background Value[a]				**na[b]**	**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
Qbt 1g, Qct, Qbt 1g Background Value[a]				**na**	**na**	**na**	**na**	**na**	**4**	**0.18**	**3.9**
Sediment Background Value[a]				**0.04**	**0.9**	**0.006**	**0.068**	**1.04**	**2.59**	**0.2**	**2.29**
Construction Worker SAL[c]				**230**	**37**	**230**	**200**	**1400**	**1000**	**130**	**340**
Industrial SAL[c]				**1000**	**41**	**1300**	**1200**	**2400**	**3100**	**160**	**710**
Residential SAL[c]				**83**	**12**	**84**	**79**	**15**	**290**	**42**	**150**
RE01-13-38218	01-162	12–13	QBT3	NA	NA	0.0622	42	NA	NA	NA	NA
RE01-13-38229	01-162	15–16	QBT3	NA	NA	—	53.8 (J)	NA	NA	NA	NA
RE01-13-38240	01-162	17–18	QBT3	NA	NA	—	7.48	NA	NA	NA	NA
RE01-13-38251	01-162	19–20	QBT3	NA	NA	—	12.7	NA	NA	NA	NA
RE01-13-38208	01-163	0–1	SOIL	NA	NA	—	360	NA	NA	NA	NA
RE01-13-38219	01-163	3–4	QBT3	NA	NA	—	2.73	NA	NA	NA	NA
RE01-13-38230	01-163	6–7	QBT3	NA	NA	—	8.43	NA	NA	NA	NA
RE01-13-38241	01-163	9–10	QBT3	NA	NA	—	9.28	NA	NA	NA	NA
RE01-13-38252	01-163	11–12	QBT3	NA	NA	—	1.6	NA	NA	NA	NA
RE01-13-38209	01-164	0–1	SOIL	NA	NA	—	3.35	NA	NA	NA	NA
RE01-13-38220	01-164	3–4	QBT3	NA	NA	—	1.17	NA	NA	NA	NA
RE01-13-38231	01-164	6–7	QBT3	NA	NA	—	0.335	NA	NA	NA	NA
RE01-13-38242	01-164	9–10	QBT3	NA	NA	—	0.089	NA	NA	NA	NA
RE01-13-38253	01-164	11–12	QBT3	NA	NA	—	1.63	NA	NA	NA	NA
RE01-13-38210	01-165	0–1	SOIL	NA	NA	—	57.5	NA	NA	NA	NA
RE01-13-38221	01-165	3–4	QBT3	NA	NA	0.0403	14.4	NA	NA	NA	NA
RE01-13-38232	01-165	6–7	QBT3	NA	NA	0.0369	5.09	NA	NA	NA	NA
RE01-13-38243	01-165	9–10	QBT3	NA	NA	—	17.7	NA	NA	NA	NA
RE01-13-38254	01-165	11–12	QBT3	NA	NA	0.0743	40.6	NA	NA	NA	NA
RE01-13-38211	01-166	5–6	QBT3	NA	NA	—	3.42	NA	NA	NA	NA
RE01-13-38222	01-166	7–8	QBT3	NA	NA	—	4.13	NA	NA	NA	NA
RE01-13-38233	01-166	9–10	QBT3	NA	NA	—	3.07	NA	NA	NA	NA
RE01-13-38244	01-166	11–12	QBT3	NA	NA	—	2.87	NA	NA	NA	NA
RE01-13-38212	01-167	7–8	QBT3	NA	NA	—	0.142	NA	NA	NA	NA
RE01-13-38223	01-167	9–10	QBT3	NA	NA	—	0.11	NA	NA	NA	NA
RE01-13-38234	01-167	11–12	QBT3	NA	NA	—	0.543	NA	NA	NA	NA
RE01-13-38214	01-238	3–4	SOIL	NA	NA	—	4.41	NA	NA	NA	NA
RE01-13-38225	01-238	6–7	QBT3	NA	NA	—	0.338	NA	NA	NA	NA

Table 7.4-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239/240	Strontium-90	Uranium-234	Uranium-235/236	Uranium-238
Soil Background Value[a]				**0.013**	**1.65**	**0.023**	**0.054**	**1.31**	**2.59**	**0.2**	**2.29**
Qbt 2,3,4 Background Value[a]				**na[b]**	**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
Qbt 1g, Qct, Qbt 1g Background Value[a]				**na**	**na**	**na**	**na**	**na**	**4**	**0.18**	**3.9**
Sediment Background Value[a]				**0.04**	**0.9**	**0.006**	**0.068**	**1.04**	**2.59**	**0.2**	**2.29**
Construction Worker SAL[c]				**230**	**37**	**230**	**200**	**1400**	**1000**	**130**	**340**
Industrial SAL[c]				**1000**	**41**	**1300**	**1200**	**2400**	**3100**	**160**	**710**
Residential SAL[c]				**83**	**12**	**84**	**79**	**15**	**290**	**42**	**150**
RE01-13-38236	01-238	9–10	QBT3	NA	NA	—	0.1	NA	NA	NA	NA
RE01-13-38247	01-238	12–13	QBT3	NA	NA	—	0.353	NA	NA	NA	NA
RE01-13-38258	01-238	15–16	QBT3	NA	NA	—	0.352 (J)	NA	NA	NA	NA
RE01-13-38269	01-238	17–18	QBT3	NA	NA	—	0.101	NA	NA	NA	NA
RE01-13-38280	01-238	19–20	QBT3	NA	NA	—	0.449	NA	NA	NA	NA
RE01-12-10456	01-57	3–4	QBT3	NA	NA	—	23	NA	NA	NA	NA
RE01-12-10457	01-58	3–4	QBT3	NA	NA	—	19.1	NA	NA	NA	NA
RE01-12-10458	01-59	3–4	QBT3	NA	NA	—	1.15	NA	NA	NA	NA
RE01-12-10463	01-60	0–1	SOIL	NA	NA	—	0.314	NA	NA	NA	NA
RE01-12-10469	01-60	4–5	QBT3	NA	NA	—	43.3	NA	NA	NA	NA
RE01-12-10464	01-61	0–1	SOIL	NA	NA	—	0.393	NA	NA	NA	NA
RE01-12-10470	01-61	4–5	QBT3	NA	NA	—	543	NA	NA	NA	NA
RE01-12-523	01-614759	0–1	SOIL	—	—	—	0.425	NA	NA	NA	NA
RE01-12-524	01-614759	2–3	QBT3	—	—	—	0.0836	NA	NA	NA	NA
RE01-12-525	01-614760	0–1	SOIL	—	—	—	2.02	NA	NA	NA	NA
RE01-12-526	01-614760	2–3	QBT3	—	—	—	0.0208	NA	NA	NA	NA
RE01-12-527	01-614761	0–1	SOIL	—	—	—	0.117	NA	NA	NA	NA
RE01-12-10471	01-62	4–5	QBT3	NA	NA	—	15	NA	NA	NA	NA
RELA-17-139293	01-159	0–1	QBT3	NA	NA	—	13.7	NA	NA	NA	NA
RELA-17-139294	01-159	1–2	QBT3	NA	NA	—	1.11	NA	NA	NA	NA
RELA-17-139295	01-161	0–1	SOIL	NA	NA	0.0396 (J)	20 (J)	NA	NA	NA	NA
RELA-17-139296	01-161	1–2	QBT3	NA	NA	—	3.93	NA	NA	NA	NA
RELA-17-139310	01-163	0–1	QBT3	NA	NA	—	633	NA	NA	NA	NA
RELA-17-139311	01-163	1–2	QBT3	NA	NA	0.11	573	NA	NA	NA	NA
RELA-17-131601	01-166	3–4	QBT3	NA	NA	—	6.34	NA	NA	NA	NA
RELA-17-131602	01-166	4–5	QBT3	NA	NA	—	5.17	NA	NA	NA	NA
RELA-17-139306	01-57	3–4	QBT3	NA	NA	—	32.6	NA	NA	NA	NA
RELA-17-139307	01-57	4–5	QBT3	NA	NA	—	4.01	NA	NA	NA	NA

Table 7.4-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239/240	Strontium-90	Uranium-234	Uranium-235/236	Uranium-238
Soil Background Value[a]				**0.013**	**1.65**	**0.023**	**0.054**	**1.31**	**2.59**	**0.2**	**2.29**
Qbt 2,3,4 Background Value[a]				**na[b]**	**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
Qbt 1g, Qct, Qbt 1g Background Value[a]				**na**	**na**	**na**	**na**	**na**	**4**	**0.18**	**3.9**
Sediment Background Value[a]				**0.04**	**0.9**	**0.006**	**0.068**	**1.04**	**2.59**	**0.2**	**2.29**
Construction Worker SAL[c]				**230**	**37**	**230**	**200**	**1400**	**1000**	**130**	**340**
Industrial SAL[c]				**1000**	**41**	**1300**	**1200**	**2400**	**3100**	**160**	**710**
Residential SAL[c]				**83**	**12**	**84**	**79**	**15**	**290**	**42**	**150**
RELA-17-139308	01-58	3.74–4.74	QBT3	NA	NA	—	19.9	NA	NA	NA	NA
RELA-17-139309	01-58	4.74–5.74	QBT3	NA	NA	—	66.2	NA	NA	NA	NA
RELA-17-131564	01-61523	3–4	QBT3	NA	NA	—	60.7	NA	NA	NA	NA
RELA-17-134177	01-61548	0–3	SOIL	—	—	—	0.68	NA	—	—	—
RELA-17-134178	01-61549	0–3	QBT3	—	—	—	4.91	NA	—	0.128	—
RELA-17-134179	01-61550	0–3	QBT3	0.116	1.01	0.205	208	NA	2.18	0.165	2.31
RELA-17-134180	01-61551	0–3	SOIL	—	—	—	1.26	NA	—	—	—
RELA-17-134181	01-61552	0–3	SOIL	—	0.0984	0.373 (J)	23.1	NA	—	—	—
RELA-17-134182	01-61553	0–3	SOIL	0.0789	0.411	0.329 (J)	27.8	NA	—	—	—
RELA-17-139204	01-61556	0–1	QBT3	NA	NA	—	43.6	NA	NA	NA	NA
RELA-17-139208	01-61556	1–2	QBT3	NA	NA	—	9.46	NA	NA	NA	NA
RELA-17-139205	01-61557	0–0.83	SOIL	NA	NA	0.54	436	NA	NA	NA	NA
RELA-17-139209	01-61557	1–2	QBT3	NA	NA	—	139	NA	NA	NA	NA
RELA-17-139206	01-61558	0–1	SOIL	NA	NA	0.109	50.8	NA	NA	NA	NA
RELA-17-139210	01-61558	1–2	QBT3	NA	NA	—	8	NA	NA	NA	NA
RELA-17-139207	01-61559	0–1	QBT3	NA	NA	—	20.6	NA	NA	NA	NA
RELA-17-139211	01-61559	1–2	QBT3	NA	NA	—	4.4	NA	NA	NA	NA
RELA-17-139214	01-61560	0–0.5	SOIL	NA	NA	—	151	NA	NA	NA	NA
RELA-17-139221	01-61560	1–2	QBT3	NA	NA	—	15.9	NA	NA	NA	NA
RELA-17-139215	01-61561	0–1	SOIL	NA	NA	0.123	148	NA	NA	NA	NA
RELA-17-139222	01-61561	1–2	QBT3	NA	NA	0.11	35.3	NA	NA	NA	NA
RELA-17-139216	01-61562	0–0.66	SOIL	NA	NA	—	35	NA	NA	NA	NA
RELA-17-139223	01-61562	1–1.66	QBT3	NA	NA	—	6.13	NA	NA	NA	NA
RELA-17-139217	01-61563	3–4	QBT3	NA	NA	—	6.68	NA	NA	NA	NA
RELA-17-139224	01-61563	4–5	QBT3	NA	NA	—	1.68	NA	NA	NA	NA
RELA-17-139218	01-61564	3–4	QBT3	NA	NA	—	9.75	NA	NA	NA	NA
RELA-17-139225	01-61564	4–5	QBT3	NA	NA	—	6 (J-)	NA	NA	NA	NA
RELA-17-139219	01-61565	3–4	QBT3	NA	NA	0.0516	18.3	NA	NA	NA	NA

Table 7.4-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239/240	Strontium-90	Uranium-234	Uranium-235/236	Uranium-238
Soil Background Value[a]				**0.013**	**1.65**	**0.023**	**0.054**	**1.31**	**2.59**	**0.2**	**2.29**
Qbt 2,3,4 Background Value[a]				**na[b]**	**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
Qbt 1g, Qct, Qbt 1g Background Value[a]				**na**	**na**	**na**	**na**	**na**	**4**	**0.18**	**3.9**
Sediment Background Value[a]				**0.04**	**0.9**	**0.006**	**0.068**	**1.04**	**2.59**	**0.2**	**2.29**
Construction Worker SAL[c]				**230**	**37**	**230**	**200**	**1400**	**1000**	**130**	**340**
Industrial SAL[c]				**1000**	**41**	**1300**	**1200**	**2400**	**3100**	**160**	**710**
Residential SAL[c]				**83**	**12**	**84**	**79**	**15**	**290**	**42**	**150**
RELA-17-139226	01-61565	4–5	QBT3	NA	NA	—	6.35	NA	NA	NA	NA
RELA-17-139220	01-61566	3–4	QBT3	NA	NA	—	0.585	NA	NA	NA	NA
RELA-17-139227	01-61566	4–5	QBT3	NA	NA	—	0.153	NA	NA	NA	NA
RELA-17-139230	01-61567	0–1	QBT3	NA	NA	0.163	1280	NA	NA	NA	NA
RELA-17-139246	01-61567	1–2	QBT3	NA	NA	—	96.6	NA	NA	NA	NA
RELA-17-139231	01-61568	0—1	QBT3	NA	NA	—	281	NA	NA	NA	NA
RELA-17-139247	01-61568	1–2	QBT3	NA	NA	—	43.6	NA	NA	NA	NA
RELA-17-139232	01-61569	0–1	QBT3	NA	NA	—	300	NA	NA	NA	NA
RELA-17-139248	01-61569	1–2	QBT3	NA	NA	—	183	NA	NA	NA	NA
RELA-17-139233	01-61570	0–1	QBT3	NA	NA	0.0655 (J)	517	NA	NA	NA	NA
RELA-17-139249	01-61570	1–2	QBT3	NA	NA	—	148	NA	NA	NA	NA
RELA-17-139234	01-61571	0–1	QBT3	NA	NA	0.0525	74	NA	NA	NA	NA
RELA-17-139250	01-61571	1–2	QBT3	NA	NA	—	23.7	NA	NA	NA	NA
RELA-17-139235	01-61572	0–1	QBT3	NA	NA	0.126	472	NA	NA	NA	NA
RELA-17-139251	01-61572	1–2	QBT3	NA	NA	—	161	NA	NA	NA	NA
RELA-17-139236	01-61573	0–1	QBT3	NA	NA	—	71.8	NA	NA	NA	NA
RELA-17-139252	01-61573	1–2	QBT3	NA	NA	—	19	NA	NA	NA	NA
RELA-17-139237	01-61574	0–1	SOIL	NA	NA	—	62.4	NA	NA	NA	NA
RELA-17-139253	01-61574	1–2	QBT3	NA	NA	—	17.7	NA	NA	NA	NA
RELA-17-139238	01-61575	0–1	QBT3	NA	NA	—	24.6 (J)	NA	NA	NA	NA
RELA-17-139254	01-61575	1–2	QBT3	NA	NA	—	9.49	NA	NA	NA	NA
RELA-17-139239	01-61576	0–1	SOIL	NA	NA	—	16.7	NA	NA	NA	NA
RELA-17-139255	01-61576	1–2	QBT3	NA	NA	—	1.77	NA	NA	NA	NA
RELA-17-139240	01-61577	0–1	QBT3	NA	NA	—	50	NA	NA	NA	NA
RELA-17-139256	01-61577	1–2	QBT3	NA	NA	—	14.1	NA	NA	NA	NA
RELA-17-139241	01-61578	0–1	QBT3	NA	NA	—	60.5	NA	NA	NA	NA
RELA-17-139257	01-61578	1–2	QBT3	NA	NA	—	31.1	NA	NA	NA	NA
RELA-17-139242	01-61579	0–1	QBT3	NA	NA	—	125	NA	NA	NA	NA

Table 7.4-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239/240	Strontium-90	Uranium-234	Uranium-235/236	Uranium-238
Soil Background Value[a]				**0.013**	**1.65**	**0.023**	**0.054**	**1.31**	**2.59**	**0.2**	**2.29**
Qbt 2,3,4 Background Value[a]				**na[b]**	**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
Qbt 1g, Qct, Qbt 1g Background Value[a]				**na**	**na**	**na**	**na**	**na**	**4**	**0.18**	**3.9**
Sediment Background Value[a]				**0.04**	**0.9**	**0.006**	**0.068**	**1.04**	**2.59**	**0.2**	**2.29**
Construction Worker SAL[c]				**230**	**37**	**230**	**200**	**1400**	**1000**	**130**	**340**
Industrial SAL[c]				**1000**	**41**	**1300**	**1200**	**2400**	**3100**	**160**	**710**
Residential SAL[c]				**83**	**12**	**84**	**79**	**15**	**290**	**42**	**150**
RELA-17-139258	01-61579	1–2	QBT3	NA	NA	—	16.4	NA	NA	NA	NA
RELA-17-139243	01-61580	0–1	QBT3	NA	NA	—	207	NA	NA	NA	NA
RELA-17-139259	01-61580	1–2	QBT3	NA	NA	—	9.93	NA	NA	NA	NA
RELA-17-139244	01-61581	0–1	QBT3	NA	NA	—	185 (J)	NA	NA	NA	NA
RELA-17-139260	01-61581	1–2	QBT3	NA	NA	—	116	NA	NA	NA	NA
RELA-17-139245	01-61582	0–1	QBT3	NA	NA	—	103	NA	NA	NA	NA
RELA-17-139261	01-61582	1–2	QBT3	NA	NA	—	79.4	NA	NA	NA	NA
RELA-17-139265	01-61583	3–4	QBT3	NA	NA	—	18.1	NA	NA	NA	NA
RELA-17-139278	01-61583	4–5	QBT3	NA	NA	—	1.23	NA	NA	NA	NA
RELA-17-139266	01-61584	3–4	QBT3	NA	NA	—	38.5	NA	NA	NA	NA
RELA-17-139279	01-61584	4–5	QBT3	NA	NA	—	1.56	NA	NA	NA	NA
RELA-17-139267	01-61585	4–5	QBT3	NA	NA	—	9.91	NA	NA	NA	NA
RELA-17-139280	01-61585	5–6	QBT3	NA	NA	—	1.35	NA	NA	NA	NA
RELA-17-139268	01-61586	3–4	QBT3	NA	NA	—	17.4	NA	NA	NA	NA
RELA-17-139281	01-61586	4–5	QBT3	NA	NA	—	1.48	NA	NA	NA	NA
RELA-17-139269	01-61587	3–4	QBT3	NA	NA	—	8.69	NA	NA	NA	NA
RELA-17-139282	01-61587	4–5	QBT3	NA	NA	—	1.62	NA	NA	NA	NA
RELA-17-139270	01-61588	3–4	QBT3	NA	NA	—	7.25	NA	NA	NA	NA
RELA-17-139283	01-61588	4–5	QBT3	NA	NA	—	3.7	NA	NA	NA	NA
RELA-17-139271	01-61589	0–1	QBT3	NA	NA	—	2960	NA	NA	NA	NA
RELA-17-139284	01-61589	1–2	QBT3	NA	NA	0.0713	366	NA	NA	NA	NA
RELA-17-139272	01-61590	0–1	SOIL	NA	NA	—	71.7	NA	NA	NA	NA
RELA-17-139285	01-61590	1–2	QBT3	NA	NA	—	63.6	NA	NA	NA	NA
RELA-17-139273	01-61591	0–1	QBT3	NA	NA	0.05	17.5	NA	NA	NA	NA
RELA-17-139286	01-61591	1–2	QBT3	NA	NA	—	8.26	NA	NA	NA	NA
RELA-17-139274	01-61592	0–1	QBT3	NA	NA	—	164	NA	NA	NA	NA
RELA-17-139287	01-61592	1–2	QBT3	NA	NA	—	72.9	NA	NA	NA	NA
RELA-17-139275	01-61593	0–1	QBT3	NA	NA	—	302	NA	NA	NA	NA

Table 7.4-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239/240	Strontium-90	Uranium-234	Uranium-235/236	Uranium-238
Soil Background Value[a]				**0.013**	**1.65**	**0.023**	**0.054**	**1.31**	**2.59**	**0.2**	**2.29**
Qbt 2,3,4 Background Value[a]				**na[b]**	**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
Qbt 1g, Qct, Qbt 1g Background Value[a]				**na**	**na**	**na**	**na**	**na**	**4**	**0.18**	**3.9**
Sediment Background Value[a]				**0.04**	**0.9**	**0.006**	**0.068**	**1.04**	**2.59**	**0.2**	**2.29**
Construction Worker SAL[c]				**230**	**37**	**230**	**200**	**1400**	**1000**	**130**	**340**
Industrial SAL[c]				**1000**	**41**	**1300**	**1200**	**2400**	**3100**	**160**	**710**
Residential SAL[c]				**83**	**12**	**84**	**79**	**15**	**290**	**42**	**150**
RELA-17-139288	01-61593	1–2	QBT3	NA	NA	—	133	NA	NA	NA	NA
RELA-17-139276	01-61594	0–1	QBT3	NA	NA	—	175	NA	NA	NA	NA
RELA-17-139289	01-61594	1–2	QBT3	NA	NA	—	48.9	NA	NA	NA	NA
RELA-17-139277	01-61595	0—1	QBT3	NA	NA	—	74.7	NA	NA	NA	NA
RELA-17-139290	01-61595	1–2	QBT3	NA	NA	—	25.8	NA	NA	NA	NA
RELA-17-139297	01-61596	3–4	QBT3	NA	NA	—	4.59	NA	NA	NA	NA
RELA-17-139298	01-61596	4–5	QBT3	NA	NA	—	4.76	NA	NA	NA	NA
RELA-17-139330	01-61597	3–4	QBT3	NA	NA	—	97.8	NA	NA	NA	NA
RELA-17-139331	01-61597	4–5	QBT3	NA	NA	—	24.9	NA	NA	NA	NA
RELA-17-139300	01-61598	3–4	QBT3	NA	NA	—	14.5	NA	NA	NA	NA
RELA-17-139301	01-61598	4–5	QBT3	NA	NA	—	10.1	NA	NA	NA	NA
RELA-17-139302	01-61599	3–4	QBT3	NA	NA	—	49.2	NA	NA	NA	NA
RELA-17-139303	01-61599	4–5	QBT3	NA	NA	—	17.7 (J)	NA	NA	NA	NA
RELA-17-131595	01-63	3–4	QBT3	NA	NA	—	37.8	NA	NA	NA	NA
RELA-17-131598	01-63	4–5	QBT3	NA	NA	—	7.86	NA	NA	NA	NA
RELA-17-131596	01-64	3–4	QBT3	NA	NA	0.48 (J)	263	NA	NA	NA	NA
RELA-17-131599	01-64	4–5	QBT3	NA	NA	0.0625	57.2	NA	NA	NA	NA
RELA-17-131597	01-65	3–4	QBT3	NA	NA	—	2.78	NA	NA	NA	NA
RELA-17-131600	01-65	4–5	QBT3	NA	NA	—	9.61	NA	NA	NA	NA

Note: Results are in pCi/g.

[a] BVs/FVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SALs are from LANL (2015, 600929).

[d] — = Not detected or not detected above BV/FV.

[e] NA = Not analyzed.

Table 7.5-1
Samples Collected and Analyses Requested at SWMU 01-001(f)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RE00-08-16146	00-603830	0–1.25	SED	09-244[a]	09-243	09-244	09-244	09-244	09-244	09-243	09-242	09-243	09-244	09-242	09-242	09-243
RE00-08-16147	00-603830	1.25–3.25	QBT3	09-244	09-243	09-244	09-244	09-244	09-244	09-243	09-242	09-243	09-244	09-242	09-242	09-243
RE01-13-37820	00-603830	3–4	QBT3	—[b]	—	—	—	—	—	—	2013-1634	—	—	—	—	—
RE01-13-37821	00-603830	6–7	QBT3	—	—	—	—	—	—	—	2013-1634	—	—	—	—	—
RE01-13-37822	00-603830	9–10	QBT3	—	—	—	—	—	—	—	2013-1634	—	—	—	—	—
RE00-08-16150	00-603832	0–1.25	SED	09-237	09-235	09-237	09-237	09-237	09-237	09-235	09-236	09-235	09-237	09-236	09-236	09-235
RE00-08-16151	00-603832	1.25–2.5	QBT3	09-237	09-235	09-237	09-237	09-237	09-237	09-235	09-236	09-235	09-237	09-236	09-236	09-235
RE00-08-16152	00-603833	0–1	SED	09-237	09-235	09-237	09-237	09-237	09-237	09-235	09-236	09-235	09-237	09-236	09-236	09-235
RE00-08-16153	00-603833	1–2	QBT3	09-237	09-235	09-237	09-237	09-237	09-237	09-235	09-236	09-235	09-237	09-236	09-236	09-235
RE00-08-16154	00-603834	0–1	SED	09-237	09-235	09-237	09-237	09-237	09-237	09-235	09-236	09-235	09-237	09-236	09-236	09-235
RE00-08-16155	00-603834	1.25–2.25	QBT3	09-237	09-235	09-237	09-237	09-237	09-237	09-235	09-236	09-235	09-237	09-236	09-236	09-235
RE00-08-16156	00-603835	0–1	SED	09-237	09-235	09-237	09-237	09-237	09-237	09-235	09-236	09-235	09-237	09-236	09-236	09-235
RE00-08-16157	00-603835	1–2	QBT3	09-237	09-235	09-237	09-237	09-237	09-237	09-235	09-236	09-235	09-237	09-236	09-236	09-235
RE01-12-592	00-603835	4–5	QBT3	—	—	—	—	—	12-335	—	—	—	—	—	12-335	—
RE00-08-16158	00-603836	0–1	SED	09-222	09-221	09-222	09-222	09-222	09-222	09-221	09-220	09-221	09-222	09-220	09-220	09-221
RE00-08-16159	00-603836	1.75–2.75	QBT3	09-222	09-221	09-222	09-222	09-222	09-222	09-221	09-220	09-221	09-222	09-220	09-220	09-221
RE01-12-591	00-603836	5–6	SED	—	—	—	—	—	12-338	12-338	—	—	—	—	12-338	—
RE01-13-37684	01-123	0–1	SED	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	—	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585
RE01-13-37685	01-124	0–1	SED	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	—	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585
RE01-13-37686	01-125	0–1	SED	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	—	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585
RE01-13-37687	01-126	0–1	SED	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	—	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585
RE01-13-37688	01-127	0–1	SED	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	—	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585
RE01-13-37689	01-128	0–1	SED	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	—	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585
RE01-13-37690	01-129	0–1	SED	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	—	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585
RE01-13-37691	01-130	0–1	SED	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	—	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585
RE01-13-37692	01-131	0–1	SED	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	—	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585
RE01-13-37693	01-132	0–1	SED	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	—	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584
RE01-13-37694	01-133	0–1	SED	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	—	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585
RE01-13-37730	01-134	0–1	ALLH	—	—	—	—	—	—	—	2013-1663	—	—	—	—	—
RE01-13-37734	01-134	12–13	QBT3	—	—	—	—	—	—	—	2013-1663	—	—	—	—	—

Table 7.5-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RE01-13-37735	01-134	14–15	QBT3	—	—	—	—	—	—	—	2013-1663	—	—	—	—	—
RE01-13-37731	01-134	3–4	QBT3	—	—	—	—	—	—	—	2013-1663	—	—	—	—	—
RE01-13-37732	01-134	6–7	QBT3	—	—	—	—	—	—	—	2013-1663	—	—	—	—	—
RE01-13-37733	01-134	9–10	QBT3	—	—	—	—	—	—	—	2013-1663	—	—	—	—	—
RE01-13-37736	01-135	0–1	ALLH	—	—	—	—	—	—	—	2013-1663	—	—	—	—	—
RE01-13-37740	01-135	12–13	QBT3	—	—	—	—	—	—	—	2013-1663	—	—	—	—	—
RE01-13-37741	01-135	14–15	QBT3	—	—	—	—	—	—	—	2013-1663	—	—	—	—	—
RE01-13-37737	01-135	3–4	QBT3	—	—	—	—	—	—	—	2013-1663	—	—	—	—	—
RE01-13-37738	01-135	6–7	QBT3	—	—	—	—	—	—	—	2013-1663	—	—	—	—	—
RE01-13-37739	01-135	9–10	QBT3	—	—	—	—	—	—	—	2013-1663	—	—	—	—	—
RE01-13-37742	01-136	0–1	ALLH	—	—	—	—	—	—	—	2013-1673	—	—	—	—	—
RE01-13-37746	01-136	12–13	QBT3	—	—	—	—	—	—	—	2013-1673	—	—	—	—	—
RE01-13-37747	01-136	14–15	QBT3	—	—	—	—	—	—	—	2013-1673	—	—	—	—	—
RE01-13-37743	01-136	3–4	QBT3	—	—	—	—	—	—	—	2013-1673	—	—	—	—	—
RE01-13-37744	01-136	6–7	QBT3	—	—	—	—	—	—	—	2013-1673	—	—	—	—	—
RE01-13-37745	01-136	9–10	QBT3	—	—	—	—	—	—	—	2013-1673	—	—	—	—	—
RE01-13-37748	01-137	0–1	ALLH	—	—	—	—	—	—	—	2013-1673	—	—	—	—	—
RE01-13-37752	01-137	12–13	QBT3	—	—	—	—	—	—	—	2013-1673	—	—	—	—	—
RE01-13-37753	01-137	14–15	QBT3	—	—	—	—	—	—	—	2013-1673	—	—	—	—	—
RE01-13-37749	01-137	3–4	QBT3	—	—	—	—	—	—	—	2013-1673	—	—	—	—	—
RE01-13-37750	01-137	6–7	QBT3	—	—	—	—	—	—	—	2013-1673	—	—	—	—	—
RE01-13-37751	01-137	9–10	QBT3	—	—	—	—	—	—	—	2013-1673	—	—	—	—	—
RE01-13-37754	01-138	0–1	SED	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585	2013-1585
RE01-13-37756	01-138	2–3	SED	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586
RE01-13-37755	01-139	0–1	SED	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586
RE01-13-37757	01-139	2–3	SED	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586
RE01-13-37788	01-140	0–1	SED	—	—	—	—	—	—	—	2013-1584	—	—	—	—	—
RE01-13-37789	01-140	1–2	ALLH	—	—	—	—	—	—	—	2013-1584	—	—	—	—	—
RE01-10-5536	01-609991	0–0.04	SED	—	—	—	—	—	—	—	10-525	—	—	—	—	—
RE01-10-5537	01-609992	0–5.25	SED	—	—	—	—	—	—	—	10-525	—	—	—	—	—
RE01-10-5538	01-609993	0–2	SED	—	—	—	—	—	—	—	10-525	—	—	—	—	—
RE01-10-5539	01-609994	0–1.41	QAL	—	—	—	—	—	—	—	10-525	—	—	—	—	—
RE01-10-5540	01-609995	0–4.13	SED	—	—	—	—	—	—	—	10-525	—	—	—	—	—
RE01-10-11576	01-611286	0–0.25	ALLH	—	—	—	—	—	—	—	10-1307	—	—	—	—	—
RE01-10-11577	01-611287	0–0.25	ALLH	—	—	—	—	—	—	—	10-1307	—	—	—	—	—

Table 7.5-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RE01-10-11578	01-611288	0–0.25	ALLH	—	—	—	—	—	—	—	10-1307	—	—	—	—	—
RE01-10-11579	01-611289	0–0.25	ALLH	—	—	—	—	—	—	—	10-1307	—	—	—	—	—
RE01-10-11580	01-611290	0–0.25	ALLH	—	—	—	—	—	—	—	10-1307	—	—	—	—	—
RE01-10-11581	01-611291	0–0.25	ALLH	—	—	—	—	—	—	—	10-1307	—	—	—	—	—
RE01-10-11582	01-611292	0–0.25	ALLH	—	—	—	—	—	—	—	10-1307	—	—	—	—	—
RE01-10-11583	01-611293	0–0.25	ALLH	—	—	—	—	—	—	—	10-1307	—	—	—	—	—
RE01-10-11584	01-611294	0–0.25	ALLH	—	—	—	—	—	—	—	10-1307	—	—	—	—	—
RE01-10-11585	01-611295	0–0.25	ALLH	—	—	—	—	—	—	—	10-1307	—	—	—	—	—
RE01-10-11586	01-611296	0–0.25	ALLH	—	—	—	—	—	—	—	10-1307	—	—	—	—	—
RE01-10-11587	01-611297	0–0.25	ALLH	—	—	—	—	—	—	—	10-1307	—	—	—	—	—
RE01-10-23245	01-612620	2.9–3	QBT3	—	—	—	—	—	—	—	10-3787	—	—	—	—	—
RE01-10-23246	01-612621	5–5.1	QBT3	—	—	—	—	—	—	—	10-3787	—	—	—	—	—
RE01-10-23247	01-612622	2.5–2.6	QBT3	—	—	—	—	—	—	—	10-3787	—	—	—	—	—
RE01-13-37727	01-612623	11–12	QBT3	—	—	—	—	—	—	—	2013-1673	—	—	—	—	—
RE01-13-37728	01-612623	13–14	QBT3	—	—	—	—	—	—	—	2013-1673	—	—	—	—	—
RE01-13-37729	01-612623	15–16	QBT3	—	—	—	—	—	—	—	2013-1673	—	—	—	—	—
RE01-10-23248	01-612623	3–3.1	QBT3	—	—	—	—	—	—	—	10-3787	—	—	—	—	—
RE01-13-37724	01-612623	5–6	QBT3	—	—	—	—	—	—	—	2013-1673	—	—	—	—	—
RE01-13-37725	01-612623	7–8	QBT3	—	—	—	—	—	—	—	2013-1673	—	—	—	—	—
RE01-13-37726	01-612623	9–10	QBT3	—	—	—	—	—	—	—	2013-1673	—	—	—	—	—
RE01-13-37723	01-612624	11–12	QBT3	—	—	—	—	—	—	—	2013-1634	—	—	—	—	—
RE01-10-23249	01-612624	2.9–3	QBT3	—	—	—	—	—	—	—	10-3787	—	—	—	—	—
RE01-13-37720	01-612624	5–6	QBT3	—	—	—	—	—	—	—	2013-1634	—	—	—	—	—
RE01-13-37721	01-612624	7–8	QBT3	—	—	—	—	—	—	—	2013-1634	—	—	—	—	—
RE01-13-37722	01-612624	9–10	QBT3	—	—	—	—	—	—	—	2013-1634	—	—	—	—	—
RE01-10-23250	01-612625	2.9–3	QBT3	—	—	—	—	—	—	—	10-3787	—	—	—	—	—
RE01-10-23251	01-612626	3.4–3.5	QBT3	—	—	—	—	—	—	—	10-3787	—	—	—	—	—
RE01-10-23252	01-612627	3.4–3.5	QBT3	—	—	—	—	—	—	—	10-3787	—	—	—	—	—
RE01-10-23253	01-612628	4–4.1	QBT3	—	—	—	—	—	—	—	10-3787	—	—	—	—	—
RE01-10-23254	01-612629	4–4.1	QBT3	—	—	—	—	—	—	—	10-3787	—	—	—	—	—
RE01-10-23255	01-612630	2.5–2.6	QBT3	—	—	—	—	—	—	—	10-3787	—	—	—	—	—
RE01-13-37714	01-612630	5–6	QBT3	—	—	—	—	—	—	—	2013-1634	—	—	—	—	—
RE01-13-37715	01-612630	7–8	QBT3	—	—	—	—	—	—	—	2013-1634	—	—	—	—	—
RE01-13-37716	01-612630	9–10	QBT3	—	—	—	—	—	—	—	2013-1634	—	—	—	—	—
RE01-10-23256	01-612631	3–3.1	QBT3	—	—	—	—	—	—	—	10-3787	—	—	—	—	—

Table 7.5-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RE01-10-23257	01-612632	2.9–3	QBT3	—	—	—	—	—	—	—	10-3787	—	—	—	—	—
RE01-13-37709	01-613697	10–11	QBT3	—	—	—	—	—	—	—	2013-1664	—	—	—	—	—
RE01-13-37710	01-613697	12–13	QBT3	—	—	—	—	—	—	—	2013-1664	—	—	—	—	—
RE01-13-37711	01-613697	14–15	QBT3	—	—	—	—	—	—	—	2013-1664	—	—	—	—	—
RE01-13-37698	01-614683	11–12	QBT3	—	—	—	—	—	—	—	2013-1664	—	—	—	—	—
RE01-13-37699	01-614683	13–14	QBT3	—	—	—	—	—	—	—	2013-1664	—	—	—	—	—
RE01-13-37700	01-614683	15–16	QBT3	—	—	—	—	—	—	—	2013-1664	—	—	—	—	—
RE01-13-37701	01-614683	17–18	QBT3	—	—	—	—	—	—	—	2013-1664	—	—	—	—	—
RE01-13-37702	01-614683	19–20	QBT3	—	—	—	—	—	—	—	2013-1664	—	—	—	—	—
RE01-13-37695	01-614683	5–6	QBT3	—	—	—	—	—	—	—	2013-1664	—	—	—	—	—
RE01-13-37696	01-614683	7–8	QBT3	—	—	—	—	—	—	—	2013-1664	—	—	—	—	—
RE01-13-37697	01-614683	9–10	QBT3	—	—	—	—	—	—	—	2013-1664	—	—	—	—	—
CALA-10-9847	LA-610960	0–0.25	SED	—	—	—	—	—	—	—	10-1064	—	—	—	—	—
RE01-13-37758	LA-610960	0–1	SED	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586
RE01-13-37759	LA-610960	2–3	SED	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586
CALA-10-9848	LA-610961	0–0.25	SED	—	—	—	—	—	—	—	10-1064	—	—	—	—	—
CALA-10-9849	LA-610962	0–0.25	SED	—	—	—	—	—	—	—	10-1064	—	—	—	—	—
CALA-10-9850	LA-610963	0–0.25	SED	—	—	—	—	—	—	—	10-1064	—	—	—	—	—
CALA-10-9851	LA-610964	0–0.25	SED	—	—	—	—	—	—	—	10-1064	—	—	—	—	—
RE01-13-37764	LA-610964	0–1	SED	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584
RE01-13-37765	LA-610964	2–3	SED	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584	2013-1584
CALA-10-9852	LA-610965	0–0.25	SED	—	—	—	—	—	—	—	10-1064	—	—	—	—	—
CALA-10-9853	LA-610966	0–0.25	SED	—	—	—	—	—	—	—	10-1064	—	—	—	—	—
RE01-13-37770	LA-610966	0–1	SED	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586
RE01-13-37771	LA-610966	2–3	SED	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586
RE01-13-37772	LA-610966	4–5	SED	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586	2013-1586
CALA-10-9854	LA-610967	0–0.25	SED	—	—	—	—	—	—	—	10-1064	—	—	—	—	—
CALA-10-9855	LA-610968	0–0.25	SED	—	—	—	—	—	—	—	10-1064	—	—	—	—	—
CALA-10-9856	LA-610969	0–0.25	SED	—	—	—	—	—	—	—	10-1064	—	—	—	—	—
CALA-10-9857	LA-610970	0–0.25	SED	—	—	—	—	—	—	—	10-1064	—	—	—	—	—
CALA-10-9858	LA-610971	0–0.25	SED	—	—	—	—	—	—	—	10-1064	—	—	—	—	—
CALA-10-9859	LA-610972	0–0.25	SED	—	—	—	—	—	—	—	10-1064	—	—	—	—	—
CALA-10-9860	LA-610973	0–0.25	SED	—	—	—	—	—	—	—	10-1064	—	—	—	—	—
CALA-10-9862	LA-610975	0–0.25	SED	—	—	—	—	—	—	—	10-1064	—	—	—	—	—
CALA-10-9863	LA-610976	0–0.25	SED	—	—	—	—	—	—	—	10-1064	—	—	—	—	—

Table 7.5-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
CALA-10-9864	LA-610977	0–0.25	SED	—	—	—	—	—	—	—	10-1064	—	—	—	—	—
CALA-10-9866	LA-610979	0–0.25	SED	—	—	—	—	—	—	—	10-1064	—	—	—	—	—
CALA-10-11204	LA-611125	0–0.5	QBT3	—	—	—	—	—	—	—	10-1691	—	—	—	—	—
CALA-10-11203	LA-611126	0–0.5	QBT3	—	—	—	—	—	—	—	10-1691	—	—	—	—	—
CALA-10-11201	LA-611127	0–1	ALLH	—	—	—	—	—	—	—	10-1308	—	—	—	—	—
CALA-10-11202	LA-611128	0–1	ALLH	—	—	—	—	—	—	—	10-1308	—	—	—	—	—
CALA-10-11205	LA-611129	0–0.5	QBT3	—	—	—	—	—	—	—	10-1691	—	—	—	—	—
CALA-10-11206	LA-611130	0–0.5	QBT3	—	—	—	—	—	—	—	10-1691	—	—	—	—	—
CALA-10-11207	LA-611131	0–0.5	QBT3	—	—	—	—	—	—	—	10-1691	—	—	—	—	—
CALA-10-11208	LA-611132	0–0.5	QBT3	—	—	—	—	—	—	—	10-1691	—	—	—	—	—
CALA-10-11209	LA-611133	0–0.5	QBT3	—	—	—	—	—	—	—	10-1691	—	—	—	—	—
CALA-10-11210	LA-611134	0–0.5	QBT3	—	—	—	—	—	—	—	10-1691	—	—	—	—	—
CALA-10-11211	LA-611135	0–0.5	QBT3	—	—	—	—	—	—	—	10-1691	—	—	—	—	—
CALA-10-11212	LA-611136	0–0.5	QBT3	—	—	—	—	—	—	—	10-1691	—	—	—	—	—
CALA-10-11213	LA-611137	0–0.5	QBT3	—	—	—	—	—	—	—	10-1691	—	—	—	—	—
CALA-10-11215	LA-611139	0–0.5	QBT3	—	—	—	—	—	—	—	10-1691	—	—	—	—	—
CALA-10-11216	LA-611140	0–0.5	QBT3	—	—	—	—	—	—	—	10-1691	—	—	—	—	—
CALA-10-11217	LA-611141	0–0.5	QBT3	—	—	—	—	—	—	—	10-1691	—	—	—	—	—
CALA-10-11218	LA-611142	0–0.5	QBT3	—	—	—	—	—	—	—	10-1691	—	—	—	—	—
CALA-10-11219	LA-611143	0–0.5	QBT3	—	—	—	—	—	—	—	10-1691	—	—	—	—	—
CALA-10-11220	LA-611144	0–0.5	QBT3	—	—	—	—	—	—	—	10-1691	—	—	—	—	—
CALA-10-11221	LA-611145	0–0.5	QBT3	—	—	—	—	—	—	—	10-1691	—	—	—	—	—
CALA-10-11226	LA-611150	0–0.5	ALLH	—	—	—	—	—	—	—	10-1889	—	—	—	—	—
CALA-10-11227	LA-611151	0–0.5	ALLH	—	—	—	—	—	—	—	10-1889	—	—	—	—	—
CALA-10-11228	LA-611152	0.5–1	ALLH	—	—	—	—	—	—	—	10-1889	—	—	—	—	—
CALA-10-11229	LA-611153	0–1	ALLH	—	—	—	—	—	—	—	10-1889	—	—	—	—	—
CALA-10-11230	LA-611154	0–0.25	ALLH	—	—	—	—	—	—	—	10-1889	—	—	—	—	—
CALA-10-11231	LA-611155	0–0.33	ALLH	—	—	—	—	—	—	—	10-1889	—	—	—	—	—
CALA-10-11232	LA-611156	0–0.33	ALLH	—	—	—	—	—	—	—	10-1889	—	—	—	—	—
CALA-10-11233	LA-611157	0–0.166	ALLH	—	—	—	—	—	—	—	10-1889	—	—	—	—	—
CALA-10-11234	LA-611158	0–0.5	ALLH	—	—	—	—	—	—	—	10-1889	—	—	—	—	—
CALA-10-11235	LA-611158	0.5–1.5	ALLH	—	—	—	—	—	—	—	10-1889	—	—	—	—	—
CALA-10-11236	LA-611160	0–0.5	ALLH	—	—	—	—	—	—	—	10-1889	—	—	—	—	—
CALA-10-11237	LA-611160	0.5–1.5	ALLH	—	—	—	—	—	—	—	10-1889	—	—	—	—	—
CALA-10-11238	LA-611162	0–0.5	ALLH	—	—	—	—	—	—	—	10-1889	—	—	—	—	—

Table 7.5-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
CALA-10-11239	LA-611162	0.5–1	ALLH	—	—	—	—	—	—	—	10-1889	—	—	—	—	—
CALA-10-11240	LA-611164	0–0.5	QBT3	—	—	—	—	—	—	—	10-2100	—	—	—	—	—
CALA-10-11251	LA-611175	0–0.5	QBT3	—	—	—	—	—	—	—	10-2100	—	—	—	—	—
CALA-10-11252	LA-611176	0–0.5	QBT3	—	—	—	—	—	—	—	10-2100	—	—	—	—	—
CALA-10-11253	LA-611177	0–0.5	QBT3	—	—	—	—	—	—	—	10-2100	—	—	—	—	—
CALA-10-11255	LA-611179	0–0.5	QBT3	—	—	—	—	—	—	—	10-2100	—	—	—	—	—
CALA-10-11256	LA-611180	0–0.5	QBT3	—	—	—	—	—	—	—	10-2100	—	—	—	—	—
CALA-10-11257	LA-611181	0–0.5	QBT3	—	—	—	—	—	—	—	10-2100	—	—	—	—	—
CALA-10-11258	LA-611182	0–0.5	QBT3	—	—	—	—	—	—	—	10-2100	—	—	—	—	—
CALA-10-11259	LA-611183	0–0.5	SED	—	—	—	—	—	—	—	10-2100	—	—	—	—	—
CALA-10-11260	LA-611184	0–0.5	QBT3	—	—	—	—	—	—	—	10-2100	—	—	—	—	—
CALA-10-11261	LA-611185	0–0.5	QBT3	—	—	—	—	—	—	—	10-2100	—	—	—	—	—
CALA-10-11262	LA-611186	0–0.5	QBT3	—	—	—	—	—	—	—	10-2142	—	—	—	—	—
CALA-10-11263	LA-611187	0–0.5	SED	—	—	—	—	—	—	—	10-2142	—	—	—	—	—
CALA-10-11264	LA-611188	0–0.5	QBT3	—	—	—	—	—	—	—	10-2142	—	—	—	—	—
CALA-10-11265	LA-611189	0–0.5	QBT3	—	—	—	—	—	—	—	10-2142	—	—	—	—	—
CALA-10-11266	LA-611190	0–0.5	QBT3	—	—	—	—	—	—	—	10-2142	—	—	—	—	—
CALA-10-11267	LA-611191	0–0.5	QBT3	—	—	—	—	—	—	—	10-2142	—	—	—	—	—
CALA-10-11268	LA-611192	0–0.5	QBT3	—	—	—	—	—	—	—	10-2142	—	—	—	—	—
CALA-10-11269	LA-611193	0–0.5	QBT3	—	—	—	—	—	—	—	10-2142	—	—	—	—	—
CALA-10-11270	LA-611194	0–0.5	QBT3	—	—	—	—	—	—	—	10-2142	—	—	—	—	—

[a] Analytical request number.

[b] — = Analysis not requested.

Table 7.5-2
Inorganic Chemicals Detected or Detected above BVs at SWMU 01-001(f)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Magnesium	Manganese	Nickel	Nitrate	Selenium	Vanadium	Zinc
Soil Background Value[a]				**0.83**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**4610**	**671**	**15.4**	**na[b]**	**1.52**	**39.6**	**48.8**
Qbt 2,3,4 Background Value[a]				**0.5**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**1690**	**482**	**6.58**	**na**	**0.3**	**17**	**63.5**
Sediment Background Value[a]				**0.83**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**2370**	**543**	**9.38**	**na**	**0.3**	**19.7**	**60.2**
Industrial SSL[c]				**519**	**1110**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**na**	**160,000**	**25,700**	**2,080,000**	**6490**	**6530**	**389,000**
Construction Worker SSL[c]				**142**	**72.1**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**na**	**464**	**753**	**991,000**	**3100**	**614**	**186,000**
Residential SSL[c]				**31.3**	**70.5**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**na**	**10,500**	**1560**	**125,000**	**391**	**394**	**23,500**
RE00-08-16147	00-603830	1.25–3.25	QBT3	—[e]	—	—	—	—	—	0.52 (U)	—	—	—	—	—	—	RE00-08-16147	00-603830
RE00-08-16150	00-603832	0–1.25	SED	—	—	—	—	—	—	—	—	—	—	—	0.54	—	—	—
RE00-08-16151	00-603832	1.25–2.5	QBT3	—	—	—	—	—	—	0.53 (U)	—	—	—	—	—	—	—	—
RE00-08-16153	00-603833	1–2	QBT3	—	—	—	9.4 (J)	—	—	—	—	—	—	—	—	—	—	—
RE00-08-16154	00-603834	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.54 (U)	—	—
RE00-08-16155	00-603834	1.25–2.25	QBT3	—	—	—	—	—	—	0.51 (U)	—	—	—	—	—	—	—	—
RE00-08-16156	00-603835	0–1	SED	—	—	15,600	—	—	—	—	—	—	—	—	0.89	0.54 (U)	—	—
RE00-08-16158	00-603836	0–1	SED	1.1	—	—	—	—	—	—	24.5 (J)	—	—	—	0.24	0.59 (U)	—	75.8
RE00-08-16159	00-603836	1.75–2.75	QBT3	—	—	—	7.4	—	5.2	0.6 (U)	18.6 (J+)	—	—	—	—	0.32 (J)	—	—
RE01-13-37684	01-123	0–1	SED	0.975 (U)	—	—	10.9 (J)	—	—	—	—	—	—	—	0.445 (J)	0.984 (U)	—	—
RE01-13-37685	01-124	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	1.08	1.08 (U)	—	62.9
RE01-13-37686	01-125	0–1	SED	1.11 (U)	—	—	—	—	—	—	—	—	—	—	0.63 (J)	1.07 (U)	—	61.8
RE01-13-37687	01-126	0–1	SED	—	0.618 (U)	—	—	—	—	—	—	—	—	—	—	1.37 (U)	—	—
RE01-13-37688	01-127	0–1	SED	1.05 (U)	—	—	—	7.49	—	—	25.2	—	1000	—	—	1.11 (U)	—	—
RE01-13-37689	01-128	0–1	SED	1.3 (J)	—	—	—	—	12.2	—	24.6	—	—	—	3.24	1.3 (U)	—	131
RE01-13-37690	01-129	0–1	SED	1.07 (U)	0.537 (U)	—	—	—	—	—	—	—	—	—	0.726 (J)	0.97 (U)	—	—
RE01-13-37691	01-130	0–1	SED	1.16 (U)	—	—	—	—	—	—	—	—	—	—	—	1.2 (U)	—	—
RE01-13-37692	01-131	0–1	SED	—	0.582 (U)	—	—	—	—	—	—	—	—	—	1.25	1.21 (U)	—	—
RE01-13-37693	01-132	0–1	SED	1.21	—	—	—	—	—	—	22	—	—	—	1.94	1.06 (U)	—	101
RE01-13-37694	01-133	0–1	SED	1.11 (U)	—	—	—	—	—	—	23.4	—	—	—	0.769 (J)	1.07 (U)	—	65.3
RE01-13-37754	01-138	0–1	SED	1.06 (U)	—	—	—	—	—	—	—	—	—	12.6	—	1.05 (U)	—	—
RE01-13-37756	01-138	2–3	SED	—	—	—	—	—	—	—	—	—	—	—	—	1.14 (U)	—	—
RE01-13-37755	01-139	0–1	SED	1.24 (U)	0.622 (U)	—	—	—	—	—	—	—	—	—	—	1.32 (U)	—	—
RE01-13-37757	01-139	2–3	SED	1.11 (U)	—	—	—	—	—	—	—	—	—	—	—	1.14 (U)	—	—

Table 7.5-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Magnesium	Manganese	Nickel	Nitrate	Selenium	Vanadium	Zinc
Soil Background Value[a]				**0.83**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**4610**	**671**	**15.4**	**na[b]**	**1.52**	**39.6**	**48.8**
Qbt 2,3,4 Background Value[a]				**0.5**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**1690**	**482**	**6.58**	**na**	**0.3**	**17**	**63.5**
Sediment Background Value[a]				**0.83**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**2370**	**543**	**9.38**	**na**	**0.3**	**19.7**	**60.2**
Industrial SSL[c]				**519**	**1110**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**na**	**160,000**	**25,700**	**2,080,000**	**6490**	**6530**	**389,000**
Construction Worker SSL[c]				**142**	**72.1**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**na**	**464**	**753**	**991,000**	**3100**	**614**	**186,000**
Residential SSL[c]				**31.3**	**70.5**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**na**	**10,500**	**1560**	**125,000**	**391**	**394**	**23,500**
RE01-13-37758	LA-610960	0–1	SED	—	0.61 (U)	—	—	—	—	—	—	—	—	—	—	1.35 (U)	—	—
RE01-13-37759	LA-610960	2–3	SED	1.06 (U)	0.528 (U)	—	—	—	—	—	—	—	—	—	0.49 (J)	1.14 (U)	—	—
RE01-13-37764	LA-610964	0–1	SED	1.14 (U)	—	—	—	—	—	—	22.2	—	—	—	—	1.03 (U)	—	—
RE01-13-37765	LA-610964	2–3	SED	1.36 (U)	—	—	—	—	—	—	—	—	—	—	—	1.19 (U)	—	—
RE01-13-37770	LA-610966	0–1	SED	1.08 (U)	—	4980	—	—	14.3	—	—	2410	—	—	—	0.961 (U)	24.4	—
RE01-13-37771	LA-610966	2–3	SED	1.07 (U)	0.534 (U)	—	—	—	—	—	—	—	—	—	—	1.18 (U)	—	—
RE01-13-37772	LA-610966	4–5	SED	—	0.577 (U)	—	—	—	—	—	—	—			0.49 (J)	1.14 (U)	—	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] BVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SSLs are from NMED (2017, 602273) unless otherwise noted.

[d] SSL for total chromium.

[e] — = Not detected or not detected above BV.

Table 7.5-3
Organic Chemicals Other Than PCBs Detected at SWMU 01-001(f)

Sample ID	Location ID	Depth (ft)	Media	Acenaphthene	Acetone	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Benzyl Alcohol	Bis(2-ethylhexyl)phthalate	Butylbenzylphthalate	Chloroform
Industrial SSL[a]				**50,500**	**959,000**	**253,000**	**32.3**	**23.6**	**32.3**	**25,300**[b]	**323**	**3,300,000**[c]	**82,000**[c]	**1830**	**12,000**	**28.4**
Construction Worker SSL[a]				**15,100**	**241,000**	**75,300**	**240**	**106**	**240**	**7530**[b]	**2310**	**1,310,000**[d]	**26,900**[d]	**5380**	**13,100**	**133**
Residential SSL[a]				**3480**	**66,300**	**17,400**	**1.53**	**1.12**	**1.53**	**1740**[b]	**15.3**	**250,000**[c]	**6300**[c]	**380**	**2900**	**5.85**
RE00-08-16146	00-603830	0–1.25	SED	—[e]	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-16150	00-603832	0–1.25	SED	—	0.0024 (J)	—	—	—	—	—	—	—	—	—	—	—
RE00-08-16154	00-603834	0–1	SED	—	—	—	—	—	—	—	—	—	—	0.1 (J)	—	—
RE00-08-16156	00-603835	0–1	SED	0.048 (J)	—	0.17 (J)	0.53	0.5	0.46	0.22 (J)	0.55	—	—	0.091 (J)	—	—
RE00-08-16157	00-603835	1–2	QBT3	—	0.02 (J)	—	0.1 (J)	0.1 (J)	0.083 (J)	0.044 (J)	0.11 (J)	—	—	—	—	—
RE00-08-16158	00-603836	0–1	SED	0.052 (J)	—	0.12 (J)	0.68	0.82	0.81	0.37 (J)	1	0.42 (J)	—	0.18 (J)	—	—
RE00-08-16159	00-603836	1.75–2.75	QBT3	—	—	—	0.15 (J)	0.14 (J)	0.15 (J)	0.067 (J)	0.14 (J)	—	—	—	—	—
RE01-13-37684	01-123	0–1	SED	—	—	—	0.173 (J)	0.135 (J)	0.225	—	0.0673 (J)	—	—	—	—	—
RE01-13-37685	01-124	0–1	SED	—	—	—	0.155 (J)	0.131 (J)	0.193	—	0.0583 (J)	—	—	—	—	—
RE01-13-37686	01-125	0–1	SED	0.0147 (J)	—	0.0167 (J)	0.113	0.146	0.239	0.0657	0.0804	0.519 (J)	—	—	—	—
RE01-13-37687	01-126	0–1	SED	—	—	0.0336 (J)	0.297	0.257	0.374	0.132	0.143	—	—	—	—	—
RE01-13-37688	01-127	0–1	SED	—	—	0.0166 (J)	0.111	0.0947	0.141	0.0598	0.0547	0.477 (J)	—	—	0.192 (J)	—
RE01-13-37689	01-128	0–1	SED	—	0.00481 (J+)	0.051	0.373	0.459	0.621	0.344	0.246	0.621 (J)	—	0.198 (J)	—	—
RE01-13-37690	01-129	0–1	SED	0.0115 (J)	—	0.049	0.239	0.319	0.411	0.22	0.171	0.434 (J)	—	—	—	—
RE01-13-37691	01-130	0–1	SED	—	0.00624 (J+)	—	0.114 (J)	—	—	—	—	—	—	—	—	—
RE01-13-37692	01-131	0–1	SED	0.0242 (J)	—	0.159	0.698	0.634	0.851	0.404	0.359	—	0.153 (J)	1.25	—	—
RE01-13-37693	01-132	0–1	SED	0.0732	—	0.303	1.24	1.17	1.88	0.559	0.709	—	—	—	—	—
RE01-13-37694	01-133	0–1	SED	—	—	—	0.0352 (J)	0.0553	0.0745	—	0.0304 (J)	—	0.172 (J)	—	—	—
RE01-13-37754	01-138	0–1	SED	—	0.00276 (J)	—	—	—	—	—	—	—	0.158 (J)	—	—	—
RE01-13-37756	01-138	2–3	SED	—	0.00588 (J)	—	0.0411 (J)	0.0305 (J)	0.0464	0.0247 (J)	0.0141 (J)	—	—	—	—	—
RE01-13-37755	01-139	0–1	SED	—	0.00419 (J+)	—	—	—	—	—	—	0.591 (J)	0.202 (J)	—	—	0.000411 (J+)
RE01-13-37757	01-139	2–3	SED	—	—	—	—	—	—	—	—	—	0.13 (J)	—	—	—
RE01-13-37758	LA-610960	0–1	SED	0.0349 (J)	—	0.068	0.117	0.113	0.166	0.0457 (J)	0.0554	—	—	—	—	—
RE01-13-37764	LA-610964	0–1	SED	—	—	0.015 (J)	0.0742	0.0663	0.0884	0.0296 (J)	0.0343 (J)	—	—	—	—	—
RE01-13-37765	LA-610964	2–3	SED	—	0.00435 (J)	—	—	—	—	—	—	—	0.18 (J)	—	—	—
RE01-13-37770	LA-610966	0–1	SED	—	—	—	0.0263 (J)	0.0249 (J)	0.0361	—	0.0134 (J)	—	—	—	—	—
RE01-13-37771	LA-610966	2–3	SED	—	—	—	—	—	—	—	—	—	0.136 (J)	—	—	—
RE01-13-37772	LA-610966	4–5	SED	—	—	—	—	—	—	—	—	—	0.156 (J)	—	—	—

Table 7.5-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Phenanthrene	Pyrene	Styrene	Toluene	Trimethylbenzene[1,2,4-]	Xylene[1,3-]+Xylene[1,4-]
Industrial SSL[a]				**3230**	**3.23**	**33,700**	**33,700**	**32.3**	**14,100[f]**	**25,300**	**25,300**	**50,900**	**61,100**	**1800[c]**	**4240[g]**
Construction Worker SSL[a]				**23,100**	**24**	**10,000**	**10,000**	**240**	**2710[f]**	**7530**	**7530**	**10,100**	**14,000**	**5010[d]**	**791[g]**
Residential SSL[a]				**153**	**0.153**	**2320**	**2320**	**1.53**	**2350[f]**	**1740**	**1740**	**7230**	**5220**	**300[c]**	**863**
RE00-08-16146	00-603830	0–1.25	SED	—	—	—	—	—	—	—	—	—	—	0.00041 (J)	NA[h]
RE00-08-16150	00-603832	0–1.25	SED	—	—	—	—	—	—	—	—	—	—	—	NA
RE00-08-16154	00-603834	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	NA
RE00-08-16156	00-603835	0–1	SED	0.64	—	1.1	0.076 (J)	0.21 (J)	—	0.83	1	—	—	—	NA
RE00-08-16157	00-603835	1–2	QBT3	0.13 (J)	—	0.21 (J)	—	0.047 (J)	—	0.12 (J)	0.2 (J)	—	—	—	NA
RE00-08-16158	00-603836	0–1	SED	0.82	0.14 (J)	1.3	0.056 (J)	0.34 (J)	—	0.57	1.2	—	—	—	NA
RE00-08-16159	00-603836	1.75–2.75	QBT3	0.16 (J)	—	0.22 (J)	—	0.062 (J)	—	0.13 (J)	0.24 (J)	—	—	—	NA
RE01-13-37684	01-123	0–1	SED	0.156 (J-)	—	0.255	—	—	—	0.14 (J)	0.313	—	—	—	—
RE01-13-37685	01-124	0–1	SED	0.127 (J-)	—	0.178 (J)	—	—	—	0.0728 (J)	0.248	—	—	—	—
RE01-13-37686	01-125	0–1	SED	0.163 (J-)	—	0.314	0.0127 (J)	0.0604	—	0.189	0.298	—	—	—	—
RE01-13-37687	01-126	0–1	SED	0.286 (J-)	—	0.385	—	0.12	—	0.199	0.486	—	—	—	—
RE01-13-37688	01-127	0–1	SED	0.111 (J-)	—	0.17	—	—	—	0.0916	0.203	—	—	—	—
RE01-13-37689	01-128	0–1	SED	0.517 (J-)	—	0.657	0.0177 (J)	0.321	—	0.322	0.998	—	—	—	—
RE01-13-37690	01-129	0–1	SED	0.302 (J-)	—	0.388	0.0133 (J)	—	—	0.254	0.658	—	—	—	—
RE01-13-37691	01-130	0–1	SED	—	—	0.0777 (J)	—	—	0.000385 (J+)	—	0.195 (J)	0.00109 (J+)	—	—	—
RE01-13-37692	01-131	0–1	SED	0.817 (J-)	—	1.06	0.0409 (J)	—	—	0.806	1.71	—	—	—	—
RE01-13-37693	01-132	0–1	SED	1.55	0.171	2.64	0.0965	0.662	—	1.55	2.55	—	—	—	—
RE01-13-37694	01-133	0–1	SED	0.0581 (J-)	—	0.0745	—	—	—	0.042	0.117	—	—	—	—
RE01-13-37754	01-138	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	—
RE01-13-37756	01-138	2–3	SED	0.0336 (J)	—	0.0729	—	0.0216 (J)	—	0.0371 (J)	0.0676	—	—	—	—
RE01-13-37755	01-139	0–1	SED	—	—	—	—	—	—	—	—	—	0.00165 (J+)	—	—
RE01-13-37757	01-139	2–3	SED	—	—	—	—	—	—	—	—	—	—	—	—
RE01-13-37758	LA-610960	0–1	SED	0.128	—	0.345	0.0294 (J)	0.0485	—	0.287	0.283	—	—	—	0.000843 (J)

Table 7.5-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Phenanthrene	Pyrene	Styrene	Toluene	Trimethylbenzene[1,2,4-]	Xylene[1,3]+Xylene[1,4-]
RE01-13-37764	LA-610964	0-1	SED	0.0734	0.0142 (J)	0.161	—	0.032 (J)	—	0.0931	0.146	—	—	—	—
RE01-13-37765	LA-610964	2-3	SED	—	—	—	—	—	—	—	—	—	—	—	—
RE01-13-37770	LA-610966	0-1	SED	0.0238 (J)	—	0.0476	—	0.013 (J)	0.000754 (J)	0.026 (J)	0.0415	—	—	—	—
RE01-13-37771	LA-610966	2-3	SED	—	—	—	—	—	—	—	—	—	—	—	—
RE01-13-37772	LA-610966	4-5	SED	—	—	—	—	—	—	—	—	—	—	—	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] SSLs from NMED (2017, 602273).

[b] Pyrene used as a surrogate based on structural similarity.

[c] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

[d] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

[e] — = Not detected.

[f] Isopropyl benzene used as a surrogate based on structural similarity.

[g] Xylenes used as a surrogate based on structural similarity.

[h] NA = Not analyzed.

Table 7.5-4
PCBs Detected at SWMU 01-001(f)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1254	Aroclor-1260
Industrial SSL[a]				**11**	**11.1**
Construction Worker SSL[a]				**49.1**	**85.3**
Residential SSL[a]				**1.14**	**2.43**
RE00-08-16146	00-603830	0–1.25	SED	5.4 (J)	—[b]
RE00-08-16147	00-603830	1.25–3.25	QBT3	0.55 (J)	—
RE01-13-37820	00-603830	3–4	QBT3	0.796	0.308
RE01-13-37821	00-603830	6–7	QBT3	0.0332	0.0127
RE01-13-37822	00-603830	9–10	QBT3	0.00387	0.00153 (J)
RE00-08-16150	00-603832	0–1.25	SED	0.17 (J)	0.094
RE00-08-16152	00-603833	0–1	SED	0.038 (J)	0.036
RE00-08-16153	00-603833	1–2	QBT3	0.038 (J)	—
RE00-08-16154	00-603834	0–1	SED	0.089 (J)	0.066
RE00-08-16156	00-603835	0–1	SED	0.067 (J)	0.036
RE00-08-16157	00-603835	1–2	QBT3	—	—
RE00-08-16158	00-603836	0–1	SED	0.5 (J)	—
RE00-08-16159	00-603836	1.75–2.75	QBT3	0.82 (J)	—
RE01-13-37730	01-134	0–1	SOIL	0.0461	0.028
RE01-13-37731	01-134	3–4	QBT3	0.00588	0.00304 (J)
RE01-13-37732	01-134	6–7	QBT3	0.00486	0.00221 (J)
RE01-13-37733	01-134	9–10	QBT3	0.00522	0.00209 (J)
RE01-13-37734	01-134	12–13	QBT3	0.0494	0.0234
RE01-13-37735	01-134	14–15	QBT3	0.0102	0.00392
RE01-13-37736	01-135	0–1	SOIL	0.0626	0.041
RE01-13-37737	01-135	3–4	QBT3	0.00219 (J)	—
RE01-13-37738	01-135	6–7	QBT3	0.00327 (J)	—
RE01-13-37739	01-135	9–10	QBT3	0.00578	0.00197 (J)
RE01-13-37740	01-135	12–13	QBT3	0.012	—
RE01-13-37741	01-135	14–15	QBT3	0.00913	—
RE01-13-37742	01-136	0–1	SOIL	0.126	0.0641
RE01-13-37743	01-136	3–4	QBT3	0.00498	—
RE01-13-37744	01-136	6–7	QBT3	0.0164	—
RE01-13-37745	01-136	9–10	QBT3	0.0117	0.00577
RE01-13-37746	01-136	12–13	QBT3	0.00645	—
RE01-13-37747	01-136	14–15	QBT3	0.00296 (J)	—
RE01-13-37748	01-137	0–1	SOIL	0.00802	—
RE01-13-37754	01-138	0–1	SED	0.00578	—
RE01-13-37756	01-138	2–3	SED	0.0947	0.0311
RE01-13-37755	01-139	0–1	SED	0.0163	0.00564
RE01-13-37757	01-139	2–3	SED	0.242	0.0673

Table 7.5-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1254	Aroclor-1260
Industrial SSL[a]				**11**	**11.1**
Construction Worker SSL[a]				**49.1**	**85.3**
Residential SSL[a]				**1.14**	**2.43**
RE01-13-37788	01-140	0–1	SED	0.0602	0.0346
RE01-13-37789	01-140	1–2	SOIL	0.0231	0.0109 (J)
RE01-10-5537	01-609992	0–5.25	SED	0.0215	0.0103
RE01-10-5538	01-609993	0–2	SED	0.0068	0.0057
RE01-10-5540	01-609995	0–4.13	SED	0.0028 (J)	0.0025 (J)
RE01-10-11577	01-611287	0–0.25	SOIL	0.36	—
RE01-10-11578	01-611288	0–0.25	SOIL	0.47	—
RE01-10-11579	01-611289	0–0.25	SOIL	0.23	—
RE01-10-11580	01-611290	0–0.25	SOIL	0.99	—
RE01-10-11581	01-611291	0–0.25	SOIL	0.32	—
RE01-10-11582	01-611292	0–0.25	SOIL	0.16	—
RE01-10-11583	01-611293	0–0.25	SOIL	5.4	—
RE01-10-11584	01-611294	0–0.25	SOIL	1.6	—
RE01-10-11585	01-611295	0–0.25	SOIL	0.26	—
RE01-10-11586	01-611296	0–0.25	SOIL	3.3	—
RE01-10-11587	01-611297	0–0.25	SOIL	5.8	—
RE01-10-23245	01-612620	2.9–3	QBT3	0.311	0.116
RE01-10-23246	01-612621	5–5.1	QBT3	5.29	1.72
RE01-10-23247	01-612622	2.5–2.6	QBT3	17.8	5.86
RE01-10-23248	01-612623	3–3.1	QBT3	30.9	10.4
RE01-13-37724	01-612623	5–6	QBT3	0.379	0.189
RE01-13-37725	01-612623	7–8	QBT3	0.281	0.124
RE01-13-37726	01-612623	9–10	QBT3	0.394	0.2
RE01-13-37727	01-612623	11–12	QBT3	0.164	0.0718
RE01-13-37728	01-612623	13–14	QBT3	0.129	0.0581
RE01-13-37729	01-612623	15–16	QBT3	0.0747	0.0395
RE01-10-23249	01-612624	2.9–3	QBT3	14.9	5.06
RE01-13-37720	01-612624	5–6	QBT3	0.103	0.0328
RE01-13-37721	01-612624	7–8	QBT3	0.0536	0.0165
RE01-13-37722	01-612624	9–10	QBT3	0.0383	0.0123
RE01-13-37723	01-612624	11–12	QBT3	0.0449	0.0143
RE01-10-23250	01-612625	2.9–3	QBT3	7.13	2.49
RE01-10-23251	01-612626	3.4–3.5	QBT3	1.72	0.778
RE01-10-23252	01-612627	3.4–3.5	QBT3	12.2	4.13
RE01-10-23253	01-612628	4–4.1	QBT3	21.6	7.79
RE01-10-23254	01-612629	4–4.1	QBT3	58.8	19.4

Table 7.5-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1254	Aroclor-1260
Industrial SSL[a]				**11**	**11.1**
Construction Worker SSL[a]				**49.1**	**85.3**
Residential SSL[a]				**1.14**	**2.43**
RE01-10-23255	01-612630	2.5–2.6	QBT3	29.2	9.99
RE01-13-37714	01-612630	5–6	QBT3	7.02	2.35
RE01-13-37715	01-612630	7–8	QBT3	2.39	0.819
RE01-13-37716	01-612630	9–10	QBT3	2.42	0.744
RE01-10-23256	01-612631	3–3.1	QBT3	30.9	10.8
RE01-10-23257	01-612632	2.9–3	QBT3	0.414	0.159
RE01-11-2736	01-613677	2.5–3.5	QBT3	0.0822	0.0344
RE01-11-2737	01-613677	3.5–4	QBT3	0.148	0.0607
CALA-10-9847	LA-610960	0–0.25	SED	—	—
RE01-13-37758	LA-610960	0–1	SED	0.826	0.266
RE01-13-37759	LA-610960	2–3	SED	0.954	0.327
CALA-10-9848	LA-610961	0–0.25	SED	—	—
CALA-10-9849	LA-610962	0–0.25	SED	—	—
CALA-10-9850	LA-610963	0–0.25	SED	—	—
CALA-10-9851	LA-610964	0–0.25	SED	—	—
RE01-13-37764	LA-610964	0–1	SED	1.37	0.431
RE01-13-37765	LA-610964	2–3	SED	0.0367	0.0135
CALA-10-9852	LA-610965	0–0.25	SED	—	—
CALA-10-9853	LA-610966	0–0.25	SED	7.8 (J)	—
RE01-13-37770	LA-610966	0–1	SED	1.16	0.38
RE01-13-37771	LA-610966	2–3	SED	0.277	0.0978
RE01-13-37772	LA-610966	4–5	SED	0.155	0.0549
CALA-10-9854	LA-610967	0–0.25	SED	—	—
CALA-10-9855	LA-610968	0–0.25	SED	—	—
CALA-10-9856	LA-610969	0–0.25	SED	—	—
CALA-10-9857	LA-610970	0–0.25	SED	—	—
CALA-10-9858	LA-610971	0–0.25	SED	—	—
CALA-10-9859	LA-610972	0–0.25	SED	—	—
CALA-10-9860	LA-610973	0–0.25	SED	—	—
CALA-10-9862	LA-610975	0–0.25	SED	—	—
CALA-10-9863	LA-610976	0–0.25	SED	—	—
CALA-10-9864	LA-610977	0–0.25	SED	—	—
CALA-10-9866	LA-610979	0–0.25	SED	—	—
CALA-10-11204	LA-611125	0–0.5	QBT3	0.23 (J)	0.1
CALA-10-11203	LA-611126	0–0.5	QBT3	0.23 (J)	0.11
CALA-10-11205	LA-611129	0–0.5	QBT3	0.38 (J)	0.15 (J)

Table 7.5-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1254	Aroclor-1260
Industrial SSL[a]				**11**	**11.1**
Construction Worker SSL[a]				**49.1**	**85.3**
Residential SSL[a]				**1.14**	**2.43**
CALA-10-11206	LA-611130	0–0.5	QBT3	0.66 (J)	0.3 (J)
CALA-10-11207	LA-611131	0–0.5	QBT3	0.033 (J)	0.014 (J)
CALA-10-11208	LA-611132	0–0.5	QBT3	0.11 (J)	0.047
CALA-10-11209	LA-611133	0–0.5	QBT3	0.1 (J)	0.043
CALA-10-11210	LA-611134	0–0.5	QBT3	0.13 (J)	0.058
CALA-10-11211	LA-611135	0–0.5	QBT3	0.13 (J)	0.06
CALA-10-11212	LA-611136	0–0.5	QBT3	3.6 (J)	2.1 (J)
CALA-10-11213	LA-611137	0–0.5	QBT3	1.5 (J)	0.63 (J)
CALA-10-11215	LA-611139	0–0.5	QBT3	3.2 (J)	1.6 (J)
CALA-10-11216	LA-611140	0–0.5	QBT3	0.031 (J)	—
CALA-10-11217	LA-611141	0–0.5	QBT3	0.01 (J)	—
CALA-10-11218	LA-611142	0–0.5	QBT3	0.56 (J)	0.23
CALA-10-11219	LA-611143	0–0.5	QBT3	4.8 (J)	1.9 (J)
CALA-10-11220	LA-611144	0–0.5	QBT3	1.5 (J)	0.62 (J)
CALA-10-11221	LA-611145	0–0.5	QBT3	1.4 (J)	0.56 (J)
CALA-10-11226	LA-611150	0–0.5	SOIL	22	—
CALA-10-11229	LA-611153	0–1	SOIL	1.9	—
CALA-10-11230	LA-611154	0–0.25	SOIL	0.86	—
CALA-10-11231	LA-611155	0–0.33	SOIL	1.7	0.97
CALA-10-11233	LA-611157	0–0.166	SOIL	0.98	0.47
CALA-10-11234	LA-611158	0–0.5	SOIL	3	1.4
CALA-10-11235	LA-611158	0.5–1.5	SOIL	0.64	0.31
CALA-10-11236	LA-611160	0–0.5	SOIL	6.3	3
CALA-10-11237	LA-611160	0.5–1.5	SOIL	1.6	0.72
CALA-10-11238	LA-611162	0–0.5	SOIL	2.2	0.98
CALA-10-11239	LA-611162	0.5–1	SOIL	0.85	0.4
CALA-10-11240	LA-611164	0–0.5	QBT3	3.3	1.53
CALA-10-11251	LA-611175	0–0.5	QBT3	2.28	1.06
CALA-10-11252	LA-611176	0–0.5	QBT3	1.63	0.624
CALA-10-11253	LA-611177	0–0.5	QBT3	3.04	1.65 (J)
CALA-10-11255	LA-611179	0–0.5	QBT3	0.254	0.145
CALA-10-11256	LA-611180	0–0.5	QBT3	0.163	0.0848
CALA-10-11257	LA-611181	0–0.5	QBT3	0.252	0.122
CALA-10-11258	LA-611182	0–0.5	QBT3	5.88	2.48
CALA-10-11259	LA-611183	0–0.5	SED	12.6	5.32
CALA-10-11260	LA-611184	0–0.5	QBT3	0.541	0.322

Table 7.5-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1254	Aroclor-1260
Industrial SSL[a]				**11**	**11.1**
Construction Worker SSL[a]				**49.1**	**85.3**
Residential SSL[a]				**1.14**	**2.43**
CALA-10-11261	LA-611185	0–0.5	QBT3	16.9	6.61
CALA-10-11262	LA-611186	0–0.5	QBT3	0.0362	0.0248
CALA-10-11263	LA-611187	0–0.5	SED	4.27	2.31
CALA-10-11264	LA-611188	0–0.5	QBT3	0.573	0.304
CALA-10-11265	LA-611189	0–0.5	QBT3	2.48	1.34
CALA-10-11266	LA-611190	0–0.5	QBT3	0.895	0.485
CALA-10-11267	LA-611191	0–0.5	QBT3	6.31	3.21
CALA-10-11268	LA-611192	0–0.5	QBT3	0.342	0.171
CALA-10-11269	LA-611193	0–0.5	QBT3	2.27	1.2
CALA-10-11270	LA-611194	0–0.5	QBT3	0.225	0.184
RE01-13-37709	01-613697	10–11	QBT3	15.2	6.46
RE01-13-37710	01-613697	12–13	QBT3	4.31	1.75
RE01-13-37711	01-613697	14–15	QBT3	16	6.58
RE01-13-37695	01-614683	5–6	QBT3	9.67	3.94
RE01-13-37696	01-614683	7–8	QBT3	0.573	0.229
RE01-13-37697	01-614683	9–10	QBT3	0.449	0.189
RE01-13-37698	01-614683	11–12	QBT3	0.162	0.0634
RE01-13-37699	01-614683	13–14	QBT3	1.41	0.609
RE01-13-37700	01-614683	15–16	QBT3	4.03	1.72
RE01-13-37701	01-614683	17–18	QBT3	0.697	0.286
RE01-13-37702	01-614683	19–20	QBT3	0.691	0.292

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] SSLs are from NMED (2017, 602273) unless otherwise noted.

[b] — = Not detected or not detected above BV.

Table 7.5-5
Radionuclides Detected or Detected above BVs/FVs at SWMU 01-001(f)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Plutonium-239/240	Uranium-234	Uranium-235/236	Uranium-238
Soil Background Value[a]				**0.013**	**0.054**	**2.59**	**0.2**	**2.29**
Qbt 2,3,4 Background Value[a]				**na**[b]	**na**	**1.98**	**0.09**	**1.93**
Sediment Background Value[a]				**0.04**	**0.068**	**2.59**	**0.2**	**2.29**
Construction Worker SAL[c]				**230**	**200**	**1000**	**130**	**340**
Industrial SAL[c]				**1000**	**1200**	**3100**	**160**	**710**
Residential SAL[c]				**83**	**79**	**290**	**42**	**150**
RE00-08-16146	00-603830	0–1.25	SED	—[d]	—	6.28	0.376	7.31
RE00-08-16147	00-603830	1.25–3.25	QBT3	—	—	1.13	—	1.29
RE00-08-16150	00-603832	0–1.25	SED	—	0.103	—	—	—
RE00-08-16151	00-603832	1.25–2.5	QBT3	—	—	0.66	—	0.725
RE00-08-16153	00-603833	1–2	QBT3	—	—	0.88	—	0.95
RE00-08-16154	00-603834	0–1	SED	—	0.222	7.52	0.399	7.2
RE00-08-16155	00-603834	1.25–2.25	QBT3	—	—	0.736	—	0.848
RE00-08-16157	00-603835	1–2	QBT3	—	—	4.16	0.13	4.14
RE01-12-592	00-603835	4–5	QBT3	NA[e]	NA	3.16	0.157	3.37
RE00-08-16159	00-603836	1.75–2.75	QBT3	—	—	4.61	0.2	4.59
RE01-12-591	00-603836	5–6	SED	NA	NA	4.1	0.219	4.4
RE01-13-37684	01-123	0–1	SED	—	0.0924	11.7	0.576	12
RE01-13-37685	01-124	0–1	SED	—	0.105	8.82	0.353	9.18
RE01-13-37686	01-125	0–1	SED	—	0.107	26.7	1.35	30.6
RE01-13-37687	01-126	0–1	SED	—	—	6.14	0.311	6.76
RE01-13-37688	01-127	0–1	SED	—	0.0832	20.1	0.994	20.4
RE01-13-37689	01-128	0–1	SED	—	0.0877	12.5	0.643	13.5
RE01-13-37690	01-129	0–1	SED	—	—	3.86	—	3.95
RE01-13-37691	01-130	0–1	SED	0.0456	0.211	32	1.69	38.7
RE01-13-37692	01-131	0–1	SED	—	—	2.93	—	3.04
RE01-13-37693	01-132	0–1	SED	—	0.103 (J)	13.2 (J)	0.746 (J)	14.5 (J)
RE01-13-37694	01-133	0–1	SED	—	0.137	9.48	0.461	10
RE01-13-37756	01-138	2–3	SED	—	0.171 (J)	11.8 (J)	0.573 (J)	12 (J)

Table 7.5-5 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Plutonium-239/240	Uranium-234	Uranium-235/236	Uranium-238
Soil Background Value[a]				**0.013**	**0.054**	**2.59**	**0.2**	**2.29**
Qbt 2,3,4 Background Value[a]				**na[b]**	**na**	**1.98**	**0.09**	**1.93**
Sediment Background Value[a]				**0.04**	**0.068**	**2.59**	**0.2**	**2.29**
Construction Worker SAL[c]				**230**	**200**	**1000**	**130**	**340**
Industrial SAL[c]				**1000**	**1200**	**3100**	**160**	**710**
Residential SAL[c]				**83**	**79**	**290**	**42**	**150**
RE01-13-37755	01-139	0–1	SED	—	—	—	—	2.31
RE01-13-37758	LA-610960	0–1	SED	—	0.137	7.65	0.428	8.26
RE01-13-37759	LA-610960	2–3	SED	—	0.133	7.14	0.361	7.49
RE01-13-37764	LA-610964	0–1	SED	—	0.17	16.3	0.603	16.8
RE01-13-37770	LA-610966	0–1	SED	—	—	3.96	0.218	3.79
RE01-13-37771	LA-610966	2–3	SED	—	0.0729	4.21	0.231	4.38
RE01-13-37772	LA-610966	4–5	SED	—	—	2.86	—	2.99

Notes: Results are in pCi/g. Data qualifiers are presented in Appendix A.

[a] BVs/FVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SALs are from LANL (2015, 600929).

[d] — = Not detected or not detected above BV/FV.

[e] NA = Not analyzed.

Table 7.6-1
Samples Collected and Analyses Requested at SWMU 01-001(g)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RE00-08-16199	00-603845	3.25–4.25	QBT3	09-544[a]	09-544	09-544	09-544	09-544	09-544	09-544	09-544	09-544	09-544	09-544	09-544	09-544
RE00-08-16200	00-603845	7.25–8.25	QBT3	09-544	09-544	09-544	09-544	09-544	09-544	09-544	09-544	09-544	09-544	09-544	09-544	09-544
RE01-12-113	00-603845	9–10	QBT3	—[b]	—	—	—	—	—	12-679	—	—	—	—	—	—
RE01-12-114	00-603845	10–11	QBT3	—	—	—	—	—	—	12-679	—	—	—	—	—	—
RE00-08-16201	00-603846	0–1	SED	09-527	09-525	09-527	09-527	09-527	09-527	09-525	09-526	09-525	09-527	09-526	09-526	09-525
RE00-08-16202	00-603846	2.25–3.5	QBT3	09-527	09-525	09-527	09-527	09-527	09-527	09-525	09-526	09-525	09-527	09-526	09-526	09-525
RE01-12-10419	00-603846	4–5	QBT3	—	—	—	—	12-1031	—	—	—	—	—	—	—	—
RE00-08-16203	00-603847	0–1	SED	09-527	09-525	09-527	09-527	09-527	09-527	09-525	09-526	09-525	09-527	09-526	09-526	09-525
RE00-08-16204	00-603847	1–2	QBT3	09-527	09-525	09-527	09-527	09-527	09-527	09-525	09-526	09-525	09-527	09-526	09-526	09-525
RE01-12-112	00-603847	3-4	QBT3	—	—	—	—	—	—	12-516	—	—	—	—	—	—
RE00-08-16205	00-603848	0–1	SED	09-527	09-525	09-527	09-527	09-527	09-527	09-525	09-526	09-525	09-527	09-526	09-526	09-525
RE00-08-16206	00-603848	1–2	QBT3	09-527	09-525	09-527	09-527	09-527	09-527	09-525	09-526	09-525	09-527	09-526	09-526	09-525
RE01-12-110	00-603848	3–4	QBT3	—	—	—	—	—	—	12-516	—	—	—	—	—	—
RE00-08-16207	00-603849	0–1	SED	09-514	09-514	09-514	09-514	09-514	09-514	09-514	09-514	09-514	09-514	09-514	09-514	09-514
RE00-08-16208	00-603849	1.5–2.5	QBT3	09-514	09-514	09-514	09-514	09-514	09-514	09-514	09-514	09-514	09-514	09-514	09-514	09-514
RE00-08-16209	00-603849	4–5	QBT3	09-527	09-525	09-527	09-527	09-527	09-527	09-525	09-526	09-525	09-527	09-526	09-526	09-525
RE01-12-111	00-603849	6–7	QBT3	—	—	—	—	—	—	12-516	—	—	—	—	—	—
RE01-13-38147	01-147	0–1	ALLH	—	—	—	—	2013-1704	—	—	—	—	—	—	—	—
RE01-13-38151	01-147	1–2	ALLH	—	—	—	—	2013-1704	—	—	—	—	—	—	—	—
RE01-13-38155	01-147	2–3	QBT3	—	—	—	—	2013-1704	—	—	—	—	—	—	—	—
RE01-13-38148	01-148	0–1	ALLH	—	—	—	—	2013-1704	—	—	—	—	—	—	—	—
RE01-13-38152	01-148	1–2	ALLH	—	—	—	—	2013-1704	—	—	—	—	—	—	—	—
RE01-13-38156	01-148	2–3	ALLH	—	—	—	—	2013-1704	—	—	—	—	—	—	—	—
RE01-13-38149	01-149	0–1	ALLH	—	—	—	—	2013-1704	—	—	—	—	—	—	—	—
RE01-13-38153	01-149	1-2	ALLH	—	—	—	—	2013-1704	—	—	—	—	—	—	—	—
RE01-13-38157	01-149	2–3	QBT3	—	—	—	—	2013-1704	—	—	—	—	—	—	—	—
RE01-13-38150	01-150	0–1	ALLH	—	—	—	—	2013-1704	—	—	—	—	—	—	—	—
RE01-13-38154	01-150	1–2	QBT3	—	—	—	—	2013-1704	—	—	—	—	—	—	—	—
RE01-13-38158	01-150	2–3	QBT3	—	—	—	—	2013-1704	—	—	—	—	—	—	—	—
RELA-16-106138	01-239	0–0.5	ALLH	—	—	—	—	2016-141	—	—	—	—	—	—	—	—
RELA-16-106142	01-239	1–2	QBT3	—	—	—	—	2016-141	—	—	—	—	—	—	—	—

Table 7.6-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RELA-16-106146	01-239	2–3	QBT3	—	—	—	—	2016-141	—	—	—	—	—	—	—	—
RELA-16-106139	01-240	0–1	ALLH	—	—	—	—	2016-141	—	—	—	—	—	—	—	—
RELA-16-106143	01-240	1–2	QBT3	—	—	—	—	2016-141	—	—	—	—	—	—	—	—
RELA-16-106147	01-240	2–3	QBT3	—	—	—	—	2016-141	—	—	—	—	—	—	—	—
RELA-16-106140	01-241	0–1	ALLH	—	—	—	—	2016-141	—	—	—	—	—	—	—	—
RELA-16-106144	01-241	1–2	ALLH	—	—	—	—	2016-141	—	—	—	—	—	—	—	—
RELA-16-106148	01-241	2–3	QBT3	—	—	—	—	2016-141	—	—	—	—	—	—	—	—
RELA-16-106137	01-281	0–1	ALLH	—	—	—	—	2016-141	—	—	—	—	—	—	—	—
RELA-16-106141	01-281	1-2	QBT3	—	—	—	—	2016-141	—	—	—	—	—	—	—	—
RELA-16-106145	01-281	2–3	QBT3	—	—	—	—	2016-141	—	—	—	—	—	—	—	—
RE01-12-10407	01-43	0–1	ALLH	—	—	—	—	12-1031	—	—	—	—	—	—	—	—
RE01-12-10413	01-43	1–2	QBT3	—	—	—	—	12-1031	—	—	—	—	—	—	—	—
RE01-12-10408	01-44	0–1	ALLH	—	—	—	—	12-1031	—	—	—	—	—	—	—	—
RE01-12-10414	01-44	1–2	QBT3	—	—	—	—	12-1031	—	—	—	—	—	—	—	—
RE01-12-10409	01-45	0–1	ALLH	—	—	—	—	12-1031	—	—	—	—	—	—	—	—
RE01-12-10415	01-45	1–2	QBT3	—	—	—	—	12-1031	—	—	—	—	—	—	—	—
RE01-12-10410	01-46	0–1	ALLH	—	—	—	—	12-1031	—	—	—	—	—	—	—	—
RE01-12-10416	01-46	1–2	QBT3	—	—	—	—	12-1031	—	—	—	—	—	—	—	—
RE01-12-10411	01-47	0–1	ALLH	—	—	—	—	12-1031	—	—	—	—	—	—	—	—
RE01-12-10417	01-47	1–2	QBT3	—	—	—	—	12-1031	—	—	—	—	—	—	—	—
RE01-12-115	01-614757	0–1	QBT3	—	—	—	—	12-513	—	—	—	—	—	—	—	—
RE01-12-116	01-614757	3–4	QBT3	—	—	—	—	12-513	—	—	—	—	—	—	—	—
RE01-12-117	01-614758	0–1	QBT3	—	—	—	—	12-513	—	—	—	—	—	—	—	—
RE01-12-118	01-614758	3–4	QBT3	—	—	—	—	12-513	—	—	—	—	—	—	—	—
CALA-16-121871	01-61493	0–1	ALLH	—	—	—	—	2016-1418	—	—	—	—	—	—	—	—
CALA-16-121872	01-61493	1–2	QBT3	—	—	—	—	2016-1418	—	—	—	—	—	—	—	—
CALA-16-121873	01-61493	2–3	QBT3	—	—	—	—	2016-1418	—	—	—	—	—	—	—	—
CALA-16-121874	01-61494	0–1	ALLH	—	—	—	—	2016-1418	—	—	—	—	—	—	—	—
CALA-16-121875	01-61494	1-2	QBT3	—	—	—	—	2016-1418	—	—	—	—	—	—	—	—
CALA-16-121876	01-61494	2–3	QBT3	—	—	—	—	2016-1418	—	—	—	—	—	—	—	—
CALA-16-124426	LA-61495	0–1	ALLH	—	—	—	—	2016-1811	—	—	—	—	—	—	—	—

Table 7.6-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
CALA-16-124430	LA-61495	1–2	ALLH	—	—	—	—	2016-1811	—	—	—	—	—	—	—	—
CALA-16-124434	LA-61495	2–3	ALLH	—	—	—	—	2016-1811	—	—	—	—	—	—	—	—
CALA-16-124427	LA-61496	0–1	ALLH	—	—	—	—	2016-1811	—	—	—	—	—	—	—	—
CALA-16-124431	LA-61496	1–2	ALLH	—	—	—	—	2016-1811	—	—	—	—	—	—	—	—
CALA-16-124435	LA-61496	2–3	ALLH	—	—	—	—	2016-1811	—	—	—	—	—	—	—	—
CALA-16-124935	LA-61496	4–5	QBT3	—	—	—	—	2016-2099	—	—	—	—	—	—	—	—
CALA-16-124936	LA-61496	5–6	QBT3	—	—	—	—	2016-2099	—	—	—	—	—	—	—	—
CALA-16-124428	LA-61497	0–1	ALLH	—	—	—	—	2016-1811	—	—	—	—	—	—	—	—
CALA-16-124432	LA-61497	1–2	ALLH	—	—	—	—	2016-1811	—	—	—	—	—	—	—	—
CALA-16-124436	LA-61497	2–3	ALLH	—	—	—	—	2016-1811	—	—	—	—	—	—	—	—

[a] Analytical request number.

[b] — = Analysis not requested.

Table 7.6-2
Inorganic Chemicals Detected or Detected above BVs at SWMU 01-001(g)

Sample ID	Location ID	Depth (ft)	Media	Chromium	Cyanide (Total)	Nickel	Nitrate	Perchlorate	Selenium
Soil Background Value[a]				**19.3**	**0.5**	**15.4**	**na[b]**	**na**	**1.52**
Qbt 2,3,4 Background Value[a]				**7.14**	**0.5**	**6.58**	**na**	**na**	**0.3**
Sediment Background Value[a]				**10.5**	**0.82**	**9.38**	**na**	**na**	**0.3**
Industrial SSL[c]				**505d**	**62.8**	**25,700**	**2,080,000**	**908**	**6490**
Construction Worker SSL[c]				**134d**	**12**	**12,400**	**991,000**	**434**	**3100**
Residential SSL[c]				**96.6d**	**11.1**	**1560**	**125,000**	**54.8**	**391**
RE00-08-16199	00-603845	3.25–4.25	QBT3	8 (J)	—[e]	—	—	—	—
RE00-08-16200	00-603845	7.25–8.25	QBT3	27.9 (J)	—	13.4 (J)	—	—	—
RE01-12-113	00-603845	9–10	QBT3	—	NA[f]	—	NA	NA	NA
RE01-12-114	00-603845	10–11	QBT3	—	NA	—	NA	NA	NA
RE00-08-16202	00-603846	2.25–3.5	QBT3	—	—	—	0.53	0.0029 (J)	0.52 (UJ)
RE01-12-10419	00-603846	4–5	QBT3	NA	NA	NA	NA	NA	NA
RE00-08-16203	00-603847	0–1	SED	—	—	—	1.5	—	—
RE00-08-16204	00-603847	1–2	QBT3	25.3 (J-)	0.51 (U)	11.7 (J-)	0.12 (J)	—	—
RE01-12-112	00-603847	3–4	QBT3	—	NA	—	NA	NA	NA
RE00-08-16205	00-603848	0–1	SED	—	—	—	0.36	—	—
RE00-08-16206	00-603848	1–2	QBT3	7.7 (J-)	0.51 (U)	—	—	—	—
RE01-12-110	00-603848	3–4	QBT3	—	NA	—	NA	NA	NA
RE00-08-16208	00-603849	1.5–2.5	QBT3	14.1 (J)	0.51 (U)	7.4	0.15 (J)	—	—
RE00-08-16209	00-603849	4–5	QBT3	17.9 (J-)	—	8.4 (J-)	—	0.0044 (J)	—
RE01-12-111	00-603849	6–7	QBT3	—	NA	—	NA	NA	NA

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] BVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SSLs are from NMED (2017, 602273).

[d] SSL for total chromium.

[e] — = Not detected or not detected above BV.

[f] NA = Not analyzed.

Table 7.6-3
Organic Chemicals Detected at SWMU 01-001(g)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1260	Bis(2-ethylhexyl)phthalate	Methylene Chloride
Industrial SSL[a]				**11.1**	**1830**	**5110**
Construction Worker SSL[a]				**85.3**	**5380**	**118**
Residential SSL[a]				**2.43**	**380**	**409**
RE00-08-16202	00-603846	2.25–3.5	QBT3	0.011 (J)	—[b]	—
RE00-08-16203	00-603847	0–1	SED	0.0081 (J)	—	0.0024 (J)
RE00-08-16204	00-603847	1–2	QBT3	—	—	0.0042 (J)
RE00-08-16205	00-603848	0–1	SED	0.021 (J)	0.074 (J)	0.0065 (J+)
RE00-08-16206	00-603848	1–2	QBT3	—	—	0.0042 (J)
RE00-08-16208	00-603849	1.5–2.5	QBT3	0.017 (J)	—	0.0018 (J)
RE00-08-16209	00-603849	4–5	QBT3	—	—	0.0035 (J)

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] SSLs are from NMED (2017, 602273) unless otherwise noted.

[b] — = Not detected or not detected above BV.

Table 7.6-4
Radionuclides Detected or Detected above BVs/FVs at SWMU 01-001(g)

Sample ID	Location ID	Depth (ft)	Media	Plutonium-238	Plutonium-239/240	Uranium-235/236
Soil Background Value[a]				**0.023**	**0.054**	**0.2**
Qbt 2,3,4 Background Value[a]				**na[b]**	**na**	**0.09**
Sediment Background Value[a]				**0.006**	**0.068**	**0.2**
Construction Worker SAL[c]				**230**	**200**	**130**
Industrial SAL[c]				**1300**	**1200**	**160**
Recreational SAL[c]				**1400**	**1300**	**1000**
Residential SAL[c]				**84**	**79**	**42**
RE00-08-16199	00-603845	3.25–4.25	QBT3	—[d]	0.192	—
RE00-08-16200	00-603845	7.25–8.25	QBT3	—	0.096	—
RE00-08-16202	00-603846	2.25–3.5	QBT3	—	4.01	—
RE01-12-10419	00-603846	4–5	QBT3	0.0161	2.69 (J)	NA[e]
RE00-08-16203	00-603847	0–1	SED	—	4.16	—
RE00-08-16204	00-603847	1–2	QBT3	—	0.395	0.196
RE00-08-16205	00-603848	0–1	SED	—	1.25	—
RE00-08-16206	00-603848	1–2	QBT3	—	0.535	0.224
RE00-08-16208	00-603849	1.5–2.5	QBT3	—	29.3	0.184 (J)
RE00-08-16209	00-603849	4–5	QBT3	—	1.29	—
RE01-13-38151	01-147	1–2	SOIL	0.582	24.3	NA
RE01-13-38155	01-147	2–3	QBT3	0.474	6.86	NA
RE01-13-38156	01-148	2–3	SOIL	0.333	19.9	NA
RE01-13-38153	01-149	1–2	SOIL	0.366	10.5	NA
RE01-13-38157	01-149	2–3	QBT3	0.0798	1.06	NA
RE01-13-38150	01-150	0–1	SOIL	0.0843	0.91	NA
RE01-13-38154	01-150	1–2	QBT3	0.113	0.614	NA
RE01-13-38158	01-150	2–3	QBT3	0.0578 (J)	0.394 (J)	NA
RELA-16-106138	01-239	0–0.5	SOIL	—	19.3 (J+)	NA
RELA-16-106142	01-239	1–2	QBT3	—	0.714	NA
RELA-16-106146	01-239	2–3	QBT3	—	0.861	NA
RELA-16-106147	01-240	2–3	QBT3	—	34.7 (J+)	NA
RELA-16-106140	01-241	0–1	SOIL	—	26.7	NA
RELA-16-106144	01-241	1–2	SOIL	—	23.7	NA
RELA-16-106148	01-241	2–3	QBT3	—	8.78	NA
RELA-16-106137	01-281	0–1	SOIL	—	25.3	NA

Table 7.6-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Plutonium-238	Plutonium-239/240	Uranium-235/236
Soil Background Value[a]				**0.023**	**0.054**	**0.2**
Qbt 2,3,4 Background Value[a]				**na[b]**	**na**	**0.09**
Sediment Background Value[a]				**0.006**	**0.068**	**0.2**
Construction Worker SAL[c]				**230**	**200**	**130**
Industrial SAL[c]				**1300**	**1200**	**160**
Recreational SAL[c]				**1400**	**1300**	**1000**
RELA-16-106141	01-281	1–2	QBT3	—	5.53	NA
RELA-16-106145	01-281	2–3	QBT3	—	1.58	NA
RE01-12-10413	01-43	1–2	QBT3	0.0672	31.6	NA
RE01-12-10414	01-44	1–2	QBT3	0.0362	14.7	NA
RE01-12-10415	01-45	1–2	QBT3	—	0.0849	NA
RE01-12-10416	01-46	1–2	QBT3	—	3.26	NA
RE01-12-10417	01-47	1–2	QBT3	—	1.33	NA
RE01-12-115	01-614757	0–1	QBT3	—	0.137	NA
RE01-12-117	01-614758	0–1	QBT3	—	1.43	NA
RE01-12-118	01-614758	3–4	QBT3	—	0.143	NA
CALA-16-121873	01-61493	2–3	QBT3	—	0.418	NA
CALA-16-121876	01-61494	2–3	QBT3	—	1.88	NA
CALA-16-124434	LA-61495	2–3	SOIL	—	9.42	NA
CALA-16-124435	LA-61496	2–3	SOIL	—	115	NA
CALA-16-124935	LA-61496	4–5	QBT3	—	2.98	NA
CALA-16-124936	LA-61496	5–6	QBT3	—	0.316	NA
CALA-16-124436	LA-61497	2–3	SOIL	—	9.75	NA

Note: Results are in pCi/g.

[a] BVs/FVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SALs are from LANL (2015, 600929).

[d] — = Not detected or not detected above BV/FV.

[e] NA = Not analyzed.

Table 7.7-1
Samples Collected and Analyses Requested at SWMU 01-001(o)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (Total)
RE01-12-753	00-603850	10–11	QBT3	12-689[a]	—[b]	12-689	—	12-689	—	12-689	12-689	—	12-689	12-689	—	—
RE01-12-754	00-603850	11–12	QBT3	12-689	—	12-689	—	12-689	—	12-689	12-689	—	12-689	12-689	—	—
RE00-08-16218	00-603850	6.75–7.75	QBT3	09-626	09-626	09-626	09-626	09-626	09-626	09-626	09-626	09-626	09-626	09-626	09-626	09-626
RE00-08-16219	00-603850	8.75–10	QBT3	09-626	09-626	09-626	09-626	09-626	09-626	09-626	09-626	09-626	09-626	09-626	09-626	09-626
RE00-08-16220	00-603851	1–2	FILL	09-834	09-833	09-834	09-834	09-834	09-834	09-833	09-832	09-833	09-834	09-832	09-846	09-833
RE00-08-16222	00-603852	0–1	FILL	09-320	09-319	09-320	09-320	09-320	09-320	09-319	09-318	09-319	09-320	09-318	09-318	09-319
RE01-12-750	00-603852	11–12	QBT3	12-706	—	12-706	—	12-706	—	12-706	12-706	—	12-706	12-706	—	—
RE00-08-16223	00-603852	7.25–8.25	QBT3	09-361	09-361	09-361	09-361	09-361	09-361	09-361	09-361	09-361	09-361	09-361	09-361	09-361
RE01-12-749	00-603852	9–10	ALLH	12-706	—	12-706	—	12-706	—	12-706	12-706	—	12-706	12-706	—	—
RE00-08-16224	00-603853	0–1	FILL	09-320	09-319	09-320	09-320	09-320	09-320	09-319	09-318	09-319	09-320	09-318	09-318	09-319
RE00-08-16225	00-603853	3–4	QBT3	09-320	09-319	09-320	09-320	09-320	09-320	09-319	09-318	09-319	09-320	09-318	09-318	09-319
RE01-12-747	00-603853	5–6	FILL	12-668	—	12-668	—	12-668	—	12-668	12-668	—	12-668	12-668	—	—
RE00-08-16226	00-603854	0–1	ALLH	09-298	09-299	09-298	09-298	09-298	09-298	09-299	09-298	09-299	09-298	09-298	09-298	09-299
RE01-12-744	00-603854	11–12	QBT3	12-489	—	12-489	—	12-489	—	12-489	12-489	—	12-489	12-489	—	—
RE00-08-16227	00-603854	2–3	QBT3	09-298	09-299	09-298	09-298	09-298	09-298	09-299	09-298	09-299	09-298	09-298	09-298	09-299
RE01-12-743	00-603854	9–10	QBT3	12-489	—	12-489	—	12-489	—	12-489	12-489	—	12-489	12-489	—	—
RE00-08-16228	00-603855	0–1	ALLH	09-298	09-299	09-298	09-298	09-298	09-298	09-299	09-298	09-299	09-298	09-298	09-298	09-299
RE00-08-16229	00-603855	1.5–2.5	QBT3	09-298	09-299	09-298	09-298	09-298	09-298	09-299	09-298	09-299	09-298	09-298	09-298	09-299
RE00-08-16230	00-603856	0–1	ALLH	09-320	09-319	09-320	09-320	09-320	09-320	09-319	09-318	09-319	09-320	09-318	09-318	09-319
RE00-08-16231	00-603856	1–2	QBT3	09-320	09-319	09-320	09-320	09-320	09-320	09-319	09-318	09-319	09-320	09-318	09-318	09-319
RE01-12-741	00-603856	11–12	QBT3	12-498	—	12-498	—	12-498	—	12-498	12-498	—	12-498	12-498	—	—
RE01-12-742	00-603856	13–14	QBT3	12-498	—	12-498	—	12-498	—	12-498	12-498	—	12-498	12-498	—	—
RE00-08-16232	00-603857	0–1	QBT3	09-320	09-319	09-320	09-320	09-320	09-320	09-319	09-318	09-319	09-320	09-318	09-318	09-319
RE00-08-16233	00-603857	1–2	QBT3	09-320	09-319	09-320	09-320	09-320	09-320	09-319	09-318	09-319	09-320	09-318	09-318	09-319
RE01-12-745	00-603857	5–6	QBT3	12-480	—	12-480	—	12-480	—	12-479	12-478	—	12-480	12-478	—	—
RE01-12-746	00-603857	7–8	QBT3	12-480	—	12-480	—	12-480	—	12-479	12-478	—	12-480	12-478	—	—
RE00-08-16234	00-603858	0.25–1.25	FILL	09-834	09-833	09-834	09-834	09-834	09-834	09-833	09-832	09-833	09-834	09-832	09-846	09-833
RE00-08-16235	00-603858	1.75–2.75	FILL	09-834	09-833	09-834	09-834	09-834	09-834	09-833	09-832	09-833	09-834	09-832	09-846	09-833
RE00-08-16236	00-603858	3.75–4.5	FILL	09-834	09-833	09-834	09-834	09-834	09-834	09-833	09-832	09-833	09-834	09-832	09-846	09-833
RE01-13-38164	01-151	0–1	FILL	—	—	—	—	—	—	—	2013-1769	—	—	—	—	—

Table 7.7-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (Total)
RE01-13-38171	01-151	3–4	FILL	—	—	—	—	—	—	—	2013-1769	—	—	—	—	—
RE01-13-38178	01-151	5–6	FILL	—	—	—	—	—	—	—	2013-1769	—	—	—	—	—
RELA-17-131536	01-151	6–7	ALLH	—	—	—	—	—	—	—	2017-1523	—	—	—	—	—
RELA-17-131537	01-151	7–8	ALLH	—	—	—	—	—	—	—	2017-1523	—	—	—	—	—
RE01-13-38165	01-152	0–1	FILL	—	—	—	—	—	—	—	2013-1778	—	—	—	—	—
RE01-13-38172	01-152	3–4	FILL	—	—	—	—	—	—	—	2013-1778	—	—	—	—	—
RE01-13-38179	01-152	5–6	FILL	—	—	—	—	—	—	—	2013-1778	—	—	—	—	—
RE01-13-38166	01-153	0–1	FILL	—	—	—	—	—	—	—	2013-1769	—	—	—	—	—
RE01-13-38173	01-153	3–4	FILL	—	—	—	—	—	—	—	2013-1769	—	—	—	—	—
RE01-13-38180	01-153	5–6	FILL	—	—	—	—	—	—	—	2013-1769	—	—	—	—	—
RE01-13-38167	01-154	0–1	FILL	—	—	—	—	—	—	—	2013-1769	—	—	—	—	—
RE01-13-38174	01-154	3–4	FILL	—	—	—	—	—	—	—	2013-1769	—	—	—	—	—
RE01-13-38181	01-154	5–6	FILL	—	—	—	—	—	—	—	2013-1769	—	—	—	—	—
RE01-13-38168	01-155	0–1	FILL	—	—	—	—	—	—	—	2013-1769	—	—	—	—	—
RE01-13-38175	01-155	3–4	FILL	—	—	—	—	—	—	—	2013-1769	—	—	—	—	—
RE01-13-38182	01-155	5–6	FILL	—	—	—	—	—	—	—	2013-1769	—	—	—	—	—
RE01-13-38169	01-156	0–1	FILL	—	—	—	—	—	—	—	2013-1778	—	—	—	—	—
RE01-13-38176	01-156	3–4	FILL	—	—	—	—	—	—	—	2013-1778	—	—	—	—	—
RE01-13-38183	01-156	5–6	FILL	—	—	—	—	—	—	—	2013-1778	—	—	—	—	—
RE01-13-38170	01-157	0–1	FILL	—	—	—	—	—	—	—	2013-1769	—	—	—	—	—
RE01-13-38177	01-157	3–4	FILL	—	—	—	—	—	—	—	2013-1769	—	—	—	—	—
RE01-13-38184	01-157	5–6	FILL	—	—	—	—	—	—	—	2013-1769	—	—	—	—	—
RE01-13-38185	01-158	5–6	FILL	—	—	—	—	—	—	—	2013-1778	—	—	—	—	—
RE01-13-38186	01-158	7–8	FILL	—	—	—	—	—	—	—	2013-1778	—	—	—	—	—
RE01-12-10359	01-39	0–1	FILL	—	—	—	—	—	—	—	12-1050	—	—	—	—	—
RE01-12-10363	01-39	2–3	FILL	—	—	—	—	—	—	—	12-1050	—	—	—	—	—
RE01-12-10360	01-40	0–1	FILL	—	—	—	—	—	—	—	12-1050	—	—	—	—	—
RE01-12-10364	01-40	2–3	FILL	—	—	—	—	—	—	—	12-1050	—	—	—	—	—
RE01-12-10361	01-41	0–1	FILL	—	—	—	—	—	—	—	12-1050	—	—	—	—	—
RE01-12-10365	01-41	2–3	FILL	—	—	—	—	—	—	—	12-1050	—	—	—	—	—
RE01-12-10362	01-42	0–1	FILL	—	—	—	—	—	—	—	12-1050	—	—	—	—	—
RE01-12-10366	01-42	2–3	FILL	—	—	—	—	—	—	—	12-1050	—	—	—	—	—

Table 7.7-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (Total)
RE01-12-755	01-614789	0–1	ALLH	12-470	—	12-470	—	12-470	—	12-469	12-468	—	12-470	12-468	—	—
RE01-12-756	01-614789	3–4	QBT3	12-470	—	12-470	—	12-470	—	12-469	12-468	—	12-470	12-468	—	—
RE01-12-757	01-614789	5–6	QBT3	12-470	—	12-470	—	12-470	—	12-469	12-468	—	12-470	12-468	—	—
RE01-12-758	01-614790	0–1	QBT3	12-470	—	12-470	—	12-470	—	12-469	12-468	—	12-470	12-468	—	—
RE01-12-759	01-614790	3–4	QBT3	12-470	—	12-470	—	12-470	—	12-469	12-468	—	12-470	12-468	—	—
RE01-12-760	01-614790	5–6	QBT3	12-470	—	12-470	—	12-470	—	12-469	12-468	—	12-470	12-468	—	—
RE01-12-761	01-614791	0–1	ALLH	12-480	—	12-480	—	12-480	—	12-479	12-478	—	12-480	12-478	—	—
RE01-12-762	01-614791	3–4	QBT3	12-480	—	12-480	—	12-480	—	12-479	12-478	—	12-480	12-478	—	—
RE01-12-763	01-614791	5–6	QBT3	12-480	—	12-480	—	12-480	—	12-479	12-478	—	12-480	12-478	—	—
RE01-12-764	01-614792	0–1	ALLH	12-480	—	12-480	—	12-480	—	12-479	12-478	—	12-480	12-478	—	—
RE01-12-765	01-614792	3–4	ALLH	12-489	—	12-489	—	12-489	—	12-489	12-489	—	12-489	12-489	—	—
RE01-12-766	01-614792	5–6	ALLH	12-489	—	12-489	—	12-489	—	12-489	12-489	—	12-489	12-489	—	—
RELA-17-131556	01-61521	0–1	ALLH	—	—	—	—	—	—	—	2017-1375	—	—	—	—	—
RELA-17-131557	01-61521	3–4	ALLH	—	—	—	—	—	—	—	2017-1375	—	—	—	—	—
RELA-17-131559	01-61522	0–1	ALLH	—	—	—	—	—	—	—	2017-1402	—	—	—	—	—
RELA-17-131560	01-61522	1–2	ALLH	—	—	—	—	—	—	—	2017-1402	—	—	—	—	—
RELA-17-132619	01-61547	0–1	ALLH	—	—	—	—	—	—	—	2017-1402	—	—	—	—	—
RELA-17-132620	01-61547	1–2	ALLH	—	—	—	—	—	—	—	2017-1402	—	—	—	—	—
RE01-12-12177	01-66	1–2	FILL	—	—	—	—	—	—	—	12-1049	—	—	—	—	—
RE01-12-12178	01-66	3–4	FILL	—	—	—	—	—	—	—	12-1049	—	—	—	—	—

[a] Analytical request number.

[b] — = Analysis not requested.

Table 7.7-2
Inorganic Chemicals Detected or Detected above BVs at SWMU 01-001(o)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Cadmium	Calcium	Chromium	Copper	Cyanide (Total)	Lead	Mercury	Nickel	Nitrate	Perchlorate	Selenium	Silver	Zinc
Soil Background Value[a]				**0.83**	**0.4**	**6120**	**19.3**	**14.7**	**0.5**	**22.3**	**0.1**	**15.4**	**na[b]**	**na**	**1.52**	**1**	**48.8**
Qbt 2,3,4 Background Value[a]				**0.5**	**1.63**	**2200**	**7.14**	**4.66**	**0.5**	**11.2**	**0.1**	**6.58**	**na**	**na**	**0.3**	**1**	**63.5**
Sediment Background Value[a]				**0.83**	**0.4**	**4420**	**10.5**	**11.2**	**0.82**	**19.7**	**0.1**	**9.38**	**na**	**na**	**0.3**	**1**	**60.2**
Industrial SSL[c]				**519**	**1110**	**na**	**505[d]**	**51,900**	**62.8**	**800**	**389**	**25,700**	**2,080,000**	**908**	**6490**	**6490**	**389,000**
Construction Worker SSL[c]				**142**	**72.1**	**na**	**134[d]**	**14,200**	**12**	**800**	**77.1**	**12,400**	**991,000**	**434**	**3100**	**3100**	**186,000**
Residential SSL[c]				**31.3**	**70.5**	**na**	**96.6[d]**	**3130**	**11.1**	**400**	**23.5**	**1560**	**125,000**	**54.8**	**391**	**391**	**23,500**
RE00-08-16218	00-603850	6.75–7.75	QBT3	—[e]	—	—	14.8	—	0.6 (U)	—	—	7.7	—	—	—	—	—
RE00-08-16219	00-603850	8.75–10	QBT3	—	—	—	22.2	—	0.62 (U)	—	—	11.2	—	—	—	—	—
RE01-12-753	00-603850	10–11	QBT3	NA[f]	NA	NA	23.6	7.82	NA	—	—	—	NA	NA	NA	2.66 (U)	—
RE01-12-754	00-603850	11–12	QBT3	NA	NA	NA	9.2	7.04	NA	—	—	—	NA	NA	NA	2.61 (U)	—
RE00-08-16220	00-603851	1–2	FILL	—	—	—	—	—	0.58 (UJ)	—	—	—	0.21 (J)	—	—	—	—
RE00-08-16223	00-603852	7.25–8.25	QBT3	—	—	—	10.5	—	—	—	0.242	—	—	—	0.55 (U)	—	—
RE01-12-749	00-603852	9–10	SOIL	NA	NA	NA	—	448 (J)	NA	57.4 (J+)	0.329	—	NA	NA	NA	3.07 (UJ)	405 (J-)
RE01-12-750	00-603852	11–12	QBT3	NA	NA	NA	—	—	NA	—	—	—	NA	NA	NA	2.62 (UJ)	—
RE00-08-16225	00-603853	3–4	QBT3	—	—	—	8.4	—	—	—	—	—	0.45	—	—	—	—
RE01-12-747	00-603853	5–6	FILL	NA	NA	NA	—	—	NA	—	—	—	NA	NA	NA	2.86 (U)	—
RE00-08-16226	00-603854	0–1	SOIL	—	—	—	—	—	0.52 (U)	—	—	—	0.13 (J)	—	—	—	—
RE00-08-16227	00-603854	2–3	QBT3	—	—	—	9.5 (J+)	—	0.53 (U)	—	—	—	0.18 (J)	0.0025 (J)	—	—	—
RE01-12-743	00-603854	9–10	QBT3	NA	NA	NA	—	—	NA	—	—	—	NA	NA	NA	—	—
RE01-12-744	00-603854	11–12	QBT3	NA	NA	NA	—	—	NA	—	—	—	NA	NA	NA	—	—
RE00-08-16228	00-603855	0–1	SOIL	—	—	—	24.2 (J+)	—	—	—	—	—	0.098 (J)	—	—	—	—
RE00-08-16229	00-603855	1.5–2.5	QBT3	—	—	—	15.1 (J+)	—	—	—	—	6.7	0.2 (J)	—	—	—	—
RE00-08-16230	00-603856	0–1	SOIL	—	—	—	—	—	—	—	—	—	0.17 (J)	—	—	—	—
RE00-08-16231	00-603856	1–2	QBT3	—	—	—	10	—	—	—	—	—	0.16 (J)	—	—	—	—
RE01-12-741	00-603856	11–12	QBT3	NA	NA	NA	10.3	—	NA	—	—	—	NA	NA	NA	—	—
RE01-12-742	00-603856	13–14	QBT3	NA	NA	NA	—	—	NA	13.2 (J)	—	—	NA	NA	NA	—	—
RE00-08-16232	00-603857	0–1	QBT3	—	—	—	—	—	—	20 (J-)	—	—	—	—	0.52 (U)	—	—
RE00-08-16233	00-603857	1–2	QBT3	—	—	—	7.4	—	—	29.4 (J-)	—	—	0.19 (J)	—	—	—	—
RE01-12-745	00-603857	5–6	QBT3	NA	NA	NA	—	—	NA	18.4 (J)	—	—	NA	NA	NA	—	—
RE01-12-746	00-603857	7–8	QBT3	NA	NA	NA	—	—	NA	16.7 (J)	—	—	NA	NA	NA	—	—
RE00-08-16234	00-603858	0.25–1.25	FILL	—	—	—	—	—	0.58 (UJ)	—	—	—	0.18 (J)	0.0023 (J)	—	—	—
RE00-08-16235	00-603858	1.75–2.75	FILL	—	1.5	—	—	49.7	—	—	0.12	—	0.086 (J)	—	—	—	75.5
RE00-08-16236	00-603858	3.75–4.5	FILL	1.4 (U)	4	13,200	27.1	236	0.56 (UJ)	62.7 (J+)	0.44	15.8	0.22	—	—	1.5	218

Table 7.7-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Cadmium	Calcium	Chromium	Copper	Cyanide (Total)	Lead	Mercury	Nickel	Nitrate	Perchlorate	Selenium	Silver	Zinc
Soil Background Value[a]				**0.83**	**0.4**	**6120**	**19.3**	**14.7**	**0.5**	**22.3**	**0.1**	**15.4**	**na[b]**	**na**	**1.52**	**1**	**48.8**
Qbt 2,3,4 Background Value[a]				**0.5**	**1.63**	**2200**	**7.14**	**4.66**	**0.5**	**11.2**	**0.1**	**6.58**	**na**	**na**	**0.3**	**1**	**63.5**
Sediment Background Value[a]				**0.83**	**0.4**	**4420**	**10.5**	**11.2**	**0.82**	**19.7**	**0.1**	**9.38**	**na**	**na**	**0.3**	**1**	**60.2**
Industrial SSL[c]				**519**	**1110**	**na**	**505[d]**	**51,900**	**62.8**	**800**	**389**	**25,700**	**2,080,000**	**908**	**6490**	**6490**	**389,000**
Construction Worker SSL[c]				**142**	**72.1**	**na**	**134[d]**	**14,200**	**12**	**800**	**77.1**	**12,400**	**991,000**	**434**	**3100**	**3100**	**186,000**
Residential SSL[c]				**31.3**	**70.5**	**na**	**96.6[d]**	**3130**	**11.1**	**400**	**23.5**	**1560**	**125,000**	**54.8**	**391**	**391**	**23,500**
RE01-12-755	01-614789	0–1	SOIL	NA	NA	NA	—	—	NA	—	—	—	NA	NA	NA	—	—
RE01-12-756	01-614789	3–4	QBT3	NA	NA	NA	8.91	—	NA	—	—	—	NA	NA	NA	—	—
RE01-12-757	01-614789	5–6	QBT3	NA	NA	NA	—	—	NA	—	—	—	NA	NA	NA	—	—
RE01-12-758	01-614790	0–1	QBT3	NA	NA	NA	—	—	NA	—	—	—	NA	NA	NA	—	—
RE01-12-759	01-614790	3–4	QBT3	NA	NA	NA	8.93	—	NA	—	—	—	NA	NA	NA	—	—
RE01-12-760	01-614790	5–6	QBT3	NA	NA	NA	—	—	NA	—	—	—	NA	NA	NA	—	—
RE01-12-761	01-614791	0–1	SOIL	NA	NA	NA	—	30.2	NA	27.2	0.279 (J+)	—	NA	NA	NA	—	73.2
RE01-12-762	01-614791	3–4	QBT3	NA	NA	NA	—	—	NA	11.7 (J)	—	—	NA	NA	NA	—	—
RE01-12-763	01-614791	5–6	QBT3	NA	NA	NA	—	—	NA	—	—	—	NA	NA	NA	—	—
RE01-12-764	01-614792	0–1	SOIL	NA	NA	NA	—	—	NA	49.6	0.245 (J+)	—	NA	NA	NA	—	52.9
RE01-12-765	01-614792	3–4	SOIL	NA	NA	NA	—	—	NA	44.7	0.255 (J+)	—	NA	NA	NA	—	106
RE01-12-766	01-614792	5–6	SOIL	NA	NA	NA	35.9	—	NA	37.9	0.404 (J+)	—	NA	NA	NA	—	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] BVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SSLs are from NMED (2017, 602273).

[d] SSL for total chromium.

[e] — = Not detected or not detected above BV.

[f] NA = Not analyzed.

Table 7.7-3
Organic Chemicals Other Than PCBs Detected at SWMU 01-001(o)

Sample ID	Location ID	Depth (ft)	Media	Acenaphthene	Acetone	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate
Industrial SSL[a]				**50,500**	**959,000**	**253,000**	**32.3**	**23.6**	**32.3**	**25300[b]**	**323**	**3,300,000[c]**	**1830**
Construction Worker SSL[a]				**15,100**	**241,000**	**75,300**	**240**	**106**	**240**	**7530[b]**	**2310**	**1,310,000[d]**	**5380**
Residential SSL[a]				**3480**	**66,300**	**17,400**	**1.53**	**1.12**	**1.53**	**1740[b]**	**15.3**	**250,000[c]**	**380**
RE00-08-16218	00-603850	6.75–7.75	QBT3	—[e]	—	—	—	—	—	—	—	—	—
RE00-08-16219	00-603850	8.75–10	QBT3	—	—	—	—	—	—	—	—	—	—
RE01-12-753	00-603850	10–11	QBT3	NA[f]	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-754	00-603850	11–12	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-08-16220	00-603851	1–2	FILL	—	—	—	—	—	—	—	—	—	—
RE01-12-749	00-603852	9–10	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-750	00-603852	11–12	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-747	00-603853	5–6	FILL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-08-16226	00-603854	0–1	SOIL	—	—	—	—	—	—	—	—	—	—
RE00-08-16227	00-603854	2–3	QBT3	—	—	—	—	—	—	—	—	—	—
RE01-12-743	00-603854	9–10	QBT3	—	NA	—	—	—	—	—	—	—	—
RE01-12-744	00-603854	11–12	QBT3	—	NA	—	—	—	—	—	—	—	—
RE00-08-16228	00-603855	0–1	SOIL	—	—	—	—	—	—	—	—	0.35 (J)	0.095 (J)
RE00-08-16229	00-603855	1.5–2.5	QBT3	—	—	—	—	—	—	—	—	—	—
RE00-08-16230	00-603856	0–1	SOIL	—	0.0049 (J+)	—	—	—	—	—	—	—	—
RE01-12-741	00-603856	11–12	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-742	00-603856	13–14	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-08-16232	00-603857	0–1	QBT3	—	0.0023 (J)	—	—	—	—	—	—	—	—
RE00-08-16233	00-603857	1–2	QBT3	—	—	—	—	—	—	—	—	—	—
RE01-12-745	00-603857	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-746	00-603857	7–8	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-08-16234	00-603858	0.25–1.25	FILL	—	—	—	—	—	—	—	—	—	0.087 (J)
RE00-08-16235	00-603858	1.75–2.75	FILL	—	—	—	—	—	—	—	—	—	—
RE00-08-16236	00-603858	3.75–4.5	FILL	—	—	—	—	—	—	—	—	—	0.12 (J)
RE01-12-755	01-614789	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-756	01-614789	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-758	01-614790	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-761	01-614791	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-762	01-614791	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-763	01-614791	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-764	01-614792	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-765	01-614792	3–4	SOIL	0.027 (J)	NA	0.0626	0.216	0.232	0.342	0.161	0.141	—	—
RE01-12-766	01-614792	5–6	SOIL	—	NA	—	0.0404	0.0457	0.0654	0.0344 (J)	—	—	—

Table 7.7-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Chrysene	Di-n-butylphthalate	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylene Chloride	Phenanthrene	Pyrene	Trimethylbenzene[1,2,4-]
Industrial SSL[a]				**50,500**	**959,000**	**253,000**	**32.3**	**23.6**	**32.3**	**25,300[b]**	**323**	**3,300,000[c]**
Construction Worker SSL[a]				**15,100**	**241,000**	**75,300**	**240**	**106**	**240**	**7530[b]**	**2310**	**1,310,000[d]**
Residential SSL[a]				**3480**	**66,300**	**17,400**	**1.53**	**1.12**	**1.53**	**1740[b]**	**15.3**	**250,000[c]**
RE00-08-16218	00-603850	6.75–7.75	QBT3	—	—	—	—	—	—	—	—	0.00048 (J)
RE00-08-16219	00-603850	8.75–10	QBT3	—	—	—	—	—	—	—	—	0.00046 (J)
RE01-12-753	00-603850	10–11	QBT3	NA	—	NA	NA	NA	NA	NA	NA	NA
RE01-12-754	00-603850	11–12	QBT3	NA	—	NA	NA	NA	NA	NA	NA	NA
RE00-08-16220	00-603851	1–2	FILL	—	—	—	—	—	—	—	—	—
RE01-12-749	00-603852	9–10	SOIL	NA	2.68	NA	NA	NA	NA	NA	NA	NA
RE01-12-750	00-603852	11–12	QBT3	NA	—	NA	NA	NA	NA	NA	NA	NA
RE01-12-747	00-603853	5–6	FILL	NA	—	NA	NA	NA	NA	NA	NA	NA
RE00-08-16226	00-603854	0–1	SOIL	—	—	—	—	—	—	—	—	—
RE00-08-16227	00-603854	2–3	QBT3	—	—	—	—	—	—	—	—	—
RE01-12-743	00-603854	9–10	QBT3	—	—	—	—	—	NA	—	—	NA
RE01-12-744	00-603854	11–12	QBT3	—	—	—	—	—	NA	—	—	NA
RE00-08-16228	00-603855	0–1	SOIL	—	—	—	—	—	—	—	—	—
RE00-08-16229	00-603855	1.5–2.5	QBT3	—	—	—	—	—	—	—	—	—
RE00-08-16230	00-603856	0–1	SOIL	—	—	—	—	—	—	—	—	—
RE01-12-741	00-603856	11–12	QBT3	NA	—	NA	NA	NA	NA	NA	NA	NA
RE01-12-742	00-603856	13–14	QBT3	NA	—	NA	NA	NA	NA	NA	NA	NA
RE00-08-16232	00-603857	0–1	QBT3	—	—	—	—	—	—	—	—	—
RE00-08-16233	00-603857	1–2	QBT3	—	—	—	—	—	0.00073 (J)	—	—	—
RE01-12-745	00-603857	5–6	QBT3	NA	—	NA	NA	NA	NA	NA	NA	NA
RE01-12-746	00-603857	7–8	QBT3	NA	—	NA	NA	NA	NA	NA	NA	NA
RE00-08-16234	00-603858	0.25–1.25	FILL	—	—	—	—	—	—	—	—	—
RE00-08-16235	00-603858	1.75–2.75	FILL	—	0.73	—	—	—	—	—	—	—
RE00-08-16236	00-603858	3.75–4.5	FILL	—	1.1	—	—	—	—	—	—	—
RE01-12-755	01-614789	0–1	SOIL	NA	—	NA	NA	NA	NA	NA	NA	NA
RE01-12-756	01-614789	3–4	QBT3	NA	—	NA	NA	NA	NA	NA	NA	NA
RE01-12-758	01-614790	0–1	QBT3	NA	—	NA	NA	NA	NA	NA	NA	NA
RE01-12-761	01-614791	0–1	SOIL	NA	0.403 (J)	NA	NA	NA	NA	NA	NA	NA
RE01-12-762	01-614791	3–4	QBT3	NA	—	NA	NA	NA	NA	NA	NA	NA
RE01-12-763	01-614791	5–6	QBT3	NA	—	NA	NA	NA	NA	NA	NA	NA

Table 7.7-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Chrysene	Di-n-butylphthalate	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylene Chloride	Phenanthrene	Pyrene	Trimethylbenzene[1,2,4-]
Industrial SSL[a]				**50,500**	**959,000**	**253,000**	**32.3**	**23.6**	**32.3**	**25,300[b]**	**323**	**3,300,000[c]**
Construction Worker SSL[a]				**15,100**	**241,000**	**75,300**	**240**	**106**	**240**	**7530[b]**	**2310**	**1,310,000[d]**
Residential SSL[a]				**3480**	**66,300**	**17,400**	**1.53**	**1.12**	**1.53**	**1740[b]**	**15.3**	**250,000[c]**
RE01-12-764	01-614792	0–1	SOIL	NA	—	NA	NA	NA	NA	NA	NA	NA
RE01-12-765	01-614792	3–4	SOIL	0.243	—	0.414	0.0259 (J)	0.13	NA	0.342	0.715	NA
RE01-12-766	01-614792	5–6	SOIL	0.0393	—	0.0695	—	—	NA	0.062	0.118	NA

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] SSLs are from NMED (2017, 602273) unless otherwise noted.

[b] Pyrene used as a surrogate based on structural similarity.

[c] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

[d] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

[e] — = Not detected.

[f] NA = Not analyzed.

Table 7.7-4
PCBs Detected at SWMU 01-001(o)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1254	Aroclor-1260
Industrial SSL[a]				**11**	**11.1**
Construction Worker SSL[a]				**49.1**	**85.3**
Residential SSL[a]				**1.14**	**2.43**
RE00-08-16218	00-603850	6.75–7.75	QBT3	—[b]	—
RE00-08-16219	00-603850	8.75–10	QBT3	—	—
RE01-12-753	00-603850	10–11	QBT3	0.0151	0.00695
RE01-12-754	00-603850	11–12	QBT3	0.00593	0.00219 (J)
RE00-08-16220	00-603851	1–2	FILL	0.13	—
RE01-12-749	00-603852	9–10	SOIL	—	0.0395
RE01-12-750	00-603852	11–12	QBT3	—	0.00558
RE01-12-747	00-603853	5–6	FILL	0.0408	0.0234
RE00-08-16226	00-603854	0–1	SOIL	—	0.26 (J+)
RE00-08-16227	00-603854	2–3	QBT3	—	0.0085 (J+)
RE01-12-743	00-603854	9–10	QBT3	—	0.00765
RE01-12-744	00-603854	11–12	QBT3	—	0.00212 (J)
RE00-08-16228	00-603855	0–1	SOIL	—	0.2 (J+)
RE00-08-16229	00-603855	1.5–2.5	QBT3	—	0.0062 (J+)
RE00-08-16230	00-603856	0–1	SOIL	—	—
RE01-12-741	00-603856	11–12	QBT3	0.00414	0.00957
RE01-12-742	00-603856	13–14	QBT3	—	0.00194 (J)
RE00-08-16232	00-603857	0–1	QBT3	—	0.13
RE00-08-16233	00-603857	1–2	QBT3	—	—
RE01-12-745	00-603857	5–6	QBT3	0.00472	0.00759
RE01-12-746	00-603857	7–8	QBT3	—	0.00531
RE00-08-16234	00-603858	0.25–1.25	FILL	—	—
RE00-08-16235	00-603858	1.75–2.75	FILL	0.092	—
RE00-08-16236	00-603858	3.75–4.5	FILL	0.052	—
RE01-13-38164	01-151	0–1	FILL	0.742	0.337
RE01-13-38171	01-151	3–4	FILL	1.53	0.519
RE01-13-38178	01-151	5–6	FILL	1.79	0.701
RELA-17-131536	01-151	6–7	SOIL	0.16	0.064
RELA-17-131537	01-151	7–8	SOIL	0.0539	0.0207
RE01-13-38165	01-152	0–1	FILL	0.0362	0.0368
RE01-13-38172	01-152	3–4	FILL	0.272	0.14

Table 7.7-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1254	Aroclor-1260
Industrial SSL[a]				**11**	**11.1**
Construction Worker SSL[a]				**49.1**	**85.3**
Residential SSL[a]				**1.14**	**2.43**
RE01-13-38179	01-152	5–6	FILL	0.493	0.19
RE01-13-38166	01-153	0–1	FILL	0.82	0.358
RE01-13-38173	01-153	3–4	FILL	1.47	0.492
RE01-13-38180	01-153	5–6	FILL	0.809	0.294
RE01-13-38167	01-154	0–1	FILL	2.58	0.811
RE01-13-38174	01-154	3–4	FILL	0.647	0.216
RE01-13-38181	01-154	5–6	FILL	0.234	0.102
RE01-13-38168	01-155	0–1	FILL	1.31	0.479
RE01-13-38175	01-155	3–4	FILL	0.202	0.087
RE01-13-38182	01-155	5–6	FILL	0.0185	0.00694
RE01-13-38169	01-156	0–1	FILL	0.624	0.246
RE01-13-38176	01-156	3–4	FILL	0.123	0.0548
RE01-13-38183	01-156	5–6	FILL	0.0491	0.0265
RE01-13-38170	01-157	0–1	FILL	0.248	0.128
RE01-13-38177	01-157	3–4	FILL	0.756	0.265
RE01-13-38184	01-157	5–6	FILL	0.102	0.0393
RE01-13-38185	01-158	5–6	FILL	0.0296	0.0507
RE01-13-38186	01-158	7–8	FILL	0.128	0.172
RE01-12-10359	01-39	0–1	FILL	0.0586	0.0458
RE01-12-10363	01-39	2–3	FILL	0.0172	0.0123
RE01-12-10360	01-40	0–1	FILL	0.129	0.0709
RE01-12-10364	01-40	2–3	FILL	0.143	0.0742
RE01-12-10361	01-41	0–1	FILL	0.0463	0.0414
RE01-12-10365	01-41	2–3	FILL	0.434	0.165
RE01-12-10362	01-42	0–1	FILL	0.0639	0.0503
RE01-12-10366	01-42	2–3	FILL	0.131	0.0748
RE01-12-755	01-614789	0–1	SOIL	—	0.00351
RE01-12-756	01-614789	3–4	QBT3	—	0.00183 (J)
RE01-12-758	01-614790	0–1	QBT3	0.0055	0.00628
RE01-12-761	01-614791	0–1	SOIL	0.0993	0.147
RE01-12-762	01-614791	3–4	QBT3	0.00261 (J)	0.00396
RE01-12-763	01-614791	5–6	QBT3	—	0.00164 (J)

Table 7.7-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1254	Aroclor-1260
Industrial SSL[a]				**11**	**11.1**
Construction Worker SSL[a]				**49.1**	**85.3**
Residential SSL[a]				**1.14**	**2.43**
RE01-12-764	01-614792	0–1	SOIL	1.37	0.523
RE01-12-765	01-614792	3–4	SOIL	1.91	0.642
RE01-12-766	01-614792	5–6	SOIL	0.49	0.211
RELA-17-131556	01-61521	0–1	SOIL	4.51	—
RELA-17-131557	01-61521	3–4	SOIL	0.822	0.435
RELA-17-131559	01-61522	0–1	SOIL	0.567	0.347
RELA-17-131560	01-61522	1–2	SOIL	0.453	0.252
RELA-17-132619	01-61547	0–1	SOIL	0.778	0.461
RELA-17-132620	01-61547	1–2	SOIL	1.29	0.732
RE01-12-12177	01-66	1–2	FILL	0.118	0.0636
RE01-12-12178	01-66	3–4	FILL	0.466	0.311

Note: Results are in pCi/g.

[a] SSLs are from NMED (2017, 602273) unless otherwise noted.

[b] — = Not detected or not detected above BV/FV.

Table 7.7-5
Radionuclides Detected or Detected above BVs/FVs at SWMU 01-001(o)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239/240	Strontium-90	Tritium
Soil Background Value[a]				**0.013**	**1.65**	**0.023**	**0.054**	**1.31**	**na**[b]
Qbt 2,3,4 Background Value[a]				**na**	**na**	**na**	**na**	**na**	**na**
Sediment Background Value[a]				**0.04**	**0.9**	**0.006**	**0.068**	**1.04**	**0.093**
Construction Worker SAL[c]				**230**	**37**	**230**	**200**	**1400**	**1,600,000**
Industrial SAL[c]				**1000**	**41**	**1300**	**1200**	**2400**	**2,400,000**
Residential SAL[c]				**83**	**12**	**84**	**79**	**15**	**1700**
RE00-08-16218	00-603850	6.75–7.75	QBT3	—[d]	—	—	—	—	1.33
RE01-12-753	00-603850	10–11	QBT3	—	—	—	0.0901	—	NA[e]
RE00-08-16223	00-603852	7.25–8.25	QBT3	—	—	—	0.229	—	—
RE01-12-749	00-603852	9–10	SOIL	—	—	—	0.315	—	NA
RE01-12-750	00-603852	11–12	QBT3	—	—	—	0.0216	—	NA
RE01-12-747	00-603853	5–6	FILL	—	—	—	0.277	—	NA
RE00-08-16226	00-603854	0–1	SOIL	—	—	—	6.51	—	—
RE00-08-16227	00-603854	2–3	QBT3	0.119	—	—	0.76	—	—
RE01-12-743	00-603854	9–10	QBT3	0.228	—	—	0.0341	—	NA
RE01-12-744	00-603854	11–12	QBT3	—	—	—	0.584	—	NA
RE00-08-16228	00-603855	0–1	SOIL	0.155	—	—	6.14	—	—
RE00-08-16229	00-603855	1.5–2.5	QBT3	—	—	—	0.234	—	—
RE01-12-741	00-603856	11–12	QBT3	—	—	—	0.322	—	NA
RE01-12-742	00-603856	13–14	QBT3	—	—	—	0.81	—	NA

Table 7.7-5 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239/240	Strontium-90	Tritium
Soil Background Value[a]				**0.013**	**1.65**	**0.023**	**0.054**	**1.31**	**na**[b]
Qbt 2,3,4 Background Value[a]				**na**	**na**	**na**	**na**	**na**	**na**
Sediment Background Value[a]				**0.04**	**0.9**	**0.006**	**0.068**	**1.04**	**0.093**
Construction Worker SAL[c]				**230**	**37**	**230**	**200**	**1400**	**1,600,000**
Industrial SAL[c]				**1000**	**41**	**1300**	**1200**	**2400**	**2,400,000**
Residential SAL[c]				**83**	**12**	**84**	**79**	**15**	**1700**
RE00-08-16232	00-603857	0–1	QBT3	—	0.298	—	1.13	0.41	—
RE00-08-16233	00-603857	1–2	QBT3	—	—	—	—	0.34	—
RE01-12-745	00-603857	5–6	QBT3	—	—	—	0.152	—	NA
RE01-12-746	00-603857	7–8	QBT3	—	—	—	0.0629	—	NA
RE00-08-16234	00-603858	0.25–1.25	FILL	—	—	—	0.103	—	—
RE00-08-16236	00-603858	3.75–4.5	FILL	—	—	—	3.41	—	—
RE01-12-756	01-614789	3–4	QBT3	—	—	—	0.125	—	NA
RE01-12-757	01-614789	5–6	QBT3	—	—	—	1.57	—	NA
RE01-12-758	01-614790	0–1	QBT3	—	0.482	0.0145	1.31	—	NA
RE01-12-759	01-614790	3–4	QBT3	—	—	—	0.0316	—	NA
RE01-12-760	01-614790	5–6	QBT3	—	—	—	0.0606	—	NA

Table 7.7-5 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239/240	Strontium-90	Tritium
Soil Background Value[a]				**0.013**	**1.65**	**0.023**	**0.054**	**1.31**	**na[b]**
Qbt 2,3,4 Background Value[a]				**na**	**na**	**na**	**na**	**na**	**na**
Sediment Background Value[a]				**0.04**	**0.9**	**0.006**	**0.068**	**1.04**	**0.093**
Construction Worker SAL[c]				**230**	**37**	**230**	**200**	**1400**	**1,600,000**
Industrial SAL[c]				**1000**	**41**	**1300**	**1200**	**2400**	**2,400,000**
Residential SAL[c]				**83**	**12**	**84**	**79**	**15**	**1700**
RE01-12-761	01-614791	0–1	SOIL	0.0345	—	—	—	—	NA
RE01-12-762	01-614791	3–4	QBT3	0.0256	—	—	0.0643	—	NA
RE01-12-765	01-614792	3–4	SOIL	—	—	—	0.139	—	NA
RE01-12-766	01-614792	5–6	SOIL	—	—	—	0.759	—	NA

Notes: Results are in pCi/g. Data qualifiers are presented in Appendix A.

[a] BVs/FVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SALs are from LANL (2015, 600929).

[d] — = Not detected or not detected above BV/FV.

[e] NA = Not analyzed.

Table 7.8-1
Samples Collected and Analyses Requested at SWMU 01-001(s2)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Mercury	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs
RE01-12-165	01-10	13–14	QBT3	—[a]	—	—	12-1003[b]	12-1003	—	12-1003	—	—	—	—	—	—
RE01-12-164	01-10	8–9	FILL	—	—	—	12-1003	12-1003	—	12-1003	—	—	—	—	—	—
RE01-12-167	01-11	13–14	QBT3	—	—	—	12-1003	12-1003	—	12-1003	—	—	—	—	—	—
RE01-12-166	01-11	8–9	QBT3	—	—	—	12-1003	12-1003	—	12-1003	—	—	—	—	—	—
RE01-12-158	01-48	5.75–6.5	FILL	—	—	—	12-1063	12-1063	—	—	—	—	—	—	—	—
RE01-12-160	01-8	4–5	FILL	—	—	—	12-1006	12-1006	—	12-1006	—	—	—	—	—	—
RE01-12-161	01-8	6–7	FILL	—	—	—	12-1009	12-1009	—	12-1009	—	—	—	—	—	—
RE01-12-162	01-9	4–5	QBT3	—	—	—	12-1006	12-1006	—	12-1006	—	—	—	—	—	—
RE01-12-163	01-9	9–10	QBT3	—	—	—	12-1006	12-1006	—	12-1006	—	—	—	—	—	—
RE00-08-16245	03-603859	4.75–5.75	QBT3	09-713	09-712	09-713	09-713	09-713	09-713	—	09-712	09-711	09-712	09-713	09-711	09-711
RE00-08-16246	03-603859	6.75–7.75	QBT3	09-713	09-712	09-713	09-713	09-713	09-713	—	09-712	09-711	09-712	09-713	09-711	09-711
RE01-12-154	03-603859	9–10	FILL	—	—	—	12-1006	—	—	12-1006	—	—	—	—	—	—
RE00-08-16248	03-603860	10.5–11.5	QBT3	09-713	09-712	09-713	09-713	09-713	09-713	—	09-712	09-711	09-712	09-713	09-711	09-711
RE01-12-155	03-603860	13–14	QBT3	—	—	—	12-1003	—	—	12-1003	—	—	—	—	—	—
RE00-08-16247	03-603860	8.5–9.5	QBT3	09-713	09-712	09-713	09-713	09-713	09-713	—	09-712	09-711	09-712	09-713	09-711	09-711
RE00-08-16249	03-603861	3–4	QBT3	09-722	09-722	09-722	09-722	09-722	09-722	—	09-722	09-722	09-722	09-722	09-722	09-722
RE00-08-16250	03-603861	5–6	QBT3	09-722	09-722	09-722	09-722	09-722	09-722	—	09-722	09-722	09-722	09-722	09-722	09-722
RE00-08-16251	03-603862	3.25–4.25	QBT3	09-565	09-565	09-565	09-565	09-565	09-565	—	09-565	09-565	09-565	09-565	09-565	09-565
RE00-08-16252	03-603862	5.25–6.25	QBT3	09-565	09-565	09-565	09-565	09-565	09-565	—	09-565	09-565	09-565	09-565	09-565	09-565
RE00-08-16253	03-603863	1.5–2.5	QBT3	09-747	09-746	09-747	09-747	09-747	09-747	—	09-746	09-745	09-746	09-747	09-745	09-745
RE00-08-16254	03-603863	3.5–4.5	QBT3	09-747	09-746	09-747	09-747	09-747	09-747	—	09-746	09-745	09-746	09-747	09-745	09-745
RE00-08-16255	03-603864	2–3	QBT3	09-747	09-746	09-747	09-747	09-747	09-747	—	09-746	09-745	09-746	09-747	09-745	09-745
RE00-08-16256	03-603864	4–5	QBT3	09-747	09-746	09-747	09-747	09-747	09-747	—	09-746	09-745	09-746	09-747	09-745	09-745
RE00-08-16257	03-603865	2–3	QBT3	09-747	09-746	09-747	09-747	09-747	09-747	—	09-746	09-745	09-746	09-747	09-745	09-745
RE00-08-16258	03-603865	4–5	QBT3	09-747	09-746	09-747	09-747	09-747	09-747	—	09-746	09-745	09-746	09-747	09-745	09-745
RE00-08-16259	03-603866	1–2	QBT3	09-747	09-746	09-747	09-747	09-747	09-747	—	09-746	09-745	09-746	09-747	09-745	09-745
RE00-08-16260	03-603866	3–4	QBT3	09-747	09-746	09-747	09-747	09-747	09-747	—	09-746	09-745	09-746	09-747	09-745	09-745
RE00-08-16261	03-603867	5.75–6.75	QBT3	09-603	09-603	09-603	09-603	09-603	09-603	—	09-603	09-603	09-603	09-603	09-603	09-603
RE00-08-16262	03-603867	7.75–8.75	QBT3	09-603	09-603	09-603	09-603	09-603	09-603	—	09-603	09-603	09-603	09-603	09-603	09-603
RE00-08-16264	03-603868	10–11	QBT3	09-644	09-643	09-644	09-644	09-644	09-644	—	09-643	09-642	09-643	09-644	09-642	09-642
RE00-08-16263	03-603868	8–9	QBT3	09-644	09-643	09-644	09-644	09-644	09-644	—	09-643	09-642	09-643	09-644	09-642	09-642
RE00-08-16265	03-603869	5.25–6.25	QBT3	09-992	09-992	09-992	09-992	09-992	09-992	—	09-992	09-992	09-992	09-992	09-992	09-992
RE00-08-16266	03-603869	7.25–8.25	QBT3	09-992	09-992	09-992	09-992	09-992	09-992	—	09-992	09-992	09-992	09-992	09-992	09-992
RE00-08-16267	03-603870	3–4	QBT3	09-644	09-643	09-644	09-644	09-644	09-644	—	09-643	09-642	09-643	09-644	09-642	09-642
RE00-08-16268	03-603870	5–6	QBT3	09-644	09-643	09-644	09-644	09-644	09-644	—	09-643	09-642	09-643	09-644	09-642	09-642

[a] — = Analysis not requested.
[b] Analytical request number.

Table 7.8-2
Inorganic Chemicals Detected or Detected above BVs at SWMU 01-001(s2)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Magnesium	Mercury	Nickel	Nitrate	Perchlorate	Selenium	Silver
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**4610**	**0.1**	**15.4**	**na[b]**	**na**	**1.52**	**1**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**1690**	**0.1**	**6.58**	**na**	**na**	**0.3**	**1**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**2370**	**0.1**	**9.38**	**na**	**na**	**0.3**	**1**
Industrial SSL[c]				**1,290,000**	**519**	**36**	**255,000**	**1110**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**na**	**389**	**25,700**	**2,080,000**	**908**	**6490**	**6490**
Construction Worker SSL[c]				**41,400**	**142**	**41**	**4,390**	**72.1**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**na**	**77.1**	**12,400**	**991,000**	**434**	**3100**	**3100**
Residential SSL[c]				**78,000**	**31.3**	**7.1**	**15,600**	**70.5**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**na**	**23.5**	**1560**	**125,000**	**54.8**	**391**	**391**
RE01-12-164	01-10	8–9	FILL	NA[e]	NA	NA	—[f]	NA	NA	NA	NA	—	NA	—	NA	NA	—	NA	NA	NA	NA
RE01-12-165	01-10	13–14	QBT3	NA	NA	NA	—	NA	NA	NA	NA	—	NA	14.2	NA	NA	—	NA	NA	NA	NA
RE01-12-166	01-11	8–9	QBT3	NA	NA	NA	—	NA	NA	NA	NA	—	NA	12.4	NA	NA	—	NA	NA	NA	NA
RE01-12-167	01-11	13–14	QBT3	NA	NA	NA	—	NA	NA	NA	NA	—	NA	—	NA	NA	—	NA	NA	NA	NA
RE01-12-158	01-48	5.75–6.5	FILL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-160	01-8	4–5	FILL	NA	NA	NA	—	NA	NA	NA	NA	—	NA	—	NA	NA	—	NA	NA	NA	NA
RE01-12-161	01-8	6–7	FILL	NA	NA	NA	—	NA	NA	NA	NA	—	NA	—	NA	NA	—	NA	NA	NA	NA
RE01-12-162	01-9	4–5	QBT3	NA	NA	NA	100	NA	NA	NA	NA	8.93	NA	—	NA	NA	—	NA	NA	NA	NA
RE01-12-163	01-9	9–10	QBT3	NA	NA	NA	95.5	NA	NA	NA	NA	—	NA	43.2	NA	NA	—	NA	NA	NA	NA
RE00-08-16245	03-603859	4.75–5.75	QBT3	—	—	—	160 (J)	—	—	—	3.3 (J)	35.1 (J)	0.6 (U)	—	—	—	12.3 (J)	0.18 (J)	—	—	—
RE00-08-16246	03-603859	6.75–7.75	QBT3	—	—	—	162 (J)	—	2720 (J)	—	—	27.6 (J)	—	—	2060 (J)	—	12 (J)	—	—	—	—
RE01-12-154	03-603859	9–10	FILL	NA	NA	NA	—	NA	NA	NA	NA	—	NA	—	NA	NA	—	NA	NA	NA	NA
RE00-08-16247	03-603860	8.5–9.5	QBT3	9510 (J)	—	—	138 (J)	—	—	—	—	5.5	—	11.7	—	—	—	—	—	0.67 (UJ)	—
RE00-08-16248	03-603860	10.5–11.5	QBT3	—	—	3	136 (J)	—	—	—	4.7 (J)	7.2 (J)	—	39.6	—	—	—	—	—	—	—
RE01-12-155	03-603860	13–14	QBT3	NA	NA	NA	324	NA	NA	NA	NA	5.64	NA	22.6	NA	NA	—	NA	NA	NA	NA
RE00-08-16249	03-603861	3–4	QBT3	—	—	—	—	—	—	—	—	—	—	13.7	—	—	—	0.44	—	—	—
RE00-08-16250	03-603861	5–6	QBT3	—	—	—	—	2.3	—	—	—	5.8	—	—	—	—	—	0.077 (J)	—	—	5.4
RE00-08-16251	03-603862	3.25–4.25	QBT3	—	—	—	—	—	—	27.4 (J)	—	—	0.54 (UJ)	—	—	0.111	13.7 (J-)	0.38	—	—	—
RE00-08-16252	03-603862	5.25–6.25	QBT3	—	—	—	—	—	—	25.5 (J)	—	—	0.54 (UJ)	—	—	—	12.1 (J-)	0.17 (J)	—	—	—
RE00-08-16253	03-603863	1.5–2.5	QBT3	—	—	—	272	—	—	7.4	—	6	0.58 (U)	13.8	—	—	—	1.3	—	0.58 (U)	—
RE00-08-16254	03-603863	3.5–4.5	QBT3	7750 (J)	—	—	54.9	—	—	—	—	7.8 (J)	0.86 (U)	—	—	—	—	—	—	0.61 (U)	—
RE00-08-16255	03-603864	2–3	QBT3	8320 (J)	0.55 (U)	2.8	126	—	3560 (J)	8.9 (J)	—	6.3 (J)	0.78 (U)	14	—	0.141	8.5 (J)	0.98	—	0.63 (U)	—
RE00-08-16256	03-603864	4–5	QBT3	8760 (J)	—	—	112	—	—	—	4.8 (J)	5.6 (J)	0.58 (U)	11.8	—	—	9.4 (J)	0.46	—	0.61 (U)	—
RE00-08-16257	03-603865	2–3	QBT3	—	0.59 (U)	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—
RE00-08-16258	03-603865	4–5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.5	—	—	—

Table 7.8-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Magnesium	Mercury	Nickel	Nitrate	Perchlorate	Selenium	Silver
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**4610**	**0.1**	**15.4**	**na[b]**	**na**	**1.52**	**1**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**1690**	**0.1**	**6.58**	**na**	**na**	**0.3**	**1**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**2370**	**0.1**	**9.38**	**na**	**na**	**0.3**	**1**
Industrial SSL[c]				**1,290,000**	**519**	**36**	**255,000**	**1110**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**na**	**389**	**25,700**	**2,080,000**	**908**	**6490**	**6490**
Construction Worker SSL[c]				**41,400**	**142**	**41**	**4,390**	**72.1**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**na**	**77.1**	**12,400**	**991,000**	**434**	**3100**	**3100**
Residential SSL[c]				**78,000**	**31.3**	**7.1**	**15,600**	**70.5**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**na**	**23.5**	**1560**	**125,000**	**54.8**	**391**	**391**
RE00-08-16259	03-603866	1–2	QBT3	—	0.56 (U)	—	—	—	—	—	—	—	0.59 (U)	—	—	—	—	—	—	0.33 (J)	—
RE00-08-16260	03-603866	3–4	QBT3	—	0.57 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-16261	03-603867	5.75–6.75	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.11 (J)	—	0.57 (U)	—
RE00-08-16262	03-603867	7.75–8.75	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.19 (J)	—	0.34 (J)	—
RE00-08-16263	03-603868	8–9	QBT3	—	—	—	—	—	—	—	—	—	0.62 (U)	—	—	—	—	—	—	0.62 (U)	—
RE00-08-16264	03-603868	10-11	QBT3	—	—	—	53.5	—	—	—	—	5.7	0.62 (U)	11.5	—	—	—	—	0.0039 (J)	—	—
RE00-08-16265	03-603869	5.25–6.25	QBT3	9070	1.24 (U)	—	50.8	—	—	—	—	—	—	—	—	—	—	2.19	—	1.22 (U)	—
RE00-08-16266	03-603869	7.25–8.25	QBT3	—	1.14 (U)	—	73.5	—	—	—	—	—	—	—	—	—	—	2.72	—	1.16 (U)	—
RE00-08-16267	03-603870	3–4	QBT3	—	—	—	—	—	—	10.1 (J+)	—	—	0.53 (U)	16.8	—	—	7	0.11 (J)	—	0.63	—
RE00-08-16268	03-603870	5–6	QBT3	—	—	—	46.5	—	—	14.5 (J+)	—	—	0.56 (U)	15.3	—	—	9.7	—	—	0.43 (J)	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] BVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SSLs are from NMED (2017, 602273) unless otherwise noted.

[d] SSL for total chromium.

[e] NA = Not analyzed.

[f] — = Not detected or not detected above BV.

Table 7.8-3
Organic Chemicals Detected at SWMU 01-001(s2)

Sample ID	Location ID	Depth (ft)	Media	Acenaphthene	Acetone	Anthracene	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Chrysene
Industrial SSL[a]				**50,500**	**959,000**	**253,000**	**11.0**	**11.1**	**32**	**24**	**32**	**25,300[b]**	**323**	**1830**	**3230**
Construction Worker SSL[a]				**15,100**	**241,000**	**75,300**	**4.91**	**85.3**	**240**	**106**	**240**	**7530[b]**	**2310**	**5380**	**23,100**
Residential SSL[a]				**3480**	**66,300**	**17,400**	**1.14**	**2.43**	**1.53**	**1.12**	**1.53**	**1740[b]**	**15.3**	**380**	**153**
RE00-08-16245	03-603859	4.75–5.75	QBT3	—[c]	0.0039 (J)	—	—	—	—	—	—	—	—	—	—
RE00-08-16246	03-603859	6.75–7.75	QBT3	—	0.034	—	—	—	—	—	—	—	—	0.082 (J)	—
RE00-08-16247	03-603860	8.5–9.5	QBT3	—	0.037	—	—	—	—	—	—	—	—	—	—
RE00-08-16248	03-603860	10.5–11.5	QBT3	—	0.062	—	—	—	—	—	—	—	—	—	—
RE00-08-16249	03-603861	3–4	QBT3	—	0.0045 (J)	—	—	—	—	—	—	—	—	—	—
RE00-08-16251	03-603862	3.25–4.25	QBT3	—	0.0051 (J)	—	—	—	—	—	—	—	—	—	—
RE00-08-16252	03-603862	5.25–6.25	QBT3	—	0.0078 (J)	—	—	—	—	—	—	—	—	—	—
RE00-08-16254	03-603863	3.5–4.5	QBT3	—	—	0.041 (J)	—	—	0.041 (J)	—	—	—	—	—	0.042 (J)
RE00-08-16255	03-603864	2–3	QBT3	—	—	—	0.21 (J)	—	—	—	—	—	—	—	—
RE00-08-16256	03-603864	4–5	QBT3	—	—	—	0.015 (J)	—	—	—	—	—	—	—	—
RE00-08-16257	03-603865	2–3	QBT3	—	0.006 (J)	—	—	0.0062 (J)	0.075 (J)	0.094 (J)	0.077 (J)	0.043 (J)	0.093 (J)	—	0.11 (J)
RE00-08-16258	03-603865	4–5	QBT3	0.052 (J)	—	0.076 (J)	—	0.012 (J)	0.29 (J)	0.29 (J)	0.21 (J)	0.15 (J)	0.28 (J)	—	0.37 (J)
RE00-08-16261	03-603867	5.75–6.75	QBT3	—	—	—	—	0.033 (J)	—	—	—	—	—	—	—
RE00-08-16262	03-603867	7.75–8.75	QBT3	—	—	—	0.015 (J)	0.03 (J)	—	—	—	—	—	—	—
RE00-08-16263	03-603868	8–9	QBT3	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-16265	03-603869	5.25–6.25	QBT3	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-16266	03-603869	7.25–8.25	QBT3	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-16267	03-603870	3–4	QBT3	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-16245	03-603859	4.75–5.75	QBT3	—	0.0039 (J)	—	—	—	—	—	—	—	—	—	—

Table 7.8-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylene Chloride	Naphthalene	Phenanthrene	Propylbenzene[1-]	Pyrene
Industrial SSL[a]				**3.23**	**33,700**	**33,700**	**32.3**	**5110**	**16,800**	**25,300**	**24,000[d]**	**25,300**
Construction Worker SSL[a]				**24.0**	**10,000**	**10,000**	**240**	**118**	**5020**	**7530**	**15,100[e]**	**7530**
Residential SSL[a]				**0.153**	**2320**	**2320**	**1.53**	**409**	**1160**	**1740**	**3800[d]**	**1740**
RE00-08-16245	03-603859	4.75–5.75	QBT3	—	—	—	—	—	—	—	—	—
RE00-08-16246	03-603859	6.75–7.75	QBT3	—	—	—	—	—	—	—	—	—
RE00-08-16247	03-603860	8.50–9.50	QBT3	—	—	—	—	—	—	—	—	—
RE00-08-16248	03-603860	10.50–11.50	QBT3	—	—	—	—	—	—	—	—	—
RE00-08-16249	03-603861	3.00–4.00	QBT3	—	—	—	—	—	—	—	0.0013 (J)	—
RE00-08-16251	03-603862	3.25–4.25	QBT3	—	—	—	—	0.028	—	—	—	—
RE00-08-16252	03-603862	5.25–6.25	QBT3	—	—	—	—	0.032	—	—	—	—
RE00-08-16254	03-603863	3.50–4.50	QBT3	—	0.094 (J)	—	—	—	0.1 (J)	0.14 (J)	—	0.088 (J)
RE00-08-16255	03-603864	2.00–3.00	QBT3	—	—	—	—	—	—	—	—	—
RE00-08-16256	03-603864	4.00–5.00	QBT3	—	—	—	—	—	—	—	—	—
RE00-08-16257	03-603865	2.00–3.00	QBT3	—	0.18 (J)	—	—	—	—	0.11 (J)	—	0.16 (J)
RE00-08-16258	03-603865	4.00–5.00	QBT3	0.052 (J)	0.78	0.053 (J)	0.15 (J)	—	—	0.66	—	0.72
RE00-08-16261	03-603867	5.75–6.75	QBT3	—	—	—	—	—	—	—	—	—
RE00-08-16262	03-603867	7.75–8.75	QBT3	—	—	—	—	—	—	—	—	—
RE00-08-16263	03-603868	8.00–9.00	QBT3	—	—	—	—	0.0014 (J)	—	—	—	—
RE00-08-16265	03-603869	5.25–6.25	QBT3	—	—	—	—	0.00365 (J)	—	—	—	—
RE00-08-16266	03-603869	7.25–8.25	QBT3	—	—	—	—	0.0029 (J)	—	—	—	—
RE00-08-16267	03-603870	3.00–4.00	QBT3	—	0.038 (J)	—	—	—	—	—	—	0.035 (J)
RE00-08-16269	03-603871	1.50–2.50	QBT3	—	—	—	—	—	—	—	—	—
RE00-08-16270	03-603871	3.50–4.50	QBT3	—	—	—	—	—	—	—	—	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] Pyrene used as a surrogate based on structural similarity.

[c] — = Not detected.

[d] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

[e] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

Table 7.8-4
Radionuclides Detected or Detected above BVs/FVs at SWMU 01-001(s2)

Sample ID	Location ID	Depth (ft)	Media	Plutonium-239/240	Tritium	Uranium-234
Soil Background Value[a]				**0.054**	**na[b]**	**2.59**
Qbt 2,3,4 Background Value[a]				**na**	**na**	**1.98**
Sediment Background Value[a]				**0.068**	**0.093**	**2.59**
Industrial SAL[c]				**1200**	**2,400,000**	**3100**
Construction Worker SAL[c]				**200**	**1,600,000**	**1000**
Residential SAL[c]				**79**	**1700**	**290**
RE01-12-158	01-48	5.75–6.5	FILL	0.465 (J)	—[d]	NA[e]
RE00-08-16248	03-603860	10.5–11.5	QBT3	—	0.9	—
RE00-08-16251	03-603862	3.25–4.25	QBT3	0.564	—	—
RE00-08-16253	03-603863	1.5–2.5	QBT3	0.105	—	—
RE00-08-16256	03-603864	4–5	QBT3	—	—	1.99
RE00-08-16258	03-603865	4–5	QBT3	0.29	—	—
RE00-08-16267	03-603870	3–4	QBT3	—	0.71	—

Note: Results are in pCi/g.

[a] BVs/FVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SALs are from LANL 2015, 600929.

[d] — = Not detected or not detected above BV.

[e] NA = Not analyzed.

Table 7.9-1
Samples Collected and Analyses Requested at SWMU 01-002(a2)-00

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-Emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (total)
RE00-08-16321	00-603884	1.75–2.75	QBT3	09-725*	09-724	09-725	09-725	09-725	09-725	09-724	09-723	09-724	09-725	09-723	09-723	09-724
RE00-08-16322	00-603884	3.75–4.75	QBT3	09-725	09-724	09-725	09-725	09-725	09-725	09-724	09-723	09-724	09-725	09-723	09-723	09-724
RE00-08-16323	00-603885	0.75–1.75	QBT3	09-564	09-563	09-564	09-564	09-564	09-564	09-563	09-562	09-563	09-564	09-562	09-562	09-563
RE00-08-16324	00-603885	2.75–3.75	QBT3	09-564	09-563	09-564	09-564	09-564	09-564	09-563	09-562	09-563	09-564	09-562	09-562	09-563
RE00-08-16325	00-603886	0.75–1.75	QBT3	09-564	09-563	09-564	09-564	09-564	09-564	09-563	09-562	09-563	09-564	09-562	09-562	09-563
RE00-08-16326	00-603886	2.75–3.75	QBT3	09-564	09-563	09-564	09-564	09-564	09-564	09-563	09-562	09-563	09-564	09-562	09-562	09-563
RE00-08-16327	00-603887	1–2	QBT3	09-750	09-749	09-750	09-750	09-750	09-750	09-749	09-748	09-749	09-750	09-748	09-748	09-749
RE00-08-16328	00-603887	3–4	QBT3	09-750	09-749	09-750	09-750	09-750	09-750	09-749	09-748	09-749	09-750	09-748	09-748	09-749
RE00-08-16329	00-603888	6–7	QBT3	09-725	09-724	09-725	09-725	09-725	09-725	09-724	09-723	09-724	09-725	09-723	09-723	09-724
RE00-08-16330	00-603888	8–9	QBT3	09-725	09-724	09-725	09-725	09-725	09-725	09-724	09-723	09-724	09-725	09-723	09-723	09-724
RE00-08-16331	00-603889	1.25–2.25	QBT3	09-725	09-724	09-725	09-725	09-725	09-725	09-724	09-723	09-724	09-725	09-723	09-723	09-724
RE00-08-16332	00-603889	3.25–4.25	QBT3	09-725	09-724	09-725	09-725	09-725	09-725	09-724	09-723	09-724	09-725	09-723	09-723	09-724
RE00-08-16333	00-603890	0.75–1.75	QBT3	09-725	09-724	09-725	09-725	09-725	09-725	09-724	09-723	09-724	09-725	09-723	09-723	09-724
RE00-08-16334	00-603890	2.75–3.75	QBT3	09-725	09-724	09-725	09-725	09-725	09-725	09-724	09-723	09-724	09-725	09-723	09-723	09-724
RE00-08-16335	00-603891	1.25–2.25	QBT3	09-725	09-724	09-725	09-725	09-725	09-725	09-724	09-723	09-724	09-725	09-723	09-723	09-724
RE00-08-16336	00-603891	3.25–4.25	QBT3	09-725	09-724	09-725	09-725	09-725	09-725	09-724	09-723	09-724	09-725	09-723	09-723	09-724
RE00-08-16337	00-603892	2–3	QBT3	09-750	09-749	09-750	09-750	09-750	09-750	09-749	09-748	09-749	09-750	09-748	09-748	09-749
RE00-08-16338	00-603892	4–5	QBT3	09-750	09-749	09-750	09-750	09-750	09-750	09-749	09-748	09-749	09-750	09-748	09-748	09-749
RE00-08-16339	00-603893	1.5–2.5	QBT3	09-602	09-602	09-602	09-602	09-602	09-602	09-602	09-602	09-602	09-602	09-602	09-602	09-602
RE00-08-16340	00-603893	3.5–4.5	QBT3	09-602	09-602	09-602	09-602	09-602	09-602	09-602	09-602	09-602	09-602	09-602	09-602	09-602
RE00-08-16341	00-603894	11–12	QBT3	09-625	09-624	09-625	09-625	09-625	09-625	09-624	09-623	09-624	09-625	09-623	09-623	09-624
RE00-08-16342	00-603894	13–14	QBT3	09-625	09-624	09-625	09-625	09-625	09-625	09-624	09-623	09-624	09-625	09-623	09-623	09-624
RE00-08-16345	00-603896	7.25–8.25	QBT3	09-625	09-624	09-625	09-625	09-625	09-625	09-624	09-623	09-624	09-625	09-623	09-623	09-624
RE00-08-16346	00-603896	9.25–10.25	QBT3	09-625	09-624	09-625	09-625	09-625	09-625	09-624	09-623	09-624	09-625	09-623	09-623	09-624
RE00-08-16357	00-604530	1–2	QBT3	09-767	09-767	09-767	09-767	09-767	09-767	09-767	09-767	09-767	09-767	09-767	09-767	09-767
RE00-08-16358	00-604530	3–4	QBT3	09-767	09-767	09-767	09-767	09-767	09-767	09-767	09-767	09-767	09-767	09-767	09-767	09-767
RE00-08-16359	00-604531	6–7	QBT3	09-750	09-749	09-750	09-750	09-750	09-750	09-749	09-748	09-749	09-750	09-748	09-748	09-749
RE00-08-16360	00-604531	8–9	QBT3	09-750	09-749	09-750	09-750	09-750	09-750	09-749	09-748	09-749	09-750	09-748	09-748	09-749

*Analytical request number.

Table 7.9-2
Inorganic Chemicals Detected or Detected above BVs at SWMU 01-002(a2)-00

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Magnesium	Mercury	Nickel	Nitrate	Selenium
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**4610**	**0.1**	**15.4**	**na[b]**	**1.52**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**1690**	**0.1**	**6.58**	**na**	**0.3**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**1.31**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**2370**	**0.1**	**9.38**	**na**	**0.3**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**na**	**389**	**25,700**	**2,080,000**	**6490**
Construction Worker SSL[c]				**619,000**	**142**	**41.2**	**4,390**	**148**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**na**	**77.1**	**12,400**	**991,000**	**3100**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**na**	**23.5**	**1560**	**125,000**	**391**
RE00-08-16321	00-603884	1.75–2.75	QBT3	—[e]	—	—	—	—	—	—	—	—	0.52 (U)	—	—	—	—	—	—
RE00-08-16322	00-603884	3.75–4.75	QBT3	—	—	—	—	—	—	7.4 (J)	—	—	0.51 (U)	—	—	—	—	—	—
RE00-08-16323	00-603885	0.75–1.75	QBT3	—	—	—	—	—	—	59.4 (J)	—	—	—	—	—	—	27.4 (J)	—	—
RE00-08-16324	00-603885	2.75–3.75	QBT3	—	—	—	—	—	—	31.5 (J)	—	—	—	—	—	—	15.1 (J-)	—	—
RE00-08-16325	00-603886	0.75–1.75	QBT3	—	—	—	—	—	—	13.8 (J)	—	—	0.53 (UJ)	—	—	—	7 (J-)	—	0.33 (J)
RE00-08-16326	00-603886	2.75–3.75	QBT3	—	—	—	—	—	—	22.1 (J)	—	—	—	13.9 (J)	—	—	10.5 (J)	—	0.41 (J)
RE00-08-16327	00-603887	1–2	QBT3	10,800 (J)	—	—	96.9	—	2620 (J)	8.7 (J)	—	5.1 (J)	—	—	2010 (J)	—	9.2 (J)	—	0.6 (U)
RE00-08-16328	00-603887	3–4	QBT3	—	—	—	—	—	—	11.8 (J)	—	—	—	—	—	—	10 (J)	—	—
RE00-08-16329	00-603888	6–7	QBT3	13,200	—	—	106	1.3	3450	8.1 (J)	—	6.4	—	12.7 (J+)	2350	—	8.9	0.43	0.6 (U)
RE00-08-16330	00-603888	8–9	QBT3	7470	—	—	201	—	2360	—	—	—	0.6 (U)	—	—	—	—	0.6	0.6 (U)
RE00-08-16331	00-603889	1.25–2.25	QBT3	—	—	—	—	—	—	—	—	—	0.62 (U)	24 (J+)	—	—	—	1.1	—
RE00-08-16332	00-603889	3.25–4.25	QBT3	—	—	—	—	—	—	—	—	—	—	74.2 (J+)	—	—	—	1	0.43 (J)
RE00-08-16333	00-603890	0.75–1.75	QBT3	—	—	—	—	—	—	7.4 (J)	—	—	0.59 (U)	—	—	—	—	—	0.59 (U)
RE00-08-16334	00-603890	2.75–3.75	QBT3	—	—	—	—	—	—	19.9	—	—	—	—	—	—	9.6	—	—
RE00-08-16335	00-603891	1.25–2.25	QBT3	—	0.63 (U)	—	—	—	—	13.9	—	—	—	—	—	—	—	—	—
RE00-08-16336	00-603891	3.25–4.25	QBT3	—	—	3.7	—	—	—	16.5	—	—	—	—	—	—	8.3	—	0.33 (J)
RE00-08-16337	00-603892	2–3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.32 (J)
RE00-08-16338	00-603892	4–5	QBT3	—	—	—	—	—	—	—	—	—	0.51 (J-)	—	—	—	—	—	—
RE00-08-16339	00-603893	1.5–2.5	QBT3	—	0.55 (UJ)	—	—	—	—	12.7 (J)	—	—	0.55 (U)	—	—	—	—	7.7	—
RE00-08-16340	00-603893	3.5–4.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.6	—
RE00-08-16341	00-603894	11–12	QBT3	—	—	—	—	—	—	—	—	—	—	22.6 (J)	—	—	—	—	—
RE00-08-16342	00-603894	13–14	QBT3	—	—	—	—	—	—	—	—	—	0.53 (U)	—	—	—	—	0.51 (J)	0.43 (J)
RE00-08-16345	00-603896	7.25–8.25	QBT3	—	—	—	49.3	—	—	11.3	—	—	0.61 (U)	—	—	—	7	6.3	0.61 (U)

Table 7.9-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Magnesium	Mercury	Nickel	Nitrate	Selenium
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**4610**	**0.1**	**15.4**	**na[b]**	**1.52**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**1690**	**0.1**	**6.58**	**na**	**0.3**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**1.31**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**2370**	**0.1**	**9.38**	**na**	**0.3**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**na**	**389**	**25,700**	**2,080,000**	**6490**
Construction Worker SSL[c]				**619,000**	**142**	**41.2**	**4,390**	**148**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**na**	**77.1**	**12,400**	**991,000**	**3100**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**na**	**23.5**	**1560**	**125,000**	**391**
RE00-08-16346	00-603896	9.25–10.25	QBT3	—	—	—	—	—	—	25.9	3.2	—	0.58 (U)	—	—	—	12.3	4.6	—
RE00-08-16357	00-604530	1–2	QBT3	—	—	—	—	—	—	21.1	—	—	—	—	—	—	11	1.2	—
RE00-08-16358	00-604530	3–4	QBT3	—	—	—	47.3	—	—	—	—	—	—	—	—	—	—	3.7	—
RE00-08-16359	00-604531	6–7	QBT3	—	—	—	69.4	—	6290 (J)	13 (J)	—	5 (J)	—	16.5	—	—	8.3 (J)	29.5	0.56 (U)
RE00-08-16360	00-604531	8–9	QBT3	—	—	—	51.4	—	—	—	—	—	—	13.9	—	0.101	—	44.3	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] BVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SSLs are from NMED (2017, 602273) unless otherwise noted.

[d] SSL for total chromium.

[e] — = Not detected or not detected above BV.

Table 7.9-3
Organic Chemicals Detected at SWMU 01-002(a2)-00

Sample ID	Location ID	Depth (ft)	Media	Acetone	Aroclor-1254	Aroclor-1260	Benzene	Bis(2-ethylhexyl)phthalate	Butylbenzene[n-]	Butylbenzene[sec-]	Chloroform	Isopropyltoluene[4-]	Methylene Chloride	Styrene	Toluene	Trichlorofluoromethane
Industrial SSL[a]				**959,000**	**11.0**	**11.1**	**420**	**1830**	**58,000[b]**	**120,000[b]**	**28.4**	**23,000[c]**	**5110**	**50,900**	**61,100**	**5980**
Construction Worker SSL[a]				**241,000**	**4.91**	**85.3**	**1431**	**5380**	**15,500[d]**	**15,500[d]**	**133**	**2740[c]**	**118**	**10,100**	**14,000**	**1120**
Residential SSL[a]				**66,300**	**1.14**	**2.43**	**17.7**	**380**	**3900[b]**	**7800[b]**	**5.85**	**1600[c]**	**409**	**7230**	**5220**	**1220**
RE00-08-16321	00-603884	1.75–2.75	QBT3	—[e]	—	—	—	—	—	—	—	—	—	—	—	0.00055 (J)
RE00-08-16323	00-603885	0.75–1.75	QBT3	0.0053 (J)	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-16324	00-603885	2.75–3.75	QBT3	0.0053 (J)	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-16326	00-603886	2.75–3.75	QBT3	0.0044 (J)	—	—	—	0.12 (J)	—	—	—	—	—	—	—	—
RE00-08-16327	00-603887	1.00–2.00	QBT3	—	—	0.0066 (J)	—	—	—	—	—	—	—	—	—	—
RE00-08-16328	00-603887	3.00–4.00	QBT3	—	—	0.0035 (J)	—	—	—	—	—	—	—	—	—	—
RE00-08-16329	00-603888	6.00–7.00	QBT3	—	0.028 (J)	—	—	—	—	—	—	—	0.0009 (J)	—	—	—
RE00-08-16331	00-603889	1.25–2.25	QBT3	—	—	—	—	—	—	—	—	—	0.0057 (J)	—	—	—
RE00-08-16332	00-603889	3.25–4.25	QBT3	0.0033 (J)	—	—	—	—	—	—	—	—	0.00084 (J)	—	—	—
RE00-08-16333	00-603890	0.75–1.75	QBT3	—	—	—	—	—	—	—	—	—	0.0058 (J)	—	—	—
RE00-08-16334	00-603890	2.75–3.75	QBT3	—	—	—	—	—	—	—	—	—	0.0018 (J)	—	—	—
RE00-08-16335	00-603891	1.25–2.25	QBT3	—	—	—	—	—	—	—	—	—	0.0058 (J)	—	—	—
RE00-08-16336	00-603891	3.25–4.25	QBT3	—	—	—	—	—	—	—	—	—	0.0027 (J)	—	—	—
RE00-08-16337	00-603892	2.00–3.00	QBT3	—	—	0.0073 (J)	—	—	—	—	—	—	—	—	—	—
RE00-08-16345	00-603896	7.25–8.25	QBT3	—	—	0.0035 (J)	—	—	—	—	—	—	—	—	—	—
RE00-08-16346	00-603896	9.25–10.25	QBT3	—	—	0.01 (J)	—	0.07 (J)	—	—	—	—	—	—	—	—
RE00-08-16357	00-604530	1–2	QBT3	—	0.063	—	—	—	—	—	—	—	—	—	0.00055 (J)	-
RE00-08-16358	00-604530	3–4	QBT3	—	0.21	—	—	—	—	—	—	—	—	—	0.00038 (J)	-
RE00-08-16359	00-604531	6–7	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.001 (J)	-

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

[c] Isopropylbenzene used as surrogate based on structural similarity.

[d] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

[e] — = Not detected.

Table 7.9-4
Radionuclides Detected or Detected above BVs/FVs at SWMU 01-002(a2)-00

Sample ID	Location ID	Depth (ft)	Media	Plutonium-238	Plutonium-239/240	Tritium	Uranium-235/236
Soil Background Value[a]				**0.023**	**0.054**	**na[b]**	**0.2**
Qbt2, 3, 4 Background Value[a]				**na**	**na**	**na**	**0.09**
Sediment Background Value[a]				**0.006**	**0.068**	**0.093**	**0.2**
Industrial SAL[c]				**1200**	**710**	**2,400,000**	**160**
Construction Worker SAL[c]				**200**	**120**	**1,600,000**	**130**
Residential SAL[c]				**79**	**48**	**1700**	**42**
RE00-08-16321	00-603884	1.75–2.75	QBT3	—[d]	—	0.66	—
RE00-08-16323	00-603885	0.75–1.75	QBT3	—	—	—	0.231
RE00-08-16329	00-603888	6–7	QBT3	—	0.233	—	—
RE00-08-16335	00-603891	1.25–2.25	QBT3	—	—	0.92	—
RE00-08-16341	00-603894	11–12	QBT3	—	29.5	—	—
RE00-08-16342	00-603894	13–14	QBT3	—	9.77	—	—
RE00-08-16357	00-604530	1–2	QBT3	—	0.127	—	—
RE00-08-16358	00-604530	3–4	QBT3	—	0.161	—	—
RE00-08-16359	00-604531	6–7	QBT3	—	0.131	—	—

Note: Results are in pCi/g.

[a] BVs/FVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SALs are from LANL (2015, 600929).

[d] — = Not detected or not detected above BV.

Table 7.10-1
Samples Collected and Analyses Requested at SWMU 01-003(a)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (Total)
RE00-08-16375	00-603902	0–1	FILL	09-828[a]	09-826	09-828	09-828	09-828	09-828	09-826	09-827	09-826	09-828	09-827	09-844	09-826
RE00-08-16376	00-603902	2–3	FILL	09-828	09-826	09-828	09-828	09-828	09-828	09-826	09-827	09-826	09-828	09-827	09-844	09-826
RE01-12-10257	00-603902	4–5	FILL	—[b]	—	—	—	—	—	—	12-1018	—	—	—	—	—
RE01-12-10258	00-603902	6–7	FILL	—	—	—	—	—	—	—	12-1018	—	—	—	—	—
RE00-08-16377	00-603903	0–1	FILL	09-297	09-296	09-297	09-297	09-297	09-297	09-296	09-295	09-296	09-297	09-295	09-295	09-296
RE00-08-16378	00-603903	2–3	QBT3	09-297	09-296	09-297	09-297	09-297	09-297	09-296	09-295	09-296	09-297	09-295	09-295	09-296
RE01-12-790	00-603903	6–7	QBT3	—	—	—	—	12-502	—	12-501	—	—	—	—	—	—
RE01-12-791	00-603903	7–8	QBT3	—	—	—	—	12-502	—	12-501	—	—	—	—	—	—
RE00-08-16379	00-603904	0–1	SED	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE01-12-788	00-603904	3–4	SED	—	—	—	—	12-502	—	12-501	—	—	—	—	—	—
RE00-08-16380	00-603904	5–5.75	QBT3	09-297	09-296	09-297	09-297	09-297	09-297	09-296	09-295	09-296	09-297	09-295	09-295	09-296
RE01-12-789	00-603904	5–6	SED	—	—	—	—	12-502	—	12-501	—	—	—	—	—	—
RE01-12-10256	00-603904	6–7	SED	—	—	—	—	—	—	—	12-1016	—	—	—	—	—
RE01-12-2116	00-603904	6–7	SED	—	—	—	—	12-631	—	12-631	—	—	—	—	—	—
RE01-12-2117	00-603904	8–9	QBT3	—	—	—	—	12-631	—	12-631	—	—	—	—	—	—
RE00-08-16381	00-603905	0–1	SED	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE00-08-16382	00-603905	1–2	QBT3	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE01-12-10260	00-603905	3–4	SED	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-16383	00-603906	0–1	SED	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE01-12-794	00-603906	3–4	SED	—	—	—	—	12-455	—	12-455	—	—	—	—	—	—
RE00-08-16384	00-603906	3.75–5	QBT3	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE01-12-795	00-603906	5–6	SED	—	—	—	—	12-455	—	12-455	—	—	—	—	—	—
RE01-12-2115	00-603906	7–8	SED	—	—	—	—	12-631	—	12-631	—	—	—	—	—	—
RE00-08-16385	00-603907	0–1	SED	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE00-08-16386	00-603907	1–1.75	QBT3	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE00-08-16387	00-603908	0–1	ALLH	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE00-08-16388	00-603908	1–2	QBT3	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE01-12-796	00-603908	3–4	QBT3	—	—	—	—	12-455	—	12-455	—	—	—	—	—	—
RE01-12-797	00-603908	5–6	QBT3	—	—	—	—	12-455	—	12-455	—	—	—	—	—	—
RE00-08-16389	00-603909	0–1	SED	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE00-08-16390	00-603909	1–2	QBT3	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287

Table 7.10-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (Total)
RE00-08-16391	00-603910	0–1	SED	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE00-08-16392	00-603910	1–1.75	QBT3	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE01-12-798	00-603910	3–4	QBT3	—	—	—	—	12-534	—	12-534	—	—	—	—	—	—
RE01-12-799	00-603910	5–6	QBT3	—	—	—	—	12-534	—	12-534	—	—	—	—	—	—
RE00-08-16393	00-603911	0–1	SED	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE00-08-16394	00-603911	1–1.75	QBT3	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE01-12-800	00-603911	3–4	QBT3	—	—	—	—	12-466	—	12-466	—	—	—	—	—	—
RE01-12-801	00-603911	5–6	QBT3	—	—	—	—	12-466	—	12-466	—	—	—	—	—	—
RE00-08-16395	00-603912	0–1	SED	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE00-08-16396	00-603912	1.5–2.5	QBT3	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE01-12-802	00-603912	3–4	QBT3	—	—	—	—	12-556	—	12-556	—	—	—	—	—	—
RE01-12-803	00-603912	5–6	QBT3	—	—	—	—	12-556	—	12-556	—	—	—	—	—	—
RE00-08-16397	00-603913	0–1	SED	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE00-08-16398	00-603913	1.75–2.75	QBT1G	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE01-12-804	00-603913	5–6	QBT3	—	—	—	—	12-556	—	12-556	—	—	—	—	—	—
RE01-12-805	00-603913	7–8	QBT3	—	—	—	—	12-556	—	12-556	—	—	—	—	—	—
RE00-08-16399	00-603914	0–1	SED	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE00-08-16400	00-603914	1–2	QBT1G	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE00-08-16401	00-603915	0–1	SED	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE00-08-16402	00-603915	1–2	QBT1G	09-288	09-287	09-288	09-288	09-288	09-288	09-287	09-286	09-287	09-288	09-286	09-286	09-287
RE00-08-16403	00-603916	0–1	SED	09-256	09-255	09-256	09-256	09-256	09-256	09-255	09-254	09-255	09-256	09-254	09-254	09-255
RE00-08-16404	00-603916	1–2.25	QBT1G	09-256	09-255	09-256	09-256	09-256	09-256	09-255	09-254	09-255	09-256	09-254	09-254	09-255
RE00-08-16405	00-603917	0–1	SED	09-256	09-255	09-256	09-256	09-256	09-256	09-255	09-254	09-255	09-256	09-254	09-254	09-255
RE00-08-16406	00-603917	1–2	QBT1G	09-256	09-255	09-256	09-256	09-256	09-256	09-255	09-254	09-255	09-256	09-254	09-254	09-255
RE01-12-806	00-603917	5–6	SED	—	—	—	—	12-472	—	12-471	—	—	—	—	—	—
RE01-12-807	00-603917	7–8	SED	—	—	—	—	12-472	—	12-471	—	—	—	—	—	—
RE00-08-16407	00-603918	0.25–1.25	FILL	09-828	09-826	09-828	09-828	09-828	09-828	09-826	09-827	09-826	09-828	09-827	09-844	09-826
RE00-08-16408	00-603918	3.5–4.25	FILL	09-828	09-826	09-828	09-828	09-828	09-828	09-826	09-827	09-826	09-828	09-827	09-844	09-826
RE01-12-786	00-603918	4.25–5	FILL	—	—	—	—	12-499	—	12-499	—	—	—	—	—	—
RE01-12-787	00-603918	5–6	FILL	—	—	—	—	12-499	—	12-499	—	—	—	—	—	—
RE00-08-16412	00-603919	0–1	FILL	09-297	09-296	09-297	09-297	09-297	09-297	09-296	09-295	09-296	09-297	09-295	09-295	09-296
RE00-08-16413	00-603919	3.25–4.25	QBT3	09-297	09-296	09-297	09-297	09-297	09-297	09-296	09-295	09-296	09-297	09-295	09-295	09-296
RE01-12-10249	00-603919	5–6	QBT3	—	—	—	—	—	—	—	12-1024	—	—	—	—	—
RE01-12-792	00-603919	6–7	QBT3	—	—	—	—	12-502	—	12-501	—	—	—	—	—	—

Table 7.10-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (Total)
RE01-12-793	00-603919	7–8	QBT3	—	—	—	—	12-502	—	12-501	—	—	—	—	—	—
RE01-13-38301	01-170	0–1	FILL	—	—	—	—	—	—	—	2013-1752	—	—	—	—	—
RE01-13-38305	01-170	4–5	FILL	—	—	—	—	—	—	—	2013-1752	—	—	—	—	—
RE01-13-38309	01-170	7–8	FILL	—	—	—	—	—	—	—	2013-1752	—	—	—	—	—
RE01-13-38313	01-170	9–10	FILL	—	—	—	—	—	—	—	2013-1752	—	—	—	—	—
RE01-13-38302	01-171	0–1	FILL	—	—	—	—	—	—	—	2013-1752	—	—	—	—	—
RE01-13-38306	01-171	4–5	FILL	—	—	—	—	—	—	—	2013-1752	—	—	—	—	—
RE01-13-38310	01-171	7–8	QBT3	—	—	—	—	—	—	—	2013-1752	—	—	—	—	—
RE01-13-38314	01-171	9–10	QBT3	—	—	—	—	—	—	—	2013-1752	—	—	—	—	—
RE01-13-38303	01-172	0–1	ALLH	—	—	—	—	—	—	—	2013-1752ADD	—	—	—	—	—
RE01-13-38307	01-172	4–5	ALLH	—	—	—	—	—	—	—	2013-1752ADD	—	—	—	—	—
RE01-13-38365	01-181	0–1	FILL	—	—	—	—	—	—	—	2013-1752	—	—	—	—	—
RE01-13-38369	01-181	2–3	FILL	—	—	—	—	—	—	—	2013-1752	—	—	—	—	—
RE01-13-38373	01-181	4–5	FILL	—	—	—	—	—	—	—	2013-1752	—	—	—	—	—
RE01-13-38366	01-182	0–1	FILL	—	—	—	—	—	—	—	2013-1752	—	—	—	—	—
RE01-13-38370	01-182	2–3	FILL	—	—	—	—	—	—	—	2013-1752	—	—	—	—	—
RE01-13-38374	01-182	4–5	FILL	—	—	—	—	—	—	—	2013-1752	—	—	—	—	—
RE01-13-38367	01-183	0–1	SED	—	—	—	—	—	—	—	2013-1742	—	—	—	—	—
RE01-13-38371	01-183	2–3	SED	—	—	—	—	—	—	—	2013-1742	—	—	—	—	—
RE01-13-38375	01-183	4–5	SED	—	—	—	—	—	—	—	2013-1742	—	—	—	—	—
RE01-13-38368	01-184	0–1	SED	—	—	—	—	—	—	—	2013-1742	—	—	—	—	—
RE01-13-38372	01-184	2–3	SED	—	—	—	—	—	—	—	2013-1742	—	—	—	—	—
RE01-13-38376	01-184	4–5	SED	—	—	—	—	—	—	—	2013-1742	—	—	—	—	—
RE01-12-10306	01-22	0–1	SED	—	—	—	—	—	—	—	12-1016	—	—	—	—	—
RE01-12-10316	01-22	4–5	SED	—	—	—	—	—	—	—	12-1016	—	—	—	—	—
RE01-12-10307	01-23	0–1	SED	—	—	—	—	—	—	—	12-1016	—	—	—	—	—
RE01-12-10317	01-23	4–5	SED	—	—	—	—	—	—	—	12-1016	—	—	—	—	—
RE01-13-41431	01-237	0–1	FILL	—	—	—	—	—	—	—	2013-1821	—	—	—	—	—
RE01-13-41432	01-237	4–5	FILL	—	—	—	—	—	—	—	2013-1821	—	—	—	—	—
RE01-12-10308	01-24	0–1	SED	—	—	—	—	—	—	—	12-1016	—	—	—	—	—
RE01-12-10318	01-24	4–5	SED	—	—	—	—	—	—	—	12-1016	—	—	—	—	—
RE01-12-10309	01-25	0–1	FILL	—	—	—	—	—	—	—	12-1018	—	—	—	—	—
RE01-12-10319	01-25	3–4	FILL	—	—	—	—	—	—	—	12-1018	—	—	—	—	—
RELA-16-106210	01-256	0–1	ALLH	—	—	—	—	—	—	—	2016-197	—	—	—	—	—

Table 7.10-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (Total)
RELA-16-106211	01-256	2–3	QBT3	—	—	—	—	—	—	—	2016-197	—	—	—	—	—
RELA-16-106212	01-256	4–5	QBT3	—	—	—	—	—	—	—	2016-197	—	—	—	—	—
RELA-16-106213	01-257	0–0.5	ALLH	—	—	—	—	—	—	—	2016-197	—	—	—	—	—
RELA-16-106214	01-257	2–3	QBT3	—	—	—	—	—	—	—	2016-197	—	—	—	—	—
RELA-16-106215	01-257	4–5	QBT3	—	—	—	—	—	—	—	2016-197	—	—	—	—	—
RE01-12-10310	01-26	0–1	FILL	—	—	—	—	—	—	—	12-1018	—	—	—	—	—
RE01-12-10320	01-26	3–4	FILL	—	—	—	—	—	—	—	12-1018	—	—	—	—	—
RE01-12-10311	01-27	0–1	FILL	—	—	—	—	—	—	—	12-1018	—	—	—	—	—
RE01-12-10321	01-27	3–4	FILL	—	—	—	—	—	—	—	12-1018	—	—	—	—	—
RE01-12-10312	01-28	0–1	SED	—	—	—	—	—	—	—	12-1024	—	—	—	—	—
RE01-12-10322	01-28	2–3	QBT3	—	—	—	—	—	—	—	12-1024	—	—	—	—	—
RE01-12-10313	01-29	0–1	SED	—	—	—	—	—	—	—	12-1024	—	—	—	—	—
RE01-12-10323	01-29	2–3	QBT3	—	—	—	—	—	—	—	12-1024	—	—	—	—	—
RE01-12-10314	01-30	0–1	SED	—	—	—	—	—	—	—	12-1024	—	—	—	—	—
RE01-12-10324	01-30	2–3	QBT3	—	—	—	—	—	—	—	12-1024	—	—	—	—	—
RE01-12-10336	01-32	0–1	SED	—	—	—	—	—	—	12-1024	—	—	—	—	—	—
RE01-12-10339	01-32	1–2	SED	—	—	—	—	—	—	12-1024	—	—	—	—	—	—
RE01-12-10337	01-33	0–1	SED	—	—	—	—	—	—	12-1024	—	—	—	—	—	—
RE01-12-10340	01-33	1–2	SED	—	—	—	—	—	—	12-1024	—	—	—	—	—	—
RE01-12-10338	01-34	0–1	SED	—	—	—	—	—	—	12-1024	—	—	—	—	—	—
RE01-12-10341	01-34	1–2	SED	—	—	—	—	—	—	12-1024	—	—	—	—	—	—
RE01-12-808	01-614797	0–1	SED	—	—	—	—	12-466	—	12-466	—	—	—	—	—	—
RE01-12-809	01-614797	2–3	SED	—	—	—	—	12-466	—	12-466	—	—	—	—	—	—
RE01-12-810	01-614797	5–6	SED	—	—	—	—	12-466	—	12-466	—	—	—	—	—	—
RE01-12-811	01-614798	0–1	SED	—	—	—	—	12-466	—	12-466	—	—	—	—	—	—
RE01-12-812	01-614798	2–3	SED	—	—	—	—	12-466	—	12-466	—	—	—	—	—	—
RE01-12-813	01-614798	5–6	SED	—	—	—	—	12-466	—	12-466	—	—	—	—	—	—
RE01-12-814	01-614799	0–1	SED	—	—	—	—	12-472	—	12-471	—	—	—	—	—	—
RE01-12-815	01-614799	2–3	SED	—	—	—	—	12-472	—	12-471	—	—	—	—	—	—
RE01-12-816	01-614799	5–6	SED	—	—	—	—	12-472	—	12-471	—	—	—	—	—	—
RE01-12-817	01-614800	0–1	SED	—	—	—	—	12-472	—	12-471	—	—	—	—	—	—
RE01-12-818	01-614800	2–3	SED	—	—	—	—	12-472	—	12-471	—	—	—	—	—	—
RE01-12-819	01-614800	5–6	SED	—	—	—	—	12-472	—	12-471	—	—	—	—	—	—

[a] Analytical request number.
[b] — = Analysis not requested.

Table 7.10-2
Inorganic Chemicals Detected or Detected above BVs at SWMU 01-003(a)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Calcium	Chromium	Copper	Cyanide (Total)	Iron	Lead	Manganese	Mercury	Nickel	Nitrate	Perchlorate	Selenium	Silver	Vanadium	Zinc
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**6120**	**19.3**	**14.7**	**0.5**	**21,500**	**22.3**	**671**	**0.1**	**15.4**	**na[b]**	**na**	**1.52**	**1**	**39.6**	**48.8**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**2200**	**7.14**	**4.66**	**0.5**	**14,500**	**11.2**	**482**	**0.1**	**6.58**	**na**	**na**	**0.3**	**1**	**17**	**63.5**
Sediment Background Value[a]				**15,400**	**0.5**	**3.98**	**127**	**1.31**	**4420**	**10.5**	**11.2**	**0.82**	**13,800**	**19.7**	**543**	**0.1**	**9.38**	**na**	**na**	**0.3**	**1**	**19.7**	**60.2**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**na**	**505[d]**	**51,900**	**62.8**	**908,000**	**800**	**160,000**	**389**	**25,700**	**2,080,000**	**908**	**6490**	**6490**	**6530**	**389,000**
Construction Worker SSL[c]				**41,400**	**142**	**41.2**	**4,390**	**148**	**na**	**134[d]**	**14,200**	**12**	**24,800**	**800**	**464**	**77.1**	**12,400**	**991,000**	**434**	**3100**	**3100**	**614**	**106,000**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**na**	**96.6[d]**	**3130**	**11.1**	**54,800**	**400**	**10,500**	**23.5**	**1560**	**125,000**	**54.8**	**391**	**391**	**394**	**23,500**
RE01-12-10257	00-603902	4–5	FILL	NA[e]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-10258	00-603902	6–7	FILL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-08-16377	00-603903	0–1	FILL	—[f]	—	—	—	—	—	—	—	—	—	—	—	0.31	—	0.26	0.0023 (J)	—	—	—	78.8 (J+)
RE00-08-16378	00-603903	2–3	QBT3	—	0.64 (U)	—	60.6 (J+)	—	3420 (J)	10.5 (J)	5.2 (J)	—	—	14.3	—	—	—	1.2	—	—	—	—	—
RE01-12-790	00-603903	6–7	QBT3	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-791	00-603903	7–8	QBT3	NA	NA	—	—	NA	NA	13.3	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-788	00-603904	3–4	SED	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	0.14	—	NA	NA	NA	NA	NA	—
RE00-08-16380	00-603904	5–5.75	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.18 (J)	—	—	—	—	—
RE01-12-789	00-603904	5–6	SED	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	0.114	—	NA	NA	NA	NA	NA	—
RE01-12-2116	00-603904	6–7	SED	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-2117	00-603904	8–9	QBT3	NA	NA	—	91.9	NA	NA	—	—	NA	—	26.1	—	—	—	NA	NA	NA	NA	NA	—
RE00-08-16382	00-603905	1–2	QBT3	—	—	—	—	—	—	8.7	—	0.58 (UJ)	—	12.4	—	—	—	—	—	0.58 (U)	—	—	—
RE01-12-10260	00-603905	3–4	SED	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-08-16383	00-603906	0–1	SED	—	—	—	—	—	—	—	—	1 (J-)	—	44	—	0.117 (J)	—	—	—	0.52 (U)	—	—	—
RE01-12-794	00-603906	3–4	SED	NA	NA	—	—	NA	NA	—	—	NA	—	41.7 (J)	—	0.209	—	NA	NA	NA	NA	NA	—
RE00-08-16384	00-603906	3.75–5	QBT3	—	—	2.8	62.7	—	—	7.3	8.3	—	—	12.3	—	0.119 (J)	—	0.33	—	0.55 (U)	1.4	—	—
RE01-12-795	00-603906	5–6	SED	NA	NA	—	—	NA	NA	—	13.6	NA	—	41.7 (J)	—	0.159	—	NA	NA	NA	NA	NA	—
RE01-12-2115	00-603906	7–8	SED	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE00-08-16385	00-603907	0–1	SED	—	—	—	—	—	—	27.1	—	—	—	—	—	—	12.8	—	—	0.52 (U)	—	—	—
RE00-08-16386	00-603907	1–1.75	QBT3	—	—	—	—	—	—	22.6	—	—	—	—	—	—	11.6	—	—	—	—	—	—
RE00-08-16387	00-603908	0–1	SOIL	—	—	—	—	—	—	—	—	0.54 (UJ)	—	29.8	—	—	—	0.13 (J)	—	—	—	—	—
RE00-08-16388	00-603908	1–2	QBT3	—	—	—	—	—	—	17.1	—	0.54 (UJ)	—	—	—	—	9.3	0.18 (J)	—	—	—	—	—
RE01-12-796	00-603908	3–4	QBT3	NA	NA	—	—	NA	NA	7.35	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-797	00-603908	5–6	QBT3	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE00-08-16389	00-603909	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.54 (U)	—	—	—
RE00-08-16390	00-603909	1–2	QBT3	—	—	—	—	1.4 (J)	—	15.1 (J)	—	—	—	—	—	—	7.1	0.18 (J)	—	—	—	—	—

Table 7.10-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Calcium	Chromium	Copper	Cyanide (Total)	Iron	Lead	Manganese	Mercury	Nickel	Nitrate	Perchlorate	Selenium	Silver	Vanadium	Zinc
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**6120**	**19.3**	**14.7**	**0.5**	**21,500**	**22.3**	**671**	**0.1**	**15.4**	**na[b]**	**na**	**1.52**	**1**	**39.6**	**48.8**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**2200**	**7.14**	**4.66**	**0.5**	**14,500**	**11.2**	**482**	**0.1**	**6.58**	**na**	**na**	**0.3**	**1**	**17**	**63.5**
Sediment Background Value[a]				**15,400**	**0.5**	**3.98**	**127**	**1.31**	**4420**	**10.5**	**11.2**	**0.82**	**13,800**	**19.7**	**543**	**0.1**	**9.38**	**na**	**na**	**0.3**	**1**	**19.7**	**60.2**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**na**	**505[d]**	**51,900**	**62.8**	**908,000**	**800**	**160,000**	**389**	**25,700**	**2,080,000**	**908**	**6490**	**6490**	**6530**	**389,000**
Construction Worker SSL[c]				**41,400**	**142**	**41.2**	**4,390**	**148**	**na**	**134[d]**	**14,200**	**12**	**24,800**	**800**	**464**	**77.1**	**12,400**	**991,000**	**434**	**3100**	**3100**	**614**	**106,000**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**na**	**96.6[d]**	**3130**	**11.1**	**54,800**	**400**	**10,500**	**23.5**	**1560**	**125,000**	**54.8**	**391**	**391**	**394**	**23,500**
RE00-08-16391	00-603910	0–1	SED	—	—	—	—	—	—	14.9 (J-)	—	—	—	—	—	—	—	0.95	—	0.54 (U)	—	—	—
RE00-08-16392	00-603910	1–1.75	QBT3	—	—	—	—	—	—	22.3	—	0.57 (UJ)	—	—	—	—	12	0.97	—	—	—	—	—
RE01-12-798	00-603910	3–4	QBT3	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-799	00-603910	5–6	QBT3	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE00-08-16393	00-603911	0–1	SED	—	—	—	—	—	—	11.7	—	—	—	—	—	0.179 (J)	—	—	—	—	—	—	—
RE00-08-16394	00-603911	1–1.75	QBT3	—	—	—	—	—	—	16.9 (J)	—	0.52 (U)	—	—	—	—	8.7	—	—	0.52 (U)	—	—	—
RE01-12-800	00-603911	3–4	QBT3	NA	NA	—	—	NA	NA	11.7	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-801	00-603911	5–6	QBT3	NA	NA	—	—	NA	NA	27.9	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE00-08-16395	00-603912	0–1	SED	—	—	—	—	—	—	—	—	—	—	34.5	—	0.126 (J)	—	—	—	0.52 (U)	—	—	—
RE00-08-16396	00-603912	1.5–2.5	QBT3	—	—	—	—	—	—	12.8 (J-)	5.3 (J)	—	—	18.9	—	0.13	—	0.15 (J)	—	—	—	—	—
RE01-12-802	00-603912	3–4	QBT3	NA	NA	—	—	NA	NA	8.12	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-803	00-603912	5–6	QBT3	NA	NA	—	—	NA	NA	25.9	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE00-08-16397	00-603913	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.7	—	0.54 (U)	—	—	91.9
RE00-08-16398	00-603913	1.75–2.75	QBT1G	—	—	0.94 (J)	28.7	—	15100 (J)	24.7	6.7	0.57 (UJ)	4280	19.9	278	—	12.6	3.2	—	0.57 (U)	—	—	66.5 (J)
RE01-12-804	00-603913	5–6	QBT3	NA	NA	—	—	NA	NA	8.52	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-805	00-603913	7–8	QBT3	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE00-08-16399	00-603914	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.54 (U)	—	—	—
RE00-08-16400	00-603914	1–2	QBT1G	—	—	0.95 (J)	36.1 (J+)	—	—	7.9 (J)	4.6 (J)	—	4660	18.5	—	—	4.2 (J)	0.13 (J)	—	0.55 (U)	—	5.4	—
RE00-08-16401	00-603915	0–1	SED	—	—	—	—	—	—	—	—	—	—	21.2	—	—	—	0.16 (J)	—	0.57 (U)	—	—	62.7 (J+)
RE00-08-16402	00-603915	1–2	QBT1G	—	—	0.58 (J)	26.3	—	2230 (J)	12.6	—	0.56 (UJ)	—	—	265	—	7.6	—	—	—	—	—	48.4 (J)
RE00-08-16403	00-603916	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.52 (U)	—	—	—
RE00-08-16404	00-603916	1–2.25	QBT1G	—	—	0.95 (U)	—	—	—	10.4	4.3 (J)	0.53 (U)	5130	—	208	—	6	—	—	0.53 (U)	—	5.5	45.3 (J)
RE00-08-16405	00-603917	0–1	SED	—	—	—	—	—	—	—	—	—	—	34.2	—	0.193	—	0.18 (J)	—	—	—	—	—
RE00-08-16406	00-603917	1–2	QBT1G	—	—	1.2	26.7	—	—	16	—	0.55 (U)	5050	—	337	—	8	—	—	0.55 (U)	—	—	—
RE01-12-806	00-603917	5–6	SED	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-807	00-603917	7–8	SED	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE00-08-16407	00-603918	0.25–1.25	FILL	—	—	—	—	—	—	—	—	0.59 (UJ)	—	—	—	—	—	—	—	—	—	—	—
RE00-08-16408	00-603918	3.5–4.25	FILL	—	—	—	—	—	—	—	—	—	—	32	—	0.415	—	8.8	—	—	—	—	66.7
RE00-08-16392	00-603910	1–1.75	QBT3	—	—	—	—	—	—	22.3	—	0.57 (UJ)	—	—	—	—	12	0.97	—	—	—	—	—

Table 7.10-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Calcium	Chromium	Copper	Cyanide (Total)	Iron	Lead	Manganese	Mercury	Nickel	Nitrate	Perchlorate	Selenium	Silver	Vanadium	Zinc
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**6120**	**19.3**	**14.7**	**0.5**	**21,500**	**22.3**	**671**	**0.1**	**15.4**	**na[b]**	**na**	**1.52**	**1**	**39.6**	**48.8**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**2200**	**7.14**	**4.66**	**0.5**	**14,500**	**11.2**	**482**	**0.1**	**6.58**	**na**	**na**	**0.3**	**1**	**17**	**63.5**
Sediment Background Value[a]				**15,400**	**0.5**	**3.98**	**127**	**1.31**	**4420**	**10.5**	**11.2**	**0.82**	**13,800**	**19.7**	**543**	**0.1**	**9.38**	**na**	**na**	**0.3**	**1**	**19.7**	**60.2**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**na**	**505[d]**	**51,900**	**62.8**	**908,000**	**800**	**160,000**	**389**	**25,700**	**2,080,000**	**908**	**6490**	**6490**	**6530**	**389,000**
Construction Worker SSL[c]				**41,400**	**142**	**41.2**	**4,390**	**148**	**na**	**134[d]**	**14,200**	**12**	**24,800**	**800**	**464**	**77.1**	**12,400**	**991,000**	**434**	**3100**	**3100**	**614**	**106,000**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**na**	**96.6[d]**	**3130**	**11.1**	**54,800**	**400**	**10,500**	**23.5**	**1560**	**125,000**	**54.8**	**391**	**391**	**394**	**23,500**
RE01-12-798	00-603910	3–4	QBT3	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-786	00-603918	4.25–5	FILL	NA	NA	—	—	NA	NA	—	22.3	NA	—	37.4	—	0.6 (J+)	—	NA	NA	NA	NA	NA	69.8
RE01-12-787	00-603918	5–6	FILL	NA	NA	—	—	NA	NA	—	—	NA	—	31.4	—	1.06 (J+)	—	NA	NA	NA	NA	NA	70.3
RE00-08-16413	00-603919	3.25–4.25	QBT3	8410 (J)	—	—	—	1.6 (J)	3920 (J)	32.2 (J)	—	0.53 (UJ)	—	—	672 (J)	—	—	0.1 (J)	—	—	—	—	—
RE01-12-10249	00-603919	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-792	00-603919	6–7	QBT3	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	67.3
RE01-12-793	00-603919	7–8	QBT3	NA	NA	—	—	NA	NA	—	5.27 (J)	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-10336	01-32	0–1	SED	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-10339	01-32	1–2	SED	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-10337	01-33	0–1	SED	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-10340	01-33	1–2	SED	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-10338	01-34	0–1	SED	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-10341	01-34	1–2	SED	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-808	01-614797	0–1	SED	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-809	01-614797	2–3	SED	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-810	01-614797	5–6	SED	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-811	01-614798	0–1	SED	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-812	01-614798	2–3	SED	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-813	01-614798	5–6	SED	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-814	01-614799	0–1	SED	NA	NA	—	134	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-815	01-614799	2–3	SED	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-816	01-614799	5–6	SED	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-817	01-614800	0–1	SED	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-818	01-614800	2–3	SED	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—
RE01-12-819	01-614800	5–6	SED	NA	NA	—	—	NA	NA	—	—	NA	—	—	—	—	—	NA	NA	NA	NA	NA	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] BVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SSLs are from NMED (2017, 602273) unless otherwise noted.

[d] SSL for total chromium.

[e] NA = Not analyzed.

[f] — = Not detected or not detected above BV.

Table 7.10-3
Organic Chemicals Other than PCBs Detected at SWMU 01-003(a)

Sample ID	Location ID	Depth (ft)	Media	Acenaphthene	Acetone	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Butylbenzylphthalate
Industrial SSL[a]				**50,500**	**959,000**	**253,000**	**32**	**24**	**32**	**25300[b]**	**323**	**3,300,000[c]**	**1830**	**12,000[c]**
Construction Worker SSL[a]				**15,100**	**241,000**	**75,300**	**240**	**106**	**240**	**7530[b]**	**2310**	**1,310,000[d]**	**5380**	**13,100[d]**
Residential SSL[a]				**3480**	**66,300**	**17,400**	**1.53**	**1.12**	**1.53**	**1740[b]**	**15.3**	**250,000[c]**	**380**	**2900[c]**
RE00-08-16377	00-603903	0–1	FILL	—[e]	0.015 (J)	—	—	—	—	—	0.041 (J)	—	—	—
RE00-08-16378	00-603903	2–3	QBT3	—	—	—	—	0.038 (J)	0.043 (J)	—	—	—	—	—
RE00-08-16380	00-603904	5–5.75	QBT3	—	0.023	—	—	—	—	—	—	—	—	—
RE00-08-16382	00-603905	1–2	QBT3	—	—	—	—	—	—	0.058 (J)	—	—	—	—
RE00-08-16383	00-603906	0–1	SED	—	—	—	0.091 (J)	0.1 (J)	0.11 (J)	0.093 (J)	0.12 (J)	—	—	0.036 (J)
RE00-08-16384	00-603906	3.75–5	QBT3	—	0.078	—	—	—	—	—	—	—	—	—
RE00-08-16385	00-603907	0–1	SED	0.035 (J)	—	0.2 (J)	0.91	0.9	1.1	0.58	0.91	—	—	—
RE00-08-16386	00-603907	1–1.75	QBT3	—	—	—	0.18 (J)	0.23 (J)	0.28 (J)	0.15 (J)	0.25 (J)	—	—	—
RE00-08-16387	00-603908	0–1	SOIL	—	—	—	—	—	—	—	—	—	—	—
RE00-08-16389	00-603909	0–1	SED	0.083 (J)	—	0.37	2.1	2.2	2.5	1.5	2.4	—	—	—
RE00-08-16390	00-603909	1–2	QBT3	—	—	—	0.14 (J)	0.15 (J)	0.18 (J)	0.093 (J)	0.17 (J)	—	—	—
RE00-08-16391	00-603910	0–1	SED	0.14 (J)	—	0.7	2.9	2.8	3	1.6	3	—	—	—
RE00-08-16392	00-603910	1–1.75	QBT3	—	—	0.039 (J)	0.31 (J)	0.37	0.51	0.23 (J)	0.4	—	—	—
RE00-08-16393	00-603911	0–1	SED	—	—	—	—	—	0.042 (J)	—	0.05 (J)	—	—	—
RE00-08-16395	00-603912	0–1	SED	—	—	—	0.085 (J)	0.11 (J)	0.13 (J)	0.077 (J)	0.12 (J)	—	—	—
RE00-08-16396	00-603912	1.5–2.5	QBT3	—	—	—	—	—	—	—	—	—	—	—
RE00-08-16397	00-603913	0–1	SED	0.28 (J)	—	1.2	5.7	5.5	7	2.7	4.1	—	0.13 (J)	—
RE00-08-16398	00-603913	1.75–2.75	QBT1G	0.05 (J)	—	0.26 (J)	1.5	1.6	1.9	1.2	1.9	—	—	—
RE00-08-16399	00-603914	0–1	SED	0.24 (J)	—	1.3	6	6.8	8.9	5.5	7.2	—	—	—
RE00-08-16400	00-603914	1–2	QBT1G	0.046 (J)	—	0.17 (J)	1.1	1.3	1.5	0.71	1.4	—	0.092 (J)	—
RE00-08-16401	00-603915	0–1	SED	0.23 (J)	—	1.2	7.3	—	7.4	4.9	8.6 (J)	1.6 (J)	0.38	—
RE00-08-16402	00-603915	1–2	QBT1G	—	—	0.13 (J)	0.98	1.1	1.4	0.84	1.2	—	—	—
RE00-08-16403	00-603916	0–1	SED	0.058 (J)	—	0.25 (J)	1.4	1.7	2	1	2	—	0.11 (J)	—
RE00-08-16404	00-603916	1–2.25	QBT1G	—	—	0.078 (J)	0.57	0.62	0.67	0.32 (J)	0.74	—	—	—
RE00-08-16405	00-603917	0–1	SED	—	—	—	0.17 (J)	0.21 (J)	0.27 (J)	0.11 (J)	0.22 (J)	—	—	—
RE00-08-16413	00-603919	3.25–4.25	QBT3	—	0.012 (J)	—	—	—	—	—	—	—	—	—
RE00-08-16377	00-603903	0–1	FILL	—	0.015 (J)	—	—	—	—	—	0.041 (J)	—	—	—
RE00-08-16378	00-603903	2–3	QBT3	—	—	—	—	0.038 (J)	0.043 (J)	—	—	—	—	—

Table 7.10-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Chrysene	Di-n-butylphthalate	Dibenz(a,h)anthracene	Dibenzofuran	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Naphthalene	Phenanthrene	Pyrene
Industrial SSL[a]				**3230**	**91,600**	**3.23**	**1000[c]**	**33,700**	**33,700**	**32.3**	**14100[f]**	**16,800**	**25,300**	**25,300**
Construction Worker SSL[a]				**23,100**	**26,900**	**24.0**	**489[d]**	**10,000**	**10,000**	**240**	**2710[f]**	**5020**	**7530**	**7530**
Residential SSL[a]				**153**	**6160**	**0.153**	**73.0[c]**	**2320**	**2320**	**1.53**	**2350[f]**	**1160**	**1740**	**1740**
RE00-08-16377	00-603903	0–1	FILL	0.041 (J)	—	—	—	0.065 (J)	—	—	—	—	—	0.062 (J)
RE00-08-16378	00-603903	2–3	QBT3	0.044 (J)	—	—	—	0.07 (J)	—	—	—	—	0.043 (J)	0.065 (J)
RE00-08-16380	00-603904	5–5.75	QBT3	—	—	—	—	—	—	—	—	—	—	—
RE00-08-16382	00-603905	1–2	QBT3	—	—	—	—	—	—	—	—	—	—	—
RE00-08-16383	00-603906	0–1	SED	0.13 (J)	—	—	—	0.2 (J)	—	0.069 (J)	—	—	0.11 (J)	0.23 (J)
RE00-08-16384	00-603906	3.75–5	QBT3	—	—	—	—	—	—	—	—	—	—	—
RE00-08-16385	00-603907	0–1	SED	1.1	—	0.22 (J)	—	2.2	0.063 (J)	0.53	—	—	1.3	2.2
RE00-08-16386	00-603907	1–1.75	QBT3	0.26 (J)	—	0.057 (J)	—	0.47	—	0.14 (J)	—	—	0.23 (J)	0.46
RE00-08-16387	00-603908	0–1	SOIL	—	—	—	—	0.047 (J)	—	—	—	—	—	0.056 (J)
RE00-08-16389	00-603909	0–1	SED	2.7	—	0.53	0.05 (J)	5	0.14 (J)	1.3	—	—	2.7	4.7
RE00-08-16390	00-603909	1–2	QBT3	0.18 (J)	—	—	—	0.33 (J)	—	0.079 (J)	—	—	0.18 (J)	0.27 (J)
RE00-08-16391	00-603910	0–1	SED	3.6	—	0.55	0.074 (J)	6.4	0.23 (J)	1.5	—	—	3.8	5
RE00-08-16392	00-603910	1–1.75	QBT3	0.47	—	0.075 (J)	—	0.79	—	0.2 (J)	—	—	0.34 (J)	0.65
RE00-08-16393	00-603911	0–1	SED	0.049 (J)	—	—	—	0.067 (J)	—	—	—	—	—	0.072 (J)
RE00-08-16395	00-603912	0–1	SED	0.14 (J)	—	—	—	0.23 (J)	—	0.065 (J)	—	—	0.095 (J)	0.21 (J)
RE00-08-16396	00-603912	1.5–2.5	QBT3	—	0.053 (J)	—	—	0.046 (J)	—	—	—	—	—	0.043 (J)
RE00-08-16397	00-603913	0–1	SED	7.8	—	0.89	0.16 (J)	14	0.4	2.6	—	—	8.3	12
RE00-08-16398	00-603913	1.75–2.75	QBT1G	2	—	0.37	—	3.5	0.091 (J)	0.98	0.015	—	1.7	6.9
RE00-08-16399	00-603914	0–1	SED	8.4	—	1.7	0.15 (J)	16	0.43	4.8	—	—	—	13
RE00-08-16400	00-603914	1–2	QBT1G	1.5	—	—	—	2.5	0.068 (J)	0.63	—	—	1.3	2.2
RE00-08-16401	00-603915	0–1	SED	9.7	—	1.5	0.16 (J)	17	0.35 (J)	4.2	—	0.044 (J)	8.9	16
RE00-08-16402	00-603915	1–2	QBT1G	1.3	—	0.26 (J)	—	2.2	—	0.67	—	—	0.88	2
RE00-08-16403	00-603916	0–1	SED	1.9	—	0.3 (J)	0.037 (J)	3.1	0.085 (J)	0.89	—	—	1.5	2.6
RE00-08-16404	00-603916	1–2.25	QBT1G	0.75	—	0.11 (J)	—	1.2	—	0.29 (J)	—	—	0.53	1.1
RE00-08-16405	00-603917	0–1	SED	0.25 (J)	—	—	—	0.43	—	0.094 (J)	—	—	0.21 (J)	0.35 (J)
RE00-08-16413	00-603919	3.25–4.25	QBT3	—	—	—	—	—	—	—	—	—	—	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] Pyrene used as surrogate based on structural similarity.

[c] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

[d] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

[e] — = Not detected.

[f] Isopropylbenzene used as surrogate based on structural similarity.

Table 7.10-4
PCBs Detected at SWMU 01-003(a)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1254	Aroclor-1260
Industrial SSL[a]				**11**	**11.1**
Construction Worker SSL[a]				**4.91**	**85.3**
Residential SSL[a]				**1.14**	**2.43**
RE01-12-10257	00-603902	4–5	FILL	1.74	0.597
RE01-12-10258	00-603902	6–7	FILL	1.56	0.52
RE00-08-16377	00-603903	0–1	FILL	0.97 (J)	—[b]
RE00-08-16378	00-603903	2–3	QBT3	0.52 (J)	—
RE00-08-16380	00-603904	5–5.75	QBT3	0.17 (J)	—
RE01-12-10256	00-603904	6–7	SED	0.0405	0.00936
RE00-08-16382	00-603905	1–2	QBT3	0.015 (J)	—
RE00-08-16383	00-603906	0–1	SED	0.44 (J)	—
RE00-08-16384	00-603906	3.75–5	QBT3	0.6 (J)	—
RE00-08-16385	00-603907	0–1	SED	0.25 (J)	—
RE00-08-16386	00-603907	1–1.75	QBT3	0.06 (J)	—
RE00-08-16387	00-603908	0–1	SOIL	0.32 (J)	—
RE00-08-16388	00-603908	1–2	QBT3	0.039 (J)	—
RE00-08-16389	00-603909	0–1	SED	0.17 (J)	—
RE00-08-16390	00-603909	1–2	QBT3	0.017 (J)	—
RE00-08-16391	00-603910	0–1	SED	0.1 (J)	—
RE00-08-16392	00-603910	1–1.75	QBT3	0.037 (J)	—
RE00-08-16393	00-603911	0–1	SED	0.035 (J)	0.065
RE00-08-16394	00-603911	1–1.75	QBT3	—	0.037
RE00-08-16395	00-603912	0–1	SED	0.51 (J)	—
RE00-08-16396	00-603912	1.5–2.5	QBT3	0.28 (J)	—
RE00-08-16397	00-603913	0–1	SED	0.085 (J)	—
RE00-08-16398	00-603913	1.75–2.75	QBT1G	0.043 (J)	—
RE00-08-16399	00-603914	0–1	SED	0.11 (J)	—
RE00-08-16400	00-603914	1–2	QBT1G	0.14 (J)	0.11 (J+)
RE00-08-16401	00-603915	0–1	SED	0.18 (J)	—
RE00-08-16402	00-603915	1–2	QBT1G	0.035 (J)	—
RE00-08-16403	00-603916	0–1	SED	0.14 (J)	—
RE00-08-16404	00-603916	1–2.25	QBT1G	0.19 (J)	—
RE00-08-16405	00-603917	0–1	SED	0.95 (J)	—
RE00-08-16406	00-603917	1–2	QBT1G	0.39 (J)	—

Table 7.10-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1254	Aroclor-1260
Industrial SSL[a]				**11**	**11.1**
Construction Worker SSL[a]				**4.91**	**85.3**
Residential SSL[a]				**1.14**	**2.43**
RE00-08-16407	00-603918	0.25–1.25	FILL	0.042	—
RE00-08-16408	00-603918	3.5–4.25	FILL	0.12	—
RE00-08-16413	00-603919	3.25–4.25	QBT3	0.27 (J)	—
RE01-12-10249	00-603919	5–6	QBT3	0.449 (J+)	0.166 (J+)
RE01-13-38301	01-170	0–1	FILL	0.00864	0.0061
RE01-13-38305	01-170	4–5	FILL	2.76	0.87
RE01-13-38309	01-170	7–8	FILL	0.304	0.108
RE01-13-38313	01-170	9–10	FILL	0.222	0.0816
RE01-13-38302	01-171	0–1	FILL	0.874	0.323
RE01-13-38306	01-171	4–5	FILL	0.183	0.0693
RE01-13-38310	01-171	7–8	QBT3	0.31	0.109
RE01-13-38314	01-171	9–10	QBT3	0.0358	0.0138
RE01-13-38303	01-172	0–1	SOIL	3.68	1.27
RE01-13-38307	01-172	4–5	SOIL	5.22	1.74
RE01-13-38365	01-181	0–1	FILL	4.05	1.21
RE01-13-38369	01-181	2–3	FILL	16.3	4.66
RE01-13-38373	01-181	4–5	FILL	9.17	2.7
RE01-13-38366	01-182	0–1	FILL	0.986	0.333
RE01-13-38370	01-182	2–3	FILL	8.73	2.6
RE01-13-38374	01-182	4–5	FILL	6.13	2.07
RE01-13-38367	01-183	0–1	SED	0.0423	0.0292
RE01-13-38371	01-183	2–3	SED	1.7	0.721
RE01-13-38375	01-183	4–5	SED	2.02	0.783
RE01-13-38368	01-184	0–1	SED	1.82	0.907
RE01-13-38372	01-184	2–3	SED	4.81	2.13
RE01-13-38376	01-184	4–5	SED	0.314	0.137
RE01-12-10306	01-22	0–1	SED	0.0664	0.0214
RE01-12-10316	01-22	4–5	SED	0.225	0.0411
RE01-12-10307	01-23	0–1	SED	2.2	0.262
RE01-12-10317	01-23	4–5	SED	0.0816	—
RE01-13-41431	01-237	0–1	FILL	—	0.0153 (J)
RE01-13-41432	01-237	4–5	FILL	0.0414	0.0264
RE01-12-10308	01-24	0–1	SED	0.518	0.0838
RE01-12-10318	01-24	4–5	SED	0.0674	—
RE01-12-10309	01-25	0–1	FILL	2.09	0.707
RE01-12-10319	01-25	3–4	FILL	2.42 (J+)	0.785 (J+)

Table 7.10-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1254	Aroclor-1260
Industrial SSL[a]				**11**	**11.1**
Construction Worker SSL[a]				**4.91**	**85.3**
Residential SSL[a]				**1.14**	**2.43**
RELA-16-106210	01-256	0–1	SOIL	0.594	0.261
RELA-16-106211	01-256	2–3	QBT3	0.0532	0.0219
RELA-16-106212	01-256	4–5	QBT3	0.0271	0.0126
RELA-16-106213	01-257	0–0.5	SOIL	0.144	0.0649
RELA-16-106214	01-257	2–3	QBT3	0.16	0.06
RELA-16-106215	01-257	4–5	QBT3	0.0252	0.0132
RE01-12-10310	01-26	0–1	FILL	2.83 (J+)	0.955 (J+)
RE01-12-10320	01-26	3–4	FILL	5.65	1.51
RE01-12-10311	01-27	0–1	FILL	1.18 (J+)	0.422 (J+)
RE01-12-10321	01-27	3–4	FILL	0.592	0.202
RE01-12-10312	01-28	0–1	SED	0.386	0.149
RE01-12-10322	01-28	2–3	QBT3	0.0137	0.0095
RE01-12-10313	01-29	0–1	SED	1.98	0.726
RE01-12-10323	01-29	2–3	QBT3	0.00275 (J)	—
RE01-12-10314	01-30	0–1	SED	1.6 (J+)	0.479 (J+)
RE01-12-10324	01-30	2–3	QBT3	0.0376	0.0193

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] SSLs from NMED (2017, 602273).

[b] — = Not detected.

Table 7.10-5
Radionuclides Detected or Detected above BVs/FVs at SWMU 01-003(a)

Sample ID	Location ID	Depth (ft)	Media	Cesium-134	Plutonium-238	Plutonium-239/240	Tritium	Uranium-234	Uranium-235/236	Uranium-238
Soil Background Value[a]				**na[b]**	**0.023**	**0.054**	**na**	**2.59**	**0.2**	**2.29**
Qbt 2,3,4 Background Value[a]				**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
Sediment Background Value[a]				**na**	**0.006**	**0.068**	**0.093**	**2.59**	**0.2**	**2.29**
Industrial SAL[c]				**17**	**1300**	**1200**	**1,500,000**	**3100**	**160**	**710**
Construction Worker SAL[c]				**150**	**230**	**200**	**990,000**	**1000**	**130**	**340**
Residential SAL[c]				**5**	**84**	**79**	**1700**	**290**	**42**	**150**
RE00-08-16377	00-603903	0–1	FILL	—[d]	—	0.249	—	—	—	—
RE00-08-16378	00-603903	2–3	QBT3	—	—	0.178	—	3.36	0.122	2.67
RE01-12-788	00-603904	3–4	SED	NA[e]	—	1.75	NA	NA	NA	NA
RE00-08-16380	00-603904	5–5.75	QBT3	—	—	2.17	—	4.89	0.163	2.96
RE01-12-789	00-603904	5–6	SED	NA	—	2.22	NA	NA	NA	NA
RE01-12-2116	00-603904	6–7	SED	NA	—	2.12	NA	NA	NA	NA
RE01-12-2117	00-603904	8–9	QBT3	NA	—	0.134	NA	NA	NA	NA
RE00-08-16382	00-603905	1–2	QBT3	—	—	1.65	—	2.14	—	2
RE00-08-16383	00-603906	0–1	SED	—	—	0.566	—	—	—	—
RE01-12-794	00-603906	3–4	SED	NA	0.015	4.32	NA	NA	NA	NA
RE00-08-16384	00-603906	3.75–5	QBT3	—	—	0.852	—	2.06	—	—
RE01-12-795	00-603906	5–6	SED	NA	0.0172	6.31	NA	NA	NA	NA
RE01-12-2115	00-603906	7–8	SED	NA	—	1.24	NA	NA	NA	NA
RE00-08-16385	00-603907	0–1	SED	—	—	0.56	—	—	—	—
RE00-08-16386	00-603907	1–1.75	QBT3	—	—	0.234	—	—	—	—
RE00-08-16387	00-603908	0–1	SOIL	0.043	—	0.917	—	—	—	—
RE00-08-16388	00-603908	1–2	QBT3	—	—	0.418	0.4	—	—	—
RE01-12-796	00-603908	3–4	QBT3	NA	—	0.199	NA	NA	NA	NA
RE01-12-797	00-603908	5–6	QBT3	NA	—	0.107	NA	NA	NA	NA
RE00-08-16389	00-603909	0–1	SED	—	—	0.43	—	—	—	—
RE00-08-16391	00-603910	0–1	SED	—	—	0.467	—	—	—	—
RE01-12-798	00-603910	3–4	QBT3	NA	—	0.0213	NA	NA	NA	NA
RE00-08-16393	00-603911	0–1	SED	—	—	1.19	—	—	—	—
RE00-08-16394	00-603911	1–1.75	QBT3	—	—	0.564	—	—	—	—
RE01-12-800	00-603911	3–4	QBT3	NA	—	0.229	NA	NA	NA	NA

Table 7.10-5 (continued)

Sample ID	Location ID	Depth (ft)	Media	Cesium-134	Plutonium-238	Plutonium-239/240	Tritium	Uranium-234	Uranium-235/236	Uranium-238
Soil Background Value[a]				**na**	**0.023**	**0.054**	**na[b]**	**2.59**	**0.2**	**2.29**
Qbt 2,3,4 Background Value[a]				**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
Sediment Background Value[a]				**na**	**0.006**	**0.068**	**0.093**	**2.59**	**0.2**	**2.29**
Industrial SAL[c]				**17**	**1300**	**1200**	**1,500,000**	**3100**	**160**	**710**
Construction Worker SAL[c]				**150**	**230**	**200**	**990,000**	**1000**	**130**	**340**
Residential SAL[c]				**5**	**84**	**79**	**1700**	**290**	**42**	**150**
RE01-12-801	00-603911	5–6	QBT3	NA	—	0.0761	NA	NA	NA	NA
RE00-08-16395	00-603912	0–1	SED	—	—	1.68	—	—	—	—
RE00-08-16396	00-603912	1.5–2.5	QBT3	—	—	2.76	—	2.06	0.163	—
RE00-08-16397	00-603913	0–1	SED	—	—	0.593	—	—	—	—
RE00-08-16398	00-603913	1.75–2.75	QBT1G	—	—	1.2	—	—	—	—
RE00-08-16399	00-603914	0–1	SED	—	—	0.662	—	—	—	—
RE00-08-16400	00-603914	1–2	QBT1G	—	—	0.468	—	—	—	—
RE00-08-16401	00-603915	0–1	SED	—	—	0.869	—	—	—	—
RE00-08-16402	00-603915	1–2	QBT1G	—	—	0.377	—	—	—	—
RE00-08-16403	00-603916	0–1	SED	—	—	0.713	—	—	—	—
RE00-08-16404	00-603916	1–2.25	QBT1G	—	—	0.331	—	—	—	—
RE00-08-16405	00-603917	0–1	SED	—	—	2.26	—	—	—	—
RE00-08-16406	00-603917	1–2	QBT1G	—	—	0.755	—	—	—	—
RE01-12-806	00-603917	5–6	SED	NA	0.0442	19.2	NA	NA	NA	NA
RE01-12-807	00-603917	7–8	SED	NA	—	0.383	NA	NA	NA	NA
RE00-08-16407	00-603918	0.25–1.25	FILL	—	—	0.109	—	—	—	—
RE00-08-16408	00-603918	3.5–4.25	FILL	—	—	0.185	—	—	—	—
RE01-12-786	00-603918	4.25–5	FILL	NA	—	0.488	NA	NA	NA	NA
RE01-12-787	00-603918	5–6	FILL	NA	—	0.071 (J+)	NA	NA	NA	NA
RE01-12-792	00-603919	6–7	QBT3	NA	—	0.0878	NA	NA	NA	NA
RE01-12-793	00-603919	7–8	QBT3	NA	—	0.267	NA	NA	NA	NA
RE01-12-808	01-614797	0–1	SED	NA	—	0.712	NA	NA	NA	NA
RE01-12-809	01-614797	2–3	SED	NA	—	0.657	NA	NA	NA	NA
RE01-12-810	01-614797	5–6	SED	NA	—	0.379	NA	NA	NA	NA
RE01-12-811	01-614798	0–1	SED	NA	—	0.733	NA	NA	NA	NA
RE01-12-812	01-614798	2–3	SED	NA	—	1.33	NA	NA	NA	NA
RE01-12-813	01-614798	5–6	SED	NA	—	0.17	NA	NA	NA	NA
RE01-12-814	01-614799	0–1	SED	NA	—	0.0836	NA	NA	NA	NA
RE01-12-815	01-614799	2–3	SED	NA	—	1.01	NA	NA	NA	NA

Table 7.10-5 (continued)

Sample ID	Location ID	Depth (ft)	Media	Cesium-134	Plutonium-238	Plutonium-239/240	Tritium	Uranium-234	Uranium-235/236	Uranium-238
Soil Background Value[a]				**na**	**0.023**	**0.054**	**na[b]**	**2.59**	**0.2**	**2.29**
Qbt 2,3,4 Background Value[a]				**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
Sediment Background Value[a]				**na**	**0.006**	**0.068**	**0.093**	**2.59**	**0.2**	**2.29**
Industrial SAL[c]				**17**	**1300**	**1200**	**1,500,000**	**3100**	**160**	**710**
Construction Worker SAL[c]				**150**	**230**	**200**	**990,000**	**1000**	**130**	**340**
Residential SAL[c]				**5**	**84**	**79**	**1700**	**290**	**42**	**150**
RE01-12-816	01-614799	5–6	SED	NA	—	1.11	NA	NA	NA	NA
RE01-12-817	01-614800	0–1	SED	NA	—	0.189	NA	NA	NA	NA
RE01-12-818	01-614800	2–3	SED	NA	—	1.58	NA	NA	NA	NA
RE01-12-819	01-614800	5–6	SED	NA	—	0.171	NA	NA	NA	NA

Note: Results are in pCi/g.

[a] BVs/FVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SALs are from LANL (2015, 600929).

[d] — = Not detected or not detected above BV.

[e] NA = Not analyzed.

Table 7.11-1
Samples Collected and Analyses Requested at AOC 01-003(b2)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Arsenic	Perchlorate	Strontium-90	Cyanide (Total)
RE00-08-16522	00-604022	0–1	SED	09-949[a]	09-948	09-949	09-949	09-949	09-949	09-948	—[b]	09-948	09-949	09-948
RE00-08-16523	00-604022	2–3	QBT3	09-949	09-948	09-949	09-949	09-949	09-949	09-948	—	09-948	09-949	09-948
RE00-08-16525	00-604023	0–1	FILL	09-949	09-948	09-949	09-949	09-949	09-949	09-948	—	09-948	09-949	09-948
RELA-16-106186	00-604023	10.0–11.0	QBT3	—	—	—	—	—	—	—	2016-223	—	—	—
RE01-13-38440	00-604023	11–12	QBT3	—	—	—	—	—	—	—	2013-1803	—	—	—
RE01-13-38441	00-604023	14–15	QBT3	—	—	—	—	—	—	—	2013-1803	—	—	—
RE01-13-38442	00-604023	17–18	QBT3	—	—	—	—	—	—	—	2013-1803	—	—	—
RE01-13-38443	00-604023	19–20	QBT3	—	—	—	—	—	—	—	2013-1803	—	—	—
RE00-08-16526	00-604023	4.25–5.25	QBT3	09-949	09-948	09-949	09-949	09-949	09-949	09-948	—	09-948	09-949	09-948
RE01-12-607	00-604023	6–7	QBT3	—	—	—	—	—	—	12-528	—	12-528	—	—
RE01-13-38439	00-604023	8–9	QBT3	—	—	—	—	—	—	—	2013-1803	—	—	—
RE00-08-16528	00-604024	0–1	SED	09-949	09-948	09-949	09-949	09-949	09-949	09-948	—	09-948	09-949	09-948
RE00-08-16529	00-604024	1.25–2.25	QBT3	09-949	09-948	09-949	09-949	09-949	09-949	09-948	—	09-948	09-949	09-948
RE01-12-608	00-604024	3–4	QBT3	—	—	—	—	—	—	12-533	—	12-533	—	—
RE00-08-16531	00-604025	0–1	SED	09-949	09-948	09-949	09-949	09-949	09-949	09-948	—	09-948	09-949	09-948
RE00-08-16532	00-604025	3–4	QBT3	09-949	09-948	09-949	09-949	09-949	09-949	09-948	—	09-948	09-949	09-948
RE00-08-16534	00-604026	0–1	SED	09-949	09-948	09-949	09-949	09-949	09-949	09-948	—	09-948	09-949	09-948
RE00-08-16536	00-604026	1.75–2.75	QBT3	09-949	09-948	09-949	09-949	09-949	09-949	09-948	—	09-948	09-949	09-948
RE01-13-38399	01-193	0–1	ALLH	—	—	—	—	—	—	—	2013-1803	—	—	—
RE01-13-38431	01-193	11–12	QBT3	—	—	—	—	—	—	—	2013-1803	—	—	—
RE01-13-38407	01-193	3–4	QBT3	—	—	—	—	—	—	—	2013-1803	—	—	—
RE01-13-38415	01-193	6–7	QBT3	—	—	—	—	—	—	—	2013-1803	—	—	—
RE01-13-38423	01-193	9–10	QBT3	—	—	—	—	—	—	—	2013-1803	—	—	—
RE01-13-38400	01-194	0–1	QBT3	—	—	—	—	—	—	—	2013-1803	—	—	—
RE01-13-38432	01-194	11–12	QBT3	—	—	—	—	—	—	—	2013-1803	—	—	—
RE01-13-38408	01-194	3–4	QBT3	—	—	—	—	—	—	—	2013-1803	—	—	—
RE01-13-38416	01-194	6–7	QBT3	—	—	—	—	—	—	—	2013-1803	—	—	—
RE01-13-38424	01-194	9–10	QBT3	—	—	—	—	—	—	—	2013-1803	—	—	—

Table 7.11-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Arsenic	Perchlorate	Strontium-90	Cyanide (Total)
RE01-13-38401	01-195	0–1	ALLH	—	—	—	—	—	—	—	2013-1796	—	—	—
RE01-13-38433	01-195	11–12	QBT3	—	—	—	—	—	—	—	2013-1796	—	—	—
RE01-13-38409	01-195	3–4	QBT3	—	—	—	—	—	—	—	2013-1796	—	—	—
RE01-13-38417	01-195	6–7	QBT3	—	—	—	—	—	—	—	2013-1796	—	—	—
RE01-13-38425	01-195	9–10	QBT3	—	—	—	—	—	—	—	2013-1796	—	—	—
RE01-13-38402	01-196	0–1	ALLH	—	—	—	—	—	—	—	2013-1803	—	—	—
CALA-16-121903	01-196	1–2	QBT3	—	—	—	—	—	—	—	2016-1458	—	—	—
RE01-13-38434	01-196	11–12	QBT3	—	—	—	—	—	—	—	2013-1803	—	—	—
CALA-16-121904	01-196	2–3	QBT3	—	—	—	—	—	—	—	2016-1458	—	—	—
RE01-13-38410	01-196	3–4	QBT3	—	—	—	—	—	—	—	2013-1803	—	—	—
RE01-13-38418	01-196	6–7	QBT3	—	—	—	—	—	—	—	2013-1803	—	—	—
RE01-13-38426	01-196	9–10	QBT3	—	—	—	—	—	—	—	2013-1803	—	—	—
RE01-13-38403	01-197	0–1	ALLH	—	—	—	—	—	—	—	2013-1787	—	—	—
RE01-13-38435	01-197	11–12	QBT3	—	—	—	—	—	—	—	2013-1787	—	—	—
RE01-13-38411	01-197	3–4	ALLH	—	—	—	—	—	—	—	2013-1787	—	—	—
RE01-13-38419	01-197	6–7	QBT3	—	—	—	—	—	—	—	2013-1787	—	—	—
RE01-13-38427	01-197	9–10	QBT3	—	—	—	—	—	—	—	2013-1787	—	—	—
RE01-13-38404	01-198	0–1	ALLH	—	—	—	—	—	—	—	2013-1777	—	—	—
RE01-13-38436	01-198	11–12	QBT3	—	—	—	—	—	—	—	2013-1777	—	—	—
RE01-13-38412	01-198	3–4	QBT3	—	—	—	—	—	—	—	2013-1777	—	—	—
RE01-13-38420	01-198	6–7	QBT3	—	—	—	—	—	—	—	2013-1777	—	—	—
RE01-13-38428	01-198	9–10	QBT3	—	—	—	—	—	—	—	2013-1777	—	—	—
RE01-13-38405	01-199	0–1	ALLH	—	—	—	—	—	—	—	2013-1796	—	—	—
RE01-13-38437	01-199	11–12	QBT3	—	—	—	—	—	—	—	2013-1796	—	—	—
RE01-13-38413	01-199	3–4	QBT3	—	—	—	—	—	—	—	2013-1796	—	—	—
RE01-13-38421	01-199	6–7	QBT3	—	—	—	—	—	—	—	2013-1796	—	—	—
RE01-13-38429	01-199	9–10	QBT3	—	—	—	—	—	—	—	2013-1796	—	—	—
RE01-13-38406	01-200	0–1	ALLH	—	—	—	—	—	—	—	2013-1796	—	—	—
RE01-13-38438	01-200	11–12	QBT3	—	—	—	—	—	—	—	2013-1796	—	—	—
RE01-13-38414	01-200	3–4	QBT3	—	—	—	—	—	—	—	2013-1796	—	—	—
RE01-13-38422	01-200	6–7	QBT3	—	—	—	—	—	—	—	2013-1796	—	—	—
RE01-13-38430	01-200	9–10	QBT3	—	—	—	—	—	—	—	2013-1796	—	—	—
RELA-16-106150	01-242	0–1	ALLH	—	—	—	—	—	—	—	2016-301	—	—	—
RELA-16-106154	01-242	11.0–12.0	QBT3	—	—	—	—	—	—	—	2016-311	—	—	—
RELA-16-106151	01-242	3.0–4.0	QBT3	—	—	—	—	—	—	—	2016-311	—	—	—

Table 7.11-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Arsenic	Perchlorate	Strontium-90	Cyanide (Total)
RELA-16-106152	01-242	6.0–7.0	QBT3	—	—	—	—	—	—	—	2016-311	—	—	—
RELA-16-106153	01-242	9.0–10.0	QBT3	—	—	—	—	—	—	—	2016-311	—	—	—
RELA-16-106155	01-243	0–1	ALLH	—	—	—	—	—	—	—	2016-257	—	—	—
RELA-16-106159	01-243	11–12	QBT3	—	—	—	—	—	—	—	2016-257	—	—	—
RELA-16-106156	01-243	3–4	QBT3	—	—	—	—	—	—	—	2016-257	—	—	—
RELA-16-106157	01-243	6–7	QBT3	—	—	—	—	—	—	—	2016-257	—	—	—
RELA-16-106158	01-243	9–10	QBT3	—	—	—	—	—	—	—	2016-257	—	—	—
RELA-16-106160	01-244	0–1	ALLH	—	—	—	—	—	—	—	2016-301	—	—	—
RELA-16-106164	01-244	11–12	QBT3	—	—	—	—	—	—	—	2016-301	—	—	—
RELA-16-106161	01-244	3–4	FILL	—	—	—	—	—	—	—	2016-301	—	—	—
RELA-16-106162	01-244	6–7	QBT3	—	—	—	—	—	—	—	2016-301	—	—	—
RELA-16-106163	01-244	9–10	QBT3	—	—	—	—	—	—	—	2016-301	—	—	—
RELA-16-106165	01-245	0–1	ALLH	—	—	—	—	—	—	—	2016-257	—	—	—
RELA-16-106169	01-245	11.0–12.0	QBT3	—	—	—	—	—	—	—	2016-311	—	—	—
RELA-16-106166	01-245	3–4	QBT3	—	—	—	—	—	—	—	2016-257	—	—	—
RELA-16-106167	01-245	6–7	QBT3	—	—	—	—	—	—	—	2016-257	—	—	—
RELA-16-106168	01-245	9–10	QBT3	—	—	—	—	—	—	—	2016-257	—	—	—
RELA-16-106170	01-246	0–1	ALLH	—	—	—	—	—	—	—	2016-257	—	—	—
RELA-16-106178	01-246	3–4	QBT3	—	—	—	—	—	—	—	2016-257	—	—	—
RELA-16-106171	01-247	0–1	ALLH	—	—	—	—	—	—	—	2016-257	—	—	—
CALA-16-121901	01-247	1–2	QBT3	—	—	—	—	—	—	—	2016-1402	—	—	—
CALA-16-121902	01-247	2–3	QBT3	—	—	—	—	—	—	—	2016-1402	—	—	—
RELA-16-106179	01-247	3–4	QBT3	—	—	—	—	—	—	—	2016-257	—	—	—
RELA-16-106180	01-248	0–1	ALLH	—	—	—	—	—	—	—	2016-257	—	—	—
RELA-16-106172	01-248	3–4	QBT3	—	—	—	—	—	—	—	2016-257	—	—	—
RELA-16-106181	01-249	0–1	ALLH	—	—	—	—	—	—	—	2016-257	—	—	—
RELA-16-106173	01-249	3–4	QBT3	—	—	—	—	—	—	—	2016-257	—	—	—
RELA-16-106182	01-250	0.0–1.0	ALLH	—	—	—	—	—	—	—	2016-223	—	—	—
RELA-16-106174	01-250	3.0–4.0	QBT3	—	—	—	—	—	—	—	2016-223	—	—	—
RELA-16-106175	01-251	0.0–1.0	QBT3	—	—	—	—	—	—	—	2016-223	—	—	—
RELA-16-106183	01-251	3.0–4.0	QBT3	—	—	—	—	—	—	—	2016-223	—	—	—
RELA-16-106176	01-252	0.0–0.5	ALLH	—	—	—	—	—	—	—	2016-223	—	—	—
RELA-16-106184	01-252	3.0–4.0	QBT3	—	—	—	—	—	—	—	2016-223	—	—	—
RELA-16-106185	01-253	0–1	ALLH	—	—	—	—	—	—	—	2016-257	—	—	—
CALA-16-121905	01-253	1–2	ALLH	—	—	—	—	—	—	—	2016-1391	—	—	—

Table 7.11-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Arsenic	Perchlorate	Strontium-90	Cyanide (Total)
CALA-16-121906	01-253	2–3	ALLH	—	—	—	—	—	—	—	2016-1391	—	—	—
RELA-16-106177	01-253	3–4	QBT3	—	—	—	—	—	—	—	2016-257	—	—	—
CALA-16-121907	01-61499	0–1	ALLH	—	—	—	—	—	—	—	2016-1391	—	—	—
CALA-16-121908	01-61499	1–2	QBT3	—	—	—	—	—	—	—	2016-1391	—	—	—
CALA-16-121909	01-61499	2–3	QBT3	—	—	—	—	—	—	—	2016-1391	—	—	—
CALA-16-121910	01-61499	3–4	QBT3	—	—	—	—	—	—	—	2016-1391	—	—	—
CALA-16-121911	01-61500	0–0.5	ALLH	—	—	—	—	—	—	—	2016-1391	—	—	—
CALA-16-121912	01-61500	1–2	QBT3	—	—	—	—	—	—	—	2016-1391	—	—	—
CALA-16-121913	01-61500	2–3	QBT3	—	—	—	—	—	—	—	2016-1391	—	—	—
CALA-16-121914	01-61500	3–4	QBT3	—	—	—	—	—	—	—	2016-1391	—	—	—
CALA-16-121923	01-61503	0–1.75 in.	Other[c]	—	—	—	—	—	—	—	2016-1459	—	—	—
CALA-16-121924	01-61504	0–1.75 in.	Other	—	—	—	—	—	—	—	2016-1459	—	—	—
CALA-16-121925	01-61505	0–3 in.	Other	—	—	—	—	—	—	—	2016-1459	—	—	—
CALA-16-121926	01-61506	0–2.75 in.	Other	—	—	—	—	—	—	—	2016-1459	—	—	—
CALA-16-125069	01-61513	0–1	ALLH	—	—	—	—	—	—	—	2016-2222	—	—	—
CALA-16-125071	01-61513	1–2	ALLH	—	—	—	—	—	—	—	2016-2222	—	—	—
CALA-16-125070	01-61514	na[d]	Other	—	—	—	—	—	—	—	2016-2222	—	—	—
CALA-16-124937	LA-61506	0–1.5 in.	Other	—	—	—	—	—	—	—	2016-2201	—	—	—
CALA-16-124938	LA-61507	0–1.5 in.	Other	—	—	—	—	—	—	—	2016-2201	—	—	—
CALA-16-124939	LA-61508	0–1.5 in.	Other	—	—	—	—	—	—	—	2016-2221	—	—	—
CALA-16-124940	LA-61509	0–1.5 in.	Other	—	—	—	—	—	—	—	2016-2221	—	—	—
CALA-16-124941	LA-61510	0–1.25 in.	Other	—	—	—	—	—	—	—	2016-2221	—	—	—
CALA-16-124949	LA-61516	0–1	ALLH	—	—	—	—	—	—	—	2016-2200	—	—	—
CALA-16-124954	LA-61516	1–2	ALLH	—	—	—	—	—	—	—	2016-2200	—	—	—
CALA-16-124950	LA-61517	0–1	ALLH	—	—	—	—	—	—	—	2016-2221	—	—	—
CALA-16-124955	LA-61517	1–2	QBT3	—	—	—	—	—	—	—	2016-2221	—	—	—
CALA-16-124951	LA-61518	0–1	QBT3	—	—	—	—	—	—	—	2016-2200	—	—	—
CALA-16-124956	LA-61518	1–2	QBT3	—	—	—	—	—	—	—	2016-2200	—	—	—
CALA-16-124957	LA-61519	0–1	ALLH	—	—	—	—	—	—	—	2016-2221	—	—	—
CALA-16-124952	LA-61519	1–2	ALLH	—	—	—	—	—	—	—	2016-2221	—	—	—
CALA-16-124953	LA-61520	0–1	QBT3	—	—	—	—	—	—	—	2016-2221	—	—	—
CALA-16-124958	LA-61520	1–2	QBT3	—	—	—	—	—	—	—	2016-2221	—	—	—

[a] Analytical request number.
[b] — = Analysis not requested.
[c] Other = Wood chip sample.
[d] na = Not available.

Table 7.11-2
Inorganic Chemicals Detected or Detected above BVs at AOC 01-003(b2)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Calcium	Chromium	Copper	Lead	Magnesium	Nickel	Nitrate	Perchlorate	Selenium	Thallium
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**6120**	**19.3**	**14.7**	**22.3**	**4610**	**15.4**	**na[b]**	**na**	**1.52**	**0.73**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**2200**	**7.14**	**4.66**	**11.2**	**1690**	**6.58**	**na**	**na**	**0.3**	**1.1**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**1.31**	**4420**	**10.5**	**11.2**	**19.7**	**2370**	**9.38**	**na**	**na**	**0.3**	**0.73**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**na**	**505[d]**	**51,900**	**800**	**na**	**25,700**	**2,080,000**	**908**	**6490**	**13**
Construction Worker SSL[c]				**41,400**	**142**	**41.2**	**4,390**	**148**	**na**	**134[d]**	**14,200**	**800**	**na**	**12,400**	**991,000**	**434**	**3100**	**3.54**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**na**	**96.6[d]**	**3130**	**400**	**na**	**1560**	**125,000**	**54.8**	**391**	**0.782**
RE00-08-16522	00-604022	0–1	SED	—[e]	—	—	—	1.5	—	—	—	—	—	—	0.17 (J)	—	0.5 (J)	—
RE00-08-16523	00-604022	2–3	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.14 (J)	—	—	—
RE00-08-16525	00-604023	0–1	FILL	—	—	—	—	—	—	—	—	28.6 (J+)	—	—	2.4	0.0022 (J-)	—	—
RE00-08-16526	00-604023	4.25–5.25	QBT3	10,700	0.75 (U)	35.9	228	1.9	2630	14.5	11.5	73.1 (J+)	2090	9.7	0.2 (J)	0.039	1.4	1.8
RE01-12-607	00-604023	6–7	QBT3	10,900	NA[f]	34.4 (J-)	200 (J-)	2.11	NA	9.52	13.4	60.6	NA	—	NA	0.0432	1.5 (J-)	—
RE01-13-38439	00-604023	8–9	QBT3	NA	NA	11.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106186	00-604023	10.0–11.0	QBT3	NA	NA	4.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38440	00-604023	11–12	QBT3	NA	NA	9.98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38441	00-604023	14–15	QBT3	NA	NA	6.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38443	00-604023	19–20	QBT3	NA	NA	2.86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-08-16528	00-604024	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	0.15 (J)	—	—	—
RE00-08-16529	00-604024	1.25–2.25	QBT3	—	—	—	63.9	—	—	—	—	24.1 (J+)	—	—	0.11 (J)	—	0.36 (J)	—
RE01-12-608	00-604024	3–4	QBT3	—	NA	—	—	—	NA	—	—	—	NA	—	NA	0.000999 (J)	1.04 (UJ)	—
RE00-08-16531	00-604025	0–1	SED	—	2.1 (U)	—	—	—	—	—	—	—	—	—	0.11 (J)	—	—	—
RE00-08-16532	00-604025	3–4	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.12 (J)	—	—	—
RE00-08-16536	00-604026	1.75–2.75	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.078 (J)	—	0.37 (J)	—
RE01-13-38399	01-193	0–1	SOIL	NA	NA	17.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE01-13-38400	01-194	0–1	QBT3	NA	NA	3.02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE01-13-38408	01-194	3–4	QBT3	NA	NA	3.41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE01-13-38424	01-194	9–10	QBT3	NA	NA	2.92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE01-13-38409	01-195	3–4	QBT3	NA	NA	3.35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE01-13-38417	01-195	6–7	QBT3	NA	NA	4.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE01-13-38425	01-195	9–10	QBT3	NA	NA	4.56	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE01-13-38433	01-195	11–12	QBT3	NA	NA	4.77	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE01-13-38402	01-196	0–1	SOIL	NA	NA	69.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
CALA-16-121903	01-196	1–2	QBT3	NA	NA	3.43 (J)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-121904	01-196	2–3	QBT3	NA	NA	2.98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38410	01-196	3–4	QBT3	NA	NA	2.95	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE01-13-38418	01-196	6–7	QBT3	NA	NA	3.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE01-13-38426	01-196	9–10	QBT3	NA	NA	3.04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE01-13-38419	01-197	6–7	QBT3	NA	NA	4.77	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—

Table 7.11-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Calcium	Chromium	Copper	Lead	Magnesium	Nickel	Nitrate	Perchlorate	Selenium	Thallium
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**6120**	**19.3**	**14.7**	**22.3**	**4610**	**15.4**	**na[b]**	**na**	**1.52**	**0.73**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**2200**	**7.14**	**4.66**	**11.2**	**1690**	**6.58**	**na**	**na**	**0.3**	**1.1**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**1.31**	**4420**	**10.5**	**11.2**	**19.7**	**2370**	**9.38**	**na**	**na**	**0.3**	**0.73**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**na**	**505[d]**	**51,900**	**800**	**na**	**25,700**	**2,080,000**	**908**	**6490**	**13**
Construction Worker SSL[c]				**41,400**	**142**	**41.2**	**4,390**	**148**	**na**	**134[d]**	**14,200**	**800**	**na**	**12,400**	**991,000**	**434**	**3100**	**3.54**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**na**	**96.6[d]**	**3130**	**400**	**na**	**1560**	**125,000**	**54.8**	**391**	**0.782**
RE01-13-38427	01-197	9–10	QBT3	NA	NA	4.39	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE01-13-38435	01-197	11–12	QBT3	NA	NA	3.95	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE01-13-38413	01-199	3–4	QBT3	NA	NA	3.49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE01-13-38421	01-199	6–7	QBT3	NA	NA	3.06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE01-13-38437	01-199	11–12	QBT3	NA	NA	3.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE01-13-38414	01-200	3–4	QBT3	NA	NA	2.83	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE01-13-38430	01-200	9–10	QBT3	NA	NA	2.91	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RELA-16-106150	01-242	0–1	SOIL	NA	NA	15.4 (J-)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106151	01-242	3.0–4.0	QBT3	NA	NA	25.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106152	01-242	6.0–7.0	QBT3	NA	NA	7.26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106153	01-242	9.0–10.0	QBT3	NA	NA	8.79	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106154	01-242	11.0–12.0	QBT3	NA	NA	14.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106156	01-243	3–4	QBT3	NA	NA	8.97	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106157	01-243	6–7	QBT3	NA	NA	4.43	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106166	01-245	3–4	QBT3	NA	NA	3.18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106167	01-245	6–7	QBT3	NA	NA	2.91	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106168	01-245	9–10	QBT3	NA	NA	3.16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106178	01-246	3–4	QBT3	NA	NA	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106171	01-247	0–1	SOIL	NA	NA	11.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-121901	01-247	1–2	QBT3	NA	NA	4.43	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-121902	01-247	2–3	QBT3	NA	NA	2.96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106179	01-247	3–4	QBT3	NA	NA	3.73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106174	01-250	3.0–4.0	QBT3	NA	NA	2.92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106175	01-251	0.0–1.0	QBT3	NA	NA	3.44	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106176	01-252	0.0–0.5	SOIL	NA	NA	10.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106184	01-252	3.0–4.0	QBT3	NA	NA	7.33	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106185	01-253	0–1	SOIL	NA	NA	10.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-121905	01-253	1–2	SOIL	NA	NA	41.3 (J)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-121906	01-253	2–3	SOIL	NA	NA	24.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-16-106177	01-253	3–4	QBT3	NA	NA	2.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 7.11-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Calcium	Chromium	Copper	Lead	Magnesium	Nickel	Nitrate	Perchlorate	Selenium	Thallium
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**6120**	**19.3**	**14.7**	**22.3**	**4610**	**15.4**	**na[b]**	**na**	**1.52**	**0.73**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**2200**	**7.14**	**4.66**	**11.2**	**1690**	**6.58**	**na**	**na**	**0.3**	**1.1**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**1.31**	**4420**	**10.5**	**11.2**	**19.7**	**2370**	**9.38**	**na**	**na**	**0.3**	**0.73**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**na**	**505[d]**	**51,900**	**800**	**na**	**25,700**	**2,080,000**	**908**	**6490**	**13**
Construction Worker SSL[c]				**41,400**	**142**	**41.2**	**4,390**	**148**	**na**	**134[d]**	**14,200**	**800**	**na**	**12,400**	**991,000**	**434**	**3100**	**3.54**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**na**	**96.6[d]**	**3130**	**400**	**na**	**1560**	**125,000**	**54.8**	**391**	**0.782**
CALA-16-121908	01-61499	1–2	QBT3	NA	NA	4.83	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-121909	01-61499	2–3	QBT3	NA	NA	5.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-121910	01-61499	3–4	QBT3	NA	NA	5.73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-121911	01-61500	0–0.5	SOIL	NA	NA	18.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-121912	01-61500	1–2	QBT3	NA	NA	6.33	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-121913	01-61500	2–3	QBT3	NA	NA	4.09	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-121914	01-61500	3–4	QBT3	NA	NA	4.58	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-121923	01-61503	0–0.15	Other[g]	NA	NA	30.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-121924	01-61504	0–01.5	Other	NA	NA	8.18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-121925	01-61505	0–0.25	Other	NA	NA	3950	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-121926	01-61506	0–0.23	Other	NA	NA	1600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-125071	01-61513	1–2	SOIL	NA	NA	8.89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-125070	01-61514	na	Other	NA	NA	169	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-124937	LA-61506	0–0.13	Other	NA	NA	1830	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-124938	LA-61507	0–0.13	Other	NA	NA	3390	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-124939	LA-61508	0–0.13	Other	NA	NA	2830	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-124940	LA-61509	0–0.13	Other	NA	NA	4390	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-124941	LA-61510	0–0.1	Other	NA	NA	849	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-124955	LA-61517	1–2	QBT3	NA	NA	3.53	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-124951	LA-61518	0–1	QBT3	NA	NA	4.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALA-16-124956	LA-61518	1–2	QBT3	NA	NA	5.71	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] BVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SSLs are from NMED (2017, 602273) unless otherwise noted.

[d] SSL for total chromium.

[e] — = Not detected or not detected above BV.

[f] NA = Not analyzed.

[g] Other = Wood chip sample.

Table 7.11-3
Radionuclides Detected or Detected above BVs/FVs at AOC 01-003(b2)

Sample ID	Location ID	Depth (ft)	Media	Plutonium-238	Plutonium-239/240
Soil Background Value[a]				**0.023**	**0.054**
Qbt2, 3, 4 Background Value[a]				**na[b]**	**na**
Sediment Background Value[a]				**0.006**	**0.068**
Industrial SAL[c]				**1300**	**1200**
Construction Worker SAL[c]				**230**	**200**
Residential SAL[c]				**84**	**79**
RE00-08-16522	00-604022	0–1	SED	—[d]	0.361
RE00-08-16525	00-604023	0–1	FILL	—	1.63
RE00-08-16528	00-604024	0–1	SED	—	0.58
RE00-08-16531	00-604025	0–1	SED	—	2.11
RE00-08-16534	00-604026	0–1	SED	—	0.97
RE00-08-16536	00-604026	1.75–2.75	QBT3	0.178	0.492

Notes: Results are in pCi/g. Data qualifiers are presented in Appendix A.

[a] BVs/FVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SALs are from LANL (2015, 600929).

[d] — = Not detected or not detected above BV.

Table 7.12-1
Samples Collected and Analyses Requested at SWMU 01-003(d)

Sample ID	Location ID	Depth (ft)	Media	Americium241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Antimony	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (Total)
RE00-08-16543	00-604027	0–1.2	ALLH	09-44[a]	09-43	09-44	09-44	09-44	09-44	09-43	—[b]	09-42	09-43	09-44	09-42	09-42	09-43
RE00-08-16544	00-604027	2–3	QBT3	09-44	09-43	09-44	09-44	09-44	09-44	09-43	—	09-42	0-9-43	09-44	09-42	09-42	09-43
RE00-08-16545	00-604028	0–1	ALLH	09-44	09-43	09-44	09-44	09-44	09-44	09-43	—	09-42	09-43	09-44	09-42	09-42	09-43
RE00-08-16546	00-604028	2–3	QBT3	09-44	09-43	09-44	09-44	09-44	09-44	09-43	—	09-42	09-43	09-44	09-42	09-42	09-43
RE00-08-16547	00-604029	0–1	QBT3	09-44	09-43	09-44	09-44	09-44	09-44	09-43	—	09-42	09-43	09-44	09-42	09-42	09-43
RE00-08-16548	00-604029	2–3	QBT3	09-44	09-43	09-44	09-44	09-44	09-44	09-43	—	09-42	09-43	09-44	09-42	09-42	09-43
RE00-08-16549	00-604030	0–1	ALLH	09-44	09-43	09-44	09-44	09-44	09-44	09-43	—	09-42	09-43	09-44	09-42	09-42	09-43
RE00-08-16550	00-604030	2–3	QBT3	09-44	09-43	09-44	09-44	09-44	09-44	09-43	—	09-42	09-43	09-44	09-42	09-42	09-43
RE00-08-16551	00-604031	0–1	ALLH	09-44	09-43	09-44	09-44	09-44	09-44	09-43	—	09-42	09-43	09-44	09-42	09-42	09-43
RE00-08-16552	00-604031	2–3	QBT3	09-44	09-43	09-44	09-44	09-44	09-44	09-43	—	09-42	09-43	09-44	09-42	09-42	09-43
RE00-08-16553	00-604032	0–1	QBT3	09-44	09-43	09-44	09-44	09-44	09-44	09-43	—	09-42	09-43	09-44	09-42	09-42	09-43
RE00-08-16554	00-604032	2–3	QBT3	09-44	09-43	09-44	09-44	09-44	09-44	09-43	—	09-42	09-43	09-44	09-42	09-42	09-43
RELA-17-131526	00-604032	2–3	QBT3	—	—	—	—	—	—	2017-1305	—	—	—	—	—	—	—
RELA-17-131529	00-604032	4–5	QBT3	—	—	—	—	—	—	2017-1305	—	—	—	—	—	—	—
RE01-12-623	00-604032	4–5	QBT3	—	—	—	—	—	—	12-567	—	—	—	—	—	—	—
RE01-12-624	00-604032	6–7	QBT3	—	—	—	—	—	—	12-567	—	—	—	—	—	—	—
RE01-13-38381	01-185	0–1	ALLH	—	—	—	—	—	—	—	2013-1862	—	—	—	—	—	—
RE01-13-38389	01-185	2–3	QBT3	—	—	—	—	—	—	—	2013-1862	—	—	—	—	—	—
RE01-13-38382	01-186	0–1	ALLH	—	—	—	—	—	—	—	2013-1862	—	—	—	—	—	—
RE01-13-38390	01-186	2–3	QBT3	—	—	—	—	—	—	—	2013-1862	—	—	—	—	—	—
RE01-13-38383	01-187	0–1	ALLH	—	—	—	—	—	—	—	2013-1862	—	—	—	—	—	—
RE01-13-38391	01-187	2–3	QBT3	—	—	—	—	—	—	—	2013-1862	—	—	—	—	—	—
RE01-13-38384	01-188	0–1	ALLH	—	—	—	—	—	—	—	2013-1862	—	—	—	—	—	—
RE01-13-38392	01-188	2–3	QBT3	—	—	—	—	—	—	—	2013-1862	—	—	—	—	—	—
RE01-13-38385	01-189	0–1	ALLH	—	—	—	—	—	—	—	2013-1862	—	—	—	—	—	—
RE01-13-38393	01-189	2–3	QBT3	—	—	—	—	—	—	—	2013-1862	—	—	—	—	—	—
RELA-17-131527	01-189	2–3	QBT3	—	—	—	—	—	—	2017-1305	—	—	—	—	—	—	—
RELA-17-131530	01-189	4–5	QBT3	—	—	—	—	—	—	2017-1305	—	—	—	—	—	—	—
RE01-13-38386	01-190	0–1	ALLH	—	—	—	—	—	—	—	2013-1862	—	—	—	—	—	—

Table 7.12-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Antimony	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (Total)
RE01-13-38394	01-190	2–3	QBT3	—	—	—	—	—	—	—	2013-1862	—	—	—	—	—	—
RE01-13-38387	01-191	0–1	QBT3	—	—	—	—	—	—	—	2013-1862	—	—	—	—	—	—
RE01-13-38395	01-191	2–3	QBT3	—	—	—	—	—	—	—	2013-1862	—	—	—	—	—	—
RE01-13-38388	01-192	0–1	ALLH	—	—	—	—	—	—	—	2013-1862	—	—	—	—	—	—
RE01-13-38396	01-192	2–3	QBT3	—	—	—	—	—	—	—	2013-1862	—	—	—	—	—	—
RE01-12-611	01-614775	0–1	ALLH	—	—	—	—	—	—	12-561	—	—	—	—	—	—	—
RE01-12-612	01-614775	2–3	QBT3	—	—	—	—	—	—	12-561	—	—	—	—	—	—	—
RE01-12-613	01-614775	4–5	QBT3	—	—	—	—	—	—	12-561	—	—	—	—	—	—	—
RE01-12-614	01-614776	0–1	ALLH	—	—	—	—	—	—	12-561	—	—	—	—	—	—	—
RE01-12-615	01-614776	2–3	QBT3	—	—	—	—	—	—	12-561	—	—	—	—	—	—	—
RE01-12-616	01-614776	4–5	QBT3	—	—	—	—	—	—	12-561	—	—	—	—	—	—	—
RE01-12-617	01-614777	0–1	ALLH	—	—	—	—	—	—	12-567	—	—	—	—	—	—	—
RE01-12-618	01-614777	2–3	QBT3	—	—	—	—	—	—	12-567	—	—	—	—	—	—	—
RELA-17-131528	01-614777	2–3	QBT3	—	—	—	—	—	—	2017-1305	—	—	—	—	—	—	—
RELA-17-131531	01-614777	4–5	QBT3	—	—	—	—	—	—	2017-1305	—	—	—	—	—	—	—
RE01-12-619	01-614777	4–5	QBT3	—	—	—	—	—	—	12-567	—	—	—	—	—	—	—
RE01-12-620	01-614778	0–1	ALLH	—	—	—	—	—	—	12-561	—	—	—	—	—	—	—
RE01-12-621	01-614778	2–3	QBT3	—	—	—	—	—	—	12-561	—	—	—	—	—	—	—
RE01-12-622	01-614778	4–5	QBT3	—	—	—	—	—	—	12-561	—	—	—	—	—	—	—

[a] Analytical request number.

[b] — = Analysis not requested.

Table 7.12-2
Inorganic Chemicals Detected or Detected above BVs at SWMU 01-003(d)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Barium	Beryllium	Cadmium	Calcium	Chromium	Cyanide (Total)	Lead	Nitrate	Perchlorate	Selenium	Zinc
Soil Background Value[a]				**0.83**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**0.5**	**22.3**	**na[b]**	**na**	**1.52**	**48.8**
Qbt 2,3,4 Background Value[a]				**0.5**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**0.5**	**11.2**	**na**	**na**	**0.3**	**63.5**
Sediment Background Value[a]				**0.83**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**0.82**	**19.7**	**na**	**na**	**0.3**	**60.2**
Industrial SSL[c]				**519**	**255,000**	**2580**	**1110**	**na**	**505[d]**	**62.8**	**800**	**2,080,000**	**908**	**6490**	**389,000**
Construction Worker SSL[c]				**142**	**4,390**	**148**	**72.1**	**na**	**134[d]**	**12**	**800**	**991,000**	**434**	**3100**	**186,000**
Residential SSL[c]				**31.3**	**15,600**	**156**	**70.5**	**na**	**96.6[d]**	**11.1**	**400**	**125,000**	**54.8**	**391**	**23,500**
RE00-08-16543	00-604027	0–1.2	SOIL	—[e]	—	—	—	—	—	0.51 (UJ)	—	4.3	—	—	50 (J-)
RE00-08-16544	00-604027	2–3	QBT3	—	—	—	—	—	—	0.51 (UJ)	—	4.4	—	—	—
RE00-08-16545	00-604028	0–1	SOIL	18.4	—	—	—	—	—	—	62.1	39	0.0031 (J)	—	94.2 (J)
RE00-08-16546	00-604028	2–3	QBT3	1.6	—	—	—	—	—	—	—	5.8	—	—	—
RE00-08-16547	00-604029	0–1	QBT3	—	—	—	—	—	—	0.51 (UJ)	—	4.1	—	—	—
RE00-08-16548	00-604029	2–3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-16549	00-604030	0–1	SOIL	—	—	—	—	—	—	0.51 (UJ)	—	0.15 (J)	—	—	—
RE00-08-16550	00-604030	2–3	QBT3	—	—	—	—	2880	—	—	—	—	0.0043 (J)	0.39 (J)	—
RE00-08-16551	00-604031	0–1	SOIL	10.6	—	—	—	—	—	0.51 (UJ)	—	0.9	0.0031 (J)	—	59.4 (J)
RE00-08-16552	00-604031	2–3	QBT3	—	—	—	—	—	11	—	—	0.22	—	0.33 (J)	—
RE00-08-16554	00-604032	2–3	QBT3	6.3	—	1.6	—	—	—	—	—	—	—	0.62	—
RELA-17-131526	00-604032	2–3	QBT3	181 (J)	1130	NA[f]	9.84 (J)	NA	34.9 (J)	NA	206	NA	NA	—	NA
RE01-12-623	00-604032	4–5	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.984 (UJ)	NA
RELA-17-131529	00-604032	4–5	QBT3	38	832	NA	5.33 (J)	NA	—	NA	64.7	NA	NA	—	NA
RE01-12-624	00-604032	6–7	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.968 (UJ)	NA
RE01-13-38381	01-185	0–1	SOIL	2.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38389	01-185	2–3	QBT3	0.938 (U)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38382	01-186	0–1	SOIL	1.96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38390	01-186	2–3	QBT3	0.959 (U)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38383	01-187	0–1	SOIL	1.09 (U)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38391	01-187	2–3	QBT3	0.953 (U)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38384	01-188	0–1	SOIL	1 (U)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38392	01-188	2–3	QBT3	0.962 (U)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38393	01-189	2–3	QBT3	30.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RELA-17-131527	01-189	2–3	QBT3	497	1080	NA	8.76 (J)	NA	38.8 (J)	NA	482	NA	NA	—	NA

Table 7.12-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Barium	Beryllium	Cadmium	Calcium	Chromium	Cyanide (Total)	Lead	Nitrate	Perchlorate	Selenium	Zinc
Soil Background Value[a]				**0.83**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**0.5**	**22.3**	**na[b]**	**na**	**1.52**	**48.8**
Qbt 2,3,4 Background Value[a]				**0.5**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**0.5**	**11.2**	**na**	**na**	**0.3**	**63.5**
Sediment Background Value[a]				**0.83**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**0.82**	**19.7**	**na**	**na**	**0.3**	**60.2**
Industrial SSL[c]				**519**	**255,000**	**2580**	**1110**	**na**	**505[d]**	**62.8**	**800**	**2,080,000**	**908**	**6490**	**389,000**
Construction Worker SSL[c]				**142**	**4,390**	**148**	**72.1**	**na**	**134[d]**	**12**	**800**	**991,000**	**434**	**3100**	**186,000**
Residential SSL[c]				**31.3**	**15,600**	**156**	**70.5**	**na**	**96.6[d]**	**11.1**	**400**	**125,000**	**54.8**	**391**	**23,500**
RELA-17-131530	01-189	4–5	QBT3	52.2	531	NA	—	NA	—	NA	9.2 (J)	NA	NA	—	NA
RE01-13-38394	01-190	2–3	QBT3	3.11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38387	01-191	0–1	QBT3	31.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38395	01-191	2–3	QBT3	26.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38388	01-192	0–1	SOIL	6.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-13-38396	01-192	2–3	QBT3	0.553 (J)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-611	01-614775	0–1	SOIL	1.09 (U)	—	NA	NA	NA	NA	NA	—	NA	NA	—	—
RE01-12-612	01-614775	2–3	QBT3	0.962 (U)	—	NA	NA	NA	NA	NA	—	NA	NA	0.457 (J-)	—
RE01-12-613	01-614775	4–5	QBT3	0.963 (U)	—	NA	NA	NA	NA	NA	—	NA	NA	0.983 (UJ)	—
RE01-12-614	01-614776	0–1	SOIL	10.8	—	NA	NA	NA	NA	NA	30.8	NA	NA	—	100
RE01-12-615	01-614776	2–3	QBT3	3.44 (U)	—	NA	NA	NA	NA	NA	—	NA	NA	0.988 (UJ)	—
RE01-12-616	01-614776	4–5	QBT3	1.78 (U)	—	NA	NA	NA	NA	NA	—	NA	NA	0.985 (UJ)	—
RE01-12-618	01-614777	2–3	QBT3	13.4	—	NA	NA	NA	NA	NA	11.9	NA	NA	0.483 (J-)	—
RELA-17-131528	01-614777	2–3	QBT3	30.9	658	NA	—	NA	—	NA	116	NA	NA	—	NA
RE01-12-619	01-614777	4–5	QBT3	11.2	—	NA	NA	NA	NA	NA	—	NA	NA	0.329 (J-)	—
RELA-17-131531	01-614777	4–5	QBT3	18.6	587	NA	—	NA	—	NA	48.7	NA	NA	—	NA
RE01-12-620	01-614778	0–1	SOIL	1.06 (U)	—	NA	NA	NA	NA	NA	—	NA	NA	—	—
RE01-12-621	01-614778	2–3	QBT3	0.965 (U)	—	NA	NA	NA	NA	NA	—	NA	NA	0.94 (UJ)	—
RE01-12-622	01-614778	4–5	QBT3	0.958 (U)	—	NA	NA	NA	NA	NA	—	NA	NA	0.983 (UJ)	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] BVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SSLs are from NMED (2017, 602273) unless otherwise noted.

[d] SSL for total chromium.

[e] — = Not detected or not detected above BV.

[f] NA = Not analyzed.

Table 7.12-3
Organic Chemicals Detected at SWMU 01-003(d)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1260	Bis(2-ethylhexyl)phthalate	Toluene
Industrial SSL[a]				**11.1**	**1830**	**61,100**
Construction Worker SSL[a]				**85.3**	**5380**	**14,000**
Residential SSL[a]				**2.43**	**380**	**5220**
RE00-08-16543	00-604027	0–1.2	SOIL	0.043	—[b]	—
RE00-08-16550	00-604030	2–3	QBT3	—	0.054 (J)	—
RE00-08-16551	00-604031	0–1	SOIL	—	—	0.0017 (J)

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.
[a] SSLs are from NMED (2017, 602273) unless otherwise noted.
[b] — = Not detected.

Table 7.12-4
Radionuclides Detected or Detected above BVs/FVs at SWMU 01-003(d)

Sample ID	Location ID	Depth (ft)	Media	Plutonium-239/240
Soil Background Value[a]				**0.054**
Qbt 2,3,4 Background Value[a]				**na[b]**
Sediment Background Value[a]				**0.068**
Industrial SAL[c]				**1200**
Construction Worker SAL[c]				**200**
Residential SAL[c]				**79**
RE00-08-16543	00-604027	0–1.2	SOIL	0.364
RE00-08-16545	00-604028	0–1	SOIL	0.59
RE00-08-16547	00-604029	0–1	QBT3	0.139
RE00-08-16549	00-604030	0–1	SOIL	0.068
RE00-08-16551	00-604031	0–1	SOIL	0.194

Notes: Results are in pCi/g. Data qualifiers are presented in Appendix A.
[a] BVs/FVs are from LANL (1998, 059730).
[b] na = Not available.
[c] SALs are from LANL (2015, 600929).

Table 7.13-1
Samples Collected and Analyses Requested at SWMU 01-006(a)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (Total)
RE00-08-16585	00-604039	0–1	SED	09-516[a]	09-515	09-516	09-516	09-516	09-516	09-515	09-517	09-515	09-516	09-517	09-517	09-515
RE00-08-16586	00-604039	3–4	QBT3	09-516	09-515	09-516	09-516	09-516	09-516	09-515	09-517	09-515	09-516	09-517	09-517	09-515
RE00-08-16587	00-604040	0–1	SED	09-512	09-511	09-512	09-512	09-512	09-512	09-511	09-513	09-511	09-512	09-513	09-513	09-511
RE00-08-16588	00-604040	3.25–4.25	QBT3	09-512	09-511	09-512	09-512	09-512	09-512	09-511	09-513	09-511	09-512	09-513	09-513	09-511
RE00-08-16589	00-604041	0–1	FILL	09-516	09-515	09-516	09-516	09-516	09-516	09-515	09-517	09-515	09-516	09-517	09-517	09-515
RE00-08-16590	00-604041	4–5	QBT3	09-516	09-515	09-516	09-516	09-516	09-516	09-515	09-517	09-515	09-516	09-517	09-517	09-515
RE01-12-697	00-604041	6–7	QBT3	—[b]	—	—	—	12-517	12-517	—	—	—	—	—	—	—
RE01-12-698	00-604041	8–9	QBT3	—	—	—	—	12-517	12-517	—	—	—	—	—	—	—
RE00-08-16591	00-604042	0–1	ALLH	09-512	09-511	09-512	09-512	09-512	09-512	09-511	09-513	09-511	09-512	09-513	09-513	09-511
RE00-08-16592	00-604042	2.25–3.25	QBT3	09-512	09-511	09-512	09-512	09-512	09-512	09-511	09-513	09-511	09-512	09-513	09-513	09-511
RE00-08-16593	00-604043	0–1	SED	09-512	09-511	09-512	09-512	09-512	09-512	09-511	09-513	09-511	09-512	09-513	09-513	09-511
RE00-08-16594	00-604043	1–2	QBT3	09-512	09-511	09-512	09-512	09-512	09-512	09-511	09-513	09-511	09-512	09-513	09-513	09-511
RE00-08-16595	00-604044	0–1	QBT3	09-516	09-515	09-516	09-516	09-516	09-516	09-515	09-517	09-515	09-516	09-517	09-517	09-515
RE00-08-16596	00-604044	1–2	QBT3	09-516	09-515	09-516	09-516	09-516	09-516	09-515	09-517	09-515	09-516	09-517	09-517	09-515
RE01-12-699	00-604044	3–4	QBT3	—	—	—	—	12-517	12-517	—	—	—	—	—	—	—
RE01-12-700	00-604044	5–6	QBT3	—	—	—	—	12-517	12-517	—	—	—	—	—	—	—
RE00-08-16597	00-604045	0–1	SED	09-516	09-515	09-516	09-516	09-516	09-516	09-515	09-517	09-515	09-516	09-517	09-517	09-515
RE00-08-16598	00-604045	1–2	QBT3	09-516	09-515	09-516	09-516	09-516	09-516	09-515	09-517	09-515	09-516	09-517	09-517	09-515
RE00-08-16599	00-604046	0–1	SED	09-516	09-515	09-516	09-516	09-516	09-516	09-515	09-517	09-515	09-516	09-517	09-517	09-515
RE00-08-16600	00-604046	1.5–2.5	QBT3	09-516	09-515	09-516	09-516	09-516	09-516	09-515	09-517	09-515	09-516	09-517	09-517	09-515
RE00-08-16601	00-604047	0–1	ALLH	09-542	09-541	09-542	09-542	09-542	09-542	09-541	09-540	09-541	09-542	09-540	09-540	09-541
RE00-08-16602	00-604047	1.5–2.5	ALLH	09-542	09-541	09-542	09-542	09-542	09-542	09-541	09-540	09-541	09-542	09-540	09-540	09-541
RE00-08-16603	00-604047	4–5	QBT3	09-542	09-541	09-542	09-542	09-542	09-542	09-541	09-540	09-541	09-542	09-540	09-540	09-541

[a] Analytical request number.

[b] — = Analysis not requested.

Table 7.13-2
Inorganic Chemicals Detected or Detected above BVs at SWMU 01-006(a)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Calcium	Chromium	Copper	Cyanide (Total)	Lead	Magnesium	Mercury	Nickel	Nitrate	Perchlorate	Selenium
Soil Background Value[a]				**29,200**	**0.83**	**8.17**	**295**	**1.83**	**6120**	**19.3**	**14.7**	**0.5**	**22.3**	**4610**	**0.1**	**15.4**	**na[b]**	**na**	**1.52**
Qbt 2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**2200**	**7.14**	**4.66**	**0.5**	**11.2**	**1690**	**0.1**	**6.58**	**na**	**na**	**0.3**
Sediment Background Value[a]				**15,400**	**0.83**	**3.98**	**127**	**1.31**	**4420**	**10.5**	**11.2**	**0.82**	**19.7**	**2370**	**0.1**	**9.38**	**na**	**na**	**0.3**
Industrial SSL[c]				**1,290,000**	**519**	**35.9**	**255,000**	**2580**	**na**	**505[d]**	**51,900**	**62.8**	**800**	**na**	**389**	**25,700**	**2,080,000**	**908**	**6490**
Construction Worker SSL[c]				**41,400**	**142**	**41.2**	**4390**	**148**	**na**	**134[d]**	**14,200**	**12**	**800**	**na**	**77.1**	**12,400**	**991,000**	**434**	**3100**
Residential SSL[c]				**78,000**	**31.3**	**7.07**	**15,600**	**156**	**na**	**96.6[d]**	**3130**	**11.1**	**400**	**na**	**23.5**	**1560**	**125,000**	**54.8**	**391**
RE00-08-16585	00-604039	0–1	SED	—[e]	—	—	—	—	—	—	—	—	—	—	—	—	0.14 (J)	—	—
RE00-08-16586	00-604039	3–4	QBT3	—	—	2.8 (J)	—	—	—	8.4 (J+)	11.6	0.51 (UJ)	—	—	—	—	—	—	—
RE00-08-16587	00-604040	0–1	SED	—	—	—	—	—	—	—	—	-	—	—	—	—	0.91	0.0026 (J)	—
RE00-08-16588	00-604040	3.25–4.25	QBT3	—	—	—	—	—	—	—	—	0.52 (U)	—	—	—	—	—	0.0034 (J)	—
RE00-08-16589	00-604041	0–1	FILL	—	—	—	—	—	—	—	—	0.53 (UJ)	—	—	—	—	—	—	—
RE00-08-16590	00-604041	4–5	QBT3	—	0.61 (U)	—	—	—	—	9.2 (J+)	5.5 (J)	0.53 (UJ)	14.6	—	—	—	0.4	0.0046 (J)	—
RE01-12-697	00-604041	6–7	QBT3	NA[f]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-698	00-604041	8–9	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-08-16591	00-604042	0–1	SOIL	—	—	—	—	—	—	—	—	0.55 (U)	—	—	—	—	—	—	—
RE00-08-16592	00-604042	2.25–3.25	QBT3	9970 (J)	0.54 (U)	5.5	235 (J)	1.5 (J)	2720 (J)	9.2 (J)	5.3 (J)	0.58 (U)	21.2 (J)	2420 (J)	-	7.6 (J)	0.39	0.017	—
RE00-08-16593	00-604043	0–1	SED	—	—	—	—	—	—	—	—	—	42.8 (J)	—	—	—	2.3	—	—
RE00-08-16594	00-604043	1–2	QBT3	—	—	—	—	—	—	18.5 (J-)	-	0.51 (U)	-	—	—	8.4 (J-)	—	—	—
RE00-08-16595	00-604044	0–1	QBT3	—	—	3.1 (J)	55	—	—	11.5 (J+)	4.7 (J)	0.52 (UJ)	12.6	—	—	—	—	—	—
RE00-08-16596	00-604044	1–2	QBT3	—	—	3.1 (J)	54	—	—	17.8 (J+)	—	—	—	—	—	9	0.096 (J)	—	—
RE01-12-699	00-604044	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE01-12-700	00-604044	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RE00-08-16597	00-604045	0–1	SED	—	—	—	—	—	7640	—	—	—	—	—	—	—	0.43	—	—
RE00-08-16598	00-604045	1–2	QBT3	—	—	—	—	—	5490	—	—	0.51 (UJ)	—	—	—	—	0.16 (J)	—	—
RE00-08-16599	00-604046	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	0.084 (J)	—	0.53 (U)
RE00-08-16600	00-604046	1.5–2.5	QBT3	—	—	—	—	—	—	—	—	0.51 (UJ)	—	—	—	—	—	—	—
RE00-08-16601	00-604047	0–1	SOIL	—	—	—	—	—	—	—	—	—	—	—	0.203	—	0.15 (J)	—	—
RE00-08-16602	00-604047	1.5–2.5	SOIL	—	—	—	—	—	—	—	—	0.6 (U)	—	—	—	—	—	0.0039 (J)	—
RE00-08-16603	00-604047	4–5	QBT3	—	—	—	—	—	—	14.5 (J)	—	—	—	—	—	7.5 (J)	—	—	0.35 (J)

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] BVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SSLs are from NMED (2017, 602273) unless otherwise noted.

[d] SSL for total chromium.

[e] — = Not detected or not detected above BV.

[f] NA = Not analyzed.

Table 7.13-3
Organic Chemicals Detected at SWMU 01-006(a)

Sample ID	Location ID	Depth (ft)	Media	Acetone	Aroclor-1260	Bis(2-ethylhexyl)phthalate	Di-n-butylphthalate	Methylene Chloride
Industrial SSL[a]				**959,000**	**11.1**	**1830**	**91,600**	**5110**
Construction Worker SSL[a]				**241,000**	**85.3**	**5380**	**26,900**	**118**
Residential SSL[a]				**66,300**	**2.43**	**380**	**6160**	**409**
RE00-08-16585	00-604039	0–1	SED	—[b]	0.049	—	—	—
RE00-08-16586	00-604039	3–4	QBT3	—	0.013 (J)	—	—	0.0089
RE00-08-16587	00-604040	0–1	SED	—	0.052	—	—	0.0017 (J)
RE00-08-16588	00-604040	3.25–4.25	QBT3	—	0.0085 (J)	—	—	0.0036 (J)
RE00-08-16589	00-604041	0–1	FILL	—	0.021 (J)	—	—	—
RE00-08-16590	00-604041	4–5	QBT3	—	0.013 (J)	—	—	—
RE00-08-16591	00-604042	0–1	SOIL	—	0.02 (J)	—	—	0.0025 (J)
RE00-08-16592	00-604042	2.25–3.25	QBT3	0.0049 (J)	—	0.057 (J)	-	0.0014 (J)
RE00-08-16593	00-604043	0–1	SED	—	0.009 (J)	—	0.054 (J)	—
RE00-08-16595	00-604044	0–1	QBT3	—	0.0081 (J)	—	—	—
RE00-08-16597	00-604045	0–1	SED	—	0.0083 (J)	0.097 (J)	0.15 (J)	—
RE00-08-16599	00-604046	0–1	SED	—	0.012 (J)	—	—	0.0093
RE00-08-16601	00-604047	0–1	SOIL	—	0.029 (J)	—	—	0.021 (J)
RE00-08-16602	00-604047	1.5–2.5	SOIL	—	0.038 (J)	—	—	0.025 (J)
RE00-08-16603	00-604047	4–5	QBT3	—	—	2.7 (J)	—	—

[a] SSLs are from NMED (2017, 602273) unless otherwise noted.

[b] — = Not detected.

Table 7.13-4
Radionuclides Detected or Detected above BVs/FVs at SWMU 01-006(a)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Plutonium-238	Plutonium-239/240	Uranium-234	Uranium-235/236	Uranium-238
Soil Background Value[a]				**0.013**	**0.023**	**0.054**	**2.59**	**0.2**	**2.29**
Qbt 2,3,4 Background Value[a]				**na[b]**	**na**	**na**	**1.98**	**0.09**	**1.93**
Sediment Background Value[a]				**0.04**	**0.006**	**0.068**	**2.59**	**0.2**	**2.29**
Industrial SAL[c]				**1000**	**1300**	**1200**	**3100**	**160**	**710**
Construction Worker SAL[c]				**230**	**230**	**200**	**1000**	**130**	**340**
Residential SAL[c]				**83**	**84**	**79**	**290**	**42**	**150**
RE00-08-16585	00-604039	0–1	SED	—[d]	—	4.45	—	—	—
RE00-08-16586	00-604039	3–4	QBT3	—	—	1.61	—	—	—
RE00-08-16587	00-604040	0–1	SED	—	—	5.52	—	—	—
RE00-08-16588	00-604040	3.25–4.25	QBT3	—	—	0.88 (J)	—	—	—
RE00-08-16589	00-604041	0–1	FILL	—	—	1.92	—	—	—
RE00-08-16590	00-604041	4–5	QBT3	—	—	7.1	—	0.214	—
RE01-12-697	00-604041	6–7	QBT3	NA[e]	0.031	10	—	—	—
RE01-12-698	00-604041	8–9	QBT3	NA	—	3.64	—	—	—
RE00-08-16591	00-604042	0–1	SOIL	0.187 (J)	—	0.694 (J)	—	—	—
RE00-08-16593	00-604043	0–1	SED	0.466 (J)	—	25.8	—	0.329	—
RE00-08-16594	00-604043	1–2	QBT3	—	—	8.23	—	—	—
RE00-08-16595	00-604044	0–1	QBT3	—	—	1.2	—	—	—
RE00-08-16596	00-604044	1–2	QBT3	—	—	0.116	—	0.173	—
RE01-12-699	00-604044	3–4	QBT3	NA	—	0.0399	—	0.131	—
RE01-12-700	00-604044	5–6	QBT3	NA	—	0.0249	—	0.116	—
RE00-08-16597	00-604045	0–1	SED	—	—	4.07	4.15 (J)	0.357	3.12
RE00-08-16598	00-604045	1–2	QBT3	—	—	0.524	—	0.198	—
RE00-08-16599	00-604046	0–1	SED	—	—	0.59	—	—	—
RE00-08-16600	00-604046	1.5–2.5	QBT3	—	—	0.093	—	—	—
RE00-08-16601	00-604047	0–1	SOIL	—	—	2.42	—	—	—
RE00-08-16602	00-604047	1.5–2.5	SOIL	—	—	4.08	—	—	—
RE00-08-16603	00-604047	4–5	QBT3	—	—	0.109	—	—	—

Notes: Results are in pCi/g. Data qualifiers are presented in Appendix A.

[a] BVs/FVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SALs are from LANL 2015, 600929.

[d] — = Not detected or not detected above BV.

[e] NA = Not analyzed.

Table 7.14-1
Samples Collected and Analyses Requested at AOC 01-006(e)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (Total)
RE00-08-16285	00-603872	11–12	QBT3	09-770[a]	09-769	09-770	09-770	09-770	09-770	09-769	09-771	09-769	09-770	09-771	09-771	09-769
RE00-08-16284	00-603872	9–10	QBT3	09-770	09-769	09-770	09-770	09-770	09-770	09-769	09-771	09-769	09-770	09-771	09-771	09-769
RE00-08-16288	00-603874	5–6	QBT3	09-770	09-769	09-770	09-770	09-770	09-770	09-769	09-771	09-769	09-770	09-771	09-771	09-769
RE00-08-16289	00-603874	7–8	QBT3	09-770	09-769	09-770	09-770	09-770	09-770	09-769	09-771	09-769	09-770	09-771	09-771	09-769
RE01-12-108	00-603874	9–10	QBT3	—[b]	—	—	—	—	—	12-1047	—	—	—	—	—	—
RE00-08-16292	00-603876	4–5	QBT3	09-770	09-769	09-770	09-770	09-770	09-770	09-769	09-771	09-769	09-770	09-771	09-771	09-769
RE00-08-16293	00-603876	6–7	QBT3	09-770	09-769	09-770	09-770	09-770	09-770	09-769	09-771	09-769	09-770	09-771	09-771	09-769
RE01-12-13361	00-603876	9–10	QBT3	—	—	—	—	—	—	12-1012_1	—	—	—	—	—	—

[a] Analytical request number.
[b] — = Analysis not requested.

Table 7.14-2
Inorganic Chemicals Detected or Detected above BVs at AOC 01-006(e)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Barium	Chromium	Cyanide (Total)	Nickel	Selenium
Soil Background Value[a]				**8.17**	**295**	**19.3**	**0.5**	**15.4**	**1.52**
Qbt 2,3,4 Background Value[a]				**2.79**	**46**	**7.14**	**0.5**	**6.58**	**0.3**
Sediment Background Value[a]				**3.98**	**127**	**10.5**	**0.82**	**9.38**	**0.3**
Industrial SSL[b]				**36**	**255,000**	**505[c]**	**62.8**	**25,700**	**6490**
Construction Worker SSL[b]				**41**	**4,390**	**134[c]**	**12**	**12,400**	**3100**
Residential SSL[b]				**7.1**	**15,600**	**96.6[c]**	**11.1**	**1560**	**391**
RE00-08-16284	00-603872	9–10	QBT3	—[d]	—	—	—	—	0.59 (U)
RE00-08-16285	00-603872	11–12	QBT3	—	—	—	—	—	0.6 (U)
RE00-08-16288	00-603874	5–6	QBT3	—	69.4	—	0.61 (UJ)	—	0.61 (U)
RE00-08-16289	00-603874	7-8	QBT3	2.9	106	9	0.61 (UJ)	—	0.61 (U)
RE01-12-108	00-603874	9–10	QBT3	NA[e]	—	—	NA	—	NA
RE00-08-16292	00-603876	4–5	QBT3	—	—	9.4	0.57 (UJ)	—	0.57 (U)
RE00-08-16293	00-603876	6–7	QBT3	—	—	20.4	—	11.2	—
RE01-12-13361	00-603876	9–10	QBT3	NA	—	26.7 (J-)	NA	—	NA

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.
[a] BVs are from LANL (1998, 059730).
[b] SSLs are from NMED (2017, 602273) unless otherwise noted.
[c] SSL for total chromium.
[d] — = Not detected or not detected above BV.
[e] NA = Not analyzed.

Table 7.14-3
Organic Chemicals Detected at AOC 01-006(e)

Sample ID	Location ID	Depth (ft)	Media	Acetone	Benzyl Alcohol
Industrial SSL[a]				**959,000**	**82,000**
Construction Worker SSL[a]				**241,000**	**26,900**
Residential SSL[a]				**66,300**	**6300**
RE00-08-16285	00-603872	11–12	QBT3	0.0063 (J)	—[b]
RE00-08-16289	00-603874	7–8	QBT3	0.0033 (J)	—
RE00-08-16293	00-603876	6–7	QBT3	—	1.8

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] SSLs are from NMED (2017, 602273) unless otherwise noted.

[b] — = Not detected or not detected above BV.

Table 7.17-1
Samples Collected and Analyses Requested at SWMU 01-007(c)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (Total)
RE00-08-16343	00-603895	3.25–4.25	QBT3	09-625[a]	09-624	09-625	09-625	09-625	09-625	09-624	09-623	09-624	09-625	09-623	09-623	09-624
RE00-08-16344	00-603895	5.25–6.25	QBT3	09-625	09-624	09-625	09-625	09-625	09-625	09-624	09-623	09-624	09-625	09-623	09-623	09-624
RE01-12-572	00-603895	7–8	FILL	—[b]	—	—	—	—	—	12-751	—	—	—	—	—	—
RE01-12-573	00-603895	9–10	QBT3	—	—	—	—	—	—	12-751	—	—	—	—	—	—
RE01-12-575	00-603897	11–12	QBT3	—	—	—	—	—	—	12-731	—	—	—	—	—	—
RE00-08-16347	00-603897	5.5–7	QBT3	09-625	09-624	09-625	09-625	09-625	09-625	09-624	09-623	09-624	09-625	09-623	09-623	09-624
RE00-08-16348	00-603897	7.5–8.5	QBT3	09-625	09-624	09-625	09-625	09-625	09-625	09-624	09-623	09-624	09-625	09-623	09-623	09-624
RE01-12-574	00-603897	9–10	QBT3	—	—	—	—	—	—	12-731	—	—	—	—	—	—
RE00-08-16349	00-603898	1.25–2.25	QBT3	09-641	09-640	09-641	09-641	09-641	09-641	09-640	09-639	09-640	09-641	09-639	09-639	09-640
RE00-08-16350	00-603898	3.25–4.5	QBT3	09-641	09-640	09-641	09-641	09-641	09-641	09-640	09-639	09-640	09-641	09-639	09-639	09-640
RE01-12-576	00-603898	5–6	QBT3	—	—	—	—	—	—	12-731	—	—	—	—	—	—
RE01-12-577	00-603898	7–8	QBT3	—	—	—	—	—	—	12-731	—	—	—	—	—	—
RE00-08-16353	00-603900	1.25–2.25	QBT3	09-641	09-640	09-641	09-641	09-641	09-641	09-640	09-639	09-640	09-641	09-639	09-639	09-640
RE00-08-16354	00-603900	3.25–4.25	QBT3	09-641	09-640	09-641	09-641	09-641	09-641	09-640	09-639	09-640	09-641	09-639	09-639	09-640
RE01-12-578	00-603900	5–6	QBT3	—	—	—	—	—	—	12-751	—	—	—	—	—	—
RE01-12-579	00-603900	7–8	QBT3	—	—	—	—	—	—	12-751	—	—	—	—	—	—
RE01-12-563	01-614771	1–2	FILL	—	—	—	—	—	—	12-751	—	—	—	—	—	—
RE01-12-564	01-614771	4–5	QBT3	—	—	—	—	—	—	12-751	—	—	—	—	—	—

Table 7.17-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	SVOCs	VOCs	Cyanide (Total)
RE01-12-565	01-614771	7–8	QBT3	—	—	—	—	—	—	12-751	—	—	—	—	—	—
RE01-12-566	01-614772	1–2	FILL	—	—	—	—	—	—	12-742	—	—	—	—	—	—
RE01-12-567	01-614772	4–5	QBT3	—	—	—	—	—	—	12-742	—	—	—	—	—	—
RE01-12-568	01-614772	7–8	QBT3	—	—	—	—	—	—	12-742	—	—	—	—	—	—
RE01-12-569	01-614773	1–2	FILL	—	—	—	—	—	—	12-751	—	—	—	—	—	—
RE01-12-570	01-614773	4–5	FILL	—	—	—	—	—	—	12-751	—	—	—	—	—	—
RE01-12-571	01-614773	7–8	FILL	—	—	—	—	—	—	12-751	—	—	—	—	—	—

[a] Analytical request number.

[b] — = Analysis not requested.

Table 7.17-2
Inorganic Chemicals Detected or Detected above BVs at SWMU 01-007(c)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Chromium	Cyanide (Total)	Lead	Nickel	Nitrate	Selenium
Soil Background Value[a]				**0.83**	**19.3**	**0.5**	**22.3**	**15.4**	**na[b]**	**1.52**
Qbt 2,3,4 Background Value[a]				**0.5**	**7.14**	**0.5**	**11.2**	**6.58**	**na**	**0.3**
Sediment Background Value[a]				**0.83**	**10.5**	**0.82**	**19.7**	**9.38**	**na**	**0.3**
Industrial SSL[c]				**519**	**505[d]**	**62.8**	**800**	**25,700**	**2,080,000**	**6490**
Construction Worker SSL[c]				**142**	**134[d]**	**12**	**800**	**12,400**	**991,000**	**3100**
Residential SSL[c]				**31.3**	**96.6[d]**	**11.1**	**400**	**1560**	**125,000**	**391**
RE00-08-16343	00-603895	3.25–4.25	QBT3	—[e]	—	0.54 (U)	38.3 (J)	—	—	0.4 (J)
RE00-08-16344	00-603895	5.25–6.25	QBT3	0.53 (U)	28.8	0.53 (U)	13.4 (J)	13.1	—	0.36 (J)
RE00-08-16347	00-603897	5.5–7	QBT3	—	—	0.6 (U)	11.4 (J)	—	—	0.41 (J)
RE00-08-16348	00-603897	7.5–8.5	QBT3	—	8.9 (J)	0.57 (U)	18.4 (J)	6.8	—	0.36 (J)
RE00-08-16349	00-603898	1.25–2.25	QBT3	—	10.5 (J+)	—	—	—	—	0.35 (J)
RE00-08-16350	00-603898	3.25–4.5	QBT3	—	15.8 (J+)	0.55 (U)	—	8.8	0.16 (J)	—
RE01-12-576	00-603898	5–6	QBT3	NA[f]	10.8	NA	NA	—	NA	NA
RE00-08-16353	00-603900	1.25–2.25	QBT3	—	10.3 (J+)	0.54 (U)	—	—	0.18 (J)	0.31 (J)
RE00-08-16354	00-603900	3.25–4.25	QBT3	0.54 (U)	25.8 (J+)	0.54 (U)	—	12.3	—	0.31 (J)
RE01-12-565	01-614771	7–8	QBT3	NA	13.8 (J)	NA	NA	—	NA	NA
RE01-12-568	01-614772	7–8	QBT3	NA	28.4	NA	NA	—	NA	NA

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] BVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SSLs are from NMED (2017, 602273).

[d] SSL for total chromium.

[e] — = Not detected or not detected above BV.

[f] NA = Not analyzed.

Table 7.17-3
Organic Chemicals Detected at SWMU 01-007(c)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1260	Benzene	Butylbenzene[n-]	Butylbenzene[sec-]	Chloroform	Isopropyltoluene[4-]	Styrene	Toluene	Vinyl Chloride	Xylene (Total)
Industrial SSL[a]				**11.1**	**420**	**58,000[b]**	**120,000[b]**	**28.4**	**14,100[c]**	**50,900**	**61,100**	**28.3**	**4240**
Construction Worker SSL[a]				**85.3**	**1431**	**15,500[d]**	**15,500[d]**	**133**	**2710[c]**	**10,100**	**14,000**	**160**	**791**
Residential SSL[a]				**2.43**	**17.7**	**3900[b]**	**7800[b]**	**5.85**	**2350[c]**	**7230**	**5220**	**0.741**	**863**
RE00-08-16343	00-603895	3.25–4.25	QBT3	0.038	—[e]	—	—	—	—	—	—	—	—
RE00-08-16344	00-603895	5.25–6.25	QBT3	0.0077 (J)	—	—	—	—	—	—	—	—	—
RE00-08-16348	00-603897	7.5–8.5	QBT3	—	0.0002 (J)	0.00041 (J)	0.00019 (J)	0.00012 (J)	0.00023 (J)	-	0.00038 (J)	0.0017 (J)	0.0051 (J)
RE00-08-16350	00-603898	3.25–4.5	QBT3	—	—	—	—	—	—	0.00041 (J)	—	—	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.
[a] SSLs are from NMED (2017, 602273) unless otherwise noted.
[b] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).
[c] Isopropyl benzene used as a surrogate based on structural similarity.
[d] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).
[e] — = Not detected or not detected above BV.

Table 7.17-4
Radionuclides Detected or Detected above BVs/FVs at SWMU 01-007(c)

Sample ID	Location ID	Depth (ft)	Media	Plutonium-238	Plutonium-239/240	Uranium-235/236
Soil Background Value[a]				**0.023**	**0.054**	**0.2**
Qbt 2,3,4 Background Value[a]				**na[b]**	**na**	**0.09**
Sediment Background Value[a]				**0.006**	**0.068**	**0.2**
Industrial SAL[c]				**1300**	**1200**	**160**
Construction Worker SAL[c]				**230**	**200**	**130**
Residential SAL[c]				**84**	**70**	**42**
RE00-08-16343	00-603895	3.25–4.25	QBT3	—[d]	0.459	—
RE00-08-16347	00-603897	5.5–7	QBT3	—	0.234	—
RE00-08-16349	00-603898	1.25–2.25	QBT3	—	—	0.13
RE00-08-16353	00-603900	1.25–2.25	QBT3	0.112	0.272	—

Notes: Results are in pCi/g. Data qualifiers are presented in Appendix A.
[a] BVs/FVs are from LANL (1998, 059730).
[b] na = Not available.
[c] SALs are from LANL (2015, 600929).
[d] — = Not detected or not detected above BV.

Table 8.2-1
Samples Collected and Analyses Requested at SWMUs 03-038(a,b)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	PCBs	Perchlorate	Strontium-90	VOCs	SVOCs	Cyanide (Total)
RE00-09-343	00-604254	2–3	QBT3	09-647[a]	09-647	09-647	09-647	09-647	09-647	09-647	09-647	09-647	09-647	09-647	09-647	09-647
RE00-09-344	00-604254	4–5	QBT3	09-661	09-660	09-661	09-661	09-661	09-661	09-660	09-659	09-660	09-661	09-659	09-659	09-660
RE00-09-345	00-604254	6–7	QBT3	09-661	09-660	09-661	09-661	09-661	09-661	09-660	09-659	09-660	09-661	09-659	09-659	09-660
RE00-09-346	00-604255	1.5–2.5	QBT3	09-661	09-660	09-661	09-661	09-661	09-661	09-660	09-659	09-660	09-661	09-659	09-659	09-660
RE00-09-347	00-604255	3.5–4.5	QBT3	09-661	09-660	09-661	09-661	09-661	09-661	09-660	09-659	09-660	09-661	09-659	09-659	09-660
RE00-09-348	00-604255	5.5–6.5	QBT3	09-661	09-660	09-661	09-661	09-661	09-661	09-660	09-659	09-660	09-661	09-659	09-659	09-660
RE00-09-350	00-604256	2–3	QBT3	09-661	09-660	09-661	09-661	09-661	09-661	09-660	09-659	09-660	09-661	09-659	09-659	09-660
RE00-09-351	00-604256	4–5	QBT3	09-661	09-660	09-661	09-661	09-661	09-661	09-660	09-659	09-660	09-661	09-659	09-659	09-660
RE00-09-349	00-604256	7.25–8.25	QBT3	09-661	09-660	09-661	09-661	09-661	09-661	09-660	09-659	09-660	09-661	09-659	09-659	09-660
RE00-09-352	00-604257	1–2	QBT3	09-661	09-660	09-661	09-661	09-661	09-661	09-660	09-659	09-660	09-661	09-659	09-659	09-660
RE00-09-353	00-604257	3–4	QBT3	09-661	09-660	09-661	09-661	09-661	09-661	09-660	09-659	09-660	09-661	09-659	09-659	09-660
RE00-09-354	00-604257	5–6	QBT3	09-661	09-660	09-661	09-661	09-661	09-661	09-660	09-659	09-660	09-661	09-659	09-659	09-660
RE03-12-42	00-604257	7–8	FILL	—[b]	—	—	—	—	—	12-172	—	—	—	—	—	—
RE03-12-43	00-604257	9–10	FILL	—	—	—	—	—	—	12-172	—	—	—	—	—	—
RE00-09-355	00-604258	2.25–3.25	QBT3	09-661	09-660	09-661	09-661	09-661	09-661	09-660	09-659	09-660	09-661	09-659	09-659	09-660
RE00-09-356	00-604258	4.25–5.25	QBT3	09-661	09-660	09-661	09-661	09-661	09-661	09-660	09-659	09-660	09-661	09-659	09-659	09-660
RE00-09-357	00-604258	6.25–7.25	QBT3	09-661	09-660	09-661	09-661	09-661	09-661	09-660	09-659	09-660	09-661	09-659	09-659	09-660
RE03-12-41	00-604259	10–11	FILL	—	—	—	—	—	—	12-203-2	—	—	—	—	—	—
RE00-09-358	00-604259	2.25–3.25	QBT3	09-661	09-660	09-661	09-661	09-661	09-661	09-660	09-659	09-660	09-661	09-659	09-659	09-660
RE00-09-359	00-604259	4.25–5.25	QBT3	09-661	09-660	09-661	09-661	09-661	09-661	09-660	09-659	09-660	09-661	09-659	09-659	09-660
RE00-09-360	00-604259	6.25–7.25	QBT3	09-661	09-660	09-661	09-661	09-661	09-661	09-660	09-659	09-660	09-661	09-659	09-659	09-660
RE03-12-40	00-604259	8–9	FILL	—	—	—	—	—	—	12-203-2	—	—	—	—	—	—
RE03-12-12008	03-1	11–12	QBT3	—	—	—	—	—	—	12-1046	—	—	—	—	—	—
RE03-12-12007	03-1	9–10	QBT3	—	—	—	—	—	—	12-1046	—	—	—	—	—	—
RE03-12-33	03-614730	10–11	FILL	—	—	—	—	—	—	12-203-2	—	—	—	—	—	—
RE03-12-32	03-614730	8–9	FILL	—	—	—	—	—	—	12-203-2	—	—	—	—	—	—
RE03-12-34	03-614731	7–8	FILL	—	—	—	—	—	—	12-237	—	—	—	—	—	—
RE03-12-35	03-614731	9–10	FILL	—	—	—	—	—	—	12-237	—	—	—	—	—	—
RE03-12-36	03-614732	7–8	FILL	—	—	—	—	—	—	12-237	—	—	—	—	—	—
RE03-12-37	03-614732	9–10	QBT3	—	—	—	—	—	—	12-237	—	—	—	—	—	—

[a] Analytical request number.
[b] — = Analysis not requested.

Table 8.2-2
Inorganic Chemicals Detected or Detected above BVs at SWMUs 03-038(a,b)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Arsenic	Barium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Nickel	Nitrate	Perchlorate	Selenium
Soil Background Value[a]				**0.83**	**8.17**	**295**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**15.4**	**na[b]**	**na**	**1.52**
Qbt 2,3,4 Background Value[a]				**0.5**	**2.79**	**46**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**6.58**	**na**	**na**	**0.3**
Sediment Background Value[a]				**0.83**	**3.98**	**127**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**9.38**	**na**	**na**	**0.3**
Industrial SSL[c]				**519**	**35.9**	**255,000**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**25,700**	**2,080,000**	**908**	**6490**
Construction Worker SSL[c]				**142**	**41.2**	**4,390**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**12,400**	**991,000**	**434**	**3100**
Residential SSL[c]				**31.3**	**7.07**	**15,600**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**1560**	**125,000**	**54.8**	**391**
RE00-09-343	00-604254	2–3	QBT3	—[e]	—	90.3 (J-)	2420	25.4 (J-)	—	—	—	12.5 (J-)	14.1 (J)	—	0.0084 (J)	0.54 (U)
RE00-09-344	00-604254	4–5	QBT3	—	—	72.9	—	13.8	—	—	0.54 (U)	15.4 (J-)	8.7	0.22	0.036	—
RE00-09-345	00-604254	6–7	QBT3	—	3.1	74.8	2520	16.4	—	5.2	0.53 (U)	14.9 (J-)	10.1	2.7	0.039 (J)	—
RE00-09-346	00-604255	1.5–2.5	QBT3	0.59 (U)	—	—	—	—	—	—	—	—	—	5.4	—	—
RE00-09-347	00-604255	3.5–4.5	QBT3	—	—	—	—	—	—	—	0.6 (U)	—	—	5.9	—	—
RE00-09-348	00-604255	5.5–6.5	QBT3	—	—	46.7	—	7.7	—	—	0.59 (U)	—	—	4.3	—	—
RE00-09-350	00-604256	2–3	QBT3	0.59 (U)	—	—	—	—	—	—	—	—	—	8.3	—	—
RE00-09-351	00-604256	4–5	QBT3	—	—	—	—	—	—	—	—	—	—	8.6	—	—
RE00-09-349	00-604256	7.25–8.25	QBT3	—	—	64.4	4740	14.2	—	—	0.59 (U)	12.6 (J-)	8	4.2	—	—
RE00-09-352	00-604257	1–2	QBT3	0.58 (U)	—	—	—	—	—	—	0.58 (U)	—	—	3	—	—
RE00-09-353	00-604257	3–4	QBT3	0.59 (U)	—	—	—	—	—	—	0.59 (U)	—	—	6.1	—	—
RE00-09-354	00-604257	5–6	QBT3	—	—	95.8	2950	10.9	—	—	0.96	13.9 (J-)	—	2.7	—	—
RE03-12-42	00-604257	7–8	FILL	NA[f]	NA	—	NA	—	NA	—	NA	—	—	NA	NA	NA
RE03-12-43	00-604257	9–10	FILL	NA	NA	—	NA	—	NA	—	NA	—	—	NA	NA	NA
RE00-09-355	00-604258	2.25–3.25	QBT3	0.58 (U)	—	—	—	—	-	—	-	—	—	1	—	—
RE00-09-356	00-604258	4.25–5.25	QBT3	0.6 (U)	—	—	—	—	-	—	0.6 (U)	—	—	4.3	—	—
RE00-09-357	00-604258	6.25–7.25	QBT3	—	—	73.8	2560	151	4.5	10.3	0.55 (U)	22 (J-)	71.6	1.9	—	0.55 (U)
RE00-09-358	00-604259	2.25–3.25	QBT3	—	—	—	—	—	—	7.6	0.53 (U)	—	—	0.22	—	—
RE00-09-359	00-604259	4.25–5.25	QBT3	—	—	78.6	—	19.4	—	—	0.54 (J)	16.3 (J-)	11.5	2.3	—	0.56 (U)
RE00-09-360	00-604259	6.25–7.25	QBT3	—	—	95.7	—	15.9	—	5.7	0.55 (U)	19 (J-)	10	1.4	—	0.55 (U)
RE03-12-40	00-604259	8–9	FILL	NA	NA	—	NA	—	NA	—	NA	—	—	NA	NA	NA
RE03-12-41	00-604259	10–11	FILL	NA	NA	—	NA	—	NA	—	NA	—	—	NA	NA	NA
RE03-12-12007	03-1	9–10	QBT3	NA	NA	—	NA	27.5 (J-)	NA	—	NA	—	—	NA	NA	NA
RE03-12-12008	03-1	11–12	QBT3	NA	NA	—	NA	—	NA	—	NA	—	—	NA	NA	NA
RE03-12-32	03-614730	8–9	FILL	NA	NA	—	NA	—	NA	—	NA	—	—	NA	NA	NA
RE03-12-33	03-614730	10–11	FILL	NA	NA	—	NA	—	NA	—	NA	26.1	—	NA	NA	NA
RE03-12-34	03-614731	7–8	FILL	NA	NA	—	NA	—	NA	—	NA	—	—	NA	NA	NA

Table 8.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Arsenic	Barium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Nickel	Nitrate	Perchlorate	Selenium
Soil Background Value[a]				**0.83**	**8.17**	**295**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**15.4**	**na[b]**	**na**	**1.52**
Qbt2, 3, 4 Background Value[a]				**0.5**	**2.79**	**46**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**6.58**	**na**	**na**	**0.3**
Sediment Background Value[a]				**0.83**	**3.98**	**127**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**9.38**	**na**	**na**	**0.3**
Industrial SSL[c]				**519**	**35.9**	**255,000**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**25,700**	**2,080,000**	**908**	**6490**
Construction Worker SSL[c]				**142**	**41.2**	**4,390**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**12,400**	**991,000**	**434**	**3100**
Residential SSL[c]				**31.3**	**7.07**	**15,600**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**1560**	**125,000**	**54.8**	**391**
RE03-12-35	03-614731	9–10	FILL	NA	NA	—	NA	—	NA	—	NA	—	—	NA	NA	NA
RE03-12-36	03-614732	7–8	FILL	NA	NA	—	NA	—	NA	—	NA	—	—	NA	NA	NA
RE03-12-37	03-614732	9–10	QBT3	NA	NA	—	NA	—	NA	—	NA	—	—	NA	NA	NA

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] BVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SSLs are from NMED (2017, 602273) unless otherwise noted.

[d] SSL for total chromium.

[e] — = Not detected or not detected above BV.

[f] NA = Not analyzed.

Table 8.2-3
Organic Chemicals Detected at SWMUs 03-038(a,b)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1254	Aroclor-1260	Benzo(a)pyrene	Benzo(g,h,i)perylene	Bis(2-ethylhexyl)phthalate	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Hexanone[2-]	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene	Toluene
Industrial SSL[a]				**11.0**	**11.1**	**23.6**	**25,300**[b]	**1830**	**3230**	**3.23**	**33,700**	**1300**[c]	**32.3**	**25,300**	**25,300**	**61,100**
Construction Worker SSL[a]				**4.91**	**85.3**	**106**	**7530**[b]	**5380**	**23,100**	**24.0**	**10,000**	**1760**[d]	**240**	**7530**	**7530**	**14,000**
Residential SSL[a]				**1.14**	**2.43**	**1.12**	**1740**[b]	**380**	**153**	**0.153**	**2320**	**200**[c]	**1.53**	**1740**	**1740**	**5220**
RE00-09-343	00-604254	2–3	QBT3	0.0074 (J)	0.028 (J)	—[e]	—	0.066 (J)	—	—	—	—	—	—	—	—
RE00-09-344	00-604254	4–5	QBT3	0.0093 (J)	0.016 (J)	—	—	—	—	—	0.074 (J)	—	—	0.064 (J)	0.067 (J)	—
RE00-09-345	00-604254	6–7	QBT3	—	0.012 (J)	—	—	0.083 (J)	—	—	0.071 (J)	—	—	0.056 (J)	0.054 (J)	—
RE00-09-348	00-604255	5.5–6.5	QBT3	—	0.0077 (J)	—	—	—	—	—	—	—	—	—	—	—
RE00-09-351	00-604256	4–5	QBT3	0.013 (J)	0.0084 (J)	—	—	—	—	—	0.062 (J)	—	—	0.047 (J)	0.064 (J)	—
RE00-09-349	00-604256	7.25–8.25	QBT3	—	0.016 (J)	—	—	—	—	—	—	—	—	—	—	0.00057 (J)
RE00-09-352	00-604257	1–2	QBT3	—	—	—	0.32 (J)	—	—	0.17 (J)	—	—	0.2 (J)	—	—	—
RE00-09-354	00-604257	5–6	QBT3	—	0.016 (J)	—	—	—	—	—	—	—	—	—	—	—
RE00-09-357	00-604258	6.25–7.25	QBT3	—	0.02 (J)	—	—	—	—	—	0.042 (J)	—	—	—	0.062 (J)	—
RE00-09-358	00-604259	2.25–3.25	QBT3	—	0.014 (J)	—	—	—	—	—	—	—	—	—	—	—
RE00-09-359	00-604259	4.25–5.25	QBT3	0.039	0.026 (J)	—	—	—	—	—	0.051 (J)	0.0056 (J)	—	—	0.05 (J)	0.0006 (J)
RE00-09-360	00-604259	6.25–7.25	QBT3	0.022 (J)	0.022 (J)	0.039 (J)	—	—	0.043 (J)	—	0.079 (J)	—	—	0.05 (J)	0.071 (J)	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] Pyrene used as a surrogate based on structural similarity.

[c] SSL are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

[d] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

[e] — = Not detected.

Table 8.4-1
Samples Collected and Analyses Requested at SWMU 03-055(c)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Mercury	PCBs	Perchlorate	Strontium-90	VOCs	SVOCs	Explosive Compounds	Cyanide (Total)
RE03-08-9417	03-603243	0–0.85	SED	08-357[a]	08-356	08-357	08-357	08-357	08-357	—[b]	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-08-9421	03-603243	0.85–1.64	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-12-21	03-603243	3–4	ALLH	—	—	—	—	—	—	12-163	—	—	—	—	—	—	—	—
RE03-12-22	03-603243	5–6	ALLH	—	—	—	—	—	—	12-163	—	—	—	—	—	—	—	—
RE03-08-9425	03-603245	0–0.46	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-08-9429	03-603245	0.46–1.05	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-12-19	03-603245	2–3	ALLH	—	—	—	—	—	—	12-163	—	—	—	—	—	—	—	—
RE03-12-20	03-603245	4–5	ALLH	—	—	—	—	—	—	12-163	—	—	—	—	—	—	—	—
RE03-08-9430	03-603247	0–0.66	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-08-9431	03-603248	0–1.08	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-08-9432	03-603248	1.08–4.43	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-12-17	03-603248	5–6	ALLH	—	—	—	—	—	—	12-163	—	—	—	—	—	—	—	—
RE03-12-18	03-603248	7–8	ALLH	—	—	—	—	—	—	12-163	—	—	—	—	—	—	—	—
RE03-08-9433	03-603250	0–0.66	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-08-9434	03-603250	0.66–1.64	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-08-9435	03-603250	1.64–2.3	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-08-9436	03-603250	2.3–3.12	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-12-15	03-603250	4–5	ALLH	—	—	—	—	—	—	12-163	—	—	—	—	—	—	—	—
RE03-12-16	03-603250	6–7	ALLH	—	—	—	—	—	—	12-163	—	—	—	—	—	—	—	—
RE03-08-9437	03-603254	0–1.15	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-12-23	03-603254	2–3	ALLH	—	—	—	—	—	—	12-163	—	—	—	—	—	—	—	—
RE03-12-24	03-603254	4–5	ALLH	—	—	—	—	—	—	12-163	—	—	—	—	—	—	—	—
RE03-08-9438	03-603255	0–1.48	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-08-9439	03-603256	0–0.66	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-12-25	03-603256	2–3	ALLH	—	—	—	—	—	—	12-163	—	—	—	—	—	—	—	—
RE03-12-26	03-603256	4–5	ALLH	—	—	—	—	—	—	12-163	—	—	—	—	—	—	—	—
RE03-08-9440	03-603257	0–0.79	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-08-9441	03-603258	0–1.48	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-08-9442	03-603258	1.48–2.13	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-08-9443	03-603258	2.13–3.12	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-08-9444	03-603258	3.12–3.61	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356
RE03-08-9445	03-603258	3.61–4	SED	08-357	08-356	08-357	08-357	08-357	08-357	—	08-356	08-354	08-356	08-357	08-354	08-354	08-355	08-356

[a] Analytical request number.
[b] — = Analysis not requested.

Table 8.4-2
Inorganic Chemicals Detected or Detected above BVs at SWMU 03-055(c)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Nitrate	Selenium	Vanadium	Zinc
Soil Background Value[a]				**8.17**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**na[b]**	**1.52**	**39.6**	**48.8**
Qbt 2,3,4 Background Value[a]				**2.79**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**na**	**0.3**	**17**	**63.5**
Sediment Background Value[a]				**3.98**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**na**	**0.3**	**19.7**	**60.2**
Industrial SSL[c]				**35.9**	**1110**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**2,080,000**	**6490**	**6530**	**389,000**
Construction Worker SSL[c]				**41.2**	**72.1**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**991,000**	**3100**	**614**	**186,000**
Residential SSL[c]				**7.07**	**70.5**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**125,000**	**391**	**394**	**23,500**
RE03-08-9417	03-603243	0–0.85	SED	—[e]	—	4440 (J)	—	—	—	1.94	—	1.22 (J+)	1.56 (U)	—	—
RE03-08-9421	03-603243	0.85–1.64	SED	—	—	—	—	—	—	2.79	21.7 (J)	1.17 (J+)	8.76 (U)	—	140 (J)
RE03-12-21	03-603243	3–4	SOIL	NA[f]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	279
RE03-12-22	03-603243	5–6	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	95.5
RE03-08-9425	03-603245	0–0.46	SED	—	—	—	—	—	—	—	—	1.06 (J-)	1.71 (U)	—	86.8 (J)
RE03-08-9429	03-603245	0.46–1.05	SED	—	—	—	—	—	—	—	—	—	1.82 (U)	—	98 (J)
RE03-12-19	03-603245	2–3	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	76.9
RE03-12-20	03-603245	4–5	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	113
RE03-08-9430	03-603247	0–0.66	SED	—	—	5670 (J)	—	—	—	—	—	1.59 (J+)	1.76 (U)	—	—
RE03-08-9431	03-603248	0–1.08	SED	—	—	—	10.6	—	—	—	25.6 (J)	1.57 (J+)	1.9 (U)	—	80.8 (J)
RE03-08-9432	03-603248	1.08–4.43	SED	—	—	—	—	—	—	—	70 (J)	-	1.76 (U)	—	102 (J)
RE03-12-17	03-603248	5–6	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	73.5
RE03-12-18	03-603248	7–8	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	51.5
RE03-08-9433	03-603250	0–0.66	SED	6.02	—	—	—	8.52	—	—	—	—	1.85 (U)	—	70.6 (J)
RE03-08-9434	03-603250	0.66–1.64	SED	—	—	—	11.1	—	11.6 (J)	—	—	—	1.73 (U)	—	117 (J)
RE03-08-9435	03-603250	1.64–2.3	SED	—	—	—	—	—	—	—	—	—	1.78 (U)	—	69.4 (J-)
RE03-08-9436	03-603250	2.3–3.12	SED	—	—	—	—	—	—	—	—	—	2.07 (U)	—	113 (J)
RE03-12-15	03-603250	4–5	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	56.3
RE03-12-16	03-603250	6–7	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE03-08-9437	03-603254	0–1.15	SED	—	—	—	—	—	—	—	—	—	2.17 (U)	—	130 (J)
RE03-12-23	03-603254	2–3	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE03-12-24	03-603254	4–5	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE03-08-9438	03-603255	0–1.48	SED	—	0.573 (U)	—	—	—	—	—	—	1.1 (J+)	1.13 (J)	24 (J)	—
RE03-08-9439	03-603256	0–0.66	SED	—	—	—	—	—	15.1 (J)	—	—	—	1.88 (U)	—	146 (J)
RE03-12-25	03-603256	2–3	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	110
RE03-12-26	03-603256	4–5	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—
RE03-08-9440	03-603257	0–0.79	SED	—	—	—	—	—	—	—	—	—	0.642 (J)	—	—

Table 8.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Nitrate	Selenium	Vanadium	Zinc
Soil Background Value[a]				**8.17**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**na[b]**	**1.52**	**39.6**	**48.8**
Qbt2, 3, 4 Background Value[a]				**2.79**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**na**	**0.3**	**17**	**63.5**
Sediment Background Value[a]				**3.98**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**na**	**0.3**	**19.7**	**60.2**
Industrial SSL[c]				**35.9**	**1110**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**2,080,000**	**6490**	**6530**	**389,000**
Construction Worker SSL[c]				**41.2**	**72.1**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**991,000**	**3100**	**614**	**186,000**
Residential SSL[c]				**7.07**	**70.5**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**125,000**	**391**	**394**	**23,500**
RE03-08-9441	03-603258	0–1.48	SED	—	—	—	—	—	—	—	—	1.23 (J+)	1.81 (U)	—	276 (J)
RE03-08-9442	03-603258	1.48–2.13	SED	—	—	—	—	—	—	—	—	—	1.8 (U)	—	73.1 (J)
RE03-08-9443	03-603258	2.13–3.12	SED	—	—	—	—	—	—	—	36.1 (J)	—	1.69 (U)	—	—
RE03-08-9444	03-603258	3.12–3.61	SED	—	—	—	—	—	—	1.89	174 (J)	—	8.91 (U)	—	67 (J)
RE03-08-9445	03-603258	3.61–4	SED	—	—	—	—	—	—	—	50.3 (J)	—	1.92 (U)	—	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] BVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SSLs are from NMED (2017, 602273) unless otherwise noted.

[d] SSL for total chromium.

[e] — = Not detected or not detected above BV.

[f] NA = Not analyzed.

Table 8.4-3
Organic Chemicals Detected at SWMU 03-055(c)

Sample ID	Location ID	Depth (ft)	Media	Acenaphthene	Acetone	Anthracene	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Butanone[2-]	Chrysene
Industrial SSL[a]				**50,500**	**959,000**	**253,000**	**11.0**	**11.1**	**32**	**23.4**	**32**	**25300[b]**	**323**	**3,300,000[c]**	**1830**	**409,000**	**3230**
Construction Worker SSL[a]				**15,100**	**241,000**	**75,300**	**4.91**	**85.3**	**240**	**106**	**240**	**7530[b]**	**2310**	**1,310,000[d]**	**5380**	**91,200**	**23,100**
Residential SSL[a]				**3480**	**66,300**	**17,400**	**1.14**	**2.43**	**1.53**	**1.12**	**1.53**	**1740[b]**	**15.3**	**250,000[c]**	**380**	**37,300**	**153**
RE03-08-9417	03-603243	0–0.85	SED	—[e]	—	0.0123 (J)	0.0036 (J-)	0.0034 (J)	0.037 (J)	—	—	—	—	—	0.184 (J)	—	0.041 (J)
RE03-08-9421	03-603243	0.85–1.64	SED	—	—	0.00975 (J)	0.0042 (J-)	0.0037 (J)	0.031 (J)	—	—	—	—	—	0.251 (J)	—	—
RE03-08-9425	03-603245	0–0.46	SED	—	—	0.00858 (J)	0.0034 (J-)	0.0033 (J-)	0.0209 (J)	—	—	—	—	—	0.16 (J)	—	—
RE03-08-9429	03-603245	0.46–1.05	SED	—	—	—	0.0028 (J-)	0.0026 (J-)	0.0186 (J)	—	—	—	—	—	0.143 (J)	—	—
RE03-08-9430	03-603247	0–0.66	SED	—	—	—	0.0016 (J-)	—	—	—	—	—	—	—	0.253 (J)	—	—
RE03-08-9431	03-603248	0–1.08	SED	—	—	0.0101 (J)	0.0025 (J-)	0.0026 (J-)	0.0306 (J)	—	—	—	—	—	0.481	—	0.0445
RE03-08-9432	03-603248	1.08–4.43	SED	0.0462	0.00648	0.0674	0.0143 (J-)	0.0159 (J-)	0.15	0.138	0.242	0.0869	-	-	0.187 (J)	—	0.169
RE03-08-9433	03-603250	0–0.66	SED	0.0423 (J)	—	0.0654	0.0019 (J-)	0.0016 (J-)	0.0865	0.075 (J)	0.077 (J)	-	0.0558 (J)	-	0.191 (J)	—	0.0869
RE03-08-9434	03-603250	0.66–1.64	SED	—	—	—	0.0025 (J-)	0.0023 (J)	—	—	—	—	—	-	0.316	—	—
RE03-08-9435	03-603250	1.64–2.3	SED	—	—	—	—	0.002 (J)	—	—	—	—	—	0.36 (J)	2.39	0.23	0.0217 (J)
RE03-08-9436	03-603250	2.3–3.12	SED	—	—	—	0.0046 (J-)	0.0039 (J)	—	—	—	—	—	—	—	—	—
RE03-08-9437	03-603254	0–1.15	SED	—	—	0.023 (J)	0.0064 (J-)	0.0063 (J-)	0.0654	-	0.0849	—	0.0648	—	0.332	0.00397 (J)	—
RE03-08-9439	03-603256	0–0.66	SED	—	—	0.00882 (J)	0.0062 (J-)	0.0055 (J-)	0.0316 (J)	—	—	—	—	—	0.413 (J)	—	0.036 (J)
RE03-08-9440	03-603257	0–0.79	SED	—	—	0.0113 (J)	0.0046 (J-)	0.0044 (J-)	0.0338 (J)	—	—	—	—	—	0.128 (J)	—	0.049
RE03-08-9441	03-603258	0–1.48	SED	0.151	—	0.252	0.0044 (J-)	0.0048 (J-)	0.278	0.29 (J)	0.497 (J)	—	—	—	0.176 (J)	0.00368 (J)	0.277
RE03-08-9442	03-603258	1.48–2.13	SED	—	—	0.0102 (J)	0.0024 (J-)	0.0024 (J-)	0.0237 (J)	—	—	—	—	—	0.161 (J)	0.00993 (J)	0.0249 (J)
RE03-08-9443	03-603258	2.13–3.12	SED	0.478	—	0.664	0.029 (J-)	0.0344 (J)	1.31 (J)	1.3 (J)	2.29 (J)	0.594 (J)	—	—	0.16 (J)	0.0113 (J)	1.41 (J)
RE03-08-9444	03-603258	3.12–3.61	SED	0.332	—	0.485	0.0347 (J-)	0.036 (J)	0.845 (J)	0.88 (J)	1.65 (J)	—	—	—	0.216 (J)	—	0.961 (J)
RE03-08-9445	03-603258	3.61–4	SED	0.177	—	0.265	0.0255 (J-)	0.0236 (J)	0.456 (J)	0.466 (J)	0.773 (J)	—	—	—	0.135 (J)	0.00531 (J)	0.505 (J)

Table 8.4-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Dibenzofuran	Ethylbenzene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Pyrene	Toluene	Trichlorofluoromethane	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]
Industrial SSL[a]				**1000**[c]	**365**	**33,700**	**33,700**	**32.3**	**3370**	**16,800**	**25,300**	**25,300**	**61,100**	**5980**	**3910**	**4240**[f]
Construction Worker SSL[a]				**1000**[d]	**1760**	**10,000**	**10,000**	**240**	**1000**	**5020**	**7530**	**7530**	**14,000**	**1120**	**729**	**791**[f]
Residential SSL[a]				**73.0**[c]	**74.5**	**2320**	**2320**	**1.53**	**232**	**1160**	**1740**	**1740**	**5220**	**1220**	**798**	**863**[f]
RE03-08-9417	03-603243	0–0.85	SED	—	—	0.0712	—	—	—	—	0.0426	0.114 (J)	—	—	—	—
RE03-08-9421	03-603243	0.85–1.64	SED	—	—	0.0527	—	—	—	—	0.0377 (J)	0.0868 (J)	—	—	—	—
RE03-08-9425	03-603245	0–0.46	SED	—	—	0.0468	—	—	—	—	0.0287 (J)	0.0481	—	—	—	—
RE03-08-9429	03-603245	0.46–1.05	SED	—	—	0.0296 (J)	—	—	—	—	0.0217 (J)	0.0455	—	0.0133 (J)	—	—
RE03-08-9430	03-603247	0–0.66	SED	—	—	—	—	—	—	—	—	0.0274 (J)	—	—	—	—
RE03-08-9431	03-603248	0–1.08	SED	—	—	0.0612	—	—	—	—	0.0367 (J)	0.0781	—	—	—	—
RE03-08-9432	03-603248	1.08–4.43	SED	—	0.000358 (J)	0.373	0.0445	0.0673	0.0123 (J)	0.0339 (J)	0.33	0.41	0.000506 (J)	—	—	—
RE03-08-9433	03-603250	0–0.66	SED	—	—	0.177	0.0394 (J)	—	0.0197 (J)	0.0668	0.196	0.239	—	—	—	—
RE03-08-9434	03-603250	0.66–1.64	SED	—	—	0.0313 (J)	—	—	—	—	0.021 (J)	0.0583	—	—	—	—
RE03-08-9435	03-603250	1.64–2.3	SED	—	—	0.031 (J)	—	—	—	—	0.0208 (J)	0.0377 (J)	0.000616 (J)	—	—	—
RE03-08-9436	03-603250	2.3–3.12	SED	—	—	0.0312 (J)	—	—	—	—	0.0185 (J)	0.0444 (J)	-	—	—	—
RE03-08-9437	03-603254	0–1.15	SED	—	—	0.157	—	—	—	—	0.0962	0.18	0.000469 (J)	—	—	—
RE03-08-9439	03-603256	0–0.66	SED	—	—	0.0473	—	—	—	—	0.0349 (J)	0.0812 (J)	—	—	—	—
RE03-08-9440	03-603257	0–0.79	SED	—	—	0.0818	—	—	—	—	0.0494	0.0861	—	—	—	—
RE03-08-9441	03-603258	0–1.48	SED	0.0879 (J)	—	0.701	0.147	0.15 (J)	0.0487	0.158	0.835	0.976	0.000552 (J)	—	—	—
RE03-08-9442	03-603258	1.48–2.13	SED	—	—	0.0493	—	—	—	—	0.0298 (J)	0.0617	—	—	—	—
RE03-08-9443	03-603258	2.13–3.12	SED	0.255 (J)	0.00161	2.63	0.437	0.606 (J)	0.175	0.515	2.78	4.08 (J)	—	—	—	0.000865 (J)
RE03-08-9444	03-603258	3.12–3.61	SED	0.183 (J)	0.00149	1.74	0.316	0.442 (J)	0.118	0.336	1.91	3.16 (J)	—	—	—	0.00309
RE03-08-9445	03-603258	3.61–4	SED	—	0.000774 (J)	0.94	0.16	—	0.053	0.15	0.997	1.46 (J)	—	—	0.0015	0.00148 (J)

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] Pyrene used as a surrogate based on structural similarity.

[c] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

[d] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

[e] — = Not detected.

[f] Xylenes used as a surrogate based on structural similarity.

Table 8.4-4
Radionuclides Detected or Detected above BVs/FVs at SWMU 03-055(c)

Sample ID	Location ID	Depth (ft)	Media	Plutonium-239/240	Tritium
Soil Background Value[a]				**0.054**	**na[b]**
Qbt2, 3, 4 Background Value[a]				**na**	**na**
Sediment Background Value[a]				**0.068**	**0.093**
Industrial SAL[c]				**1200**	**2,400,000**
Construction Worker SAL[c]				**200**	**1,600,000**
Residential SAL[c]				**79**	**1700**
RE03-08-9435	03-603250	1.64–2.3	SED	—[d]	0.116247
RE03-08-9444	03-603258	3.12–3.61	SED	0.0905	—

Note: Results are in pCi/g.
[a] BVs/FVs are from LANL (1998, 059730).
[b] na = Not available.
[c] SALs are from LANL (2015, 600929).
[d] — = Not detected or not detected above BV.

Table 9.2-1
Samples Collected and Analyses Requested at SWMU 32-002(b2)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Mercury	PCBs	Perchlorate	Strontium-90	VOCs	SVOCs	Dioxins/Furans	Cyanide
RE00-08-15167	00-603589	3.5–4.5	QBT3	08-2011[a]	08-2011	08-2011	08-2011	08-2011	08-2011	08-2011	—[b]	08-2011	08-2011	08-2011	08-2011	08-2011	08-2010	08-2011
RE00-08-15168	00-603589	5.5–6.5	QBT3	08-2011	08-2011	08-2011	08-2011	08-2011	08-2011	08-2011	—	08-2011	08-2011	08-2011	08-2011	08-2011	08-2010	08-2011
RE32-10-11437	00-603589	7–8	QBT3	—	—	—	—	—	—	10-1961	—	—	—	—	—	—	—	—
RE00-08-15169	00-603590	5.5–6.5	QBT3	08-2026	08-2026	08-2026	08-2026	08-2026	08-2026	08-2025	—	08-2028	08-2025	08-2026	08-2028	08-2028	08-2027	08-2025
RE00-08-15170	00-603590	7.5–8.5	QBT3	08-2026	08-2026	08-2026	08-2026	08-2026	08-2026	08-2025	—	08-2028	08-2025	08-2026	08-2028	08-2028	08-2027	08-2025
RE32-10-11442	00-603590	9–10	QBT3	—	—	—	—	—	—	10-2113	—	—	—	—	—	—	—	—
RE00-08-15171	00-603591	5.5–6.5	QBT3	08-2026	08-2026	08-2026	08-2026	08-2026	08-2026	08-2025	—	08-2028	08-2025	08-2026	08-2028	08-2028	08-2027	08-2025
RE00-08-15172	00-603591	7.5–8.5	QBT3	08-2026	08-2026	08-2026	08-2026	08-2026	08-2026	08-2025	—	08-2028	08-2025	08-2026	08-2028	08-2028	08-2027	08-2025
RE32-10-11438	00-603591	9–10	QBT3	—	—	—	—	—	—	10-1961	—	—	—	—	—	—	—	—
RE00-08-15173	00-603592	3.5–4.5	QBT3	08-2026	08-2026	08-2026	08-2026	08-2026	08-2026	08-2025	—	08-2028	08-2025	08-2026	08-2028	08-2028	08-2027	08-2025
RE00-08-15174	00-603592	5.5–6.5	QBT3	08-2026	08-2026	08-2026	08-2026	08-2026	08-2026	08-2025	—	08-2028	08-2025	08-2026	08-2028	08-2028	08-2027	08-2025

Table 9.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Mercury	PCBs	Perchlorate	Strontium-90	VOCs	SVOCs	Dioxins/Furans	Cyanide
RE32-10-11439	00-603592	7–8	QBT3	—	—	—	—	—	—	10-2113	—	—	—	—	—	—	—	—
RE00-08-15175	00-603593	0–1	QBT3	09-37	09-37	09-37	09-37	09-37	09-37	09-36	—	09-35	09-36	09-37	09-35	09-35	09-34	09-36
RE00-08-15176	00-603593	2–3	QBT3	09-37	09-37	09-37	09-37	09-37	09-37	09-36	—	09-35	09-36	09-37	09-35	09-35	09-34	09-36
RE00-08-15177	00-603594	3.5–4.5	QBT3	08-2026	08-2026	08-2026	08-2026	08-2026	08-2026	08-2025	—	08-2028	08-2025	08-2026	08-2028	08-2028	08-2027	08-2025
RE00-08-15178	00-603594	6.5–7.5	QBT3	08-2026	08-2026	08-2026	08-2026	08-2026	08-2026	08-2025	—	08-2028	08-2025	08-2026	08-2028	08-2028	08-2027	08-2025
RE32-10-11440	00-603594	8–9	QBT3	—	—	—	—	—	—	10-2113	—	—	—	—	—	—	—	—
RE00-08-15179	00-603595	1.2–2.2	QBT3	08-2026	08-2026	08-2026	08-2026	08-2026	08-2026	08-2025	—	08-2028	08-2025	08-2026	08-2028	08-2028	08-2027	08-2025
RE32-10-24894	00-603595	12–12.5	QBT3	—	—	—	—	—	—	10-3962	—	—	—	—	—	—	—	—
RE00-08-15180	00-603595	3.2–4.2	QBT3	08-2026	08-2026	08-2026	08-2026	08-2026	08-2026	08-2025	—	08-2028	08-2025	08-2026	08-2028	08-2028	08-2027	08-2025
RE32-10-11441	00-603595	5–6	QBT3	—	—	—	—	—	—	10-2113	—	—	—	—	—	—	—	—
RE32-10-21512	00-603595	9–10	QBT3	—	—	—	—	—	—	10-3429	—	—	—	—	—	—	—	—
RE00-08-15181	00-603596	1.25–2.25	QBT3	09-4	09-4	09-4	09-4	09-4	09-4	09-4	—	09-4	09-4	09-4	09-4	09-4	09-3	09-4
RE00-08-15182	00-603596	3.25–4.25	QBT3	09-4	09-4	09-4	09-4	09-4	09-4	09-4	—	09-4	09-4	09-4	09-4	09-4	09-3	09-4
RE00-08-15183	00-603597	0.75–1.75	QBT3	09-37	09-37	09-37	09-37	09-37	09-37	09-36	—	09-35	09-36	09-37	09-35	09-35	09-34	09-36
RE00-08-15184	00-603597	2.75–3.75	QBT3	09-37	09-37	09-37	09-37	09-37	09-37	09-36	—	09-35	09-36	09-37	09-35	09-35	09-34	09-36
RE00-08-15185	00-603598	1.25–2.25	QBT3	09-37	09-37	09-37	09-37	09-37	09-37	09-36	—	09-35	09-36	09-37	09-35	09-35	09-34	09-36
RE00-08-15186	00-603598	3.25–4.25	QBT3	09-37	09-37	09-37	09-37	09-37	09-37	09-36	—	09-35	09-36	09-37	09-35	09-35	09-34	09-36
RE00-08-15187	00-603599	0–0.5	ALLH	09-37	09-37	09-37	09-37	09-37	09-37	09-36	—	09-35	09-36	09-37	09-35	09-35	09-34	09-36
RE00-08-15188	00-603599	2.5–3.5	QBT2	09-37	09-37	09-37	09-37	09-37	09-37	09-36	—	09-35	09-36	09-37	09-35	09-35	09-34	09-36
RE32-12-1074	32-06312	0–1	ALLH	—	—	—	—	—	—	—	12-259	—	—	—	—	—	—	—
RE32-12-1075	32-06312	2–3	ALLH	—	—	—	—	—	—	—	12-259	—	—	—	—	—	—	—
RE32-12-1076	32-06313	0–1	ALLH	—	—	—	—	—	—	—	12-259	—	—	—	—	—	—	—
RE32-12-1077	32-06313	2–3	ALLH	—	—	—	—	—	—	—	12-259	—	—	—	—	—	—	—
RE32-12-1078	32-06315	0–1	ALLH	—	—	—	—	—	—	—	12-259	—	—	—	—	—	—	—
RE32-12-1079	32-06315	2–3	ALLH	—	—	—	—	—	—	—	12-259	—	—	—	—	—	—	—
RE32-12-1080	32-06325	0–1	ALLH	—	—	—	—	—	—	—	12-272	—	—	—	—	—	—	—
RE32-12-1081	32-06325	2–3	ALLH	—	—	—	—	—	—	—	12-272	—	—	—	—	—	—	—
RE32-12-1082	32-614811	0–1	ALLH	—	—	—	—	—	—	—	12-259	—	—	—	—	—	—	—
RE32-12-1083	32-614811	2–3	QBT3	—	—	—	—	—	—	—	12-259	—	—	—	—	—	—	—
RE32-12-1084	32-614812	0–1	ALLH	—	—	—	—	—	—	—	12-259	—	—	—	—	—	—	—
RE32-12-1085	32-614812	2–3	ALLH	—	—	—	—	—	—	—	12-259	—	—	—	—	—	—	—
RE32-12-1086	32-614813	0–1	ALLH	—	—	—	—	—	—	—	12-259	—	—	—	—	—	—	—

Table 9.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Mercury	PCBs	Perchlorate	Strontium-90	VOCs	SVOCs	Dioxins/Furans	Cyanide
RE32-12-1087	32-614813	2–3	ALLH	—	—	—	—	—	—	—	12-259	—	—	—	—	—	—	—
RE32-12-1088	32-614814	0–1	ALLH	—	—	—	—	—	—	—	12-259	—	—	—	—	—	—	—
RE32-12-1089	32-614814	2–3	ALLH	—	—	—	—	—	—	—	12-259	—	—	—	—	—	—	—
RE32-12-1090	32-614815	0–1	ALLH	—	—	—	—	—	—	—	12-272	—	—	—	—	—	—	—
RE32-12-1091	32-614815	2–3	ALLH	—	—	—	—	—	—	—	12-272	—	—	—	—	—	—	—
RE32-12-1092	32-614816	0–1	ALLH	—	—	—	—	—	—	—	12-272	—	—	—	—	—	—	—
RE32-12-1093	32-614816	2–3	ALLH	—	—	—	—	—	—	—	12-272	—	—	—	—	—	—	—
RE32-12-1094	32-614817	0–1	ALLH	—	—	—	—	—	—	—	12-272	—	—	—	—	—	—	—
RE32-12-1095	32-614817	2–3	ALLH	—	—	—	—	—	—	—	12-272	—	—	—	—	—	—	—
RE32-12-1096	32-614818	0–1	ALLH	—	—	—	—	—	—	—	12-272	—	—	—	—	—	—	—
RE32-12-1097	32-614818	2–3	ALLH	—	—	—	—	—	—	—	12-272	—	—	—	—	—	—	—
RE32-13-37077	32-61482	0–1	ALLH	—	—	—	—	—	—	—	2013-1058	—	—	—	—	—	—	—
RE32-13-37091	32-61482	2–3	ALLH	—	—	—	—	—	—	—	2013-1058	—	—	—	—	—	—	—
RE32-13-37105	32-61482	5–6	QBT3	—	—	—	—	—	—	—	2013-1058	—	—	—	—	—	—	—
RE32-13-37078	32-61483	0–1	ALLH	—	—	—	—	—	—	—	2013-1058	—	—	—	—	—	—	—
RE32-13-37092	32-61483	2–3	ALLH	—	—	—	—	—	—	—	2013-1058	—	—	—	—	—	—	—
RE32-13-37106	32-61483	5–6	ALLH	—	—	—	—	—	—	—	2013-1058	—	—	—	—	—	—	—
RE32-13-37079	32-61484	0–1	ALLH	—	—	—	—	—	—	—	2013-1058	—	—	—	—	—	—	—
RE32-13-37093	32-61484	2–3	ALLH	—	—	—	—	—	—	—	2013-1058	—	—	—	—	—	—	—
RE32-13-37107	32-61484	5–6	QBT3	—	—	—	—	—	—	—	2013-1058	—	—	—	—	—	—	—
RE32-13-37080	32-61485	0–1	ALLH	—	—	—	—	—	—	—	2013-1058	—	—	—	—	—	—	—
RE32-13-37094	32-61485	2–3	QBT3	—	—	—	—	—	—	—	2013-1058	—	—	—	—	—	—	—
RE32-13-37108	32-61485	5–6	QBT3	—	—	—	—	—	—	—	2013-1058	—	—	—	—	—	—	—
RE32-13-37081	32-61486	0–1	ALLH	—	—	—	—	—	—	—	2013-1058	—	—	—	—	—	—	—
RE32-13-37095	32-61486	2–3	ALLH	—	—	—	—	—	—	—	2013-1058	—	—	—	—	—	—	—
RE32-13-37109	32-61486	5–6	QBT3	—	—	—	—	—	—	—	2013-1058	—	—	—	—	—	—	—
RE32-13-37082	32-61487	0–1	ALLH	—	—	—	—	—	—	—	2013-1058	—	—	—	—	—	—	—
RE32-13-37096	32-61487	2–3	ALLH	—	—	—	—	—	—	—	2013-1058	—	—	—	—	—	—	—
RE32-13-37110	32-61487	5–6	QBT3	—	—	—	—	—	—	—	2013-1058	—	—	—	—	—	—	—
RE32-13-37083	32-61488	0–1	ALLH	—	—	—	—	—	—	—	2013-1058-1	—	—	—	—	—	—	—
RE32-13-37097	32-61488	2–3	QBT3	—	—	—	—	—	—	—	2013-1058-1	—	—	—	—	—	—	—
RE32-13-37111	32-61488	5–6	QBT3	—	—	—	—	—	—	—	2013-1058-1	—	—	—	—	—	—	—

Table 9.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Mercury	PCBs	Perchlorate	Strontium-90	VOCs	SVOCs	Dioxins/Furans	Cyanide
RE32-13-37084	32-61489	0–1	ALLH	—	—	—	—	—	—	—	2013-1058-1	—	—	—	—	—	—	—
RE32-13-37098	32-61489	2–3	QBT3	—	—	—	—	—	—	—	2013-1058-1	—	—	—	—	—	—	—
RE32-13-37112	32-61489	5–6	QBT3	—	—	—	—	—	—	—	2013-1058-1	—	—	—	—	—	—	—
RE32-13-37085	32-61490	0–1	ALLH	—	—	—	—	—	—	—	2013-1061	—	—	—	—	—	—	—
RE32-13-37099	32-61490	2–3	QBT3	—	—	—	—	—	—	—	2013-1061	—	—	—	—	—	—	—
RE32-13-37113	32-61490	5–6	QBT3	—	—	—	—	—	—	—	2013-1061	—	—	—	—	—	—	—
RE32-13-37086	32-61491	0–1	ALLH	—	—	—	—	—	—	—	2013-1061	—	—	—	—	—	—	—
RE32-13-37100	32-61491	2–3	QBT3	—	—	—	—	—	—	—	2013-1061	—	—	—	—	—	—	—
RE32-13-37114	32-61491	5–6	QBT3	—	—	—	—	—	—	—	2013-1061	—	—	—	—	—	—	—
RE32-13-37087	32-61492	0–1	ALLH	—	—	—	—	—	—	—	2013-1072	—	—	—	—	—	—	—
RE32-13-37101	32-61492	2–3	QBT3	—	—	—	—	—	—	—	2013-1072	—	—	—	—	—	—	—
RE32-13-37115	32-61492	5–6	QBT3	—	—	—	—	—	—	—	2013-1072	—	—	—	—	—	—	—
RE32-13-37088	32-61493	0–1	ALLH	—	—	—	—	—	—	—	2013-1072	—	—	—	—	—	—	—
RE32-13-37102	32-61493	2–3	QBT3	—	—	—	—	—	—	—	2013-1072	—	—	—	—	—	—	—
RE32-13-37116	32-61493	5–6	QBT3	—	—	—	—	—	—	—	2013-1072	—	—	—	—	—	—	—
RE32-13-37089	32-61494	0–1	ALLH	—	—	—	—	—	—	—	2013-1072	—	—	—	—	—	—	—
RE32-13-37103	32-61494	2–3	QBT3	—	—	—	—	—	—	—	2013-1072	—	—	—	—	—	—	—
RE32-13-37117	32-61494	5–6	QBT3	—	—	—	—	—	—	—	2013-1072	—	—	—	—	—	—	—
RE32-13-37090	32-61495	0–1	ALLH	—	—	—	—	—	—	—	2013-1072	—	—	—	—	—	—	—
RE32-13-37104	32-61495	2–3	QBT3	—	—	—	—	—	—	—	2013-1072	—	—	—	—	—	—	—
RE32-13-37118	32-61495	5–6	QBT3	—	—	—	—	—	—	—	2013-1072	—	—	—	—	—	—	—
RE32-13-40857	32-61496	0–1	ALLH	—	—	—	—	—	—	—	2013-1633	—	—	—	—	—	—	—
RE32-13-40867	32-61496	2–3	QBT3	—	—	—	—	—	—	—	2013-1633	—	—	—	—	—	—	—
RE32-13-40858	32-61497	0–1	ALLH	—	—	—	—	—	—	—	2013-1633	—	—	—	—	—	—	—
RE32-13-40868	32-61497	2–3	QBT3	—	—	—	—	—	—	—	2013-1633	—	—	—	—	—	—	—
RE32-13-40859	32-61498	0–1	ALLH	—	—	—	—	—	—	—	2013-1633	—	—	—	—	—	—	—
RE32-13-40869	32-61498	2–3	QBT3	—	—	—	—	—	—	—	2013-1633	—	—	—	—	—	—	—
RE32-13-40860	32-61499	0–1	ALLH	—	—	—	—	—	—	—	2013-1633	—	—	—	—	—	—	—
RE32-13-40870	32-61499	2–3	QBT3	—	—	—	—	—	—	—	2013-1633	—	—	—	—	—	—	—
RE32-13-40861	32-61500	0–1	ALLH	—	—	—	—	—	—	—	2013-1633	—	—	—	—	—	—	—
RE32-13-40871	32-61500	2–3	QBT3	—	—	—	—	—	—	—	2013-1633	—	—	—	—	—	—	—
RE32-13-40862	32-61501	0–1	QBT3	—	—	—	—	—	—	—	2013-1651	—	—	—	—	—	—	—

Table 9.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Mercury	PCBs	Perchlorate	Strontium-90	VOCs	SVOCs	Dioxins/Furans	Cyanide
RE32-13-40872	32-61501	2–3	QBT3	—	—	—	—	—	—	—	2013-1651	—	—	—	—	—	—	—
RE32-13-40863	32-61502	0–1	ALLH	—	—	—	—	—	—	—	2013-1651	—	—	—	—	—	—	—
RE32-13-40873	32-61502	2–3	QBT3	—	—	—	—	—	—	—	2013-1651	—	—	—	—	—	—	—
RE32-13-40864	32-61503	0–1	ALLH	—	—	—	—	—	—	—	2013-1651	—	—	—	—	—	—	—
RE32-13-40874	32-61503	2–3	QBT3	—	—	—	—	—	—	—	2013-1651	—	—	—	—	—	—	—
RE32-13-40865	32-61504	0–1	ALLH	—	—	—	—	—	—	—	2013-1651	—	—	—	—	—	—	—
RE32-13-40875	32-61504	2–3	QBT3	—	—	—	—	—	—	—	2013-1651	—	—	—	—	—	—	—
RE32-13-40866	32-61505	0–1	ALLH	—	—	—	—	—	—	—	2013-1651	—	—	—	—	—	—	—
RE32-13-40876	32-61505	2–3	QBT3	—	—	—	—	—	—	—	2013-1651	—	—	—	—	—	—	—
RE32-13-40878	32-61506	0–1	ALLH	—	—	—	—	—	—	—	2013-1633	—	—	—	—	—	—	—
RE32-13-40883	32-61506	2–3	QBT3	—	—	—	—	—	—	—	2013-1633	—	—	—	—	—	—	—
RE32-13-40879	32-61507	0–1	QBT3	—	—	—	—	—	—	—	2013-1633	—	—	—	—	—	—	—
RE32-13-40884	32-61507	2–3	QBT3	—	—	—	—	—	—	—	2013-1633	—	—	—	—	—	—	—
RE32-13-40880	32-61508	0–1	ALLH	—	—	—	—	—	—	—	2013-1651	—	—	—	—	—	—	—
RE32-13-40885	32-61508	2–3	QBT3	—	—	—	—	—	—	—	2013-1651	—	—	—	—	—	—	—
RE32-13-40881	32-61509	0–1	ALLH	—	—	—	—	—	—	—	2013-1651	—	—	—	—	—	—	—
RE32-13-40886	32-61509	2–3	QBT3	—	—	—	—	—	—	—	2013-1651	—	—	—	—	—	—	—
RE32-13-40882	32-61510	0–1	ALLH	—	—	—	—	—	—	—	2013-1651	—	—	—	—	—	—	—
RE32-13-40887	32-61510	2–3	QBT3	—	—	—	—	—	—	—	2013-1651	—	—	—	—	—	—	—
RE32-13-40902	WST-600902	0–1	ALLH	—	—	—	—	—	—	—	2013-1651	—	—	—	—	—	—	—
RELA-15-97209	32-614812	3–4	QBT3	—	—	—	—	—	—	—	2015-1161	—	—	—	—	—	—	—
RELA-15-97210	32-614812	5–6	QBT3	—	—	—	—	—	—	—	2015-1161	—	—	—	—	—	—	—
RELA-15-97211	32-614814	3–4	QBT3	—	—	—	—	—	—	—	2015-1161	—	—	—	—	—	—	—
RELA-15-97212	32-614814	5–6	QBT3	—	—	—	—	—	—	—	2015-1161	—	—	—	—	—	—	—
RELA-15-97213	32-614815	3–4	QBT3	—	—	—	—	—	—	—	2015-1149	—	—	—	—	—	—	—
RELA-15-97214	32-614815	5–6	QBT3	—	—	—	—	—	—	—	2015-1149	—	—	—	—	—	—	—
RELA-15-97215	32-614817	3–4	ALLH	—	—	—	—	—	—	—	2015-1149	—	—	—	—	—	—	—
RELA-15-97216	32-614817	5–6	ALLH	—	—	—	—	—	—	—	2015-1149	—	—	—	—	—	—	—
RELA-15-97171	32-61530	2–3	QBT3	—	—	—	—	—	—	—	2015-1149	—	—	—	—	—	—	—
RELA-15-97178	32-61530	4–5	QBT3	—	—	—	—	—	—	—	2015-1149	—	—	—	—	—	—	—
RELA-15-97172	32-61531	2–3	QBT3	—	—	—	—	—	—	—	2015-1149	—	—	—	—	—	—	—
RELA-15-97179	32-61531	4–5	QBT3	—	—	—	—	—	—	—	2015-1149	—	—	—	—	—	—	—

Table 9.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Mercury	PCBs	Perchlorate	Strontium-90	VOCs	SVOCs	Dioxins/Furans	Cyanide
RELA-15-97173	32-61532	2–3	QBT3	—	—	—	—	—	—	—	2015-1149	—	—	—	—	—	—	—
RELA-15-97180	32-61532	4–5	QBT3	—	—	—	—	—	—	—	2015-1149	—	—	—	—	—	—	—
RELA-15-97174	32-61533	2–3	ALLH	—	—	—	—	—	—	—	2015-1149	—	—	—	—	—	—	—
RELA-15-97181	32-61533	4–5	ALLH	—	—	—	—	—	—	—	2015-1149	—	—	—	—	—	—	—
RELA-15-97469	32-61533	5–6	QBT3	—	—	—	—	—	—	—	2015-1194	—	—	—	—	—	—	—
RELA-15-97470	32-61533	6–7	QBT3	—	—	—	—	—	—	—	2015-1194	—	—	—	—	—	—	—
RELA-15-97175	32-61534	2–3	ALLH	—	—	—	—	—	—	—	2015-1149	—	—	—	—	—	—	—
RELA-15-97182	32-61534	4–5	ALLH	—	—	—	—	—	—	—	2015-1149	—	—	—	—	—	—	—
RELA-15-97176	32-61535	2–3	QBT3	—	—	—	—	—	—	—	2015-1161	—	—	—	—	—	—	—
RELA-15-97183	32-61535	4–5	QBT3	—	—	—	—	—	—	—	2015-1161	—	—	—	—	—	—	—
RELA-15-97177	32-61536	2–3	ALLH	—	—	—	—	—	—	—	2015-1161	—	—	—	—	—	—	—
RELA-15-97184	32-61536	4–5	QBT3	—	—	—	—	—	—	—	2015-1161	—	—	—	—	—	—	—

[a] Analytical request number.

[b] — = Analysis not requested.

Table 9.2-2
Inorganic Chemicals Detected or Detected above BVs at SWMU 32-002(b2)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Arsenic	Barium	Chromium	Copper	Cyanide (Total)	Lead	Mercury	Nickel	Nitrate	Perchlorate	Selenium	Silver	Sodium	Zinc
Soil Background Value[a]				**0.83**	**8.17**	**295**	**19.3**	**14.7**	**0.5**	**22.3**	**0.1**	**15.4**	**na[b]**	**na**	**1.52**	**1**	**915**	**48.8**
Qbt 2,3,4 Background Value[a]				**0.5**	**2.79**	**46**	**7.14**	**4.66**	**0.5**	**11.2**	**0.1**	**6.58**	**na**	**na**	**0.3**	**1**	**2770**	**63.5**
Sediment Background Value[a]				**0.83**	**3.98**	**127**	**10.5**	**11.2**	**0.82**	**19.7**	**0.1**	**9.38**	**na**	**na**	**0.3**	**1**	**1470**	**60.2**
Industrial SSL[c]				**519**	**35.9**	**255,000**	**505[d]**	**51,900**	**62.8**	**800**	**389**	**25,700**	**2,080,000**	**908**	**6490**	**6490**	**na**	**389,000**
Construction Worker SSL[c]				**142**	**41.2**	**4,390**	**134[d]**	**14,200**	**12**	**800**	**77.1**	**12,400**	**991,000**	**434**	**3100**	**3100**	**na**	**186,000**
Residential SSL[c]				**31.3**	**7.07**	**15,600**	**96.6[d]**	**3130**	**11.1**	**400**	**23.5**	**1560**	**125,000**	**54.8**	**391**	**391**	**na**	**23,500**
RE00-08-15167	00-603589	3.5–4.5	QBT3	—[e]	—	51.3	13.6 (J)	—	0.59 (U)	13.2	—	11.2 (J)	8.5	—	—	—	—	—
RE00-08-15168	00-603589	5.5–6.5	QBT3	—	—	60.3	14.7 (J)	—	0.58 (U)	—	—	11.3 (J)	2.4	—	—	—	—	—
RE32-10-11437	00-603589	7–8	QBT3	1.11 (U)	—	—	9.4	—	NA[f]	—	—	—	NA	NA	0.703 (J)	—	—	—
RE00-08-15169	00-603590	5.5–6.5	QBT3	—	—	77.2 (J-)	22.2 (J-)	5.4 (J-)	—	51.1	—	14.5	3.5	—	—	—	—	—
RE00-08-15170	00-603590	7.5–8.5	QBT3	—	—	—	45.6 (J-)	—	—	31.7	—	22.2	1.3	—	0.31 (J)	—	—	98.7 (J-)
RE32-10-11442	00-603590	9–10	QBT3	1.23 (U)	—	—	7.62	—	NA	—	—	—	NA	NA	1.18 (UJ)	—	2840	—

Table 9.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Arsenic	Barium	Chromium	Copper	Cyanide (Total)	Lead	Mercury	Nickel	Nitrate	Perchlorate	Selenium	Silver	Sodium	Zinc
Soil Background Value[a]				**0.83**	**8.17**	**295**	**19.3**	**14.7**	**0.5**	**22.3**	**0.1**	**15.4**	**na[b]**	**na**	**1.52**	**1**	**915**	**48.8**
Qbt 2,3,4 Background Value[a]				**0.5**	**2.79**	**46**	**7.14**	**4.66**	**0.5**	**11.2**	**0.1**	**6.58**	**na**	**na**	**0.3**	**1**	**2770**	**63.5**
Sediment Background Value[a]				**0.83**	**3.98**	**127**	**10.5**	**11.2**	**0.82**	**19.7**	**0.1**	**9.38**	**na**	**na**	**0.3**	**1**	**1470**	**60.2**
Industrial SSL[c]				**519**	**35.9**	**255,000**	**505[d]**	**51,900**	**62.8**	**800**	**389**	**25,700**	**2,080,000**	**908**	**6490**	**6490**	**na**	**389,000**
Construction Worker SSL[c]				**142**	**41.2**	**4,390**	**134[d]**	**14,200**	**12**	**800**	**77.1**	**12,400**	**991,000**	**434**	**3100**	**3100**	**na**	**186,000**
Residential SSL[c]				**31.3**	**7.07**	**15,600**	**96.6[d]**	**3130**	**11.1**	**400**	**23.5**	**1560**	**125,000**	**54.8**	**391**	**391**	**na**	**23,500**
RE00-08-15171	00-603591	5.5–6.5	QBT3	—	—	166 (J-)	45.1 (J-)	4.8 (J-)	—	—	—	23.2	0.92	—	0.39 (J)	—	—	—
RE00-08-15172	00-603591	7.5–8.5	QBT3	—	—	—	60.7 (J-)	—	—	—	—	28.5	0.39	—	0.33 (J)	—	—	—
RE32-10-11438	00-603591	9–10	QBT3	1.14 (U)	—	—	12	—	NA	—	—	—	NA	NA	0.762 (J)	—	—	—
RE00-08-15173	00-603592	3.5–4.5	QBT3	0.78 (U)	—	—	44 (J-)	—	—	—	—	21.6	—	—	—	—	—	—
RE00-08-15174	00-603592	5.5–6.5	QBT3	—	—	—	48.3 (J-)	—	—	—	—	23.5	—	—	0.32 (J)	—	—	—
RE32-10-11439	00-603592	7–8	QBT3	1.08 (U)	—	—	—	—	NA	—	—	—	NA	NA	1.08 (UJ)	—	—	—
RE00-08-15177	00-603594	3.5–4.5	QBT3	—	—	—	13.4 (J-)	—	—	16.3	0.86	7.3	—	—	0.34 (J)	—	—	—
RE00-08-15178	00-603594	6.5–7.5	QBT3	—	—	—	22.6 (J-)	—	—	—	0.166	12.2	—	—	0.33 (J)	—	—	—
RE32-10-11440	00-603594	8–9	QBT3	1.01 (U)	—	—	15.4	—	NA	—	—	—	NA	NA	0.997 (UJ)	—	—	—
RE00-08-15179	00-603595	1.2–2.2	QBT3	0.79 (U)	7.5 (J+)	57.5 (J-)	—	6.1 (J-)	—	22	1.92	—	0.88	—	—	—	—	66.4 (J)
RE00-08-15180	00-603595	3.2–4.2	QBT3	—	—	220 (J-)	38.4 (J-)	6.3 (J-)	—	13	2	22.6	0.36	—	0.45 (J)	—	—	—
RE32-10-11441	00-603595	5–6	QBT3	—	7.91	—	67.8	8.41	NA	67.3	10.1	—	NA	NA	1.04 (UJ)	2.38	—	—
RE32-10-21512	00-603595	9–10	QBT3	3.72	—	56.8	167 (J+)	7.96	NA	—	—	14.4	NA	NA	1.08 (U)	—	—	—
RE32-10-24894	00-603595	12–12.5	QBT3	0.54 (U)	—	49.7	8.1 (J)	5.9 (J)	NA	51	1.67	—	NA	NA	—	—	—	69.2
RE00-08-15181	00-603596	1.25–2.25	QBT3	—	—	55.1	10.3 (J)	5.6 (J)	—	13.6	0.546 (J)	6.9 (J)	0.16 (J)	—	0.34 (J)	—	—	—
RE00-08-15182	00-603596	3.25–4.25	QBT3	—	—	—	17.8 (J+)	—	—	—	—	9 (J+)	0.13 (J)	—	—	—	—	—
RE00-08-15183	00-603597	0.75–1.75	QBT3	0.54 (U)	2.8 (J)	53.2	15.2	6.5	0.52 (U)	45.9	2.18	7.8	—	0.006 (J)	—	4.8 (J+)	—	—
RE00-08-15184	00-603597	2.75–3.75	QBT3	0.52 (U)	—	—	8 (J)	—	—	20.8	0.65	—	—	0.0056 (J)	—	5.1 (J+)	—	—
RE00-08-15185	00-603598	1.25–2.25	QBT3	0.53 (U)	—	—	7.2 (J)	—	—	14.4	2.12	—	—	—	—	—	—	—
RE00-08-15186	00-603598	3.25–4.25	QBT3	0.53 (U)	—	—	10.9 (J)	—	—	—	0.205	—	—	0.0021 (J)	—	—	—	—
RE00-08-15187	00-603599	0–0.5	SOIL	—	—	—	—	—	—	—	—	—	3	—	—	—	—	—
RE00-08-15188	00-603599	2.5–3.5	QBT2	0.56 (U)	—	—	—	—	0.56 (U)	—	—	—	0.56	—	0.56 (U)	—	—	—
RE32-12-1074	32-06312	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	32.6	NA	NA	NA	NA	NA	NA	NA
RE32-12-1075	32-06312	2–3	SOIL	NA	NA	NA	NA	NA	NA	NA	1.62	NA	NA	NA	NA	NA	NA	NA
RE32-12-1076	32-06313	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	8.56	NA	NA	NA	NA	NA	NA	NA
RE32-12-1077	32-06313	2–3	SOIL	NA	NA	NA	NA	NA	NA	NA	0.689	NA	NA	NA	NA	NA	NA	NA
RE32-12-1078	32-06315	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	1.75	NA	NA	NA	NA	NA	NA	NA

Table 9.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Arsenic	Barium	Chromium	Copper	Cyanide (Total)	Lead	Mercury	Nickel	Nitrate	Perchlorate	Selenium	Silver	Sodium	Zinc
Soil Background Value[a]				**0.83**	**8.17**	**295**	**19.3**	**14.7**	**0.5**	**22.3**	**0.1**	**15.4**	**na[b]**	**na**	**1.52**	**1**	**915**	**48.8**
Qbt 2,3,4 Background Value[a]				**0.5**	**2.79**	**46**	**7.14**	**4.66**	**0.5**	**11.2**	**0.1**	**6.58**	**na**	**na**	**0.3**	**1**	**2770**	**63.5**
Sediment Background Value[a]				**0.83**	**3.98**	**127**	**10.5**	**11.2**	**0.82**	**19.7**	**0.1**	**9.38**	**na**	**na**	**0.3**	**1**	**1470**	**60.2**
Industrial SSL[c]				**519**	**35.9**	**255,000**	**505[d]**	**51,900**	**62.8**	**800**	**389**	**25,700**	**2,080,000**	**908**	**6490**	**6490**	**na**	**389,000**
Construction Worker SSL[c]				**142**	**41.2**	**4,390**	**134[d]**	**14,200**	**12**	**800**	**77.1**	**12,400**	**991,000**	**434**	**3100**	**3100**	**na**	**186,000**
Residential SSL[c]				**31.3**	**7.07**	**15,600**	**96.6[d]**	**3130**	**11.1**	**400**	**23.5**	**1560**	**125,000**	**54.8**	**391**	**391**	**na**	**23,500**
RE32-12-1079	32-06315	2–3	SOIL	NA	NA	NA	NA	NA	NA	NA	0.218	NA	NA	NA	NA	NA	NA	NA
RE32-12-1080	32-06325	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	0.678	NA	NA	NA	NA	NA	NA	NA
RE32-12-1081	32-06325	2–3	SOIL	NA	NA	NA	NA	NA	NA	NA	0.102	NA	NA	NA	NA	NA	NA	NA
RE32-12-1082	32-614811	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	13.9	NA	NA	NA	NA	NA	NA	NA
RE32-12-1083	32-614811	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	0.926	NA	NA	NA	NA	NA	NA	NA
RE32-12-1086	32-614813	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	4.93	NA	NA	NA	NA	NA	NA	NA
RE32-12-1087	32-614813	2–3	SOIL	NA	NA	NA	NA	NA	NA	NA	0.461	NA	NA	NA	NA	NA	NA	NA
RE32-12-1092	32-614816	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	6.58	NA	NA	NA	NA	NA	NA	NA
RE32-12-1093	32-614816	2–3	SOIL	NA	NA	NA	NA	NA	NA	NA	0.652	NA	NA	NA	NA	NA	NA	NA
RE32-12-1096	32-614818	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	14.9	NA	NA	NA	NA	NA	NA	NA
RE32-12-1097	32-614818	2–3	SOIL	NA	NA	NA	NA	NA	NA	NA	0.787	NA	NA	NA	NA	NA	NA	NA
RE32-13-37077	32-61482	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	0.2	NA	NA	NA	NA	NA	NA	NA
RE32-13-37091	32-61482	2–3	SOIL	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37105	32-61482	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37078	32-61483	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	0.491	NA	NA	NA	NA	NA	NA	NA
RE32-13-37092	32-61483	2–3	SOIL	NA	NA	NA	NA	NA	NA	NA	0.139	NA	NA	NA	NA	NA	NA	NA
RE32-13-37106	32-61483	5–6	SOIL	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37079	32-61484	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	7.3	NA	NA	NA	NA	NA	NA	NA
RE32-13-37093	32-61484	2–3	SOIL	NA	NA	NA	NA	NA	NA	NA	0.187	NA	NA	NA	NA	NA	NA	NA
RE32-13-37107	32-61484	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37080	32-61485	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	8.54	NA	NA	NA	NA	NA	NA	NA
RE32-13-37094	32-61485	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37108	32-61485	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	0.143	NA	NA	NA	NA	NA	NA	NA
RE32-13-37081	32-61486	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	3.64	NA	NA	NA	NA	NA	NA	NA
RE32-13-37095	32-61486	2–3	SOIL	NA	NA	NA	NA	NA	NA	NA	1.02	NA	NA	NA	NA	NA	NA	NA
RE32-13-37109	32-61486	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	1.8	NA	NA	NA	NA	NA	NA	NA
RE32-13-37082	32-61487	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	17.9	NA	NA	NA	NA	NA	NA	NA

Table 9.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Arsenic	Barium	Chromium	Copper	Cyanide (Total)	Lead	Mercury	Nickel	Nitrate	Perchlorate	Selenium	Silver	Sodium	Zinc
Soil Background Value[a]				**0.83**	**8.17**	**295**	**19.3**	**14.7**	**0.5**	**22.3**	**0.1**	**15.4**	**na[b]**	**na**	**1.52**	**1**	**915**	**48.8**
Qbt 2,3,4 Background Value[a]				**0.5**	**2.79**	**46**	**7.14**	**4.66**	**0.5**	**11.2**	**0.1**	**6.58**	**na**	**na**	**0.3**	**1**	**2770**	**63.5**
Sediment Background Value[a]				**0.83**	**3.98**	**127**	**10.5**	**11.2**	**0.82**	**19.7**	**0.1**	**9.38**	**na**	**na**	**0.3**	**1**	**1470**	**60.2**
Industrial SSL[c]				**519**	**35.9**	**255,000**	**505[d]**	**51,900**	**62.8**	**800**	**389**	**25,700**	**2,080,000**	**908**	**6490**	**6490**	**na**	**389,000**
Construction Worker SSL[c]				**142**	**41.2**	**4,390**	**134[d]**	**14,200**	**12**	**800**	**77.1**	**12,400**	**991,000**	**434**	**3100**	**3100**	**na**	**186,000**
Residential SSL[c]				**31.3**	**7.07**	**15,600**	**96.6[d]**	**3130**	**11.1**	**400**	**23.5**	**1560**	**125,000**	**54.8**	**391**	**391**	**na**	**23,500**
RE32-13-37096	32-61487	2–3	SOIL	NA	NA	NA	NA	NA	NA	NA	1.07	NA	NA	NA	NA	NA	NA	NA
RE32-13-37110	32-61487	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	0.548	NA	NA	NA	NA	NA	NA	NA
RE32-13-37083	32-61488	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	1.42	NA	NA	NA	NA	NA	NA	NA
RE32-13-37097	32-61488	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37111	32-61488	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37084	32-61489	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	0.153	NA	NA	NA	NA	NA	NA	NA
RE32-13-37098	32-61489	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37112	32-61489	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37085	32-61490	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37099	32-61490	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	0.364	NA	NA	NA	NA	NA	NA	NA
RE32-13-37113	32-61490	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37086	32-61491	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	0.345	NA	NA	NA	NA	NA	NA	NA
RE32-13-37100	32-61491	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37114	32-61491	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37087	32-61492	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	0.103 (J)	NA	NA	NA	NA	NA	NA	NA
RE32-13-37101	32-61492	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37115	32-61492	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37088	32-61493	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37102	32-61493	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37116	32-61493	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37089	32-61494	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37103	32-61494	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37117	32-61494	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-37090	32-61495	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	4.3	NA	NA	NA	NA	NA	NA	NA
RE32-13-37104	32-61495	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	0.362	NA	NA	NA	NA	NA	NA	NA
RE32-13-37118	32-61495	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	1.45	NA	NA	NA	NA	NA	NA	NA
RE32-13-40859	32-61498	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	0.106	NA	NA	NA	NA	NA	NA	NA

Table 9.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Arsenic	Barium	Chromium	Copper	Cyanide (Total)	Lead	Mercury	Nickel	Nitrate	Perchlorate	Selenium	Silver	Sodium	Zinc
Soil Background Value[a]				**0.83**	**8.17**	**295**	**19.3**	**14.7**	**0.5**	**22.3**	**0.1**	**15.4**	**na[b]**	**na**	**1.52**	**1**	**915**	**48.8**
Qbt 2,3,4 Background Value[a]				**0.5**	**2.79**	**46**	**7.14**	**4.66**	**0.5**	**11.2**	**0.1**	**6.58**	**na**	**na**	**0.3**	**1**	**2770**	**63.5**
Sediment Background Value[a]				**0.83**	**3.98**	**127**	**10.5**	**11.2**	**0.82**	**19.7**	**0.1**	**9.38**	**na**	**na**	**0.3**	**1**	**1470**	**60.2**
Industrial SSL[c]				**519**	**35.9**	**255,000**	**505[d]**	**51,900**	**62.8**	**800**	**389**	**25,700**	**2,080,000**	**908**	**6490**	**6490**	**na**	**389,000**
Construction Worker SSL[c]				**142**	**41.2**	**4,390**	**134[d]**	**14,200**	**12**	**800**	**77.1**	**12,400**	**991,000**	**434**	**3100**	**3100**	**na**	**186,000**
Residential SSL[c]				**31.3**	**7.07**	**15,600**	**96.6[d]**	**3130**	**11.1**	**400**	**23.5**	**1560**	**125,000**	**54.8**	**391**	**391**	**na**	**23,500**
RE32-13-40869	32-61498	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-40860	32-61499	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-40870	32-61499	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-40861	32-61500	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-40871	32-61500	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-40862	32-61501	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	0.254	NA	NA	NA	NA	NA	NA	NA
RE32-13-40872	32-61501	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-40863	32-61502	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	21.9	NA	NA	NA	NA	NA	NA	NA
RE32-13-40873	32-61502	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	0.884	NA	NA	NA	NA	NA	NA	NA
RE32-13-40864	32-61503	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	0.179	NA	NA	NA	NA	NA	NA	NA
RE32-13-40874	32-61503	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-40865	32-61504	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	9.18	NA	NA	NA	NA	NA	NA	NA
RE32-13-40875	32-61504	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	0.34	NA	NA	NA	NA	NA	NA	NA
RE32-13-40866	32-61505	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	1.91	NA	NA	NA	NA	NA	NA	NA
RE32-13-40876	32-61505	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	0.176	NA	NA	NA	NA	NA	NA	NA
RE32-13-40878	32-61506	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	1.69	NA	NA	NA	NA	NA	NA	NA
RE32-13-40883	32-61506	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-40879	32-61507	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-40884	32-61507	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-40880	32-61508	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	1.8	NA	NA	NA	NA	NA	NA	NA
RE32-13-40885	32-61508	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE32-13-40881	32-61509	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	0.142	NA	NA	NA	NA	NA	NA	NA
RE32-13-40886	32-61509	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	0.194	NA	NA	NA	NA	NA	NA	NA
RE32-13-40882	32-61510	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	1.22	NA	NA	NA	NA	NA	NA	NA
RE32-13-40887	32-61510	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	0.167	NA	NA	NA	NA	NA	NA	NA
RE32-13-40902	WST-600902	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RELA-15-97209	32-614812	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	0.768 (J+)	NA	NA	NA	NA	NA	NA	NA

Table 9.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Antimony	Arsenic	Barium	Chromium	Copper	Cyanide (Total)	Lead	Mercury	Nickel	Nitrate	Perchlorate	Selenium	Silver	Sodium	Zinc
Soil Background Value[a]				**0.83**	**8.17**	**295**	**19.3**	**14.7**	**0.5**	**22.3**	**0.1**	**15.4**	**na**[b]	**na**	**1.52**	**1**	**915**	**48.8**
Qbt 2,3,4 Background Value[a]				**0.5**	**2.79**	**46**	**7.14**	**4.66**	**0.5**	**11.2**	**0.1**	**6.58**	**na**	**na**	**0.3**	**1**	**2770**	**63.5**
Sediment Background Value[a]				**0.83**	**3.98**	**127**	**10.5**	**11.2**	**0.82**	**19.7**	**0.1**	**9.38**	**na**	**na**	**0.3**	**1**	**1470**	**60.2**
Industrial SSL[c]				**519**	**35.9**	**255,000**	**505**[d]	**51,900**	**62.8**	**800**	**389**	**25,700**	**2,080,000**	**908**	**6490**	**6490**	**na**	**389,000**
Construction Worker SSL[c]				**142**	**41.2**	**4,390**	**134**[d]	**14,200**	**12**	**800**	**77.1**	**12,400**	**991,000**	**434**	**3100**	**3100**	**na**	**186,000**
Residential SSL[c]				**31.3**	**7.07**	**15,600**	**96.6**[d]	**3130**	**11.1**	**400**	**23.5**	**1560**	**125,000**	**54.8**	**391**	**391**	**na**	**23,500**
RELA-15-97210	32-614812	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	4.4	NA	NA	NA	NA	NA	NA	NA
RELA-15-97211	32-614814	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	1.43	NA	NA	NA	NA	NA	NA	NA
RELA-15-97212	32-614814	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	0.18	NA	NA	NA	NA	NA	NA	NA
RELA-15-97213	32-614815	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	3.93 (J)	NA	NA	NA	NA	NA	NA	NA
RELA-15-97214	32-614815	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	1.1	NA	NA	NA	NA	NA	NA	NA
RELA-15-97215	32-614817	3–4	SOIL	NA	NA	NA	NA	NA	NA	NA	0.374	NA	NA	NA	NA	NA	NA	NA
RELA-15-97216	32-614817	5–6	SOIL	NA	NA	NA	NA	NA	NA	NA	0.221	NA	NA	NA	NA	NA	NA	NA
RELA-15-97174	32-61533	2–3	SOIL	NA	NA	NA	NA	NA	NA	NA	0.227	NA	NA	NA	NA	NA	NA	NA
RELA-15-97181	32-61533	4–5	SOIL	NA	NA	NA	NA	NA	NA	NA	8.09	NA	NA	NA	NA	NA	NA	NA
RELA-15-97469	32-61533	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	0.127 (J)	NA	NA	NA	NA	NA	NA	NA
RELA-15-97470	32-61533	6–7	QBT3	NA	NA	NA	NA	NA	NA	NA	0.219	NA	NA	NA	NA	NA	NA	NA
RELA-15-97175	32-61534	2–3	SOIL	NA	NA	NA	NA	NA	NA	NA	1.95	NA	NA	NA	NA	NA	NA	NA
RELA-15-97182	32-61534	4–5	SOIL	NA	NA	NA	NA	NA	NA	NA	0.509	NA	NA	NA	NA	NA	NA	NA
RELA-15-97176	32-61535	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	1.95	NA	NA	NA	NA	NA	NA	NA
RELA-15-97183	32-61535	4–5	QBT3	NA	NA	NA	NA	NA	NA	NA	0.558	NA	NA	NA	NA	NA	NA	NA

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] BVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SSLs are from NMED (2017, 602273) unless otherwise noted.

[d] SSL for total chromium.

[e] — = Not detected or not detected above BV.

[f] NA = Not analyzed.

Table 9.2-3
Organic Chemicals Detected at SWMU 32-002(b2)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Butylbenzylphthalate	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	Heptachlorodibenzodioxins (Total)
Industrial SSL[a]				**11.1**	**32**	**23.6**	**32**	**25,300[b]**	**323**	**1830**	**12,000[c]**	**3230**	**3.23**	**33,700**	**na[d]**	**na**
Construction Worker SSL[a]				**85.3**	**240**	**106**	**240**	**7530[b]**	**2310**	**5380**	**5380[e]**	**23,100**	**24.0**	**10,000**	**na**	**na**
Residential SSL[a]				**2.43**	**1.53**	**1.12**	**1.53**	**1740[b]**	**15.3**	**380**	**2900[c]**	**153**	**0.153**	**2320**	**na**	**na**
RE00-08-15167	00-603589	3.5–4.5	QBT3	—[f]	—	—	—	—	—	0.23 (J)	—	—	—	—	5.2E-007 (J)	1.28E-006 (J)
RE00-08-15168	00-603589	5.5–6.5	QBT3	—	—	—	—	—	—	0.098 (J)	—	—	—	—	2.15E-006 (J)	4.49E-006 (J)
RE00-08-15169	00-603590	5.5–6.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	1.28E-006 (J)	3.23E-006 (J)
RE00-08-15170	00-603590	7.5–8.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	3.73E-007 (J)	8.5E-007 (J)
RE00-08-15171	00-603591	5.5–6.5	QBT3	—	—	—	—	—	—	0.7	0.085 (J)	—	—	—	1.95E-005 (J)	4.68E-005 (J)
RE00-08-15172	00-603591	7.5–8.5	QBT3	—	—	—	—	—	—	0.69	0.051 (J)	—	—	—	1.01E-05	2.18E-05
RE00-08-15173	00-603592	3.5–4.5	QBT3	0.4	—	—	—	—	—	—	—	—	—	—	4.70E-06	8.24E-06
RE00-08-15174	00-603592	5.5–6.5	QBT3	0.078	—	—	—	—	—	—	—	—	—	—	1.74E-006 (J)	3.23E-06
RE00-08-15177	00-603594	3.5–4.5	QBT3	—	—	—	—	—	—	0.32 (J)	—	—	—	—	6.04E-06	1.47E-05
RE00-08-15178	00-603594	6.5–7.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	1.66E-006 (J)	4.43E-06
RE00-08-15179	00-603595	1.2–2.2	QBT3	0.088	0.14 (J)	0.41	0.69	0.3 (J)	0.52	—	—	0.48	0.09 (J)	0.11 (J)	0.000102	0.000329
RE00-08-15180	00-603595	3.2–4.2	QBT3	0.059	—	—	—	—	—	—	—	—	—	—	4.01E-05	0.000124
RE00-08-15181	00-603596	1.25–2.25	QBT3	—	—	—	—	—	—	0.12 (J)	—	—	—	—	8.40E-05	0.000163
RE00-08-15182	00-603596	3.25–4.25	QBT3	—	—	—	—	—	—	0.44	—	—	—	—	2.83E-05	5.85E-05
RE00-08-15183	00-603597	0.75–1.75	QBT3	0.031 (J)	—	—	0.039 (J)	—	—	—	—	0.041 (J)	—	0.044 (J)	0.00032	0.000555
RE00-08-15184	00-603597	2.75–3.75	QBT3	—	—	—	—	—	—	—	—	—	—	—	1.39E-05	2.41E-05
RE00-08-15185	00-603598	1.25–2.25	QBT3	—	—	—	—	—	—	—	—	—	—	—	1.61E-006 (J)	1.61E-06
RE00-08-15186	00-603598	3.25–4.25	QBT3	—	—	—	—	—	—	—	—	—	—	—	6.07E-007 (J)	1.15E-06
RE00-08-15187	00-603599	0–0.5	SOIL	—	0.039 (J)	0.061 (J)	0.091 (J)	—	0.072 (J)	—	—	0.091 (J)	—	0.14 (J)	4.22E-05	0.000107
RE00-08-15188	00-603599	2.5–3.5	QBT2	—	—	—	—	—	—	—	—	—	—	—	1.67E-006 (J)	4.07E-06

Table 9.2-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	Heptachlorodibenzofurans (Total)	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	Hexachlorodibenzodioxins (Total)	Hexachlorodibenzofuran[1,2,3,4,7,8-]	Hexachlorodibenzofuran[1,2,3,6,7,8-]	Hexachlorodibenzofuran[1,2,3,7,8,9-]	Hexachlorodibenzofuran[2,3,4,6,7,8-]	Hexachlorodibenzofurans (Total)
Industrial SSL[a]				**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**
Construction Worker SSL[a]				**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**
Residential SSL[a]				**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**
RE00-08-15167	00-603589	3.5–4.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-15168	00-603589	5.5–6.5	QBT3	—	—	—	—	—	—	1.78E-007 (J)	—	—	—	—	—
RE00-08-15169	00-603590	5.5–6.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-15170	00-603590	7.5–8.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-15171	00-603591	5.5–6.5	QBT3	4.28E-006 (J)	—	1.22E-005 (J)	3.07E-007 (J)	8.3E-007 (J)	6.56E-007 (J)	5.15E-006 (J)	2.85E-007 (J)	1.83E-007 (J)	—	3.04E-007 (J)	4.88E-006 (J)
RE00-08-15172	00-603591	7.5–8.5	QBT3	3.18E-006 (J)	1.95E-007 (J)	8.68E-006 (J)	—	4.06E-007 (J)	2.86E-007 (J)	2.12E-06	2.7E-007 (J)	—	—	1.61E-007 (J)	2.78E-006 (J)
RE00-08-15173	00-603592	3.5–4.5	QBT3	—	3.18E-007 (J)	4.34E-006 (J)	—	—	—	3.18E-07	4.11E-007 (J)	1.67E-007 (J)	—	2.15E-007 (J)	2.94E-006 (J)
RE00-08-15174	00-603592	5.5–6.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-15177	00-603594	3.5–4.5	QBT3	—	—	5.69E-006 (J)	—	—	—	1.06E-06	1.82E-007 (J)	—	—	—	2.07E-006 (J)
RE00-08-15178	00-603594	6.5–7.5	QBT3	—	—	—	—	—	—	1.84E-07	—	—	—	—	—
RE00-08-15179	00-603595	1.2–2.2	QBT3	3.92E-05	1.8E-006 (J)	0.000123	6.68E-007 (J)	2.72E-06	1.25E-006 (J)	2.15E-05	1.79E-006 (J)	8.26E-007 (J)	3.41E-007 (J)	1.3E-006 (J)	3.58E-05
RE00-08-15180	00-603595	3.2–4.2	QBT3	1.65E-005 (J)	8.73E-007 (J)	5.78E-05	3.02E-007 (J)	1.2E-006 (J)	5.94E-007 (J)	7.50E-06	5.65E-007 (J)	2.68E-007 (J)	—	3.83E-007 (J)	1.35E-05
RE00-08-15181	00-603596	1.25–2.25	QBT3	2.38E-005 (J)	1.2E-006 (J)	7.49E-05	7.63E-007 (J)	2.22E-006 (J)	1.67E-006 (J)	1.27E-05	5.69E-007 (J)	3.86E-007 (J)	—	5.84E-007 (J)	1.67E-05
RE00-08-15182	00-603596	3.25–4.25	QBT3	7.57E-006 (J)	4.72E-007 (J)	2.69E-05	—	7.18E-007 (J)	4.5E-007 (J)	3.68E-06	—	—	—	—	4.86E-006 (J)
RE00-08-15183	00-603597	0.75–1.75	QBT3	7.89E-05	6.02E-06	0.000245	3.13E-06	8.59E-06	6.72E-06	4.98E-05	2.01E-006 (J)	1.55E-006 (J)	4.85E-007 (J)	2.99E-06	7.00E-05
RE00-08-15184	00-603597	2.75–3.75	QBT3	3.29E-06	—	9.70E-06	—	4.22E-007 (J)	—	2.02E-06	—	—	—	—	2.32E-06
RE00-08-15185	00-603598	1.25–2.25	QBT3	3.96E-007 (J)	—	9.69E-07	—	—	—	—	—	—	—	—	4.27E-07
RE00-08-15186	00-603598	3.25–4.25	QBT3	—	—	—	—	—	—	—	—	—	—	—	—
RE00-08-15187	00-603599	0–0.5	SOIL	5.66E-06	5.23E-007 (J)	1.51E-05	4.91E-007 (J)	1.34E-006 (J)	8.39E-007 (J)	1.26E-05	6.06E-007 (J)	3.23E-007 (J)	—	4.44E-007 (J)	8.75E-06
RE00-08-15188	00-603599	2.5–3.5	QBT2	—	—	3.21E-07	—	—	—	—	—	—	—	—	—

Table 9.2-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Indeno(1,2,3-cd)pyrene	Methylene Chloride	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	Pentachlorodibenzodioxin[1,2,3,7,8-]	Pentachlorodibenzodioxins (Total)	Pentachlorodibenzofuran[1,2,3,7,8-]	Pentachlorodibenzofuran[2,3,4,7,8-]	Pentachlorodibenzofurans (Totals)	Phenanthrene	Pyrene	Tetrachlorodibenzofurans (Totals)
Industrial SSL[a]				**32.3**	**5110**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**25,300**	**25,300**	**na**
Construction Worker SSL[a]				**240**	**118**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**7530**	**7530**	**na**
Residential SSL[a]				**1.53**	**409**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**1740**	**1740**	**na**
RE00-08-15167	00-603589	3.5–4.5	QBT3	—	—	4.64E-006 (J)	—	—	—	—	—	—	—	—	—
RE00-08-15168	00-603589	5.5–6.5	QBT3	—	—	1.8E-005 (J)	—	—	—	—	—	3.65E-007 (J)	—	—	1.9E-007 (J)
RE00-08-15169	00-603590	5.5–6.5	QBT3	—	—	1.27E-005 (J)	—	—	—	—	1.03E-007 (J)	1.03E-007 (J)	—	—	—
RE00-08-15170	00-603590	7.5–8.5	QBT3	—	—	3.21E-006 (J)	—	—	—	—	—	—	—	—	—
RE00-08-15171	00-603591	5.5–6.5	QBT3	—	—	0.00018 (J)	1.18E-005 (J)	—	—	—	2.94E-007 (J)	2.96E-006 (J)	—	—	2.23E-007 (J)
RE00-08-15172	00-603591	7.5–8.5	QBT3	—	—	8.99E-05	7.99E-006 (J)	—	—	—	—	1.18E-06	—	—	—
RE00-08-15173	00-603592	3.5–4.5	QBT3	—	—	4.14E-05	4.81E-006 (J)	—	—	—	3.75E-007 (J)	2.66E-06	—	—	4.77E-07
RE00-08-15174	00-603592	5.5–6.5	QBT3	—	—	1.53E-05	1.61E-006 (J)	—	—	—	—	—	—	—	—
RE00-08-15177	00-603594	3.5–4.5	QBT3	—	—	4.38E-05	4.41E-006 (J)	—	—	—	—	7.68E-07	—	—	—
RE00-08-15178	00-603594	6.5–7.5	QBT3	—	0.0084 (J+)	1.24E-05	1.88E-006 (J)	—	—	—	—	2.71E-07	—	—	—
RE00-08-15179	00-603595	1.2–2.2	QBT3	0.26 (J)	—	0.000948	9.69E-05	2.85E-007 (J)	1.09E-06	2.3E-007 (J)	1.16E-006 (J)	1.20E-05	—	0.13 (J)	3.02E-06
RE00-08-15180	00-603595	3.2–4.2	QBT3	—	—	0.000342	4.66E-05	—	—	—	3.45E-007 (J)	3.08E-06	—	—	4.22E-07
RE00-08-15181	00-603596	1.25–2.25	QBT3	—	—	0.00067	8.04E-05	—	1.74E-07	—	2.26E-007 (J)	2.86E-06	—	—	4.03E-07
RE00-08-15182	00-603596	3.25–4.25	QBT3	—	—	0.000235	3.06E-05	—	—	—	—	3.98E-07	—	—	—
RE00-08-15183	00-603597	0.75–1.75	QBT3	—	—	0.00246 (J)	0.000285	1.09E-006 (J)	2.99E-06	—	7.43E-007 (J)	9.55E-06	—	0.041 (J)	2.13E-06
RE00-08-15184	00-603597	2.75–3.75	QBT3	—	—	0.000101 (J)	1.24E-05	—	—	—	—	2.83E-07	—	—	1.76E-07
RE00-08-15185	00-603598	1.25–2.25	QBT3	—	—	1.12E-005 (J)	8.44E-007 (J)	—	—	—	—	—	—	—	—
RE00-08-15186	00-603598	3.25–4.25	QBT3	—	—	3.3E-006 (J)	—	—	—	—	—	—	—	—	—
RE00-08-15187	00-603599	0–0.5	SOIL	—	—	0.000411 (J)	1.30E-05	—	3.96E-07	1.51E-007 (J)	3.7E-007 (J)	2.90E-06	0.072 (J)	0.12 (J)	9.37E-07
RE00-08-15188	00-603599	2.5–3.5	QBT2	—	0.004 (J)	1.3E-005 (J)	—	—	—	—	—	—	—	—	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] Pyrene used as a surrogate based on structural similarity.

[c] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

[d] na = Not available.

[e] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

[f] — = Not detected.

Table 9.2-4
Radionuclides Detected or Detected above BVs/FVs at SWMU 32-002(b2)

Sample ID	Location ID	Depth (ft)	Media	Plutonium-239/240	Strontium-90	Uranium-235/236
Soil Background Value[a]				**0.054**	**1.31**	**0.2**
Qbt 2,3,4 Background Value[a]				**na[b]**	**na**	**0.09**
Industrial SAL[c]				**1200**	**2400**	**160**
Construction Worker SAL[c]				**200**	**1400**	**130**
Residential SAL[c]				**79**	**15**	**42**
RE00-08-15179	00-603595	1.2–2.2	QBT3	—[d]	0.45	—
RE00-08-15183	00-603597	0.75–1.75	QBT3	0.171	—	—
RE00-08-15184	00-603597	2.75–3.75	QBT3	0.1	—	—
RE00-08-15188	00-603599	2.5-3.5	QBT2	—	—	0.104

Note: Results are in pCi/g.
[a] BVs/FVs are from LANL (1998, 059730).
[b] na = Not available.
[c] SALs are from LANL (2015, 600929).
[d] — = Not detected or not detected above BV/FV.

Table 10.2-1
Samples Collected and Analyses Requested at AOC C-43-001

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Lead	PCBs	Perchlorate	Strontium-90	VOCs	SVOCs	Dioxins/Furans	Cyanide
RE00-09-426	00-604277	0–1	SED	09-674[a]	09-673	09-674	09-674	09-674	09-674	09-673	—[b]	09-672	09-673	09-674	09-672	09-672	09-671	09-673
RE00-09-427	00-604277	1–2	QBT3	09-674	09-673	09-674	09-674	09-674	09-674	09-673	—	09-672	09-673	09-674	09-672	09-672	09-671	09-673
RE00-09-428	00-604278	0–1	SED	09-674	09-673	09-674	09-674	09-674	09-674	09-673	—	09-672	09-673	09-674	09-672	09-672	09-671	09-673
RE00-09-429	00-604278	1.5–2.5	QBT3	09-674	09-673	09-674	09-674	09-674	09-674	09-673	—	09-672	09-673	09-674	09-672	09-672	09-671	09-673
RE00-09-430	00-604279	0–1	SED	09-674	09-673	09-674	09-674	09-674	09-674	09-673	—	09-672	09-673	09-674	09-672	09-672	09-671	09-673
RE00-09-431	00-604279	2.5–3.5	QBT3	09-674	09-673	09-674	09-674	09-674	09-674	09-673	—	09-672	09-673	09-674	09-672	09-672	09-671	09-673
RE00-09-444	00-604286	0–1	SED	09-674	09-673	09-674	09-674	09-674	09-674	09-673	—	09-672	09-673	09-674	09-672	09-672	09-671	09-673
RE00-09-445	00-604286	1.5–2.5	SED	09-674	09-673	09-674	09-674	09-674	09-674	09-673	—	09-672	09-673	09-674	09-672	09-672	09-671	09-673
RE00-09-446	00-604286	4–5	QBT3	09-674	09-673	09-674	09-674	09-674	09-674	09-673	—	09-672	09-673	09-674	09-672	09-672	09-671	09-673

Table 10.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Lead	PCBs	Perchlorate	Strontium-90	VOCs	SVOCs	Dioxins/Furans	Cyanide
RE00-09-5306	00-604846	0–1	SED	09-1262	09-1260	09-1262	09-1262	09-1262	09-1262	09-1260	—	09-1261	09-1260	09-1262	09-1261	09-1261	09-1265	09-1260
RE00-09-5307	00-604846	1.5–2.5	QBT3	09-1262	09-1260	09-1262	09-1262	09-1262	09-1262	09-1260	—	09-1261	09-1260	09-1262	09-1261	09-1261	09-1265	09-1260
RE00-09-5308	00-604847	0–1	SED	09-1262	09-1260	09-1262	09-1262	09-1262	09-1262	09-1260	—	09-1261	09-1260	09-1262	09-1261	09-1261	09-1265	09-1260
RE00-09-5309	00-604847	1–2	QBT3	09-1262	09-1260	09-1262	09-1262	09-1262	09-1262	09-1260	—	09-1261	09-1260	09-1262	09-1261	09-1261	09-1265	09-1260
RE00-09-5310	00-604848	0–1	SED	09-1262	09-1260	09-1262	09-1262	09-1262	09-1262	09-1260	—	09-1261	09-1260	09-1262	09-1261	09-1261	09-1265	09-1260
RE00-09-5311	00-604848	1–2	QBT3	09-1262	09-1260	09-1262	09-1262	09-1262	09-1262	09-1260	—	09-1261	09-1260	09-1262	09-1261	09-1261	09-1265	09-1260
RELA-16-106263	01-258	0–1	ALLH	—	—	—	—	—	—	—	2016-535	—	—	—	—	—	—	—
RELA-16-106286	01-258	2–3	QBT3	—	—	—	—	—	—	—	2016-535	—	—	—	—	—	—	—
RELA-16-106309	01-258	3–4	QBT3	—	—	—	—	—	—	—	2016-535	—	—	—	—	—	—	—
RELA-16-106332	01-258	5–6	QBT3	—	—	—	—	—	—	—	2016-536	—	—	—	—	—	—	—
RELA-16-106264	01-259	0–1.0	QBT3	—	—	—	—	—	—	—	2016-533	—	—	—	—	—	—	—
RELA-16-106287	01-259	2–3	QBT3	—	—	—	—	—	—	—	2016-533	—	—	—	—	—	—	—
RELA-16-106310	01-259	3–4	QBT3	—	—	—	—	—	—	—	2016-533	—	—	—	—	—	—	—
RELA-16-106333	01-259	5–6	QBT3	—	—	—	—	—	—	—	2016-533	—	—	—	—	—	—	—
RELA-16-106265	01-260	0–1	QBT3	—	—	—	—	—	—	—	2016-536	—	—	—	—	—	—	—
RELA-16-106288	01-260	2–3	QBT3	—	—	—	—	—	—	—	2016-536	—	—	—	—	—	—	—
RELA-16-106311	01-260	3–4	QBT3	—	—	—	—	—	—	—	2016-536	—	—	—	—	—	—	—
RELA-16-106334	01-260	5–6	QBT3	—	—	—	—	—	—	—	2016-536	—	—	—	—	—	—	—
RELA-16-106266	01-261	0–1	QBT3	—	—	—	—	—	—	—	2016-536	—	—	—	—	—	—	—
RELA-16-106289	01-261	2–3	QBT3	—	—	—	—	—	—	—	2016-536	—	—	—	—	—	—	—
RELA-16-106312	01-261	3–4	QBT3	—	—	—	—	—	—	—	2016-536	—	—	—	—	—	—	—
RELA-16-106335	01-261	5–6	QBT3	—	—	—	—	—	—	—	2016-536	—	—	—	—	—	—	—
RELA-16-106267	01-262	0–1	ALLH	—	—	—	—	—	—	—	2016-533	—	—	—	—	—	—	—
RELA-16-106290	01-262	2–3	QBT3	—	—	—	—	—	—	—	2016-535	—	—	—	—	—	—	—
RELA-16-106313	01-262	3–4	QBT3	—	—	—	—	—	—	—	2016-535	—	—	—	—	—	—	—
RELA-16-106336	01-262	5–6	QBT3	—	—	—	—	—	—	—	2016-535	—	—	—	—	—	—	—
RELA-16-106268	01-263	0–1	ALLH	—	—	—	—	—	—	—	2016-536	—	—	—	—	—	—	—
RELA-16-106291	01-263	2–3	QBT3	—	—	—	—	—	—	—	2016-536	—	—	—	—	—	—	—
RELA-16-106337	01-263	5–6	QBT3	—	—	—	—	—	—	—	2016-537	—	—	—	—	—	—	—
RELA-16-106270	01-265	0–1	ALLH	—	—	—	—	—	—	—	2016-537	—	—	—	—	—	—	—
RELA-16-106293	01-265	2–3	ALLH	—	—	—	—	—	—	—	2016-537	—	—	—	—	—	—	—
RELA-16-106316	01-265	3–4	QBT3	—	—	—	—	—	—	—	2016-537	—	—	—	—	—	—	—
RELA-16-106339	01-265	5–6	QBT3	—	—	—	—	—	—	—	2016-537	—	—	—	—	—	—	—

Table 10.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Lead	PCBs	Perchlorate	Strontium-90	VOCs	SVOCs	Dioxins/Furans	Cyanide
RELA-16-106272	01-267	0–1	ALLH	—	—	—	—	—	—	—	2016-537	—	—	—	—	—	—	—
RELA-16-106295	01-267	2–3	QBT3	—	—	—	—	—	—	—	2016-537	—	—	—	—	—	—	—
RELA-16-106318	01-267	3–4	QBT3	—	—	—	—	—	—	—	2016-537	—	—	—	—	—	—	—
RELA-16-106341	01-267	5–6	QBT3	—	—	—	—	—	—	—	2016-537	—	—	—	—	—	—	—
RELA-16-106273	01-268	0–1	ALLH	—	—	—	—	—	—	—	2016-538	—	—	—	—	—	—	—
RELA-16-106296	01-268	2–3	QBT3	—	—	—	—	—	—	—	2016-538	—	—	—	—	—	—	—
RELA-16-106319	01-268	3–4	QBT3	—	—	—	—	—	—	—	2016-539	—	—	—	—	—	—	—
RELA-16-106342	01-268	5–6	QBT3	—	—	—	—	—	—	—	2016-545	—	—	—	—	—	—	—
RELA-16-106274	01-269	0–1	ALLH	—	—	—	—	—	—	—	2016-538	—	—	—	—	—	—	—
RELA-16-106297	01-269	2–3	QBT3	—	—	—	—	—	—	—	2016-538	—	—	—	—	—	—	—
RELA-16-106320	01-269	3–4	QBT3	—	—	—	—	—	—	—	2016-538	—	—	—	—	—	—	—
RELA-16-106343	01-269	5–6	QBT3	—	—	—	—	—	—	—	2016-538	—	—	—	—	—	—	—
RELA-16-106298	01-270	0–1	QBT3	—	—	—	—	—	—	—	2016-539	—	—	—	—	—	—	—
RELA-16-106275	01-270	2–3	QBT3	—	—	—	—	—	—	—	2016-539	—	—	—	—	—	—	—
RELA-16-106321	01-270	3–4	QBT3	—	—	—	—	—	—	—	2016-539	—	—	—	—	—	—	—
RELA-16-106344	01-270	5–6	QBT3	—	—	—	—	—	—	—	2016-545	—	—	—	—	—	—	—
RELA-16-106278	01-273	0–1	ALLH	—	—	—	—	—	—	—	2016-539	—	—	—	—	—	—	—
RELA-16-106301	01-273	2–3	QBT3	—	—	—	—	—	—	—	2016-539	—	—	—	—	—	—	—
RELA-16-106324	01-273	3–4	QBT3	—	—	—	—	—	—	—	2016-540	—	—	—	—	—	—	—
RELA-16-106347	01-273	5–6	QBT3	—	—	—	—	—	—	—	2016-545	—	—	—	—	—	—	—
RELA-16-106279	01-274	0–1	ALLH	—	—	—	—	—	—	—	2016-539	—	—	—	—	—	—	—
RELA-16-106348	01-274	2–3	QBT3	—	—	—	—	—	—	—	2016-539	—	—	—	—	—	—	—
RELA-16-106302	01-274	3–4	QBT3	—	—	—	—	—	—	—	2016-539	—	—	—	—	—	—	—
RELA-16-106325	01-274	5–6	QBT3	—	—	—	—	—	—	—	2016-545	—	—	—	—	—	—	—
RELA-16-106283	01-278	0–1	ALLH	—	—	—	—	—	—	—	2016-540	—	—	—	—	—	—	—
RELA-16-106306	01-278	2–3	QBT3	—	—	—	—	—	—	—	2016-540	—	—	—	—	—	—	—
RELA-16-106329	01-278	3–4	QBT3	—	—	—	—	—	—	—	2016-540	—	—	—	—	—	—	—
RELA-16-106352	01-278	5–6	QBT3	—	—	—	—	—	—	—	2016-545	—	—	—	—	—	—	—
RELA-16-106285	01-280	0–1	ALLH	—	—	—	—	—	—	—	2016-540	—	—	—	—	—	—	—
RELA-16-106308	01-280	2–3	QBT3	—	—	—	—	—	—	—	2016-540	—	—	—	—	—	—	—
RELA-16-106331	01-280	3–4	QBT3	—	—	—	—	—	—	—	2016-540	—	—	—	—	—	—	—
RELA-16-106354	01-280	5–6	QBT3	—	—	—	—	—	—	—	2016-545	—	—	—	—	—	—	—
RELA-16-106355	43-614768	0–1	QBT3	—	—	—	—	—	—	—	2016-540	—	—	—	—	—	—	—
RE43-12-555	43-614768	0–1	SED	—	—	—	—	—	—	—	12-136	—	—	—	—	—	—	—
RE43-13-38010	43-614768	10–11	QBT3	—	—	—	—	—	—	—	2013-1428	—	—	—	—	—	—	—

Table 10.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Lead	PCBs	Perchlorate	Strontium-90	VOCs	SVOCs	Dioxins/Furans	Cyanide
RE43-13-38011	43-614768	12–13	QBT3	—	—	—	—	—	—	—	2013-1428	—	—	—	—	—	—	—
RE43-13-38012	43-614768	14–15	QBT3	—	—	—	—	—	—	—	2013-1428	—	—	—	—	—	—	—
RE43-13-38013	43-614768	16–17	QBT3	—	—	—	—	—	—	—	2013-1428	—	—	—	—	—	—	—
RE43-13-38014	43-614768	18–19	QBT3	—	—	—	—	—	—	—	2013-1428	—	—	—	—	—	—	—
RE43-13-38015	43-614768	19–20	QBT3	—	—	—	—	—	—	—	2013-1428	—	—	—	—	—	—	—
RELA-16-106356	43-614768	2–3	QBT3	—	—	—	—	—	—	—	2016-540	—	—	—	—	—	—	—
RE43-12-556	43-614768	2–3	QBT3	—	—	—	—	—	—	—	12-136	—	—	—	—	—	—	—
RELA-16-106357	43-614768	3–4	QBT3	—	—	—	—	—	—	—	2016-545	—	—	—	—	—	—	—
RELA-16-106358	43-614768	5–6	QBT3	—	—	—	—	—	—	—	2016-545	—	—	—	—	—	—	—
RE43-13-38008	43-614768	6–7	QBT3	—	—	—	—	—	—	—	2013-1428	—	—	—	—	—	—	—
RE43-13-38009	43-614768	8–9	QBT3	—	—	—	—	—	—	—	2013-1428	—	—	—	—	—	—	—
RELA-16-106359	43-614769	0–1	ALLH	—	—	—	—	—	—	—	2016-540	—	—	—	—	—	—	—
RE43-12-557	43-614769	0–1	ALLH	—	—	—	—	—	—	—	12-136	—	—	—	—	—	—	—
RE43-13-38018	43-614769	10–11	QBT3	—	—	—	—	—	—	—	2013-1476	—	—	—	—	—	—	—
RE43-13-38019	43-614769	12–13	QBT3	—	—	—	—	—	—	—	2013-1476	—	—	—	—	—	—	—
RE43-13-38020	43-614769	14–15	QBT3	—	—	—	—	—	—	—	2013-1476	—	—	—	—	—	—	—
RE43-13-38021	43-614769	16–17	QBT3	—	—	—	—	—	—	—	2013-1476	—	—	—	—	—	—	—
RE43-13-38022	43-614769	18–19	QBT3	—	—	—	—	—	—	—	2013-1476	—	—	—	—	—	—	—
RE43-13-38023	43-614769	19–20	QBT3	—	—	—	—	—	—	—	2013-1476	—	—	—	—	—	—	—
RE43-12-558	43-614769	2–3	ALLH	—	—	—	—	—	—	—	12-136	—	—	—	—	—	—	—
RELA-16-106360	43-614769	2–3	QBT3	—	—	—	—	—	—	—	2016-540	—	—	—	—	—	—	—
RELA-16-106361	43-614769	3–4	QBT3	—	—	—	—	—	—	—	2016-545	—	—	—	—	—	—	—
RELA-16-106362	43-614769	5–6	QBT3	—	—	—	—	—	—	—	2016-545	—	—	—	—	—	—	—
RE43-13-38016	43-614769	6–7	QBT3	—	—	—	—	—	—	—	2013-1476	—	—	—	—	—	—	—
RE43-13-38017	43-614769	8–9	QBT3	—	—	—	—	—	—	—	2013-1476	—	—	—	—	—	—	—
RELA-16-106363	43-614770	0–1	ALLH	—	—	—	—	—	—	—	2016-545	—	—	—	—	—	—	—
RE43-12-559	43-614770	0–1	ALLH	—	—	—	—	—	—	—	12-136	—	—	—	—	—	—	—
RE43-13-38026	43-614770	10–11	QBT3	—	—	—	—	—	—	—	2013-1487	—	—	—	—	—	—	—
RE43-12-560	43-614770	2–3	ALLH	—	—	—	—	—	—	—	12-136	—	—	—	—	—	—	—
RELA-16-106364	43-614770	2–3	QBT3	—	—	—	—	—	—	—	2016-545	—	—	—	—	—	—	—
RELA-16-106365	43-614770	3–4	ALLH	—	—	—	—	—	—	—	2016-545	—	—	—	—	—	—	—
RELA-16-106366	43-614770	5–6	ALLH	—	—	—	—	—	—	—	2016-545	—	—	—	—	—	—	—
RE43-13-38024	43-614770	6–7	QBT3	—	—	—	—	—	—	—	2013-1477	—	—	—	—	—	—	—
RE43-13-38025	43-614770	8–9	QBT3	—	—	—	—	—	—	—	2013-1477	—	—	—	—	—	—	—
RE43-13-37931	43-61478	0–1	ALLH	—	—	—	—	—	—	—	2013-1396	—	—	—	—	—	—	—

Table 10.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Lead	PCBs	Perchlorate	Strontium-90	VOCs	SVOCs	Dioxins/Furans	Cyanide
RE43-13-37935	43-61478	12–13	QBT3	—	—	—	—	—	—	—	2013-1428	—	—	—	—	—	—	—
RE43-13-37936	43-61478	15–16	QBT3	—	—	—	—	—	—	—	2013-1428	—	—	—	—	—	—	—
RE43-13-37937	43-61478	17–18	QBT3	—	—	—	—	—	—	—	2013-1428	—	—	—	—	—	—	—
RE43-13-37938	43-61478	19–20	QBT3	—	—	—	—	—	—	—	2013-1428	—	—	—	—	—	—	—
RE43-13-37932	43-61478	3–4	QBT3	—	—	—	—	—	—	—	2013-1428	—	—	—	—	—	—	—
RE43-13-37933	43-61478	6–7	QBT3	—	—	—	—	—	—	—	2013-1428	—	—	—	—	—	—	—
RE43-13-37934	43-61478	9–10	QBT3	—	—	—	—	—	—	—	2013-1428	—	—	—	—	—	—	—
RE43-13-37939	43-61479	0–1	ALLH	—	—	—	—	—	—	—	2013-1396	—	—	—	—	—	—	—
RE43-13-37943	43-61479	12–13	QBT3	—	—	—	—	—	—	—	2013-1396	—	—	—	—	—	—	—
RE43-13-37944	43-61479	15–16	QBT3	—	—	—	—	—	—	—	2013-1396	—	—	—	—	—	—	—
RE43-13-37945	43-61479	17–18	QBT3	—	—	—	—	—	—	—	2013-1396	—	—	—	—	—	—	—
RE43-13-37946	43-61479	19–20	QBT3	—	—	—	—	—	—	—	2013-1396	—	—	—	—	—	—	—
RE43-13-37940	43-61479	3–4	QBT3	—	—	—	—	—	—	—	2013-1396	—	—	—	—	—	—	—
RE43-13-37941	43-61479	6–7	QBT3	—	—	—	—	—	—	—	2013-1396	—	—	—	—	—	—	—
RE43-13-37942	43-61479	9–10	QBT3	—	—	—	—	—	—	—	2013-1396	—	—	—	—	—	—	—
RE43-13-37947	43-61480	0–1	ALLH	—	—	—	—	—	—	—	2013-1371	—	—	—	—	—	—	—
RE43-13-37951	43-61480	12–13	QBT3	—	—	—	—	—	—	—	2013-1396	—	—	—	—	—	—	—
RE43-13-37952	43-61480	15–16	QBT3	—	—	—	—	—	—	—	2013-1396	—	—	—	—	—	—	—
RE43-13-37953	43-61480	17–18	QBT3	—	—	—	—	—	—	—	2013-1396	—	—	—	—	—	—	—
RE43-13-37954	43-61480	19–20	QBT3	—	—	—	—	—	—	—	2013-1396	—	—	—	—	—	—	—
RE43-13-37948	43-61480	3–4	ALLH	—	—	—	—	—	—	—	2013-1371	—	—	—	—	—	—	—
RE43-13-37949	43-61480	6–7	QBT3	—	—	—	—	—	—	—	2013-1396	—	—	—	—	—	—	—
RE43-13-37950	43-61480	9–10	QBT3	—	—	—	—	—	—	—	2013-1396	—	—	—	—	—	—	—
RE43-13-37955	43-61481	0–1	ALLH	—	—	—	—	—	—	—	2013-1373	—	—	—	—	—	—	—
RE43-13-37959	43-61481	12–13	QBT3	—	—	—	—	—	—	—	2013-1373	—	—	—	—	—	—	—
RE43-13-37960	43-61481	15–16	QBT3	—	—	—	—	—	—	—	2013-1371	—	—	—	—	—	—	—
RE43-13-37961	43-61481	17–18	QBT3	—	—	—	—	—	—	—	2013-1371	—	—	—	—	—	—	—
RE43-13-37962	43-61481	19–20	QBT3	—	—	—	—	—	—	—	2013-1371	—	—	—	—	—	—	—
RE43-13-37956	43-61481	3–4	QBT3	—	—	—	—	—	—	—	2013-1371	—	—	—	—	—	—	—
RE43-13-37957	43-61481	6–7	QBT3	—	—	—	—	—	—	—	2013-1371	—	—	—	—	—	—	—
RE43-13-37958	43-61481	9–10	QBT3	—	—	—	—	—	—	—	2013-1371	—	—	—	—	—	—	—
RE43-13-37963	43-61482	0–1	ALLH	—	—	—	—	—	—	—	2013-1372	—	—	—	—	—	—	—
RE43-13-37972	43-61482	3–4	QBT3	—	—	—	—	—	—	—	2013-1372	—	—	—	—	—	—	—
RE43-13-37981	43-61482	5–6	QBT3	—	—	—	—	—	—	—	2013-1372	—	—	—	—	—	—	—
RE43-13-37990	43-61482	7–8	QBT3	—	—	—	—	—	—	—	2013-1372	—	—	—	—	—	—	—

Table 10.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Lead	PCBs	Perchlorate	Strontium-90	VOCs	SVOCs	Dioxins/Furans	Cyanide
RE43-13-37999	43-61482	9–10	QBT3	—	—	—	—	—	—	—	2013-1372	—	—	—	—	—	—	—
RE43-13-37964	43-61483	0–1	QBT3	—	—	—	—	—	—	—	2013-1372	—	—	—	—	—	—	—
RE43-13-37973	43-61483	3–4	QBT3	—	—	—	—	—	—	—	2013-1372	—	—	—	—	—	—	—
RE43-13-37982	43-61483	5–6	QBT3	—	—	—	—	—	—	—	2013-1372	—	—	—	—	—	—	—
RE43-13-37991	43-61483	7–8	QBT3	—	—	—	—	—	—	—	2013-1372	—	—	—	—	—	—	—
RE43-13-38000	43-61483	9–10	QBT3	—	—	—	—	—	—	—	2013-1372	—	—	—	—	—	—	—
RE43-13-37965	43-61484	0–1	ALLH	—	—	—	—	—	—	—	2013-1372	—	—	—	—	—	—	—
RE43-13-37974	43-61484	3–4	QBT3	—	—	—	—	—	—	—	2013-1372	—	—	—	—	—	—	—
RE43-13-37983	43-61484	5–6	QBT3	—	—	—	—	—	—	—	2013-1372	—	—	—	—	—	—	—
RE43-13-37992	43-61484	7–8	QBT3	—	—	—	—	—	—	—	2013-1371	—	—	—	—	—	—	—
RE43-13-38001	43-61484	9–10	QBT3	—	—	—	—	—	—	—	2013-1371	—	—	—	—	—	—	—
RE43-13-37966	43-61485	0–1	ALLH	—	—	—	—	—	—	—	2013-1477	—	—	—	—	—	—	—
RE43-13-37975	43-61485	3–4	ALLH	—	—	—	—	—	—	—	2013-1477	—	—	—	—	—	—	—
RE43-13-37984	43-61485	5–6	ALLH	—	—	—	—	—	—	—	2013-1477	—	—	—	—	—	—	—
RE43-13-37967	43-61486	0–1	ALLH	—	—	—	—	—	—	—	2013-1477	—	—	—	—	—	—	—
RE43-13-37976	43-61486	3–4	QBT3	—	—	—	—	—	—	—	2013-1477	—	—	—	—	—	—	—
RE43-13-37968	43-61487	0–1	ALLH	—	—	—	—	—	—	—	2013-1477	—	—	—	—	—	—	—
RE43-13-37977	43-61487	3–4	ALLH	—	—	—	—	—	—	—	2013-1477	—	—	—	—	—	—	—
RE43-13-37969	43-61488	0–1	ALLH	—	—	—	—	—	—	—	2013-1487	—	—	—	—	—	—	—
RE43-13-37978	43-61488	3–4	ALLH	—	—	—	—	—	—	—	2013-1487	—	—	—	—	—	—	—
RE43-13-37970	43-61489	0–1	ALLH	—	—	—	—	—	—	—	2013-1487	—	—	—	—	—	—	—
RE43-13-37979	43-61489	3–4	QBT3	—	—	—	—	—	—	—	2013-1487	—	—	—	—	—	—	—
RE43-13-37988	43-61489	5–6	QBT3	—	—	—	—	—	—	—	2013-1487	—	—	—	—	—	—	—
RE43-13-37997	43-61489	7–8	QBT3	—	—	—	—	—	—	—	2013-1487	—	—	—	—	—	—	—
RE43-13-38006	43-61489	9–10	QBT3	—	—	—	—	—	—	—	2013-1487	—	—	—	—	—	—	—
RE43-13-37971	43-61490	0–1	ALLH	—	—	—	—	—	—	—	2013-1487	—	—	—	—	—	—	—
RE43-13-37980	43-61490	3–4	QBT3	—	—	—	—	—	—	—	2013-1487	—	—	—	—	—	—	—
RE43-13-37989	43-61490	5–6	QBT3	—	—	—	—	—	—	—	2013-1487	—	—	—	—	—	—	—
RE43-13-37998	43-61490	7–8	QBT3	—	—	—	—	—	—	—	2013-1487	—	—	—	—	—	—	—
RE43-13-38007	43-61490	9–10	QBT3	—	—	—	—	—	—	—	2013-1487	—	—	—	—	—	—	—
RE43-13-39466	43-61491	0–1	ALLH	—	—	—	—	—	—	—	2013-1531	—	—	—	—	—	—	—
RE43-13-39467	43-61491	3–4	QBT3	—	—	—	—	—	—	—	2013-1531	—	—	—	—	—	—	—
RE43-13-39468	43-61491	5–6	QBT3	—	—	—	—	—	—	—	2013-1531	—	—	—	—	—	—	—
RE43-13-39469	43-61491	7–8	QBT3	—	—	—	—	—	—	—	2013-1531	—	—	—	—	—	—	—
RE43-13-39470	43-61491	9–10	QBT3	—	—	—	—	—	—	—	2013-1531	—	—	—	—	—	—	—

Table 10.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Nitrate	Gamma-emitting Radionuclides	Tritium	Isotopic Plutonium	Isotopic Uranium	TAL Metals	Lead	PCBs	Perchlorate	Strontium-90	VOCs	SVOCs	Dioxins/Furans	Cyanide
RE43-13-39471	43-61492	0–1	ALLH	—	—	—	—	—	—	—	2013-1531	—	—	—	—	—	—	—
RE43-13-39472	43-61492	3–4	QBT3	—	—	—	—	—	—	—	2013-1531	—	—	—	—	—	—	—
RE43-13-39473	43-61492	5–6	QBT3	—	—	—	—	—	—	—	2013-1531	—	—	—	—	—	—	—
RE43-13-39474	43-61492	7–8	QBT3	—	—	—	—	—	—	—	2013-1531	—	—	—	—	—	—	—
RE43-13-39475	43-61492	9–10	QBT3	—	—	—	—	—	—	—	2013-1531	—	—	—	—	—	—	—
RE43-13-39476	43-61493	0–1	ALLH	—	—	—	—	—	—	—	2013-1531	—	—	—	—	—	—	—
RE43-13-39477	43-61493	3–4	QBT3	—	—	—	—	—	—	—	2013-1531	—	—	—	—	—	—	—
RE43-13-39478	43-61493	5–6	QBT3	—	—	—	—	—	—	—	2013-1531	—	—	—	—	—	—	—
RE43-13-39479	43-61493	7–8	QBT3	—	—	—	—	—	—	—	2013-1531	—	—	—	—	—	—	—
RE43-13-39480	43-61493	9–10	QBT3	—	—	—	—	—	—	—	2013-1531	—	—	—	—	—	—	—

[a] Analytical request number.

[b] — = Analysis not requested.

Table 10.2-2
Inorganic Chemicals Detected or Detected above BVs at AOC C-43-001

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Barium	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Mercury	Nickel	Nitrate	Selenium	Silver	Vanadium	Zinc
Soil Background Value[a]				**8.17**	**295**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**0.1**	**15.4**	**na[b]**	**1.52**	**1**	**39.6**	**48.8**
Qbt 2,3,4 Background Value[a]				**2.79**	**46**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**0.1**	**6.58**	**na**	**0.3**	**1**	**17**	**63.5**
Sediment Background Value[a]				**3.98**	**127**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**0.1**	**9.38**	**na**	**0.3**	**1**	**19.7**	**60.2**
Industrial SSL[c]				**35.9**	**255,000**	**1110**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**389**	**25,700**	**2,080,000**	**6490**	**6490**	**6530**	**389,000**
Construction Worker SSL[c]				**41.2**	**4,390**	**72.1**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**77.1**	**12,400**	**991,000**	**3100**	**3100**	**614**	**186,000**
Residential SSL[c]				**7.07**	**15,600**	**70.5**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**23.5**	**1560**	**125,000**	**391**	**391**	**394**	**23,500**
RE00-09-426	00-604277	0–1	SED	—[e]	—	—	—	—	—	—	—	26.9	—	—	0.71	0.55 (U)	—	—	78 (J-)
RE00-09-427	00-604277	1–2	QBT3	—	—	—	—	8.5	—	4.9	—	14.3	0.117 (J)	—	0.2 (J)	0.32 (J+)	—	—	—
RE00-09-428	00-604278	0–1	SED	—	—	—	4670 (J-)	—	—	—	—	—	—	—	1.6	0.61 (U)	—	—	—
RE00-09-429	00-604278	1.5–2.5	QBT3	—	—	—	3430 (J-)	22	—	—	0.62 (U)	—	—	11.3	0.26	—	—	—	—
RE00-09-430	00-604279	0–1	SED	—	—	—	—	—	—	—	—	26.8	0.129 (J)	—	0.96	—	—	—	—
RE00-09-431	00-604279	2.5–3.5	QBT3	—	46.1 (J)	—	—	7.9	—	5.3	—	14.2	—	—	0.24 (J)	0.63 (U)	—	—	—
RE00-09-444	00-604286	0–1	SED	—	—	—	—	—	—	15.3	—	—	0.125 (J)	—	0.12 (J)	0.59 (U)	—	—	74.7 (J-)

Table 10.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Barium	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Mercury	Nickel	Nitrate	Selenium	Silver	Vanadium	Zinc
Soil Background Value[a]				**8.17**	**295**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**0.1**	**15.4**	**na[b]**	**1.52**	**1**	**39.6**	**48.8**
Qbt 2,3,4 Background Value[a]				**2.79**	**46**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**0.1**	**6.58**	**na**	**0.3**	**1**	**17**	**63.5**
Sediment Background Value[a]				**3.98**	**127**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**0.1**	**9.38**	**na**	**0.3**	**1**	**19.7**	**60.2**
Industrial SSL[c]				**35.9**	**255,000**	**1110**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**389**	**25,700**	**2,080,000**	**6490**	**6490**	**6530**	**389,000**
Construction Worker SSL[c]				**41.2**	**4,390**	**72.1**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**77.1**	**12,400**	**991,000**	**3100**	**3100**	**614**	**186,000**
Residential SSL[c]				**7.07**	**15,600**	**70.5**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**23.5**	**1560**	**125,000**	**391**	**391**	**394**	**23,500**
RE00-09-445	00-604286	1.5–2.5	SED	4.5	—	—	—	13.1	4.9	52	1.3 (J)	60.5	0.308 (J)	—	0.19 (J)	0.41 (J+)	—	20.4	144 (J-)
RE00-09-446	00-604286	4–5	QBT3	—	—	—	—	18.6	—	9.3	—	22.5	—	10.1	0.2 (J)	0.32 (J+)	—	—	—
RE00-09-5306	00-604846	0–1	SED	—	—	0.46	—	24.3	—	13.2	—	90.7	0.242	—	0.1 (J)	0.53 (U)	—	—	125
RE00-09-5307	00-604846	1.5–2.5	QBT3	—	—	—	—	—	—	5.4	0.54 (U)	16.2	0.134	—	—	0.59 (U)	—	—	—
RE00-09-5308	00-604847	0–1	SED	—	—	0.41	—	43.5	—	17.2	—	202	0.291	—	—	0.59 (U)	1.1	—	127
RE00-09-5309	00-604847	1–2	QBT3	3.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-09-5310	00-604848	0–1	SED	—	—	—	—	—	—	—	—	23	—	—	0.15 (J)	0.59 (U)	—	—	—
RE00-09-5311	00-604848	1–2	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.19 (J)	—	—	—	—
RELA-16-106263	01-258	0–1	SOIL	NA[f]	NA	NA	NA	NA	NA	NA	NA	22.7	NA	NA	NA	NA	NA	NA	NA
RELA-16-106264	01-259	0–1.0	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	32.4	NA	NA	NA	NA	NA	NA	NA
RELA-16-106267	01-262	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	28.7	NA	NA	NA	NA	NA	NA	NA
RELA-16-106268	01-263	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	136	NA	NA	NA	NA	NA	NA	NA
RELA-16-106270	01-265	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	42.5	NA	NA	NA	NA	NA	NA	NA
RELA-16-106316	01-265	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	14.8	NA	NA	NA	NA	NA	NA	NA
RELA-16-106339	01-265	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	13.7	NA	NA	NA	NA	NA	NA	NA
RELA-16-106272	01-267	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	34.3	NA	NA	NA	NA	NA	NA	NA
RELA-16-106273	01-268	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	34.4	NA	NA	NA	NA	NA	NA	NA
RELA-16-106274	01-269	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	104	NA	NA	NA	NA	NA	NA	NA
RELA-16-106278	01-273	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	51.9	NA	NA	NA	NA	NA	NA	NA
RELA-16-106279	01-274	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	78.7	NA	NA	NA	NA	NA	NA	NA
RELA-16-106348	01-274	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	15.3	NA	NA	NA	NA	NA	NA	NA
RELA-16-106283	01-278	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	36.8	NA	NA	NA	NA	NA	NA	NA
RELA-16-106306	01-278	2–3	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	11.7	NA	NA	NA	NA	NA	NA	NA
RELA-16-106329	01-278	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	11.3	NA	NA	NA	NA	NA	NA	NA
RELA-16-106285	01-280	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	24.1	NA	NA	NA	NA	NA	NA	NA
RELA-16-106357	43-614768	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	15.5	NA	NA	NA	NA	NA	NA	NA
RELA-16-106358	43-614768	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	12.3	NA	NA	NA	NA	NA	NA	NA
RE43-13-38008	43-614768	6–7	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38009	43-614768	8–9	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38010	43-614768	10–11	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA

Table 10.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Barium	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Mercury	Nickel	Nitrate	Selenium	Silver	Vanadium	Zinc
Soil Background Value[a]				**8.17**	**295**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**0.1**	**15.4**	**na[b]**	**1.52**	**1**	**39.6**	**48.8**
Qbt 2,3,4 Background Value[a]				**2.79**	**46**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**0.1**	**6.58**	**na**	**0.3**	**1**	**17**	**63.5**
Sediment Background Value[a]				**3.98**	**127**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**0.1**	**9.38**	**na**	**0.3**	**1**	**19.7**	**60.2**
Industrial SSL[c]				**35.9**	**255,000**	**1110**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**389**	**25,700**	**2,080,000**	**6490**	**6490**	**6530**	**389,000**
Construction Worker SSL[c]				**41.2**	**4,390**	**72.1**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**77.1**	**12,400**	**991,000**	**3100**	**3100**	**614**	**186,000**
Residential SSL[c]				**7.07**	**15,600**	**70.5**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**23.5**	**1560**	**125,000**	**391**	**391**	**394**	**23,500**
RE43-13-38011	43-614768	12–13	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38012	43-614768	14–15	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38013	43-614768	16–17	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38014	43-614768	18–19	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38015	43-614768	19–20	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RELA-16-106359	43-614769	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	40.1	NA	NA	NA	NA	NA	NA	NA
RE43-13-38016	43-614769	6–7	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38017	43-614769	8–9	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38018	43-614769	10–11	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38019	43-614769	12–13	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38020	43-614769	14–15	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38021	43-614769	16–17	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38022	43-614769	18–19	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38023	43-614769	19–20	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RELA-16-106363	43-614770	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	31.3	NA	NA	NA	NA	NA	NA	NA
RELA-16-106365	43-614770	3–4	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	33	NA	NA	NA	NA	NA	NA	NA
RELA-16-106366	43-614770	5–6	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	29	NA	NA	NA	NA	NA	NA	NA
RE43-13-38024	43-614770	6–7	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38025	43-614770	8–9	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38026	43-614770	10–11	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37931	43-61478	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	37.8	NA	NA	NA	NA	NA	NA	NA
RE43-13-37932	43-61478	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37933	43-61478	6–7	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37934	43-61478	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37935	43-61478	12–13	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37936	43-61478	15–16	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37937	43-61478	17–18	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37938	43-61478	19–20	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37939	43-61479	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37940	43-61479	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA

Table 10.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Barium	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Mercury	Nickel	Nitrate	Selenium	Silver	Vanadium	Zinc
Soil Background Value[a]				**8.17**	**295**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**0.1**	**15.4**	**na[b]**	**1.52**	**1**	**39.6**	**48.8**
Qbt 2,3,4 Background Value[a]				**2.79**	**46**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**0.1**	**6.58**	**na**	**0.3**	**1**	**17**	**63.5**
Sediment Background Value[a]				**3.98**	**127**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**0.1**	**9.38**	**na**	**0.3**	**1**	**19.7**	**60.2**
Industrial SSL[c]				**35.9**	**255,000**	**1110**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**389**	**25,700**	**2,080,000**	**6490**	**6490**	**6530**	**389,000**
Construction Worker SSL[c]				**41.2**	**4,390**	**72.1**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**77.1**	**12,400**	**991,000**	**3100**	**3100**	**614**	**186,000**
Residential SSL[c]				**7.07**	**15,600**	**70.5**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**23.5**	**1560**	**125,000**	**391**	**391**	**394**	**23,500**
RE43-13-37941	43-61479	6–7	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37942	43-61479	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37943	43-61479	12–13	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37944	43-61479	15–16	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37945	43-61479	17–18	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37946	43-61479	19–20	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37947	43-61480	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	23	NA	NA	NA	NA	NA	NA	NA
RE43-13-37948	43-61480	3–4	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37949	43-61480	6–7	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37950	43-61480	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37951	43-61480	12–13	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37952	43-61480	15–16	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37953	43-61480	17–18	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37954	43-61480	19–20	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37955	43-61481	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	36.2	NA	NA	NA	NA	NA	NA	NA
RE43-13-37956	43-61481	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37957	43-61481	6–7	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37958	43-61481	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37959	43-61481	12–13	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37960	43-61481	15–16	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37961	43-61481	17–18	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37962	43-61481	19–20	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37963	43-61482	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37972	43-61482	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37981	43-61482	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37990	43-61482	7–8	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37999	43-61482	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37964	43-61483	0–1	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	29.6	NA	NA	NA	NA	NA	NA	NA
RE43-13-37973	43-61483	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	18.4	NA	NA	NA	NA	NA	NA	NA
RE43-13-37982	43-61483	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA

Table 10.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Barium	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Mercury	Nickel	Nitrate	Selenium	Silver	Vanadium	Zinc
Soil Background Value[a]				**8.17**	**295**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**0.1**	**15.4**	**na[b]**	**1.52**	**1**	**39.6**	**48.8**
Qbt 2,3,4 Background Value[a]				**2.79**	**46**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**0.1**	**6.58**	**na**	**0.3**	**1**	**17**	**63.5**
Sediment Background Value[a]				**3.98**	**127**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**0.1**	**9.38**	**na**	**0.3**	**1**	**19.7**	**60.2**
Industrial SSL[c]				**35.9**	**255,000**	**1110**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**389**	**25,700**	**2,080,000**	**6490**	**6490**	**6530**	**389,000**
Construction Worker SSL[c]				**41.2**	**4,390**	**72.1**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**77.1**	**12,400**	**991,000**	**3100**	**3100**	**614**	**186,000**
Residential SSL[c]				**7.07**	**15,600**	**70.5**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**23.5**	**1560**	**125,000**	**391**	**391**	**394**	**23,500**
RE43-13-37991	43-61483	7–8	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38000	43-61483	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37965	43-61484	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37974	43-61484	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37983	43-61484	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37992	43-61484	7–8	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38001	43-61484	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37966	43-61485	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	25.3	NA	NA	NA	NA	NA	NA	NA
RE43-13-37975	43-61485	3–4	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	27.6	NA	NA	NA	NA	NA	NA	NA
RE43-13-37984	43-61485	5–6	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37967	43-61486	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	40.7	NA	NA	NA	NA	NA	NA	NA
RE43-13-37976	43-61486	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	14.8	NA	NA	NA	NA	NA	NA	NA
RE43-13-37968	43-61487	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	22.5	NA	NA	NA	NA	NA	NA	NA
RE43-13-37977	43-61487	3–4	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	24.6	NA	NA	NA	NA	NA	NA	NA
RE43-13-37969	43-61488	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	29.7	NA	NA	NA	NA	NA	NA	NA
RE43-13-37978	43-61488	3–4	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37970	43-61489	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	34.9	NA	NA	NA	NA	NA	NA	NA
RE43-13-37979	43-61489	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37988	43-61489	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37997	43-61489	7–8	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38006	43-61489	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37971	43-61490	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37980	43-61490	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37989	43-61490	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-37998	43-61490	7–8	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-38007	43-61490	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-39466	43-61491	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	41.8	NA	NA	NA	NA	NA	NA	NA
RE43-13-39467	43-61491	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-39468	43-61491	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-39469	43-61491	7–8	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA

Table 10.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Barium	Cadmium	Calcium	Chromium	Cobalt	Copper	Cyanide (Total)	Lead	Mercury	Nickel	Nitrate	Selenium	Silver	Vanadium	Zinc
Soil Background Value[a]				**8.17**	**295**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**0.5**	**22.3**	**0.1**	**15.4**	**na[b]**	**1.52**	**1**	**39.6**	**48.8**
Qbt 2,3,4 Background Value[a]				**2.79**	**46**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**0.5**	**11.2**	**0.1**	**6.58**	**na**	**0.3**	**1**	**17**	**63.5**
Sediment Background Value[a]				**3.98**	**127**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**0.82**	**19.7**	**0.1**	**9.38**	**na**	**0.3**	**1**	**19.7**	**60.2**
Industrial SSL[c]				**35.9**	**255,000**	**1110**	**na**	**505[d]**	**388**	**51,900**	**62.8**	**800**	**389**	**25,700**	**2,080,000**	**6490**	**6490**	**6530**	**389,000**
Construction Worker SSL[c]				**41.2**	**4,390**	**72.1**	**na**	**134[d]**	**36.7**	**14,200**	**12**	**800**	**77.1**	**12,400**	**991,000**	**3100**	**3100**	**614**	**186,000**
Residential SSL[c]				**7.07**	**15,600**	**70.5**	**na**	**96.6[d]**	**23.4**	**3130**	**11.1**	**400**	**23.5**	**1560**	**125,000**	**391**	**391**	**394**	**23,500**
RE43-13-39470	43-61491	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-39471	43-61492	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-39472	43-61492	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-39473	43-61492	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-39474	43-61492	7–8	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-39475	43-61492	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-39476	43-61493	0–1	SOIL	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-39477	43-61493	3–4	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-39478	43-61493	5–6	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-39479	43-61493	7–8	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA
RE43-13-39480	43-61493	9–10	QBT3	NA	NA	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	NA	NA

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] BVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SSLs are from NMED (2017, 602273) unless otherwise noted.

[d] SSL for total chromium.

[e] — = Not detected or not detected above BV.

[f] NA = Not analyzed.

Table 10.2-3
Organic Chemicals Detected at AOC C-43-001

Sample ID	Location ID	Depth (ft)	Media	Acenaphthene	Acenaphthylene	Acetone	Anthracene	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Bromomethane
Industrial SSL[a]				**50,500**	**25,300**	**959,000**	**253,000**	**11.0**	**11.1**	**32**	**23.6**	**32.3**	**25,300[b]**	**323**	**1830**	**97.3**
Construction Worker SSL[a]				**15,100**	**7530**	**241,000**	**75,300**	**4.91**	**85.3**	**240**	**106**	**240**	**7530[b]**	**2310**	**5380**	**17.7**
Residential SSL[a]				**3480**	**1740**	**66,300**	**17,400**	**1.14**	**2.43**	**1.53**	**1.12**	**1.53**	**1740[b]**	**15.3**	**380**	**17.6**
RE00-09-426	00-604277	0–1	SED	0.19 (J)	—[c]	—	0.31 (J)	0.035 (J)	0.019 (J)	0.97	1	1.1	0.44	1	0.082 (J)	—
RE00-09-427	00-604277	1–2	QBT3	0.12 (J)	—	—	0.18 (J)	0.013 (J)	0.0075 (J)	0.34 (J)	0.34 (J)	0.32 (J)	0.17 (J)	0.38 (J)	0.075 (J)	—
RE00-09-428	00-604278	0–1	SED	0.5	—	—	0.56	0.048 (J)	—	0.96	0.94	0.8	0.49	0.85	—	—
RE00-09-429	00-604278	1.5–2.5	QBT3	0.085 (J)	—	—	0.1 (J)	0.0056 (J)	0.0042 (J)	0.14 (J)	0.15 (J)	0.11 (J)	0.12 (J)	0.13 (J)	—	—
RE00-09-430	00-604279	0–1	SED	0.86	—	—	1.3	0.026 (J)	0.017 (J)	2.2	2.1	1.9	0.89	2.1	0.064 (J)	—
RE00-09-431	00-604279	2.5–3.5	QBT3	0.22 (J)	0.087 (J)	0.049	0.73	0.019 (J)	0.0097 (J)	2.8	2.8 (J)	2 (J)	1.2 (J)	3 (J)	0.08 (J)	—
RE00-09-444	00-604286	0–1	SED	0.43	—	—	0.79	0.022 (J)	0.027 (J)	2.3	2.2 (J)	2.5 (J)	1 (J)	2.4 (J)	0.34 (J)	—
RE00-09-445	00-604286	1.5–2.5	SED	0.5 (J)	—	—	0.66	0.052 (J)	0.044 (J)	1.4	1.2	1.2	0.54	1.5	—	—
RE00-09-446	00-604286	4–5	QBT3	0.12 (J)	—	—	0.24 (J)	—	—	0.63	0.5	0.55	0.21 (J)	0.47	—	—
RE00-09-5306	00-604846	0–1	SED	0.26 (J)	—	—	0.43	0.2	—	1.8	1.8	1.7	0.72	1.9	0.13 (J)	0.00064 (J)
RE00-09-5307	00-604846	1.5–2.5	QBT3	0.046 (J)	—	—	0.11 (J)	—	—	0.3 (J)	0.3 (J)	0.28 (J)	0.12 (J)	0.29 (J)	—	0.00067 (J)
RE00-09-5308	00-604847	0–1	SED	0.22 (J)	—	—	0.33 (J)	0.16	—	1	1	0.89	0.4	1.1	0.082 (J)	—
RE00-09-5309	00-604847	1–2	QBT3	—	—	—	0.04 (J)	—	—	0.16 (J)	0.14 (J)	0.13 (J)	0.087 (J)	0.12 (J)	—	—
RE00-09-5310	00-604848	0–1	SED	0.12 (J)	—	—	0.12 (J)	—	—	0.19 (J)	0.19 (J)	0.13 (J)	0.13 (J)	0.15 (J)	—	—
RE00-09-5311	00-604848	1–2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.00072 (J)

Table 10.2-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Butylbenzylphthalate	Chrysene	Dibenz(a,h)anthracene	Dibenzofuran	Fluoranthene	Fluorene	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	Heptachlorodibenzodioxins (Total)	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	Heptachlorodibenzofurans (Total)	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	Hexachlorodibenzodioxin[1,2,3,6,7,8-]
Industrial SSL[a]				**12,000**[d]	**3230**	**3.23**	**1000**[d]	**33,700**	**33,700**	**na**[e]	**na**	**na**	**na**	**na**	**na**	**na**
Construction Worker SSL[a]				**5380**[f]	**23,100**	**24.0**	**354**[f]	**10,000**	**10,000**	**na**	**na**	**na**	**na**	**na**	**na**	**na**
Residential SSL[a]				**2900**[d]	**153**	**0.153**	**73.0**[d]	**2320**	**2320**	**na**	**na**	**na**	**na**	**na**	**na**	**na**
RE00-09-426	00-604277	0–1	SED	—	1.1	0.15 (J)	0.074 (J)	2.4	0.17 (J)	2.98E-05	5.29E-05	4.69E-06	3.88E-007 (J)	1.28E-05	—	1.23E-006 (J)
RE00-09-427	00-604277	1–2	QBT3	—	0.36 (J)	—	0.052 (J)	0.94	0.12 (J)	7.20E-06	1.33E-05	1.57E-006 (J)	—	4.21E-06	—	3.16E-007 (J)
RE00-09-428	00-604278	0–1	SED	—	1.1	—	0.2 (J)	2.4	0.4	8.91E-06	1.71E-05	2.50E-06	2.41E-007 (J)	6.31E-06	—	4.59E-007 (J)
RE00-09-429	00-604278	1.5–2.5	QBT3	—	0.16 (J)	—	—	0.37 (J)	0.07 (J)	2E-006 (J)	4.03E-06	4.66E-007 (J)	—	1.16E-06	—	—
RE00-09-430	00-604279	0–1	SED	—	2.3	—	0.4	6	0.82	4.67E-05	8.09E-05	1.22E-05	8.69E-007 (J)	4.51E-05	—	2.1E-006 (J)
RE00-09-431	00-604279	2.5–3.5	QBT3	—	2.6	—	0.094 (J)	—	0.28 (J)	2.07E-05	3.86E-05	4.54E-06	2.83E-007 (J)	1.66E-05	1.73E-007 (J)	8.33E-007 (J)
RE00-09-444	00-604286	0–1	SED	—	2.4	—	0.21 (J)	6.2	0.42	1.57E-05	3.25E-05	2.75E-06	2.4E-007 (J)	6.87E-06	—	8.17E-007 (J)
RE00-09-445	00-604286	1.5–2.5	SED	—	1.5	—	0.23 (J)	3.9	0.44 (J)	4.75E-05	9.46E-05	7.97E-06	6.92E-007 (J)	2.24E-05	1.11E-006 (J)	2.63E-06
RE00-09-446	00-604286	4–5	QBT3	—	0.65	—	0.063 (J)	1.4	0.12 (J)	5.76E-06	1.21E-05	8.81E-007 (J)	—	3.03E-06	—	4.12E-007 (J)
RE00-09-5306	00-604846	0–1	SED	0.06 (J)	2.1	0.27 (J)	0.11 (J)	4.6	0.24 (J)	6.13E-05	0.000117	1.01E-05	9.89E-007 (J)	2.82E-05	7.05E-007 (J)	2.41E-006 (J)
RE00-09-5307	00-604846	1.5–2.5	QBT3	—	0.32 (J)	0.051 (J)	—	0.67	0.046 (J)	1.63E-05	3.06E-05	3.96E-006 (J)	3.95E-007 (J)	1.01E-05	2.59E-007 (J)	7.86E-007 (J)
RE00-09-5308	00-604847	0–1	SED	—	1.1	0.15 (J)	0.093 (J)	2.6	0.19 (J)	7.40E-05	0.000149	1.14E-05	1.14E-006 (J)	3.30E-05	1.07E-006 (J)	2.78E-06
RE00-09-5309	00-604847	1–2	QBT3	—	0.18 (J)	—	—	0.36 (J)	—	3.99E-06	7.59E-06	—	—	1.87E-006 (J)	—	1.67E-007 (J)
RE00-09-5310	00-604848	0–1	SED	0.17 (J)	0.2 (J)	0.04 (J)	0.047 (J)	0.49	0.1 (J)	3.18E-06	6.33E-06	—	—	1.45E-006 (J)	—	1.39E-007 (J)
RE00-09-5311	00-604848	1–2	QBT3	—	—	—	—	—	—	5.47E-007 (J)	1.10E-06	—	—	—	—	—

Table 10.2-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Hexachlorodibenzodioxins (Total)	Hexachlorodibenzofuran[1,2,3,4,7,8-]	Hexachlorodibenzofuran[1,2,3,6,7,8-]	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	Hexachlorodibenzofuran[1,2,3,7,8,9-]	Hexachlorodibenzofuran[2,3,4,6,7,8-]	Hexachlorodibenzofurans (Total)	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Methylnaphthalene[2-]	Naphthalene	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]
Industrial SSL[a]				**na**	**na**	**na**	**na**	**na**	**na**	**na**	**32.2**	**14,100[g]**	**3370**	**16,800**	**na**	**na**
Construction Worker SSL[a]				**na**	**na**	**na**	**na**	**na**	**na**	**na**	**240**	**2710[g]**	**1000**	**5020**	**na**	**na**
Residential SSL[a]				**na**	**na**	**na**	**na**	**na**	**na**	**na**	**1.53**	**2350[g]**	**232**	**1160**	**na**	**na**
RE00-09-426	00-604277	0–1	SED	—	7.66E-06	8.49E-007 (J)	5.08E-007 (J)	—	4.58E-007 (J)	9.04E-06	0.41 (J)	—	—	0.079 (J)	0.000244	1.25E-05
RE00-09-427	00-604277	1–2	QBT3	—	1.26E-06	3.26E-007 (J)	—	—	1.75E-007 (J)	3.01E-006 (J)	0.14 (J)	—	—	0.079 (J)	6.29E-05	3.86E-006 (J)
RE00-09-428	00-604278	0–1	SED	—	3.13E-06	—	5.29E-007 (J)	—	2.98E-007 (J)	3.15E-006 (J)	0.42 (J)	—	0.12 (J)	0.34 (J)	6.76E-05	6.15E-06
RE00-09-429	00-604278	1.5–2.5	QBT3	—	—	2.77E-007 (J)	—	—	—	—	0.092 (J)	—	—	0.069 (J)	1.49E-005 (J)	1.06E-006 (J)
RE00-09-430	00-604279	0–1	SED	7.15E-007 (J)	1.02E-05	1.81E-006 (J)	4.62E-007 (J)	—	5.2E-007 (J)	1.58E-05	0.81 (J)	—	0.21 (J)	0.7	0.000435	2.96E-05
RE00-09-431	00-604279	2.5–3.5	QBT3	—	2.52E-06	9.15E-007 (J)	—	—	2.06E-007 (J)	5.27E-006 (J)	1 (J)	0.042	0.052 (J)	0.15 (J)	0.0002	1.22E-05
RE00-09-444	00-604286	0–1	SED	5.53E-007 (J)	6.58E-06	—	3.24E-007 (J)	—	3.83E-007 (J)	5.17E-006 (J)	0.89 (J)	—	0.08 (J)	0.26 (J)	0.000134	6.45E-06
RE00-09-445	00-604286	1.5–2.5	SED	1.81E-006 (J)	2.13E-05	1.62E-006 (J)	7.82E-007 (J)	—	1.04E-006 (J)	1.71E-05	0.47 (J)	0.07	0.1 (J)	0.27 (J)	0.000394	1.80E-05
RE00-09-446	00-604286	4–5	QBT3	—	3.06E-06	2.28E-007 (J)	—	—	—	2.24E-006 (J)	0.19 (J)	0.22	—	0.047 (J)	3.45E-05	2.02E-006 (J)
RE00-09-5306	00-604846	0–1	SED	1.38E-006 (J)	1.84E-05	1.14E-006 (J)	8.85E-007 (J)	2.38E-007 (J)	1.16E-006 (J)	1.78E-05	0.67 (J)	—	0.045 (J)	0.1 (J)	0.000587	2.50E-05
RE00-09-5307	00-604846	1.5–2.5	QBT3	5.09E-007 (J)	5.82E-06	4.71E-007 (J)	3.75E-007 (J)	—	5.77E-007 (J)	8.02E-06	0.11 (J)	—	—	—	0.000127	8.98E-06
RE00-09-5308	00-604847	0–1	SED	1.98E-006 (J)	2.56E-05	1.44E-006 (J)	1.07E-006 (J)	2.8E-007 (J)	1.44E-006 (J)	2.20E-05	0.38 (J)	—	0.046 (J)	0.14 (J)	0.000711	2.71E-05
RE00-09-5309	00-604847	1–2	QBT3	8.99E-008 (J)	1.18E-06	1.08E-007 (J)	—	—	8.12E-008 (J)	1.31E-06	0.074 (J)	—	—	—	2.84E-05	1.83E-006 (J)
RE00-09-5310	00-604848	0–1	SED	1.17E-007 (J)	1.13E-06	—	—	—	1.06E-007 (J)	1.06E-06	0.11 (J)	—	—	0.082 (J)	2.13E-05	1.42E-006 (J)
RE00-09-5311	00-604848	1–2	QBT3	—	—	—	—	—	—	1.43E-07	—	—	—	—	3.64E-006 (J)	3.36E-007 (J)

Table 10.2-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Pentachlorodibenzodioxin[1,2,3,7,8-]	Pentachlorodibenzodioxins (Total)	Pentachlorodibenzofuran[1,2,3,7,8-]	Pentachlorodibenzofuran[2,3,4,7,8-]	Pentachlorodibenzofurans (Totals)	Phenanthrene	Pyrene	Tetrachlorodibenzodioxin[2,3,7,8-]	Tetrachlorodibenzodioxins (Total)	Tetrachlorodibenzofuran[2,3,7,8-]	Tetrachlorodibenzofurans (Totals)	Toluene
Industrial SSL[a]				**na**	**na**	**na**	**na**	**na**	**25,300**	**25,300**	**0.000238**	**14,100**	**0.00243**	**na**	**61,100**
Construction Worker SSL[a]				**na**	**na**	**na**	**na**	**na**	**7530**	**7530**	**0.000808**	**2710**	**0.0172**	**na**	**14,000**
Residential SSL[a]				**na**	**na**	**na**	**na**	**na**	**1740**	**1740**	**0.000049**	**2350**	**0.00049**	**na**	**5220**
RE00-09-426	00-604277	0–1	SED	—	8.47E-07	4.13E-007 (J)	5.06E-007 (J)	5.46E-06	1.6	1.9	—	3.30E-07	—	1.69E-06	—
RE00-09-427	00-604277	1–2	QBT3	—	—	—	—	9.81E-07	0.73	0.71	—	1.61E-07	—	—	—
RE00-09-428	00-604278	0–1	SED	—	—	5E-007 (J)	3.44E-007 (J)	2.88E-06	2.6	2.3	—	—	—	3.50E-07	—
RE00-09-429	00-604278	1.5–2.5	QBT3	—	—	—	—	—	0.41	0.43	—	—	—	—	—
RE00-09-430	00-604279	0–1	SED	—	5.49E-07	8.29E-007 (J)	5.14E-007 (J)	5.29E-06	5.3	4.7	—	—	—	1.25E-06	—
RE00-09-431	00-604279	2.5–3.5	QBT3	—	5.80E-07	3.63E-007 (J)	2.23E-007 (J)	2.46E-06	2.8	5	—	—	—	2.80E-07	—
RE00-09-444	00-604286	0–1	SED	—	4.05E-07	3.41E-007 (J)	3.83E-007 (J)	3.49E-06	3.8	4.3	1.23E-007 (J)	1.23E-07	—	2.35E-06	—
RE00-09-445	00-604286	1.5–2.5	SED	—	3.13E-06	1.09E-006 (J)	1.48E-006 (J)	1.82E-05	3.2	3	—	2.39E-07	1.09E-06	1.21E-05	0.00063 (J)
RE00-09-446	00-604286	4–5	QBT3	—	—	—	—	1.98E-06	1.2	1.3	—	—	—	1.12E-06	—
RE00-09-5306	00-604846	0–1	SED	4.34E-007 (J)	3.76E-06	3.16E-007 (J)	1.02E-006 (J)	1.31E-05	2.5	3.3	3.37E-007 (J)	1.60E-06	8.77E-07	1.02E-05	—
RE00-09-5307	00-604846	1.5–2.5	QBT3	1.62E-007 (J)	6.69E-07	1.52E-007 (J)	5.71E-007 (J)	7.58E-06	0.42	0.5	—	—	—	4.82E-06	—
RE00-09-5308	00-604847	0–1	SED	5.96E-007 (J)	4.57E-06	4.01E-007 (J)	1.28E-006 (J)	1.72E-05	1.6	1.8	2.68E-007 (J)	1.41E-06	1.12E-06	1.21E-05	—
RE00-09-5309	00-604847	1–2	QBT3	—	—	—	1.12E-007 (J)	1.03E-06	0.2 (J)	0.3 (J)	—	—	—	5.22E-07	—
RE00-09-5310	00-604848	0–1	SED	—	9.45E-08	1.04E-007 (J)	2.52E-007 (J)	1.46E-06	0.5	0.43	—	—	—	1.03E-06	—
RE00-09-5311	00-604848	1–2	QBT3	—	—	—	—	8.76E-08	—	—	—	—	—	—	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] Pyrene used as a surrogate based on structural similarity.

[c] — = Not detected.

[d] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

[e] na = Not available.

[f] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

[g] Isopropylbenzene used as a surrogate based on structural similarity.

Table 10.2-4
Radionuclides Detected or Detected above BVs/FVs at AOC C-43-001

Sample ID	Location ID	Depth (ft)	Media	Tritium
Qbt 2,3,4 Background Value[a]				**na**[b]
Industrial SAL[c]				**2,400,000**
Construction Worker SAL[c]				**1,600,000**
Residential SAL[c]				**1700**
RE00-09-429	00-604278	1.5–2.5	QBT3	1.71

Note: Results are in pCi/g.

[a] BVs/FVs are from LANL (1998, 059730).

[b] na = Not available.

[c] SALs are from LANL (2015, 600929).

Table 11.2-1
Samples Collected and Analyses Requested at SWMU 61-007

Sample ID	Location ID	Depth (ft)	Media	PCBs	SVOCs	VOCs
RE00-09-459	00-604287	0.5–1.5	FILL	09-803[a]	09-803	09-803
RE00-09-460	00-604287	4.5–5.5	FILL	09-803	09-803	09-803
RE61-14-79360	00-604287	6–7	FILL	2014-3410	—[b]	—
RE61-14-79361	00-604287	7–8	FILL	2014-3410	—	—
RE61-14-79362	00-604287	8–9	FILL	2014-3410	—	—
RE00-09-461	00-604287	9.5–10.5	FILL	09-803	09-803	09-803
RE00-09-462	00-604287	14.5–15.5	QBT3	09-803	09-803	09-803
RE00-09-463	00-604287	17–17.5	QBT3	09-803	09-803	09-803
RE00-09-465	00-604288	0.5–1.5	FILL	09-803	09-803	09-803
RE00-09-466	00-604288	4.5–5.5	QBT3	09-803	09-803	09-803
RE00-09-471	00-604289	0.5–1.5	FILL	09-803	09-803	09-803
RE00-09-472	00-604289	4.5–5.5	FILL	09-803	09-803	09-803
RE61-14-79369	00-604289	6–7	FILL	2014-3410	—	—
RE61-14-79370	00-604289	7–8	QBT4	2014-3410	—	—
RE61-14-79371	00-604289	8–9	QBT4	2014-3410	—	—
RE00-09-473	00-604289	9.5–10.5	FILL	09-803	09-803	09-803
RE00-09-474	00-604289	14–15	FILL	09-803	09-803	09-803
RE00-09-477	00-604290	0.5–1.5	FILL	09-803	09-803	09-803
RE00-09-478	00-604290	4.5–5.5	FILL	09-803	09-803	09-803
RE00-09-479	00-604290	9.5–10.5	FILL	09-803	09-803	09-803
RE00-09-480	00-604290	14.5–15.5	FILL	09-803	09-803	09-803

Table 11.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	PCBs	SVOCs	VOCs
RE00-09-481	00-604290	31.5–32.5	FILL	09-803	09-803	09-803
RE00-09-483	00-604291	2.75–3.75	FILL	09-825	09-841	09-825
RE00-09-485	00-604291	12.75–13.75	FILL	09-825	09-841	09-825
RE61-14-79366	00-604291	6–7	FILL	2014-3410	—	—
RE61-14-79367	00-604291	7–8	FILL	2014-3410	—	—
RE00-09-484	00-604291	7.75–8.75	FILL	09-825	09-841	09-825
RE61-14-79368	00-604291	8–9	FILL	2014-3410	—	—
RE61-12-551	00-604291	15–16	FILL	12-708	—	—
RE61-12-552	00-604291	19–20	FILL	12-708	—	—
RE61-12-2193	00-604291	29–30	QBT3	12-708	—	—
RE61-12-2194	00-604291	39–40	QBT3	12-715	—	—
RE61-12-2195	00-604291	49–50	QBT3	12-715	—	—
RE00-09-486	00-604532	0.5–1.5	FILL	09-825	09-841	09-825
RE00-09-487	00-604532	4.5–5.5	FILL	09-825	09-841	09-825
RE00-09-488	00-604532	5.75–6.75	QBT3	09-825	09-841	09-825
RE61-12-533	61-614762	1–2	FILL	12-715	—	—
RE61-12-534	61-614762	10–11	FILL	12-715	—	—
RE61-12-535	61-614762	19–20	QBT3	12-715	—	—
RE61-12-536	61-614763	1–2	FILL	12-715	—	—
RE61-12-537	61-614763	10–11	QBT3	12-715	—	—
RE61-12-538	61-614763	19–20	QBT3	12-715	—	—
RE61-12-539	61-614764	1–2	FILL	12-724	—	—
RE61-14-79363	61-614764	6–7	FILL	2014-3410	—	—
RE61-14-79364	61-614764	7–8	FILL	2014-3410	—	—
RE61-14-79365	61-614764	8–9	FILL	2014-3410	—	—
RE61-12-540	61-614764	10–11	FILL	12-724	—	—
RE61-12-541	61-614764	19–20	FILL	12-724	—	—
RE61-12-542	61-614765	1–2	FILL	12-724	—	—
RE61-12-543	61-614765	10–11	QBT3	12-724	—	—
RE61-12-544	61-614765	19–20	QBT3	12-724	—	—
RE61-12-548	61-614767	1–2	FILL	12-724	—	—
RE61-12-549	61-614767	10–11	FILL	12-724	—	—
RE61-12-550	61-614767	19–20	FILL	12-724	—	—
RE61-13-37849	61-61477	4.5–5.5	FILL	2013-1106	—	—
RE61-13-37867	61-61477	7–8	FILL	2013-1106	—	—
RE61-13-37885	61-61477	14–15	FILL	2013-1106	—	—

Table 11.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	PCBs	SVOCs	VOCs
RE61-13-37903	61-61477	19–20	FILL	2013-1106	—	—
RE61-13-37850	61-61478	4.5–5.5	FILL	2013-1106	—	—
RE61-13-37868	61-61478	7–8	FILL	2013-1106	—	—
RE61-13-37886	61-61478	14–15	FILL	2013-1106	—	—
RE61-13-37904	61-61478	19–20	FILL	2013-1106	—	—
RE61-13-37851	61-61479	4.5–5.5	FILL	2013-1106	—	—
RE61-13-37869	61-61479	7–8	FILL	2013-1106	—	—
RE61-13-37887	61-61479	14–15	QBT3	2013-1106	—	—
RE61-13-37905	61-61479	19–20	QBT3	2013-1106	—	—
RE61-13-37852	61-61480	4.5–5.5	FILL	2013-1106	—	—
RE61-13-37870	61-61480	7–8	FILL	2013-1106	—	—
RE61-13-37888	61-61480	14–15	FILL	2013-1106	—	—
RE61-13-37906	61-61480	19–20	QBT3	2013-1106	—	—
RE61-13-37853	61-61481	4.5–5.5	FILL	2013-1121	—	—
RE61-13-37871	61-61481	7–8	FILL	2013-1121	—	—
RE61-13-37889	61-61481	14–15	FILL	2013-1121	—	—
RE61-13-37907	61-61481	19–20	FILL	2013-1121	—	—
RE61-13-37854	61-61482	4.5–5.5	FILL	2013-1121	—	—
RE61-13-37872	61-61482	7–8	FILL	2013-1121	—	—
RE61-13-37890	61-61482	14–15	QBT3	2013-1270	—	—
RE61-13-37908	61-61482	19–20	QBT3	2013-1270	—	—
RE61-13-37855	61-61483	4.5–5.5	FILL	2013-1152	—	—
RE61-13-37873	61-61483	7–8	FILL	2013-1152	—	—
RE61-13-37891	61-61483	14–15	FILL	2013-1270	—	—
RE61-13-37909	61-61483	19–20	QBT3	2013-1270	—	—
RE61-13-37856	61-61484	4.5–5.5	FILL	2013-1152	—	—
RE61-14-79372	61-61484	6–7	FILL	2014-3410	—	—
RE61-13-37874	61-61484	7–8	FILL	2013-1152	—	—
RE61-14-79373	61-61484	8–9	FILL	2014-3410	—	—
RE61-14-79374	61-61484	9–10	FILL	2014-3410	—	—
RE61-13-37892	61-61484	14–14.3	FILL	2013-1152	—	—
RE61-13-37910	61-61484	19–20	QBT3	2013-1312	—	—
RE61-13-37857	61-61485	4.5–5.5	FILL	2013-1152	—	—
RE61-13-37875	61-61485	7–8	FILL	2013-1152	—	—
RE61-13-37893	61-61485	14–15	FILL	2013-1152	—	—
RE61-13-37911	61-61485	19–20	FILL	2013-1152	—	—
RE61-13-37858	61-61486	4.5–5.5	FILL	2013-1152	—	—

Table 11.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	PCBs	SVOCs	VOCs
RE61-13-37876	61-61486	7–8	FILL	2013-1152	—	—
RE61-13-37894	61-61486	14–15	FILL	2013-1152	—	—
RE61-13-37912	61-61486	19–20	FILL	2013-1312	—	—
RE61-13-37859	61-61487	4.5–5.5	FILL	2013-1152	—	—
RE61-13-37877	61-61487	7–8	QBT3	2013-1152	—	—
RE61-13-37895	61-61487	14–15	QBT3	2013-1174	—	—
RE61-13-37913	61-61487	19–20	QBT3	2013-1312	—	—
RE61-13-37860	61-61488	4.5–5.5	FILL	2013-1174	—	—
RE61-13-37878	61-61488	7–8	QBT3	2013-1174	—	—
RE61-13-37896	61-61488	14–15	QBT3	2013-1312	—	—
RE61-13-37914	61-61488	19–20	QBT3	2013-1312	—	—
RE61-13-37861	61-61489	4.5–5.5	FILL	2013-1174	—	—
RE61-13-37879	61-61489	7–8	FILL	2013-1312	—	—
RE61-13-37897	61-61489	14–15	QBT3	2013-1312	—	—
RE61-13-37915	61-61489	19–20	QBT3	2013-1312	—	—
RE61-13-37862	61-61490	4.5–5.5	FILL	2013-1226	—	—
RE61-13-37880	61-61490	7–8	FILL	2013-1226	—	—
RE61-13-37898	61-61490	14–15	FILL	2013-1226	—	—
RE61-13-37916	61-61490	19–20	FILL	2013-1226	—	—
RE61-13-37863	61-61491	4.5–5.5	FILL	2013-1226	—	—
RE61-13-37881	61-61491	7–8	FILL	2013-1226	—	—
RE61-13-37899	61-61491	14–15	FILL	2013-1226	—	—
RE61-13-37917	61-61491	19–20	FILL	2013-1226	—	—
RE61-13-37864	61-61492	4.5–5.5	FILL	2013-1312	—	—
RE61-13-37882	61-61492	7–8	FILL	2013-1312	—	—
RE61-13-37900	61-61492	14–15	FILL	2013-1332	—	—
RE61-13-37918	61-61492	19–20	FILL	2013-1332	—	—
RE61-13-37865	61-61493	4.5–5.5	FILL	2013-1332	—	—
RE61-13-37883	61-61493	7–8	FILL	2013-1332	—	—
RE61-13-37901	61-61493	14–15	QBT3	2013-1332	—	—
RE61-13-37919	61-61493	19–20	QBT3	2013-1332	—	—
RE61-13-37866	61-61494	4.5–5.5	FILL	2013-1226	—	—
RE61-13-37884	61-61494	7–8	FILL	2013-1312	—	—
RE61-13-37902	61-61494	14–15	FILL	2013-1312	—	—
RE61-13-37920	61-61494	19–20	FILL	2013-1312	—	—

[a] Analytical request number.

[b] — = Analysis not requested.

Table 11.2-2
Organic Chemicals Other Than PCBs Detected at SWMU 61-007

Sample ID	Location ID	Depth (ft)	Media	Acenaphthene	Acetone	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzyl Alcohol	Bis(2-ethylhexyl)phthalate	Butanone[2-]
Industrial SSL[a]				**50,500**	**959,000**	**253,000**	**32.3**	**23.6**	**32.3**	**25,300[b]**	**323**	**82,000[c]**	**1830**	**409,000**
Construction Worker SSL[a]				**15,100**	**241,000**	**75,300**	**240**	**106**	**240**	**7530[b]**	**2310**	**26,900[d]**	**5380**	**91,200**
Residential SSL[a]				**3480**	**66,300**	**17,400**	**1.53**	**1.12**	**1.53**	**1740[b]**	**15.3**	**6300[c]**	**380**	**37,300**
RE00-09-461	00-604287	9.5–10.5	FILL	—[e]	—	—	—	—	—	—	—	—	—	—
RE00-09-462	00-604287	14.5–15.5	QBT3	—	—	—	—	—	—	—	—	—	—	—
RE00-09-463	00-604287	17–17.5	QBT3	—	—	—	—	—	—	—	—	—	—	—
RE00-09-465	00-604288	0.5–1.5	FILL	0.091 (J)	—	0.14 (J)	0.31 (J)	0.31 (J)	0.27 (J)	0.14 (J)	0.28 (J)	—	—	—
RE00-09-466	00-604288	4.5–5.5	QBT3	—	—	—	—	—	—	—	—	—	—	—
RE00-09-473	00-604289	9.5–10.5	FILL	—	—	—	—	—	—	—	—	—	—	—
RE00-09-474	00-604289	14–15	FILL	—	0.15	—	—	—	—	—	—	—	—	—
RE00-09-477	00-604290	0.5–1.5	FILL	0.21 (J)	—	0.25 (J)	0.5	0.52	0.48	0.23 (J)	0.49	—	—	—
RE00-09-478	00-604290	4.5–5.5	FILL	—	—	—	—	—	—	—	—	—	—	—
RE00-09-479	00-604290	9.5–10.5	FILL	—	—	—	—	—	—	—	—	—	—	—
RE00-09-480	00-604290	14.5–15.5	FILL	—	—	—	—	—	—	—	—	—	0.1 (J)	—
RE00-09-481	00-604290	31.5–32.5	FILL	—	0.91 (J-)	—	—	—	—	—	—	—	—	0.029 (J)
RE00-09-484	00-604291	7.75–8.75	FILL	—	—	—	—	—	—	—	—	0.045 (J)	—	—
RE00-09-485	00-604291	12.75–13.75	FILL	—	0.00498 (J)	—	—	—	—	—	—	0.041 (J)	0.065 (J)	—
RE00-09-486	00-604532	0.5–1.5	FILL	—	0.00479 (J)	—	0.058 (J)	0.061 (J)	0.052 (J)	0.054 (J)	0.052 (J)	0.047 (J)	0.079 (J)	—
RE00-09-487	00-604532	4.5–5.5	FILL	—	—	—	—	—	—	—	—	0.064 (J)	—	—
RE00-09-488	00-604532	5.75–6.75	QBT3	—	—	—	—	—	—	—	—	0.043 (J)	—	—

Table 11.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Chrysene	Dibenzofuran	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Pyrene	Toluene	Trichlorobenzene[1,2,4-]
Industrial SSL[a]				**3230**	**1000[c]**	**33,700**	**33,700**	**32.3**	**3370**	**16,800**	**25,300**	**25,300**	**61,100**	**419[c]**
Construction Worker SSL[a]				**23,100**	**354[d]**	**10,000**	**10,000**	**240**	**1000**	**5020**	**7530**	**7530**	**14,000**	**78[d]**
Residential SSL[a]				**153**	**73.0[c]**	**2320**	**2320**	**1.53**	**232**	**1160**	**1740**	**1740**	**5220**	**82[c]**
RE00-09-461	00-604287	9.5–10.5	FILL	—	—	—	—	—	—	—	—	—	—	—
RE00-09-462	00-604287	14.5–15.5	QBT3	—	—	—	—	—	—	—	—	—	—	—
RE00-09-463	00-604287	17–17.5	QBT3	—	—	—	—	—	—	—	—	—	—	0.048 (J)
RE00-09-465	00-604288	0.5–1.5	FILL	0.33 (J)	—	0.8	0.072 (J)	0.14 (J)	—	—	0.62	0.67	—	—
RE00-09-466	00-604288	4.5–5.5	QBT3	—	—	—	—	—	—	—	—	—	—	—
RE00-09-473	00-604289	9.5–10.5	FILL	—	—	—	—	—	—	—	—	—	—	—
RE00-09-474	00-604289	14–15	FILL	—	—	—	—	—	—	—	—	—	—	—
RE00-09-477	00-604290	0.5–1.5	FILL	0.56	0.093 (J)	1.4	0.17 (J)	0.21 (J)	0.049 (J)	0.15 (J)	1.2	1.1	—	—
RE00-09-478	00-604290	4.5–5.5	FILL	—	—	0.075 (J)	—	—	—	—	0.041 (J)	0.063 (J)	—	—
RE00-09-479	00-604290	9.5–10.5	FILL	—	—	—	—	—	—	—	—	—	—	—
RE00-09-480	00-604290	14.5–15.5	FILL	—	—	—	—	—	—	—	—	—	—	—
RE00-09-481	00-604290	31.5–32.5	FILL	—	—	—	—	—	—	—	—	—	0.00044 (J)	—
RE00-09-484	00-604291	7.75–8.75	FILL	—	—	—	—	—	—	—	—	—	—	—
RE00-09-485	00-604291	12.75–13.75	FILL	—	—	—	—	—	—	—	—	—	—	—
RE00-09-486	00-604532	0.5–1.5	FILL	0.073 (J)	—	0.16 (J)	—	—	—	—	0.11 (J)	0.14 (J)	—	—
RE00-09-487	00-604532	4.5–5.5	FILL	—	—	—	—	—	—	—	—	—	—	—
RE00-09-488	00-604532	5.75–6.75	QBT3	—	—	—	—	—	—	—	—	—	—	—

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] Pyrene used as a surrogate based on structural similarity.

[c] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

[d] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

[e] — = Not detected.

Table 11.2-3
PCBs Detected at SWMU 61-007

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1254	Aroclor-1260
Industrial SSL[a]				**11**	**11.1**
Construction Worker SSL[a]				**4.91**	**85.3**
Residential SSL[a]				**1.14**	**2.43**
RE61-14-79361	00-604287	7–8	FILL	—[b]	38.7
RE61-14-79362	00-604287	8–9	FILL	—	21.1
RE00-09-461	00-604287	9.5–10.5	FILL	—	—
RE00-09-462	00-604287	14.5–15.5	QBT3	—	—
RE00-09-463	00-604287	17–17.5	QBT3	—	18
RE00-09-465	00-604288	0.5–1.5	FILL	—	0.26
RE00-09-466	00-604288	4.5–5.5	QBT3	—	0.051
RE61-14-79370	00-604289	7–8	QBT4	—	42.6
RE61-14-79371	00-604289	8–9	QBT4	—	32.7
RE00-09-473	00-604289	9.5–10.5	FILL	—	—
RE00-09-474	00-604289	14–15	FILL	—	—
RE00-09-477	00-604290	0.5–1.5	FILL	—	1.1
RE00-09-478	00-604290	4.5–5.5	FILL	—	0.84
RE00-09-479	00-604290	9.5–10.5	FILL	—	0.25
RE00-09-480	00-604290	14.5–15.5	FILL	—	0.31
RE00-09-481	00-604290	31.5–32.5	FILL	—	—
RE61-14-79367	00-604291	7–8	FILL	—	0.341
RE00-09-484	00-604291	7.75–8.75	FILL	—	8.4 (J)
RE61-14-79368	00-604291	8–9	FILL	—	0.609
RE00-09-485	00-604291	12.75–13.75	FILL	—	7.5
RE61-12-551	00-604291	15–16	FILL	—	6.5
RE61-12-552	00-604291	19–20	FILL	—	0.00412
RE00-09-486	00-604532	0.5–1.5	FILL	—	1.9
RE00-09-487	00-604532	4.5–5.5	FILL	—	0.21
RE00-09-488	00-604532	5.75–6.75	QBT3	—	0.46
RE61-12-533	61-614762	1–2	FILL	—	1.87
RE61-12-534	61-614762	10–11	FILL	—	1.72
RE61-12-536	61-614763	1–2	FILL	—	0.705

Table 11.2-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1254	Aroclor-1260
Industrial SSL[a]				**11**	**11.1**
Construction Worker SSL[a]				**4.91**	**85.3**
Residential SSL[a]				**1.14**	**2.43**
RE61-12-537	61-614763	10–11	QBT3	—	0.00479
RE61-14-79364	61-614764	7–8	FILL	—	0.848
RE61-14-79365	61-614764	8–9	FILL	—	0.854
RE61-12-540	61-614764	10–11	FILL	—	0.00255 (J)
RE61-12-541	61-614764	19–20	FILL	—	0.692
RE61-12-542	61-614765	1–2	FILL	—	0.862
RE61-12-543	61-614765	10–11	QBT3	—	0.43
RE61-12-548	61-614767	1–2	FILL	—	0.0145
RE61-12-549	61-614767	10–11	FILL	—	0.0122
RE61-12-550	61-614767	19–20	FILL	—	0.00562
RE61-13-37849	61-61477	4.5–5.5	FILL	—	2.26
RE61-13-37867	61-61477	7–8	FILL	—	0.0605
RE61-13-37885	61-61477	14–15	FILL	—	0.0964
RE61-13-37903	61-61477	19–20	FILL	—	4.37
RE61-13-37850	61-61478	4.5–5.5	FILL	—	1.46
RE61-13-37868	61-61478	7–8	FILL	—	0.00671
RE61-13-37886	61-61478	14–15	FILL	—	0.00637
RE61-13-37904	61-61478	19–20	FILL	—	2.59
RE61-13-37851	61-61479	4.5–5.5	FILL	—	0.0871
RE61-13-37869	61-61479	7–8	FILL	—	0.0941
RE61-13-37887	61-61479	14–15	QBT3	—	0.0862
RE61-13-37905	61-61479	19–20	QBT3	—	0.0314
RE61-13-37852	61-61480	4.5–5.5	FILL	—	0.0849
RE61-13-37870	61-61480	7–8	FILL	—	0.0216
RE61-13-37888	61-61480	14–15	FILL	0.0182	0.0253
RE61-13-37906	61-61480	19–20	QBT3	0.212	0.12
RE61-13-37853	61-61481	4.5–5.5	FILL	—	0.276
RE61-13-37871	61-61481	7–8	FILL	—	0.0287
RE61-13-37889	61-61481	14–15	FILL	—	0.0212
RE61-13-37907	61-61481	19–20	FILL	—	0.066
RE61-13-37854	61-61482	4.5–5.5	FILL	—	4.38
RE61-13-37872	61-61482	7–8	FILL	—	1.09
RE61-13-37890	61-61482	14–15	QBT3	—	1.85

Table 11.2-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1254	Aroclor-1260
Industrial SSL[a]				**11**	**11.1**
Construction Worker SSL[a]				**4.91**	**85.3**
Residential SSL[a]				**1.14**	**2.43**
RE61-13-37908	61-61482	19–20	QBT3	—	3.61
RE61-13-37855	61-61483	4.5–5.5	FILL	—	30.2
RE61-13-37873	61-61483	7–8	FILL	—	1.44
RE61-13-37891	61-61483	14–15	FILL	—	4.94
RE61-13-37909	61-61483	19–20	QBT3	—	5.64
RE61-13-37892	61-61484	14–14.3	FILL	—	34.4
RE61-13-37910	61-61484	19–20	QBT3	—	7.06
RE61-13-37857	61-61485	4.5–5.5	FILL	—	0.0356
RE61-13-37875	61-61485	7–8	FILL	—	0.0126
RE61-13-37893	61-61485	14–15	FILL	—	0.0159
RE61-13-37911	61-61485	19–20	FILL	—	0.0246
RE61-13-37858	61-61486	4.5–5.5	FILL	—	0.00957
RE61-13-37876	61-61486	7–8	FILL	—	0.0325
RE61-13-37894	61-61486	14–15	FILL	—	0.0225
RE61-13-37912	61-61486	19–20	FILL	—	0.306
RE61-13-37859	61-61487	4.5–5.5	FILL	—	0.212
RE61-13-37877	61-61487	7–8	QBT3	—	0.18
RE61-13-37895	61-61487	14–15	QBT3	—	4.94
RE61-13-37913	61-61487	19–20	QBT3	—	2.5
RE61-13-37860	61-61488	4.5–5.5	FILL	—	0.0138
RE61-13-37878	61-61488	7–8	QBT3	—	8.42
RE61-13-37896	61-61488	14–15	QBT3	—	0.254
RE61-13-37914	61-61488	19–20	QBT3	—	0.172
RE61-13-37861	61-61489	4.5–5.5	FILL	—	0.0949
RE61-13-37879	61-61489	7–8	FILL	—	0.0243
RE61-13-37897	61-61489	14–15	QBT3	—	0.00467
RE61-13-37915	61-61489	19–20	QBT3	—	0.00296 (J)
RE61-13-37862	61-61490	4.5–5.5	FILL	—	0.0427
RE61-13-37880	61-61490	7–8	FILL	—	0.655
RE61-13-37898	61-61490	14–15	FILL	—	0.0782
RE61-13-37916	61-61490	19–20	FILL	—	0.432
RE61-13-37881	61-61491	7–8	FILL	—	0.062
RE61-13-37899	61-61491	14–15	FILL	—	0.182

Table 11.2-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1254	Aroclor-1260
Industrial SSL[a]				**11**	**11.1**
Construction Worker SSL[a]				**4.91**	**85.3**
Residential SSL[a]				**1.14**	**2.43**
RE61-13-37917	61-61491	19–20	FILL	—	0.19
RE61-13-37882	61-61492	7–8	FILL	—	0.753
RE61-13-37900	61-61492	14–15	FILL	—	1.95
RE61-13-37918	61-61492	19–20	FILL	—	0.201
RE61-13-37865	61-61493	4.5–5.5	FILL	—	10.3
RE61-13-37883	61-61493	7–8	FILL	—	0.516
RE61-13-37901	61-61493	14–15	QBT3	—	0.0417
RE61-13-37919	61-61493	19–20	QBT3	—	0.0217
RE61-13-37866	61-61494	4.5–5.5	FILL	—	0.0342
RE61-13-37884	61-61494	7–8	FILL	—	0.11
RE61-13-37902	61-61494	14–15	FILL	—	0.0098
RE61-13-37920	61-61494	19–20	FILL	—	0.0593

Notes: Results are in mg/kg. Data qualifiers are presented in Appendix A.

[a] SSLs from NMED (2017, 602273).

[b] — = Not detected.

Table 13.2-1
Summary of Investigation Results and Recommendations

SWMU/AOC	Site Description	Extent Defined?	Potential Unacceptable Risk?	Recommendation
TA-00				
SWMU 00-017	Waste lines	Yes	Yes (residential)	Corrective action complete with controls
AOC C-00-044	Soil contamination	Yes	No	Corrective action complete without controls
TA-01				
SWMU 01-001(a)	Septic tank 134	Yes	No	Corrective action complete without controls
SWMU 01-001(d2)	Septic tank 138	Yes	n/a*	Deferred investigation
SWMU 01-001(d3)	Septic tank 138	Yes	Yes (residential)	Corrective action complete with controls
SWMU 01-001(f)	Septic tank 140	Yes	Yes (residential)	Corrective action complete with controls
SWMU 01-001(g)	Septic tank 141	Yes	No	Corrective action complete without controls
SWMU 01-001(o)	Sanitary waste line	Yes	No	Corrective action complete without controls
SWMU 01-001(s2)	Western sanitary waste line, main line	Yes	No	Corrective action complete without controls
SWMU 01-002(a2)-00	Industrial waste line	Yes	No	Corrective action complete without controls
SWMU 01-003(a)	Bailey Bridge landfill	Yes	Yes (residential)	Corrective action complete with controls
SWMU 01-003(b2)	Surface disposal area	Yes	No	Corrective action complete without controls
SWMU 01-003(d)	Surface disposal site – can dump site	Yes	Yes (residential)	Corrective action complete with controls
SWMU 01-006(a)	Cooling tower drainline and outfall	Yes	No	Corrective action complete without controls
AOC 01-006(e)	Drainlines and outfalls to Ashley Pond	Yes	No	Corrective action complete without controls
SWMU 01-006(h2)	Storm water drainage system	Yes	n/a	Deferred investigation
SWMU 01-006(h3)	Storm water drainage system	Yes	n/a	Deferred investigation
SWMU 01-007(c)	Suspected subsurface soil radiological contamination	Yes	No	Corrective action complete without controls
TA-03				
SWMU 03-038(a) SWMU 03-038(b)	Acid tank Acid tank	Yes	No	Corrective action complete without controls
SWMU 03-055(c)	Outfall	Yes	Yes (residential)	Corrective action complete with controls

Table 13.2-1 (continued)

SWMU/AOC	Site Description	Extent Defined?	Potential Unacceptable Risk?	Recommendation
TA-32				
SWMU 32-002(b2)	Septic system	Yes	No	Corrective action complete without controls
TA-43				
AOC C-43-001	Storm drain outfall	Yes	No	Corrective action complete without controls
TA-61				
SWMU 61-007	Transformer site – systematic leak – PCB-only site	Yes	Yes (residential)	Corrective action complete with controls

*n/a = Not applicable.

Appendix A

Acronyms and Abbreviations,
Metric Conversion Table, and Data Qualifier Definitions

A-1.0 ACRONYMS AND ABBREVIATIONS

%R	percent recovery
%RSD	percent relative standard deviation
AK	acceptable knowledge
ALARA	as low as reasonably achievable
AOC	area of concern
ATSDR	Agency for Toxic Substances and Disease Registry
AUF	area use factor
bgs	below ground surface
B Division	Bioscience Division
BV	background value
CCV	continuing calibration verification
CMP	corrugated metal pipe
COC	chain of custody
Consent Order	Compliance Order on Consent
COPEC	chemical of potential ecological concern
COPC	chemical of potential concern
cpm	counts per minute
CSM	conceptual site model
D&D	decontamination and decommissioning
DAF	dilution attenuation factor
DGPS	differential global positioning system
DL	detection limit
DOE	Department of Energy (U.S.)
dpm	disintegrations per minute
DRO	diesel range organics
EPA	Environmental Protection Agency (U.S.)
EPC	exposure point concentration
EQL	estimated quantitation limits
ER	Environmental Restoration
ER ID	Environmental Remediation and Surveillance Program identification number
ESL	ecological screening level
FIMAD	Facility for Information Management, Analysis, and Display
FV	fallout value

GIS	geographic information system
GPS	global-positioning system
HE	high explosive
HI	hazard index
HQ	hazard quotient
HR	home range
HRL	Health Research Laboratory
IA	interim action
ICS	interference check sample
ICV	initial calibration verification
IDW	investigation-derived waste
IM	Interim measure
IS	internal standard
K_d	soil-water partition coefficient
K_{oc}	organic-carbon partition coefficient
K_{ow}	octanol-water partition coefficient
LAL	lower acceptance limit
LAMC	Los Alamos Medical Center
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
LCS	laboratory control sample
LLW	low-level waste
LOAEL	lowest observed adverse effect level
MDC	minimum detectable concentration
MDL	method detection limit
MS	matrix spike
MSW	municipal solid waste
N3B	Newport News Nuclear BWXT – Los Alamos, LLC
NMED	New Mexico Environment Department
NOAEL	no-observed-adverse-effect level
PAH	polycyclic aromatic hydrocarbon
PAUF	population area use factor
PCB	polychlorinated biphenyl
PID	photoionization detector
PPE	personal protective equipment

QA/QC	quality assurance/quality control
RCT	radiological control technician
RESRAD	Residual Radioactivity computer code
RfD	reference dose
RFI	Resource Conservation and Recovery Act Facility Investigation
RLWTF	radioactive liquid waste treatment facility
RPD	relative percent difference
SAL	screening action level
SCL	sample collection log
SF	slope factor
SMO	sample management office
SOP	standard operating procedure
SOW	statement of work
SSL	soil screening level
SVOC	semivolatile organic compound
SWMU	solid waste management unit
TA	technical area
TAL	target analyte list
T&E	threatened and endangered
TEF	toxic equivalency factor
TNT	trinitrotoluene
TPH	total petroleum hydrocarbons
TPU	total propagated uncertainty
TRV	toxicity reference value
TSCA	Toxic Substances Control Act
TSD	treatment, storage, and disposal (facility)
UAL	upper acceptance level
UCL	upper confidence limit
ULR	unassigned land release
UTL	upper tolerance limit
VCA	voluntary corrective action
VCP	vitrified-clay pipe
VOC	volatile organic compound
WCSF	waste characterization strategy form
WPF	waste profile form

WSWL	western sanitary waste line
XRF	x-ray fluorescence

A-2.0 METRIC CONVERSION TABLE

Multiply SI (Metric) Unit	by	To Obtain U.S. Customary Unit
kilometers (km)	0.622	miles (mi)
kilometers (km)	3281	feet (ft)
meters (m)	3.281	feet (ft)
meters (m)	39.37	inches (in.)
centimeters (cm)	0.03281	feet (ft)
centimeters (cm)	0.394	inches (in.)
millimeters (mm)	0.0394	inches (in.)
micrometers or microns (µm)	0.0000394	inches (in.)
square kilometers (km^2)	0.3861	square miles (mi^2)
hectares (ha)	2.5	acres
square meters (m^2)	10.764	square feet (ft^2)
cubic meters (m^3)	35.31	cubic feet (ft^3)
kilograms (kg)	2.2046	pounds (lb)
grams (g)	0.0353	ounces (oz)
grams per cubic centimeter (g/cm^3)	62.422	pounds per cubic foot (lb/ft^3)
milligrams per kilogram (mg/kg)	1	parts per million (ppm)
micrograms per gram (µg/g)	1	parts per million (ppm)
liters (L)	0.26	gallons (gal.)
milligrams per liter (mg/L)	1	parts per million (ppm)
degrees Celsius (°C)	9/5 + 32	degrees Fahrenheit (°F)

A-3.0 DATA QUALIFIER DEFINITIONS

Data Qualifier	Definition
U	The analyte was analyzed for but not detected.
J	The analyte was positively identified, and the associated numerical value is estimated to be more uncertain than would normally be expected for that analysis.
J+	The analyte was positively identified, and the result is likely to be biased high.
J-	The analyte was positively identified, and the result is likely to be biased low.
UJ	The analyte was not positively identified in the sample, and the associated value is an estimate of the sample-specific detection or quantitation limit.
R	The data are rejected as a result of major problems with quality assurance/quality control (QA/QC) parameters.

Appendix B

Field Methods

B-1.0 INTRODUCTION

This appendix summarizes field methods used during the 2012 Phase II investigation of Upper Los Alamos Canyon Aggregate Area at the Los Alamos National Laboratory (LANL or Laboratory) and subsequent sampling and remediation. Table B-1.0-1 summarizes the field investigation methods, and the following sections provide more detailed descriptions of these methods. All activities were conducted in accordance with approved subcontractor procedures that are technically equivalent to the Laboratory standard operating procedures (SOPs) listed in Table B-1.0-2.

B-2.0 EXPLORATORY DRILLING CHARACTERIZATION

No exploratory drilling characterization was conducted during the 2012 Phase II investigation and supplemental sampling. All drilling was conducted for the purpose of collecting investigation samples.

B-3.0 FIELD-SCREENING METHODS

This section summarizes the field-screening methods used during the investigation activities. Field screening for organic vapors was performed as necessary for health and safety purposes. Field screening for radioactivity was performed on every sample submitted to the LANL Sample Management Office (SMO). Field-screening results for all investigation were recorded on sample collection logs (SCLs) provided on DVD in Appendix E.

B-3.1 Field Screening for Organic Vapors

Field screening for organic vapors was conducted for all samples, except when the sampling media was saturated. Screening was conducted using a MiniRAE 2000 photoionization detector (PID) equipped with an 11.7-electron volt lamp. Screening was performed in accordance with the manufacturer's specifications and SOP-06.33, "Headspace Vapor Screening with a Photo Ionization Detector." Screening was performed on each sample collected, and screening measurements were recorded on the SCLs, provided on DVD in Appendix E.

B-3.2 Field Screening for Radioactivity

All samples collected were field screened for radioactivity before they were submitted to the SMO, targeting alpha and beta/gamma emitters. A Laboratory radiation control technician (RCT) conducted radiological screening using an Eberline E-600 radiation meter with an SHP-380AB alpha/beta scintillation detector held within 1 in. of the sample. The Eberline E-600 with attachment SHP-380AB consists of a dual phosphor plate covered by two Mylar windows housed in a light-excluding metal body. The phosphor plate is a plastic scintillator used to detect beta and gamma emissions and is thinly coated with zinc sulfide to detect alpha emissions. The operational range varies from trace emissions to 1 million disintegrations per minute. Screening measurements were recorded on the SCLs and are provided on DVD in Appendix E.

B-4.0 FIELD INSTRUMENT CALIBRATION

Instrument calibration and/or function check was completed daily. Several environmental factors affected the instruments' integrity, including air temperature, atmospheric pressure, wind speed, and humidity. Calibration of the PID was conducted by the site-safety officer. The RCT calibrated the Eberline E-600 instrument according to the manufacturer's specifications and requirements.

B-4.1 MiniRAE 2000 Instrument Calibration

The MiniRAE 2000 PID was calibrated both to ambient air and a standard reference gas (100 ppm isobutylene). The ambient-air calibration determined the zero point of the instrument sensor calibration curve in ambient air. Calibration with the standard reference gas determined a second point of the sensor calibration curve. Each calibration was within 3% of 100 ppm isobutylene, qualifying the instrument for use.

The following calibration information was recorded daily on operational calibration logs:

- instrument identification number
- final span settings
- date and time
- concentration and type of calibration gas used (isobutylene at 100 ppm)
- name of the personnel performing the calibration

All daily calibration procedures for the MiniRAE 2000 PID met the manufacturer's specifications for standard reference gas calibration.

B-4.2 Eberline E-600 Instrument Calibration

The RCT calibrated the Eberline E-600 daily before local background levels for radioactivity were measured. The instrument was calibrated using plutonium-239 and chloride-36 sources for alpha and beta emissions, respectively. The following five checks were performed as part of the calibration procedures:

- calibration date
- physical damage
- battery
- response to a source of radioactivity
- background

All calibrations performed for the Eberline E-600 met the manufacturer's specifications and the applicable radiation detection instrument manual.

B-5.0 SURFACE AND SUBSURFACE SAMPLING

This section summarizes the methods used for collecting surface and subsurface samples, including soil, fill, tuff, and sediment samples, according to the approved Phase II investigation work plan (LANL 2010, 091916).

B-5.1 Surface Sampling Methods

Surface samples were collected in using either hand-auger or spade-and-scoop methods. Surface samples were collected in accordance with approved subcontractor procedures technically equivalent to SOP-06.10, "Hand Auger and Thin-Wall Tube Sampler," or SOP-06.09, "Spade and Scoop Method for the Collection of Soil Samples." A hand auger or spade and scoop was used to collect material in approximately 6-in. increments. The samples were transferred to sterile sample collection jars or bags. Samples were preserved using coolers to maintain the required temperature and chemical preservatives such as nitric acid in accordance with an approved subcontractor procedure technically equivalent to SOP-5056, “Sample Containers and Preservation.”

Samples were appropriately labeled, sealed with custody seals, and documented before transporting to the SMO. Samples were managed according to approved subcontractor procedures technically equivalent to SOP-5057, “Handling, Packaging, and Transporting Field Samples,” and SOP-5058, “Sample Control and Field Documentation.”

Sample collection tools were decontaminated (section B-5.7) immediately before each sample was collected in accordance with a subcontractor procedure technically equivalent to SOP-5061, “Field Decontamination of Equipment.”

B-5.2 Subsurface Tuff Sampling Methods

Subsurface samples were collected using approved subcontractor procedures technically equivalent to SOP-06.10, “Hand Auger and Thin-Wall Tube Sampler,” or SOP-06.26, “Core Barrel Sampling for Subsurface Earth Materials.” Borehole samples were collected in a stainless-steel split-spoon core-barrel sampler that retrieved core in 2.5-ft intervals. The samples collected, listed by borehole and depth, are provided in tables for each site discussed in the investigation report.

Core retrieved from the subsurface was field screened for organic vapors, visually inspected, and logged. Following inspection, samples for volatile organic compound (VOC) analysis were collected immediately to minimize the loss of subsurface VOCs during the sample collection process. After collection of the VOC samples, the 2.5-ft core section to be sampled was removed from the core barrel and placed in a stainless-steel bowl. The material was crushed, if necessary, with a decontaminated rock hammer and stainless-steel spoon to allow core material to fit into sample containers. The samples for the remaining analytical suites were transferred to sterile sample collection jars or bags for transport to the SMO.

The tools used to collect samples were decontaminated (section B-5.7) immediately before each sample was collected in accordance with an approved subcontractor procedure technically equivalent to SOP-5061, “Field Decontamination of Equipment.”

If alluvial or shallow groundwater was encountered during drilling of characterization holes, the saturated interval was sealed using a temporary surface casing or other appropriate technique to allow continuation of the hole without transporting water into the deeper intervals. If sampling was not possible because of saturated conditions, the planned samples were collected at the first practicable depth below the saturated zone.

B-5.3 Quality Control Samples

Quality control samples were collected in accordance with an approved subcontractor procedure technically equivalent to SOP-5059, “Field Quality Control Samples.” The quality control samples included field duplicates, field rinsate blanks, and field trip blanks. Field duplicate samples were collected from the same material as a regular investigation sample and submitted for the same analyses. Field duplicate samples were collected at a frequency of at least 1 duplicate sample for every 10 samples.

Field rinsate blanks were collected to evaluate field decontamination procedures. Rinsate blanks were collected by rinsing sampling equipment (i.e., auger buckets, sampling bowls and spoons) after decontamination with deionized water. The rinsate water was collected in a sample container and submitted to the SMO. Field rinsate blank samples were analyzed for inorganic chemicals (target analyte list metals, hexavalent chromium, perchlorate, and total cyanide) and were collected from sampling equipment at a frequency of at least 1 rinsate sample for every 10 solid samples.

Field trip blanks also were collected at a frequency of one per day at the time samples were collected for VOCs. Trip blanks consisted of containers of certified clean sand opened and kept with the other sample containers during the sampling process.

B-5.4 Sample Documentation and Handling

Field personnel completed a SCL form for each sample. Sample containers were sealed with signed custody seals and placed in coolers at approximately 4°C. Samples were handled in accordance with approved subcontractor procedures technically equivalent to SOP-5057, “Handling, Packaging, and Transporting Field Samples,” and SOP-5056, “Sample Containers and Preservation.” Swipe samples were collected from the exterior of sample containers and analyzed by the RCT before the sample containers were removed from the site. Samples were transported to the SMO for processing and shipment to off-site contract analytical laboratories. The SMO personnel reviewed and approved the SCLs and accepted custody of the samples.

B-5.5 Borehole Abandonment

All boreholes were abandoned in accordance with an approved subcontractor procedure technically equivalent to SOP-5034, “Monitoring Well and RFI Borehole Abandonment,” by filling the boreholes with bentonite chips up to 2.0–3.0 ft from the ground surface. The chips were hydrated and clean soil placed on top. Pavement was patched as necessary depending on existing site conditions. All cuttings were managed as investigation-derived waste (IDW), as described in Appendix C.

B-5.6 Decontamination of Sampling Equipment

The split-spoon core barrels and all other sampling equipment that came (or could have come) in contact with sample material were decontaminated after each core was retrieved and logged. Decontamination included wiping the equipment with Fantastik and paper towels. Decontamination of the drilling equipment was conducted before mobilization of the drill rig to another borehole to avoid cross-contamination between samples and borehole locations. Residual material adhering to equipment was removed using dry decontamination methods such as the use of wire brushes and scrapers. Decontamination activities were performed in accordance with an approved subcontractor procedure technically equivalent to SOP-5061, “Field Decontamination of Equipment.” Decontaminated equipment was surveyed by an RCT before it was released from the site.

B-5.7 Site Demobilization and Restoration

Before equipment was removed from the site, a Laboratory RCT screened the equipment for radioactivity to ensure all materials were clean of site contamination. All temporary fencing and staging areas were dismantled and returned to preinvestigation conditions. All excavated and disturbed areas were regraded and reseeded with native grass mix.

B-6.0 SOIL REMEDIATION

Contaminated soil was removed from SWMUs 01-001(d3), 01-001(f), 01-001(g), 01-0001(o), 01-003(a), 01-003(d), 32-002(b2), and 61-007.

B-6.1 Target Cleanup Levels

Target cleanup levels were based on current and reasonably expectable future land use. Cleanup was conducted so that there would be no unacceptable human health and ecological risk following cleanup.

B-6.2 Preexcavation Sampling

Where possible, preexcavation samples were collected and analyzed for the target analyte(s) to define lateral and vertical extent before remediation began. Preexcavation sampling locations were offset 4 ft to the north, south, east, and west from the proposed remediation location to define lateral extent. If a preexcavation result was greater than the soil screening levels based on land use, additional samples were collected at offset locations or at deeper depths, as appropriate. If a preexcavation result was less than the proposed cleanup level, the sample became a confirmation sample and the excavation was defined in that direction or depth.

B-6.3 Excavation

A backhoe, spyder excavator, or small track mounted excavator was used to remove environmental media exceeding target cleanup levels, and the media was managed as IDW in compliance with an approved waste characterization strategy form (WCSF) (see section B-8.0). If required, additional confirmation samples were collected. Following remediation, the excavated area was backfilled with clean fill, compacted, and revegetated as described above in section B-5.7.

B-6.4 Decontamination of Excavation Equipment

Decontamination activities were performed in accordance with an approved subcontractor procedure technically equivalent to SOP-5061, “Field Decontamination of Equipment.” Residual material adhering to equipment was removed using dry decontamination methods such as the use of wire brushes and scrapers. All decontaminated equipment was surveyed by an RCT before it was released from the site. Additional decontamination and swipe sampling was conducted, if necessary, before equipment was removed from the site.

B-7.0 GEODETIC SURVEYING

Geodetic surveys of all sample locations were performed using a Trimble RTK 5700 differential global-positioning system (DGPS) referenced from published and monumented external Laboratory survey control points in the vicinity. All sampling locations were surveyed in accordance with an approved subcontractor procedure technically equivalent to SOP-5028, “Coordinating and Evaluating Geodetic Surveys.” Horizontal accuracy of the monumented control points is within 0.1 ft. The DGPS instrument referenced from Laboratory control points is accurate within 0.2 ft. The surveyed coordinates are presented in Table 3.2-1 of the investigation report.

B-8.0 IDW STORAGE AND DISPOSAL

All IDW generated during the field investigation was managed in accordance with SOP-5238, “Characterization and Management of Environmental Program Waste.” This procedure incorporates the requirements of all applicable U.S. Environmental Protection Agency (EPA) and New Mexico Environment Department (NMED) regulations, U.S. Department of Energy orders, and Laboratory implementation requirements. IDW was also managed in accordance with the approved WCSF. Details of IDW management for the Phase II investigation are presented in Appendix C.

B-9.0 DEVIATIONS FROM THE WORK PLAN

The sampling activities proposed in the Phase II investigation work plan were implemented to define extent of contamination and define areas of soil exceeding cleanup levels. Based on the results of the Phase II sampling, additional sampling and/or remediation was required at SWMUs 01-001(d3), 01-001(f), 01-001(g), 01-0001(o), 01-003(a), 01-003(b2), 01-003(d), 32-002(b2), and 61-007 and AOC C-43-001. This scope was not included in the Phase II investigation work plan, but was conducted to meet the investigation and remediation objectives of the Phase II investigation work plan.

B-10.0 REFERENCES

The following reference list includes documents cited in this appendix. Parenthetical information following each reference provides the author(s), publication date, and ERID, ESHID, or EMID. This information is also included in text citations. ERIDs were assigned by the Laboratory's Associate Directorate for Environmental Management (IDs through 599999); ESHIDs were assigned by the Laboratory's Associate Directorate for Environment, Safety, and Health (IDs 600000 through 699999); and EMIDs are assigned by Newport News Nuclear BWXT – Los Alamos, LLC (N3B) (IDs 700000 and above). IDs are used to locate documents in N3B's Records Management System and in the Master Reference Set. The NMED Hazardous Waste Bureau and N3B maintain copies of the Master Reference Set. The set ensures that NMED has the references to review documents. The set is updated when new references are cited in documents.

Dhawan, N., December 6, 2007. RE: 03-055(c) sediment sampling. E-mail message to B. Coel-Roback (LANL) from N. Dhawan (NMED), Santa Fe, New Mexico. (Dhawan 2007, 105594)

LANL (Los Alamos National Laboratory), April 2006. "Investigation Work Plan for Upper Los Alamos Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-06-2464, Los Alamos, New Mexico. (LANL 2006, 091916)

LANL (Los Alamos National Laboratory), August 22, 2006. "Response to the Notice of Disapproval for Investigation Work Plan for the Upper Los Alamos Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-06-6753, Los Alamos, New Mexico. (LANL 2006, 094200)

NMED (New Mexico Environment Department), November 6, 2006. "Approval of the Investigation Work Plan, Upper Los Alamos Canyon Aggregate Area," New Mexico Environment Department letter to D. Gregory (DOE-LASO) and D. McInroy (LANL) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico. (NMED 2006, 095460)

Table B-1.0-1
Summary of Field Investigation Methods

Method	Summary
Spade and Scoop Collection of Soil Samples	This method is typically used for collection of shallow (i.e., approximately 0–12 in.) soil or sediment samples. The spade-and-scoop method involves digging a hole to the desired depth, as prescribed in the work plan, and collecting a discrete grab sample. The sample is typically placed in a clean stainless-steel bowl for transfer into various sample containers.
Hand Auger Sampling	This method is typically used for sampling soil or sediment at depths of less than 10–15 ft but may in some cases be used for collecting samples of weathered or nonwelded tuff. The method involves hand-turning a stainless-steel bucket auger (typically 3–4 in. inside diameter [I.D.]), creating a vertical hole that can be advanced to the desired sampling depth. When the desired depth was reached, the auger was decontaminated before the hole was advanced through the sample depth. The sample material was transferred from the auger bucket to a stainless-steel sampling bowl before the various required sample containers were filled.
Split-Spoon Core-Barrel Sampling	In this method, a stainless-steel core barrel (typically 4-in. I.D., 2.5 ft long) is advanced using a powered drilling rig. The core barrel extracts a continuous length of soil and/or rock that can be examined as a unit. The split-spoon core barrel is a cylindrical barrel split lengthwise so that the two halves can be separated to expose the core sample. Once extracted, the section of core was screened for radioactivity and organic vapors, and described in a geologic log. A portion of the core was then collected as a discrete sample from the desired depth.
Handling, Packaging, and Shipping of Samples	Field team members sealed and labeled samples before packing to ensure the sample containers and the containers used for transport were free of external contamination. Field team members packaged all samples to minimize the possibility of breakage during transportation. After all environmental samples were collected, packaged, and preserved, a field team member transported them to the SMO. The SMO arranged for shipping the samples to analytical laboratories.
Sample Control and Field Documentation	The collection, screening, and transport of samples were documented on standard forms generated by the SMO. These included SCLs, chain-of-custody (COC) forms, and sample container labels. SCLs were completed at the time of sample collection and the logs were signed by the sampler and a reviewer who verified the logs for completeness and accuracy. Corresponding labels were initialed and applied to each sample container, and custody seals were placed around each sample container. COC forms were completed and signed to verify the samples had not been left unattended.
Field Quality Control Samples	Field quality control samples were collected as follows. *Field duplicates*: at a frequency 10%; collected at the same time as a regular sample and submitted for the same analyses *Equipment rinsate blank*: at a frequency of 10%; collected by rinsing sampling equipment with deionized water, which was collected in a sample container and submitted for laboratory analysis *Trip blanks*: required for all field events, including collecting samples for VOC analysis. Trip blanks containers of certified clean sand were opened and kept with the other sample containers during the sampling process
Field Decontamination of Drilling and Sampling Equipment	Dry decontamination was used to minimize the generation of liquid waste. Dry decontamination included the use of a wire brush or other tool to remove soil or other material adhering to the sampling equipment, followed by use of a commercial cleaning agent (nonacid, waxless cleaners) and paper wipes.

Table B-1.0-1 (continued)

Method	Summary
Containers and Preservation of Samples	Specific requirements/processes for sample containers, preservation techniques, and holding times are based on EPA guidance for environmental sampling, preservation, and quality assurance. Specific requirements for each sample were printed in the SCLs provided by the SMO (size and type of container [e.g., glass, amber glass, and polyethylene]). All samples were preserved by being placed in insulated containers with ice to maintain a temperature of 4˚C.
Coordinating and Evaluating Geodetic Surveys	Geodetic surveys focused on obtaining survey data of acceptable quality for use during project investigations. Geodetic surveys were conducted with a Trimble 5700 DGPS. The survey data conformed to Laboratory Information Architecture project standards IA-CB02, “GIS Horizontal Spatial Reference System,” and IA-D802, “Geospatial Positioning Accuracy Standard for A/E/C/ and Facility Management.” All coordinates were expressed as State Plain Coordinate System 83, NM Central, U.S. feet coordinates. All elevation data were reported relative to the National Geodetic Vertical Datum of 1983.
Management of Environmental Restoration Project Waste, Waste Characterization	IDW is managed, characterized, and stored in accordance with an approved waste characterization strategy form that documents site history, field activities, and the characterization approach for each waste stream managed. Waste characterization complied with on-site or off-site waste acceptance criteria. All stored IDW was marked with appropriate signage and labels. Drummed IDW was stored on pallets to prevent deterioration of containers. A waste storage area was established before waste was generated. Waste storage areas located in controlled areas of the laboratory to prevent unauthorized personnel from inadvertently adding or managing wastes. Each container of waste generated was individually labeled with the waste classification and item identification number and as radioactive (if applicable), immediately following containerization. All waste was segregated by classification and compatibility to prevent cross-contamination. Management of IDW is discussed in Appendix C.

Table B-1.0-2
Quality Procedures and Standard Operating Procedures
Used for the Investigation Activities at Upper Los Alamos Canyon Aggregate Area

SOP-2011, “Personnel Training and Qualification”
SOP-4001, “Document Control”
SOP-4003, “Records Management”
SOP-4004, “Records Transmittal and Retrieval Processes”
SOP-5006, “Control of Measuring and Test Equipment”
EP-ERSS-SOP-5018, “Integrated Fieldwork Planning and Authorization”
EP-ERSS-SOP-5022, “Characterization and Management of Environmental Restoration (ER) Project Waste”
EP-ERSS-SOP-5028, “Coordinating and Evaluating Geodetic Surveys”
SOP-5034, “Monitor Well and RFI Borehole Abandonment”
EP-ERSS-SOP-5055, “General Instructions for Field Investigations”
EP-ERSS-SOP-5056, “Sample Containers and Preservation”
EP-ERSS-SOP-5057, “Handling, Packaging, and Transporting Field Samples”
EP-ERSS-SOP-5058, “Sample Control and Field Documentation”
EP-ERSS-SOP-5059, “Field Quality Control Samples”
SOP-5061, “Field Decontamination of Equipment”
SOP-01.12, “Field Site Closeout Checklist”
SOP-01.13, “Initiating and Managing Data Set Requests”
SOP-06.09, “Spade and Scoop Method for Collection of Soil Samples”
SOP-06.10, “Hand Auger and Thin-Wall Tube Sampler”
SOP-06.26, “Core Barrel Sampling for Subsurface Earth Materials”
SOP-06.33, “Headspace Vapor Screening with a Photoionization Detector”
SOP-5181, “Notebook Documentation for Environmental Restoration Technical Activities”
EP-DIR-QAP-0001, “Quality Assurance Plan for the Environmental Programs”

Appendix C

Investigation-Derived Waste Management

C-1.0 INTRODUCTION

This appendix contains the waste management records for the investigation-derived waste (IDW) generated during the implementation of the investigation work plan for the Upper Los Alamos Canyon Aggregate Area at Technical Area 00 (TA-00), former TA-01, TA-03, former TA-32, TA-43, and TA-61 of Los Alamos National Laboratory (LANL or the Laboratory).

Consistent with Laboratory procedures, a waste characterization strategy form (WCSF) was prepared to address characterization approaches, on-site management, and final disposition options for wastes. Analytical data and information on wastes generated during previous investigations and/or acceptable knowledge (AK) were used to complete the WCSF.

The selection of waste containers was based on appropriate U.S. Department of Transportation requirements, waste types, and estimated volumes of IDW to be generated. Immediately following containerization, each waste container was individually labeled with a unique identification number and with information regarding waste classification, contents, and radioactivity, if applicable.

Wastes were staged in clearly marked, appropriately constructed waste accumulation areas. Waste accumulation area postings, regulated storage duration, and inspection requirements were based on the type of IDW and its classification. Container and storage requirements were detailed in the WCSF and approved before waste was generated.

Investigation activities were conducted in a manner that minimized the generation of waste. Waste minimization was accomplished by implementing the most recent version of the “Los Alamos National Laboratory Hazardous Waste Minimization Report” (LANL 2008, 104174; LANL 2016, 602030).

C-2.0 WASTE STREAMS

The IDW streams that were generated and managed during the investigation of Upper Los Alamos Canyon Aggregate Area are described below and summarized in Table C-2.0-1.

- *Waste #1:* Municipal solid waste (MSW) consists of noncontact trash and debris and empty sample preservation containers. The MSW was determined to be nonhazardous and nonradioactive. It was stored in plastic-lined trash cans and disposed of at the Los Alamos County landfill.
- *Waste #2:* This waste stream includes soil and tuff cuttings from boreholes. Cuttings were stored in lined 55-gal. drums within appropriate waste staging areas. All drums were directly sampled and were determined to be nonhazardous low-level waste (LLW) or industrial waste. All drill cuttings were disposed of at an authorized treatment, storage, and disposal (TSD) facility.
- *Waste #3:* Excavated soil. This waste stream includes materials excavated or removed during the site investigation. Approximately 491 yd^3 of material was excavated and collected at the point of generation. These wastes were characterized based on acceptable knowledge of processes associated with the debris, from site characterization sampling, or by direct sampling. They were determined to be LLW or Toxic Substances Control Act- (TSCA-) regulated, and were disposed of at an authorized TSD facility.

- *Waste #4:* This waste stream includes spent personal protective equipment (PPE), material used in dry decontamination of sampling equipment (e.g., paper towels), and plastic bags. These wastes were containerized at the point of generation and were characterized based on AK of the waste materials and the methods of generation or from site-characterization sampling. These wastes were managed as hazardous or nonhazardous depending on the contaminants expected at the solid waste management units or areas of concern from which they were generated. Contact waste was disposed of as MSW through the Laboratory's Green is Clean program or disposed of as LLW at an authorized off-site TSD facility.

C-3.0 REFERENCES

The following reference list includes documents cited in this appendix. Parenthetical information following each reference provides the author(s), publication date, and ERID, ESHID, or EMID. This information is also included in text citations. ERIDs were assigned by the Laboratory's Associate Directorate for Environmental Management (IDs through 599999); ESHIDs were assigned by the Laboratory's Associate Directorate for Environment, Safety, and Health (IDs 600000 through 699999); and EMIDs are assigned by Newport News Nuclear BWXT – Los Alamos, LLC (N3B) (IDs 700000 and above). IDs are used to locate documents in N3B's Records Management System and in the Master Reference Set. The NMED Hazardous Waste Bureau and N3B maintain copies of the Master Reference Set. The set ensures that NMED has the references to review documents. The set is updated when new references are cited in documents.

LANL (Los Alamos National Laboratory), November 2008. "Los Alamos National Laboratory Hazardous Waste Minimization Report," Los Alamos National Laboratory document LA-UR-08-7274, Los Alamos, New Mexico. (LANL 2008, 104174)

LANL (Los Alamos National Laboratory), November 29, 2016. "2016 Hazardous Waste Minimization Report," Los Alamos National Laboratory document LA-UR-16-38635, Los Alamos, New Mexico. (LANL 2016, 602030)

Table C-2.0-1
Summary of IDW Generation and Management

Waste Stream	Waste Type	Volume	Characterization Method	On-Site Management	Disposition
MSW	Nonhazardous/ Nonradioactive	2 yd^3	AK	Plastic bags	County of Los Alamos landfill
Drill cuttings	LLW, industrial	10 yd^3	Direct sampling	55-gal. drums	Off-site TSD
Excavated soil	LLW, TSCA-regulated	491 yd^3	AK and direct sampling	Rolloff containers, super sacks	Off-site TSDs
Contact waste	Green is Clean or LLW	0.3 yd^3	AK and analytical results of site characterization	30-gal. drums	Off-site TSDs

Appendix D

Analytical Program

D-1.0 INTRODUCTION

This appendix presents the analytical methods used and data quality review of the sample results from the Upper Los Alamos Canyon Aggregate Area investigation at Los Alamos National Laboratory (LANL or the Laboratory). Additionally, this appendix gives a summary of the effects of data quality issues on the acceptability of the analytical data.

Quality assurance (QA), quality control (QC), and data validation procedures were implemented in accordance with the "Quality Assurance Project Plan Requirements for Sampling and Analysis" (LANL 1996, 054609), and the Laboratory's statements of work (SOWs) for analytical laboratories (LANL 1995, 049738; LANL 2000, 071233; LANL 2008, 109962). The results of the QA/QC procedures were used to estimate the accuracy, bias, and precision of the analytical measurements. Samples for QC include method blanks, matrix spikes (MSs), laboratory control samples (LCSs), internal standards, initial calibration verifications (ICVs) and continuing calibration verifications (CCVs), surrogates, and tracers.

The type and frequency of laboratory QC analyses are described in the SOWs for analytical laboratories (LANL 1995, 049738; LANL 2000, 071233; LANL 2008, 109962). Other QC factors such as sample preservation and holding times, were also assessed in accordance with the requirements outlined in Standard Operating Procedure (SOP) 5056, "Sample Containers and Preservation."

The following SOPs were used for data validation:

- SOP-5161, "Routine Validation of Volatile Organic Compound (VOC) Analytical Data"
- SOP-5162, "Routine Validation of Semivolatile Organic Compound (SVOC) Analytical Data"
- SOP-5163, "Routine Validation of Organochlorine Pesticide (PEST) and Polychlorinated Biphenyl (PCB) Analytical Data"
- SOP-5164, "Routine Validation of High Explosive (HE) Analytical Data"
- SOP-5165, "Routine Validation of Metals Analytical Data"
- SOP-5166, "Routine Validation of Gamma Spectroscopy, Chemical Separation Alpha Spectrometry, Gas Proportional Counting, and Liquid Scintillation Analytical Data"
- SOP-5168, "Routine Validation of LC/MS/MS High Explosive Analytical Data"
- SOP-5169, "Routine Validation of Dioxin Furan Analytical Data" (EPA Method 1618 and SW-846 EPA Method 8290)
- SOP-5171, "Routine Validation of Total Petroleum Hydrocarbons Gasoline Range Organics/Diesel Range Organics Analytical Data" (Method 8015B)
- SOP-5191, "Routine Validation of LC/MS/MS Perchlorate Analytical Data" (SW-846 EPA Method 6850)

Routine data validation was performed for each data package (referred to by a request number), and analytical data were reviewed and evaluated based on U.S. Environmental Protection Agency (EPA) National Functional Guidelines, where applicable (EPA 1994, 048639; EPA 1999, 066649). As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. The data qualifier definitions are provided in Appendix A. Sample collection logs (SCLs) and chain-of-custody forms (COCs) are provided in Appendix E (on DVD included with this document). The analytical data, instrument printouts, and data validation reports are provided in Appendix E.

D-2.0 ANALYTICAL DATA ORGANIZATION

Historical data evaluated in this report were collected during Resource Conservation and Recovery Act facility investigations, other corrective actions, and other investigations. All historical investigation samples were submitted to and analyzed by approved off-site laboratories. These data are determined to be of sufficient quality for decision-making purposes and have been reviewed and revalidated to current QA standards.

D-3.0 INORGANIC CHEMICAL ANALYSES

A total of 1792 samples (plus 212 field duplicates) collected within the Upper Los Alamos Canyon Aggregate Area were analyzed for inorganic chemicals. Inorganic analyses included target analyte list (TAL) metals, nitrate, perchlorate, total cyanide, and hexavalent chromium. The analytical methods used for inorganic chemicals are listed in Table D-1.0-1.

Tables in the investigation report summarize all samples collected and the analyses requested for the investigation of the sites within the Upper Los Alamos Canyon Aggregate Area. All analyses conducted during the investigation are presented in Appendix E (on DVDs included with this document).

D-3.1 Inorganic Chemical QA/QC Samples

QA/QC samples are used to produce measures of the reliability of the data. The results of the QA/QC analyses performed on a sample provide confidence about whether the analyte is present and whether the concentration reported is accurate. To assess the accuracy and precision of inorganic chemical analyses, this investigation included analyses of LCSs, preparation blanks, MSs, laboratory duplicate samples, interference check samples (ICSs), and serial dilution samples. Each of these QA/QC sample types is defined in the analytical services SOWs (LANL 1995, 049738; LANL 2000, 071233; LANL 2008, 109962) and is described briefly in the paragraphs below.

The LCS serves as a monitor of the overall performance of each step during the analysis, including sample digestion. For inorganic chemicals in soil or tuff, LCS percent recoveries (%R) should fall within the control limits of 75% to 125% (LANL 1995, 049738; LANL 2000, 071233; LANL 2008, 109962).

The preparation blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as those used in the environmental sample processing; it is extracted and analyzed in the same manner as the corresponding environmental samples. Preparation blanks are used to measure bias and potential cross-contamination. All inorganic chemical results should be below the method detection limit (MDL).

MS samples assess the accuracy of inorganic chemical analyses. These samples are designed to provide information about the effect of the sample matrix on the sample preparation procedures and analytical technique. The MS acceptance criterion is 75% to 125%, inclusive, for all spiked analytes (LANL 1995, 049738; LANL 2000, 071233; LANL 2008, 109962).

Laboratory duplicate samples assess the precision of inorganic chemical analyses. All relative percent differences (RPDs) between the sample and laboratory duplicate should be ±35% for soil (LANL 1995, 049738; LANL 2000, 071233; LANL 2008, 109962).

The ICSs assess the accuracy of the analytical laboratory's interelement and background correction factors used for inductively coupled plasma emission spectroscopy. The ICS %R should be within the acceptance range of 80% to 120%. The QC acceptance limits are ±20%.

Serial dilution samples measure potential physical or chemical interferences and correspond to a sample dilution ratio of 1:5. The chemical concentration in the undiluted sample must be at least 50 times the MDL (100 times for inductively coupled plasma mass spectroscopy) for valid comparison. For sufficiently high concentrations, the RPD should be within 10%.

D-3.2 Data Quality Results for Inorganic Chemicals

The majority of the analytical results for inorganic chemicals were either not assigned a qualifier or qualified as not detected (U) because the analytes were not detected by the respective analytical methods. These data do not have any quality issues associated with the values presented.

A total of 3627 TAL metals results, 235 cyanide results, 201 perchlorate results, 102 hexavalent chromium results, and 56 nitrate results were qualified as estimated (J) because the analytical laboratory qualified the detected result as estimated.

D-3.2.1 Maintenance of SCL/COC Forms

SCL/COC forms were maintained properly for all samples analyzed for inorganic chemicals (see Appendix E, on DVD included with this document).

D-3.2.2 Sample Documentation

All samples analyzed for inorganic chemicals were properly documented on SCL/COC forms in the field (see Appendix E, on DVD included with this document).

D-3.2.3 Sample Dilutions

A total of 65 TAL metal results were qualified as estimated (J) because the serial dilution sample RPD was >10% and the sample result was greater than 100 times the MDL.

D-3.2.4 Sample Preservation

Preservation criteria were met for all samples analyzed for inorganic chemicals.

D-3.2.5 Holding Times

A total of 14 TAL metal results, 19 cyanide results, and 1 perchlorate result were qualified as estimated and biased low (J-) because the extraction/analytical holding time was exceeded by less than 2 times the applicable holding time.

A total of 13 cyanide results were qualified as estimated not detected (UJ) because the extraction/analytical holding time was exceeded by less than 2 times the applicable holding time.

D-3.2.6 ICVs and CCVs

A total of 32 TAL metal results and 3 perchlorate results were qualified as estimated (J) because the ICV and/or CCV were not analyzed at the appropriate method frequency.

Four perchlorate results were qualified as estimated non detected (UJ) because the ICV and/or CCV were recovered outside the method limits.

A total of 32 TAL metal results and three perchlorate results were qualified as estimated not detected (UJ) because the ICV and/or CCV were not analyzed at the appropriate method frequency.

D-3.2.7 Laboratory Duplicate Samples

A total of 342 TAL metals results were qualified as estimated (J) because the sample and the duplicate sample results were greater than 5 times the reporting limit (RL) and the duplicate RPD was greater than 35%.

One TAL metals result was qualified as estimated not detected (UJ) because the duplicate sample was analyzed on a sample not collected on-site.

A total of 132 TAL metals results were qualified as estimated (J) because the duplicate results exceeded the RPD requirements.

Two TAL metals results were qualified as estimated not detected (UJ) because the duplicate results exceeded the RPD requirements.

D-3.2-8 Internal Standards

A total of 591 TAL metal results were qualified as estimated (J) because the internal standard (IS) area count for the quantitating IS is greater than 125 in the relation to the initial calibration blank.

Six perchlorate results were qualified as estimated (J) because the IS area count for the quantitating IS is less than 70% but greater than 25% of the average of that obtained from the calibration standards.

A total of 35 perchlorate results were qualified as estimated nondetected (UJ) because the IS area count for the quantitating IS is less than 70% but greater than 25% of the average of that obtained from the calibration standards.

D-3.2.9 Blanks

A total of 624 TAL metals results, 573 cyanide results, and 4 nitrate results were qualified as not detected (U) because the sample result was less than 5 times the concentration of the related analyte in the method blank.

A total of 1027 TAL metals results were qualified as estimated (J) because the analyte was identified in the method blank but was greater than 5 times the RL.

A total of 364 TAL metals, 30 cyanide results, and 1 nitrate result were qualified as not detected (U) because the sample result was less than or equal to 5 times the concentration of the related analyte in the initial calibration blank/continuous calibration blank.

A total of 511 cyanide metals results were qualified because the analyte was identified in the method blank but was greater than 5 times the RL.

Twenty TAL metal results and one nitrate result were qualified as not detected (U) because the sample result was equal to or less than 5 times the concentration of the related analyte in the rinsate blank or equipment blank.

D-3.2.10 MS Samples

A total of 1053 TAL metals results and 6 hexavalent chromium results were qualified as estimated and biased low (J-) because the MS %R value was less than the lower acceptance limit (LAL) but greater than 30%.

A total of 51 TAL metal results were qualified as estimated and biased high (J+) because the spike percent recovery value is less than 30%, and the result is a nondetection, which increases the potential for false negatives being reported.

A total of 79 TAL metals results, 2 hexavalent chromium results, and 1 nitrate result were qualified as estimated not detected (UJ) because the associated MS recovery was less than the LAL but greater than 10%.

A total of 443 TAL metals results were qualified as estimated and biased high (J+) because the associated MS recovery was greater than the upper acceptance level (UAL).

Three TAL metals results were qualified as estimated not detected (UJ) because the associated MS recovery was greater than the UAL.

A total of 60 TAL metal results were qualified as estimated not detected (UJ) because the spike percent recovery value is greater than 30% and less than the LAL (75%), and the sample result is a nondetection, which indicates a potential for false negatives being reported.

D-3.2.11 LCS Recoveries

A total of 71 TAL metals results were qualified as estimated and biased high (J+) because the associated LCS was recovered above the upper warning limit.

D-3.2.12 Detection Limits

A total of 551 TAL metals results, 10 hexavalent chromium results, and 1 perchlorate result were qualified as estimated (J) because the sample result was reported as detected between the instrument detection limit and the estimated detection limit.

D-3.2.13 Rejected Results

Four TAL metals results were qualified as rejected (R) because the MS %R value was less than 30%.

Four TAL metals results were qualified as rejected (R) because the extraction holding time was exceeded by more than 2 times the acceptable holding time.

A total of 43 TAL metals results and 20 cyanide results were qualified as rejected (R) because the associated MS recovery was less than 10%.

The rejected data were not used to determine the nature and extent of contamination or to assess the potential human and ecological risks. However, sufficient data of good quality are available to characterize the site(s) and conduct the risk assessments. The results of other qualified data were used as reported and do not affect the usability of the sampling results.

D-4.0 ORGANIC CHEMICAL ANALYSES

A total of 1709 samples (plus 114 field duplicates) collected within the upper Los Alamos Canyon Aggregate Area were analyzed for organic chemicals. Organic analyses included volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and dioxins and furans. All QC procedures were followed as required by the analytical laboratory SOWs (LANL 1995, 049738; LANL 2000, 071233; LANL 2008, 109962). The analytical methods used for organic chemicals are listed in Table D-1.0-1.

Tables within the investigation report summarize all samples collected from the Upper Los Alamos Canyon Aggregate Area and the analyses requested. All organic chemical results are provided on DVD in Appendix E.

E-4.1 Organic Chemical QA/QC Samples

QA/QC samples are used to produce measures of the reliability of the data. The results of the QA/QC analyses performed on a sample provide confidence about whether the analyte is present and whether the concentration reported is accurate. To assess the accuracy and precision of organic chemical analyses, this investigation included calibration verifications and the analysis of LCSs, method blanks, MSs, surrogates, and ISs. Each of these QA/QC sample types is defined in the analytical services SOWs (LANL 1995, 049738; LANL 2000, 071233; LANL 2008, 109962) and described briefly in the paragraphs below.

Calibration verification is the establishment of a quantitative relationship between the response of the analytical procedure and the concentration of the target analyte. There are two aspects of calibration verification: initial and continuing. The initial calibration verifies the accuracy of the calibration curve as well as the individual calibration standards used to perform the calibration. The continuing calibration ensures that the initial calibration is still holding and correct as the instrument is used to process samples. The continuing calibration also serves to determine that analyte identification criteria such as retention times and spectral matching are being met.

The LCS is a sample of a known matrix that has been spiked with compounds that are representative of the target analytes and serves as a monitor of overall performance on a controlled sample. The LCS is the primary demonstration, on a daily basis, of the ability to analyze samples with good qualitative and quantitative accuracy. The LCS recoveries should fall within the method-specific acceptance criteria.

A method blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as those used in the environmental sample processing and which is extracted and analyzed in the same manner as the corresponding environmental samples. Method blanks are used to assess the potential for sample contamination during extraction and analysis. All target analytes should be below the contract-required detection limit in the method blank.

MS samples are used to measure the ability to recover prescribed analytes from a native sample matrix and consist of aliquots of the submitted samples spiked with a known concentration of the target analyte(s). Spiking typically occurs before sample preparation and analysis. The spike sample recoveries should be between the LAL and UAL.

A surrogate compound (surrogate) is an organic compound used in the analyses of target analytes that is similar in composition and behavior to the target analytes but is not normally found in environmental samples. Surrogates are added to every blank, sample, and spike to evaluate the efficiency with which analytes are recovered during extraction and analysis. The recovery percentage of the surrogates must be within specified ranges or the sample may be rejected or assigned a qualifier.

ISs are chemical compounds added to every blank, sample, and standard extract at a known concentration. They are used to compensate for (1) analyte concentration changes that might occur during storage of the extract and (2) quantitation variations that can occur during analysis. Internal standards are used as the basis for quantitation of target analytes. The %R for ISs should be within the range of 50% to 200%.

D-4.2 Data Quality Results for Organic Chemicals

The majority of the analytical results for organic chemicals were either not assigned a qualifier or qualified as not detected (U) because the analytes were not detected by the respective analytical methods. These data do not have any quality issues associated with the values presented.

A total of 1560 SVOC results, 678 dioxin/furan results, 276 PCB results, 254 VOC results, and 57 total petroleum hydrocarbons-diesel range organics (TPH-DRO) results were qualified as estimated (J) because the analytical laboratory qualified the detected result as estimated.

A total of 43 dioxin/furan results were qualified as estimated (J) because the validator identified quality deficiencies in the reported data that required qualification.

D-4.2.1 Maintenance of SCL/COC Forms

SCL/COC forms were maintained properly for all samples analyzed for organic chemicals (see Appendix E, on DVD included with this document).

D-4.2.2 Sample Documentation

All samples analyzed for organic chemicals were properly documented on the SCL in the field (see Appendix E, on DVD included with this document).

D-4.2.3 Sample Dilutions

Some samples were diluted for organic chemical analyses. No qualifiers were applied to any organic chemical sample results because of dilutions.

D-4.2.4 Sample Preservation

Preservation criteria were met for all samples analyzed for organic chemicals.

D-4.2.5 Holding Times

One VOC result was qualified as estimated and biased low (J-) because the extraction/analytical holding time was exceeded by less than 2 times the published method holding times.

D-4.2.6 ICVs and CCVs

Seventeen SVOC results, three VOC results, six dioxin/furan results, and six PCB results were qualified as estimated (J) because the ICV and/or CCV were recovered outside the method-specific limits.

A total of 316 SVOC results and 517 VOC results were qualified as estimated not detected (UJ) because the ICV and/or CCV were recovered outside the method-specific limits.

A total of 31 dioxin/furan results were qualified as estimated (J) because the ICV and/or CCV were not analyzed at the appropriate method frequency.

A total of 84 dioxin/furan results were qualified as estimated not detected (UJ) because the ICV and/or CCV were not analyzed at the appropriate method frequency.

A total of 353 SVOC results, 169 VOC results, 239 high-explosives results, and 7 PCB results were qualified as estimated not detected (UJ) because the initial calibration curve exceeded the percent relative standard deviation (%RSD) criteria and/or the associated multipoint calibration correlation coefficient was less than 0.995.

Twenty SVOC results, seven VOC results, and seven PCB results were qualified as estimated (J) because the initial calibration curve exceeded the %RSD criteria and/or the associated multipoint calibration correlation coefficient was less than 0.995.

A total of 86 PCB results were qualified as estimated (J) because the multicomponent standard was not analyzed within 72 hours of the initial analysis.

D-4.2.7 Surrogate Recoveries

A total of 61 SVOC results, 22 SVOC results, 18 PCB results, and 3 dioxin/furan results were qualified as estimated and biased low (J-) because the surrogate recovery percentage was less than the LAL but greater than or equal to 10%.

Two VOC and ten PCB results were qualified as estimated and biased high (J+) because the associated surrogate recovery was greater than the UAL.

A total of 392 PCB results were qualified as estimated not detected (UJ) because at least one surrogate was greater than the UAL and one surrogate was less than the LAL.

A total of 28 PCB results were qualified as estimated and biased low (J-) because one surrogate recovery percentage was less than 10%.

D-4.2.8 IS Responses

A total of 117 SVOC results and 36 VOC results were qualified as estimated not detected (UJ) because the %R of the associated IS area counts was between 10% and 50% when compared with the area counts in the applicable continuing calibration standard.

A total of 41 SVOC results and 200 VOC results were qualified as estimated (J) because the %R of the associated IS area counts was between 10% and 50% when compared with the area counts in the applicable continuing calibration standard.

A total of 14 SVOC results were qualified as estimated (J) because the quantitating IS area count was less than 10% of the expected value.

A total of 68 SVOC results were qualified as estimated not detected (UJ) because the quantitating IS area count was less than 50% but greater than 10% relative to the previous continuing calibration.

A total of 16 VOC results were qualified as estimated not detected (UJ) because the mass spectrum did not meet specifications.

D-4.2.9 Blanks

A total of 14 SVOC results, 164 VOC results, 18 dioxin/furan results, and 1 PCB result were qualified as not detected (U) because the sample result was less than 5 times the concentration of the related analyte in the method blank.

A total of 1 SVOC result and 31 dioxin/furan results were qualified as estimated (J) because the sample result was less than 5 times the concentration of the related analyte in the method blank.

A total of 68 VOC results and 3 PCB results were qualified as not detected (U) because the associated sample concentration was less than or equal to 5 times (VOCs)/10 times (PCBs) the amount in the trip, rinsate, or equipment blank.

D-4.2.10 MS Samples

No results were qualified because of matrix spike results.

D-4.2.11 Laboratory Duplicate Samples

Laboratory duplicate samples collected for organic chemical analyses indicated acceptable precision for all samples.

D-4.2.12 LCS Recoveries

Twelve SVOC results were qualified as estimated and biased low (J-) because the LCS %R was less than the LAL but greater than 10%.

One VOC result was qualified as estimated and biased high (J+) because the LCS %R was greater than the UAL.

A total of 15 SVOC results and 54 VOC results were qualified as estimated not detected (UJ) because the LCS %R was less than the LAL but greater than 10%.

D-4.2.13 Rejected Data

A total of 223 VOC results were qualified as rejected (R) because the affected analytes were analyzed with a relative response factor of less than 0.05 in the initial calibration and/or CCV.

Thirty SVOC results were qualified as rejected (R) because the LCS percent recovery was <10%.

Eleven SVOC results were qualified as rejected (R) because the quantitating IS area count is less than 10% of the expected value.

A total of 233 VOC results were qualified as rejected (R) because the affected analytes were analyzed with a relative response factor of less than 0.05 in the initial calibration and/or CCV.

The rejected data were not used to characterize the nature and extent of contamination or assess the potential human and ecological risks. However, sufficient data of good quality are available to characterize the site(s) and conduct the risk assessments. The results of other qualified data were used as reported and do not affect the usability of the sampling results.

D-5.0 RADIONUCLIDE ANALYSES

A total of 1833 samples (plus 203 field duplicates) collected within the Upper Los Alamos Canyon Aggregate Area were analyzed for radionuclides. Radionuclide analyses included americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, tritium, and strontium-90. The analytical methods used for radionuclides are listed in Table D-1.0-1.

Tables in the investigation report summarize all samples collected from the Upper Los Alamos Canyon Aggregate Area and the analyses requested. All radionuclide results are provided on DVD (Appendix E).

D-5.1 Radionuclide QA/QC Samples

To assess the accuracy and precision of radionuclide analyses, this investigation included analyses of LCSs, method blanks, MS samples, laboratory duplicate samples, and tracers. Each of these QA/QC sample types is defined in the analytical services SOWs (LANL 1995, 049738; LANL 2000, 071233; LANL 2008, 109962) and is described briefly in the paragraphs below.

The LCS serves as a monitor of the overall performance of each step during the analysis, including sample digestion. For radionuclides in soil or tuff, LCS %R should fall between the control limits of 80% and 120%.

A method blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as those used in the environmental sample processing; it is analyzed in the same manner as the corresponding environmental samples. Method blanks are used to assess the potential for sample contamination during analysis. All radionuclide results should be below the minimum detectable concentration (MDC).

MS samples assess the accuracy of radionuclide analyses. These samples are designed to provide information about the effect of the sample matrix on the sample preparation procedures and analytical technique. The MS acceptance criterion is 75% to 125%.

Tracers are radioisotopes added to a sample to monitor losses of the target analyte. The tracer is assumed to behave in the same manner as the target analytes. The tracer recoveries should fall between the LAL and UAL.

Laboratory duplicate samples assess the precision of radionuclide analyses. All RPDs between the sample and laboratory duplicate should be ±35% for soil (LANL 1995, 049738; LANL 2000, 071233; LANL 2008, 109962).

D-5.2 Data Quality Results for Radionuclides

Approximately one-third (6403) of the analytical results for radionuclides either were not assigned a qualifier or were qualified as not detected (U) because the analytes were not detected by the respective analytical methods. These data do not have any quality issues associated with the values presented.

All procedures were followed as required by the analytical services SOWs (LANL 1995, 049738; LANL 2000, 071233; LANL 2008, 109962). The majority of results (11,604) were qualified as not detected (U) because the associated sample concentration was less than or equal to the MDC. A total of 166 sample results were qualified as not detected (U) because the associated sample concentration was less than or equal to 3 times the total propagated uncertainty (TPU). This data qualification is related to detection status only, not to the quality of the data.

D-5.2.1 Maintenance of SCL/COC Forms

SCL/COC forms were maintained properly for all samples (see Appendix E, on DVD included with this document).

D-5.2.2 Sample Documentation

All samples were properly documented on the SCL/COC forms in the field (see Appendix F, on DVD included with this document).

D-5.2.3 Sample Dilutions

Some samples were diluted for radionuclide analyses. No qualifiers were applied to any radionuclide sample results because of dilutions.

D-5.2.4 Sample Preservation

Preservation criteria were met for all samples analyzed for radionuclides.

D-5.2.5 Holding Times

Holding-time criteria were met for all samples analyzed for radionuclides.

D-5.2.6 Method Blanks

Sixty-seven isotopic plutonium/isotopic uranium results and five tritium results were qualified as estimated (U) because the sample results were less than or equal to 5 times the concentration of the analyte in the method blank.

Twelve isotopic plutonium/isotopic uranium results were qualified as not detected (U) because the sample results were less than or equal to 5 times the concentration of the analyte in the method blank.

D-5.2.7 MS Samples

Nineteen strontium-90 results were qualified as estimated not detected (UJ) because the MS recovery was less than the LAL but greater than 10%.

Nine strontium-90 results were qualified as estimated and biased low (J-) because the associated MS recovery was less than the LAL but greater than 10%.

D-5.2.8 Tracer Recoveries

Two isotopic plutonium/isotopic uranium results were qualified as estimated and biased low (J-) because the tracer %R was less than 30% but greater than 10%.

Eleven isotopic plutonium/isotopic uranium results were qualified as estimated and biased high (J+) because the tracer recovery was greater than the UAL.

D-5.2.9 LCS Recoveries

Eighteen isotopic plutonium/isotopic uranium results were qualified as estimated and biased high (J+) because the associated analyte in the LCS was recovered above the UAL.

D-5.2.10 Laboratory Duplicate Sample Recoveries

Eighteen isotopic uranium results and one gamma spectrometry result were qualified as estimated (J) because the associated duplicate sample has a duplicate error ratio outside the analytical laboratory's acceptance limits.

D-5.2.11 Rejected Data

A total of 63 gamma spectrometry results were qualified as rejected (R) because spectral interference prevented positive identification of the analytes.

Two gamma spectrometry results were qualified as rejected (R) because the MDC and/or TPU documentation was missing.

D-6.0 REFERENCES

The following reference list includes documents cited in this appendix. Parenthetical information following each reference provides the author(s), publication date, and ERID, ESHID, or EMID. This information is also included in text citations. ERIDs were assigned by the Laboratory's Associate Directorate for Environmental Management (IDs through 599999); ESHIDs were assigned by the Laboratory's Associate Directorate for Environment, Safety, and Health (IDs 600000 through 699999); and EMIDs are assigned by Newport News Nuclear BWXT – Los Alamos, LLC (N3B) (IDs 700000 and above). IDs are used to locate documents in N3B's Records Management System and in the Master Reference Set. The NMED Hazardous Waste Bureau and N3B maintain copies of the Master Reference Set. The set ensures that NMED has the references to review documents. The set is updated when new references are cited in documents.

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LANL (Los Alamos National Laboratory), July 1995. "Statement of Work (Formerly Called "Requirements Document") - Analytical Support, (RFP number 9-XS1-Q4257), (Revision 2 - July, 1995)," Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 1995, 049738)

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LANL (Los Alamos National Laboratory), June 30, 2008. “Exhibit "D" Scope of Work and Technical Specifications, Analytical Laboratory Services for General Inorganic, Organic, Radiochemical, Asbestos, Low-Level Tritium, Particle Analysis, Bioassay, Dissolved Organic Carbon Fractionation, and PCB Congeners,” Los Alamos National Laboratory document RFP No. 63639-RFP-08, Los Alamos, New Mexico. (LANL 2008, 109962)

Table D-1.0-1
Inorganic Chemical, Organic Chemical, and Radionuclide Analytical Methods for Samples Collected in the Upper Los Alamos Canyon Aggregate Area

Analytical Method	Analytical Description	Analytical Suite
Inorganic Chemicals		
EPA 300.0	Ion chromatography	Anions (nitrate)
EPA SW-846: 6010/6010B	Inductively coupled plasma emission spectroscopy—atomic emission spectroscopy	Aluminum, antimony, arsenic, barium, beryllium, calcium, cadmium, cobalt, chromium, copper, iron, lead, magnesium, manganese, nickel, potassium, selenium, silver, sodium, thallium, uranium, vanadium, and zinc (TAL metals)
EPA SW-846:6020	Inductively coupled plasma mass spectrometry	Aluminum, antimony, arsenic, barium, beryllium, calcium, cadmium, cobalt, chromium, copper, iron, lead, magnesium, manganese, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc (TAL metals)
EPA SW-846:9012A	Automated colorimetric/off-line distillation	Total cyanide
EPA SW-846:6850	Liquid chromatography–mass spectrometry/mass spectrometry	Perchlorate
EPA SW-846:7471A	Cold vapor atomic absorption	Mercury
Organic Chemicals		
EPA SW-846: 8082	Gas chromatography	PCBs
EPA SW-846:8240 EPA SW-846:8260 EPA SW-846:8260B	Gas chromatography-mass spectrometry	VOCs
EPA SW-846:8270C	Gas chromatography-mass spectrometry	SVOCs
EPA SW-846:8290	High-resolution gas chromatography/high-resolution mass spectrometry	Dioxins/furans
EPA SW-846: 8321A _MOD	High performance liquid chromatography	Explosive compounds
EPA SW-846:8081A	Gas chromatography	Pesticides
EPA SW-846:8080	Gas chromatography	Pesticides/PCBs
EPA SW-846:8015M_EXTRACTABLE	Gas chromatography/flame ionization detector	TPH-DRO
EPA:418.1	Infrared spectrophotometry	TPH unknown range; Total recoverable petroleum hydrocarbons

Table D-1.0-1 (continued)

Analytical Method	Analytical Description	Analytical Suite
Radionuclides		
EPA 901.1	Gamma spectroscopy	Americium-241, cesium-134, cesium-137, cobalt-60, europium-152, ruthenium-106, sodium-22, uranium-235
HASL Method 300:ISOPU HASL Method 300:ISOU	Chemical separation alpha spectrometry	Isotopic plutonium Isotopic uranium
EPA 905.0	Gas proportional counting	Strontium-90
EPA 906.0	Liquid scintillation	Tritium

Appendix E

Analytical Suites and Results and Analytical Reports
(on DVDs included with this document)

Appendix F

Box Plots and Statistical Results

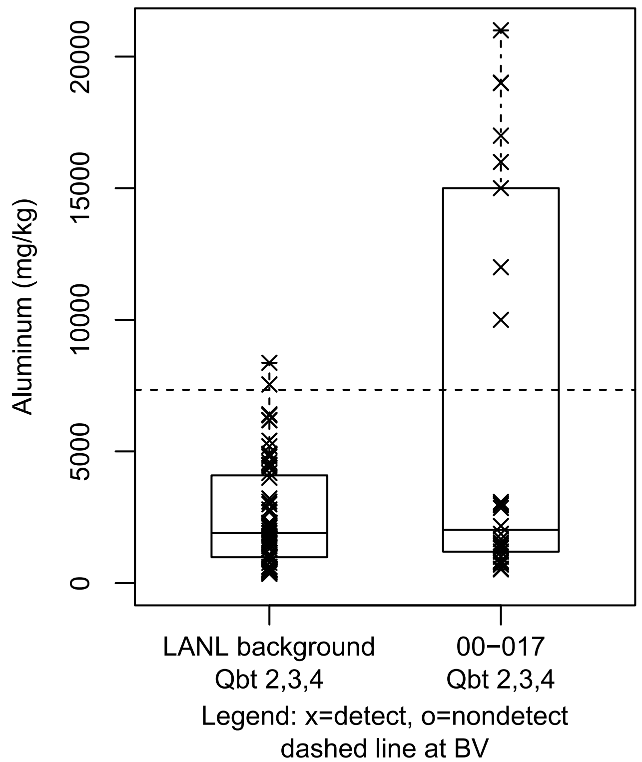

Figure F-1 Box plot for aluminum in tuff at SWMU 00-017

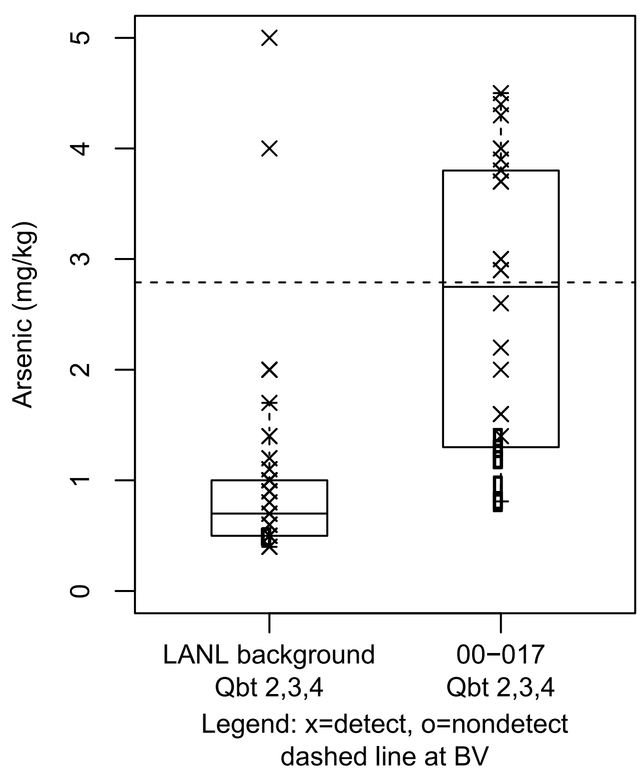

Figure F-2 Box plot for arsenic in tuff at SWMU 00-017

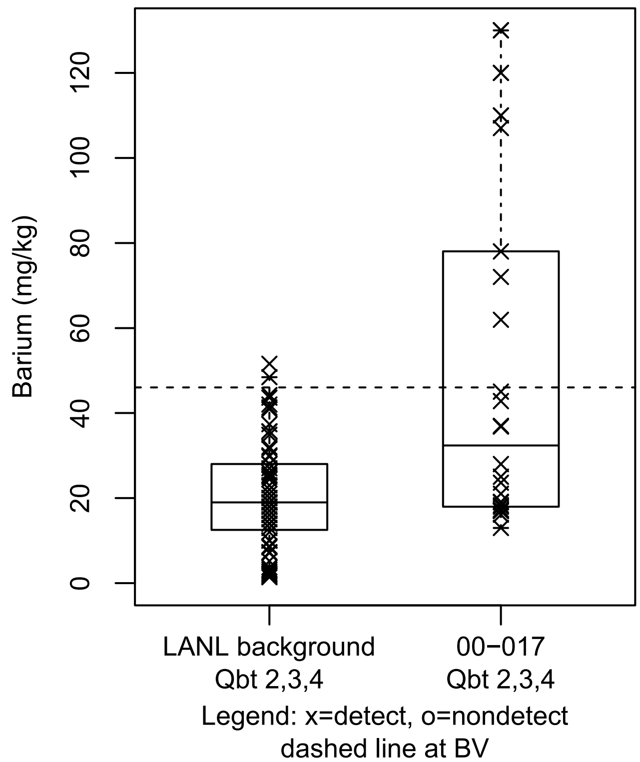

Figure F-3 Box plot for barium in tuff at SWMU 00-017

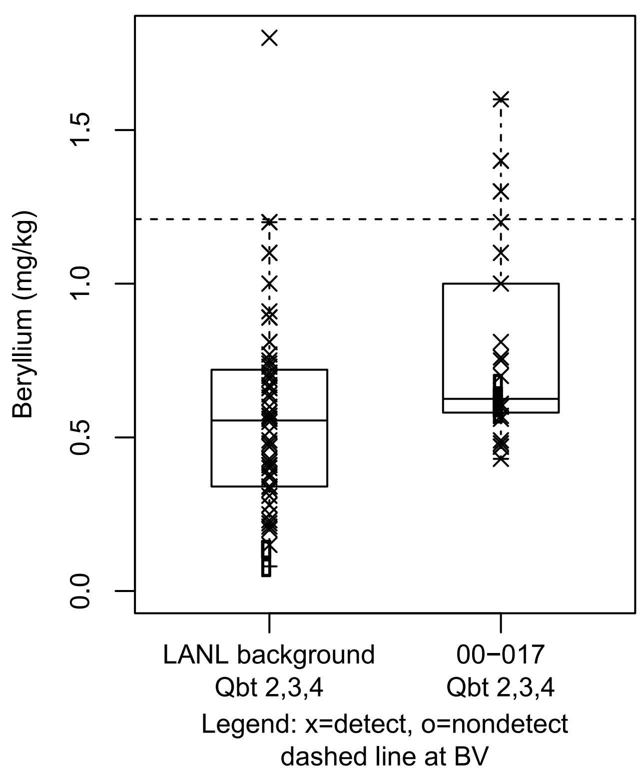

Figure F-4 Box plot for beryllium in tuff at SWMU 00-017

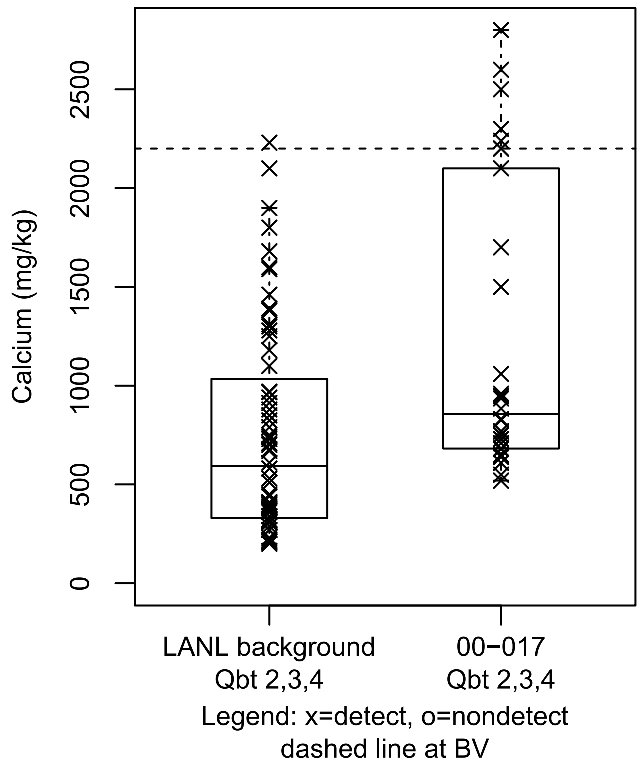

Figure F-5 Box plot for calcium in tuff at SWMU 00-017

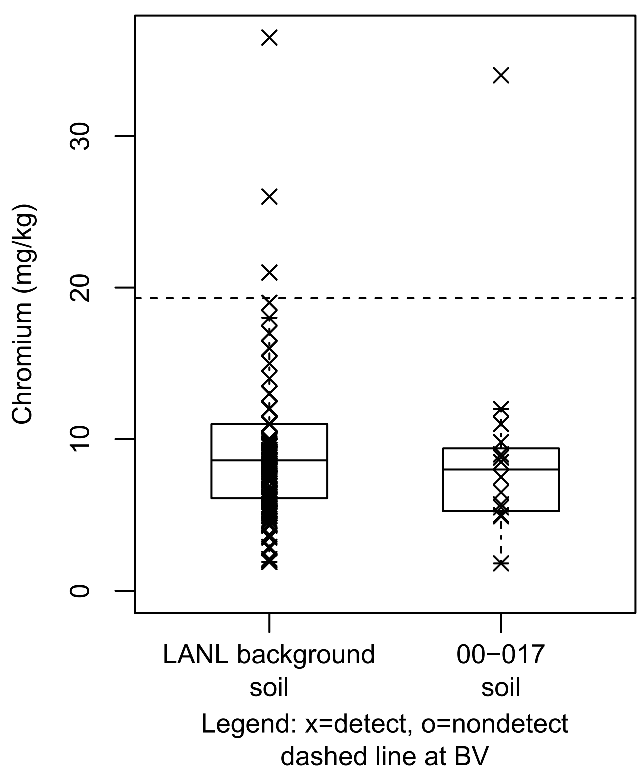

Figure F-6 Box plot for chromium in soil at SWMU 00-017

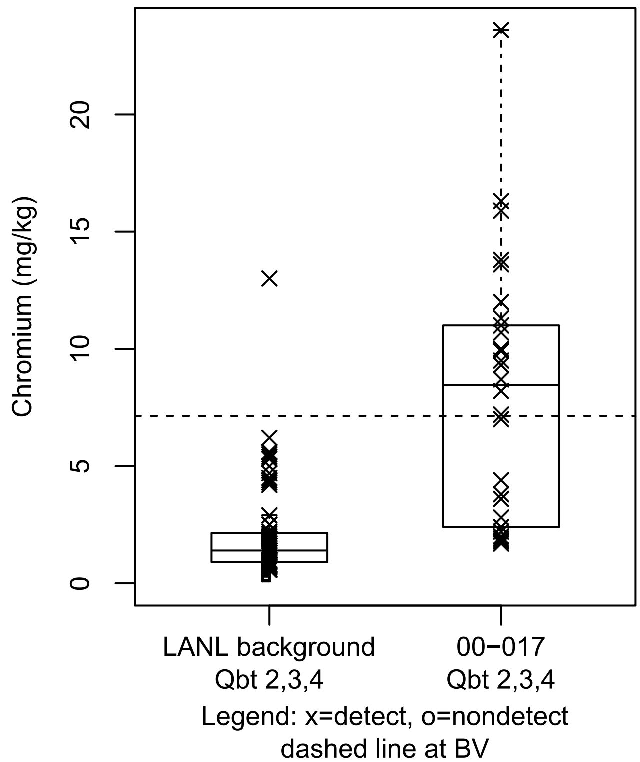

Figure F-7 Box plot for chromium in tuff at SWMU 00-017

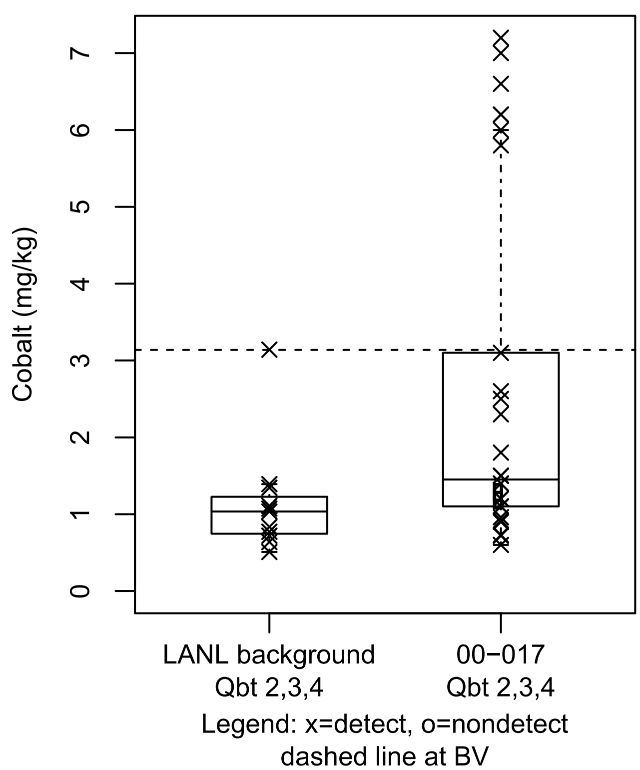

Figure F-8 Box plot for cobalt in tuff at SWMU 00-017

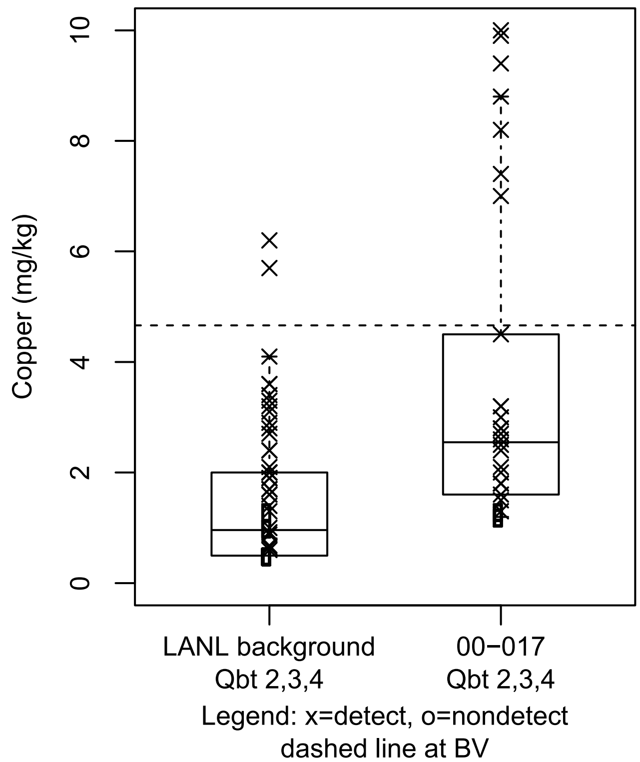

Figure F-9 Box plot for copper in tuff at SWMU 00-017

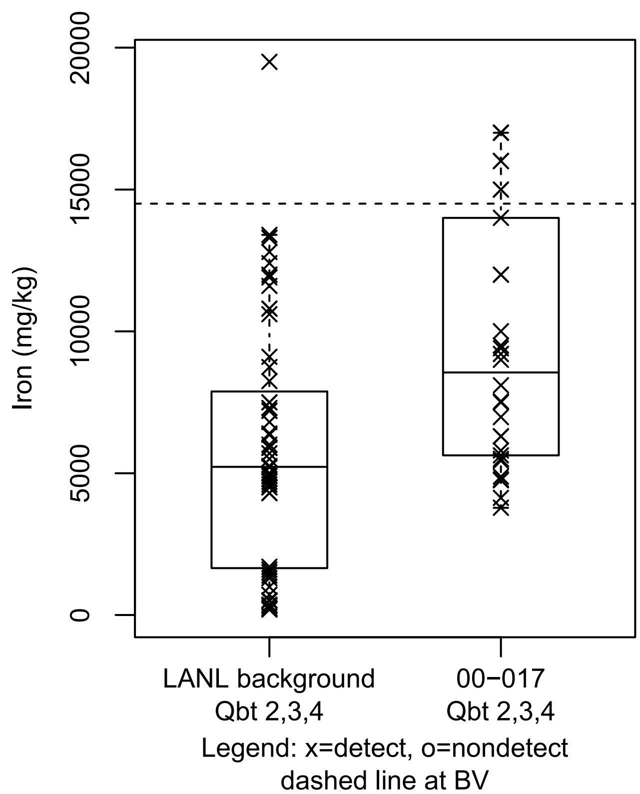

Figure F-10 Box plot for iron in tuff at SWMU 00-017

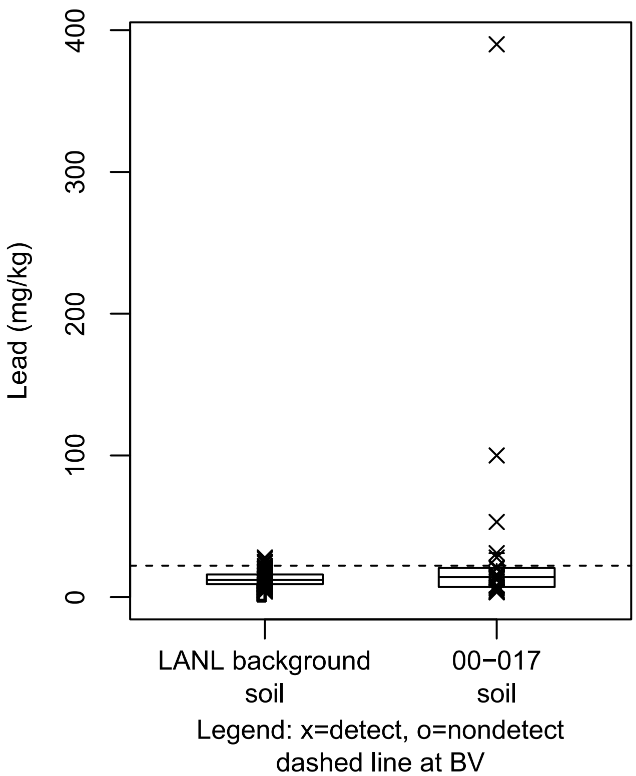

Figure F-11 Box plot for lead in soil at SWMU 00-017

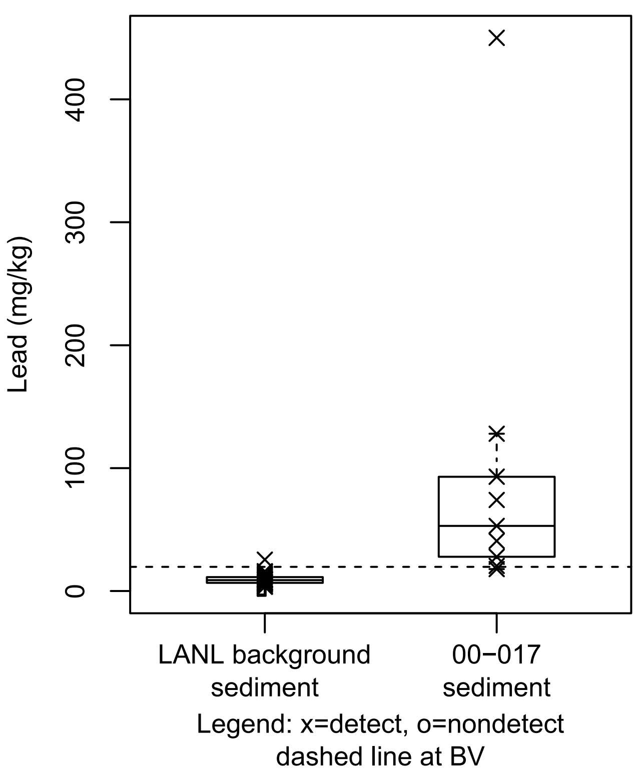

Figure F-12 Box plot for lead in sediment at SWMU 00-017

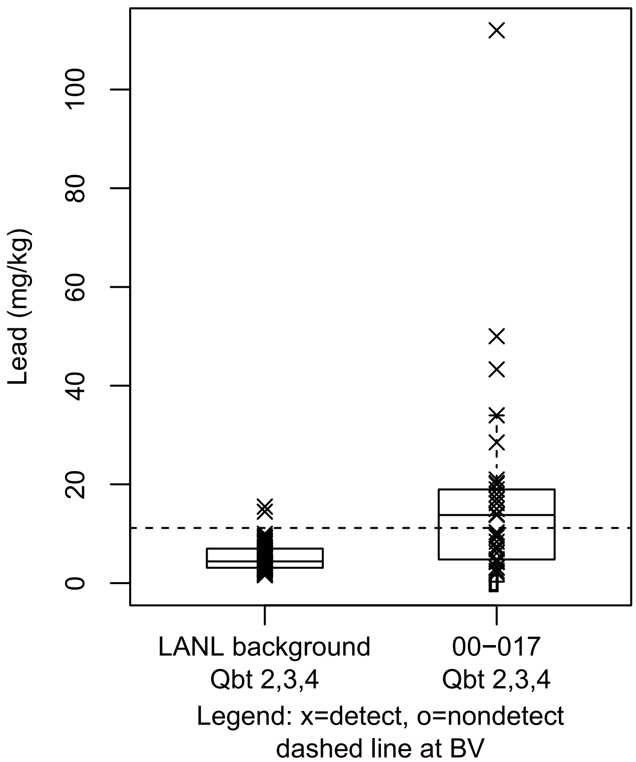

Figure F-13 Box plot for lead in tuff at SWMU 00-017

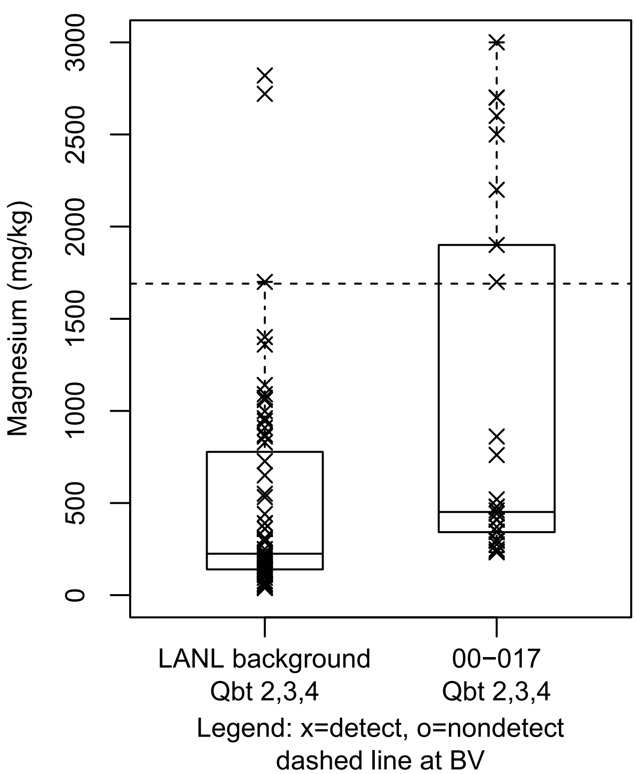

Figure F-14 Box plot for magnesium in tuff at SWMU 00-017

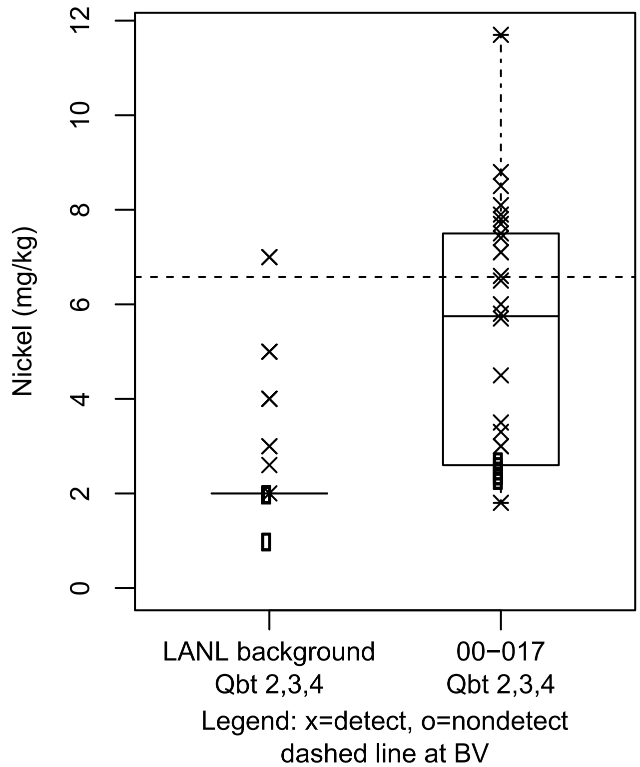

Figure F-15 Box plot for nickel in tuff at SWMU 00-017

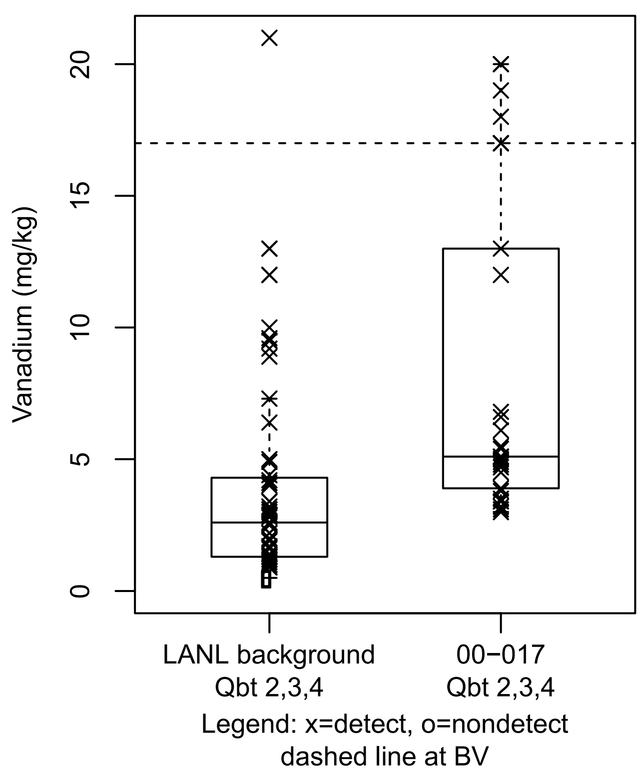

Figure F-16 Box plot for vanadium in tuff at SWMU 00-017

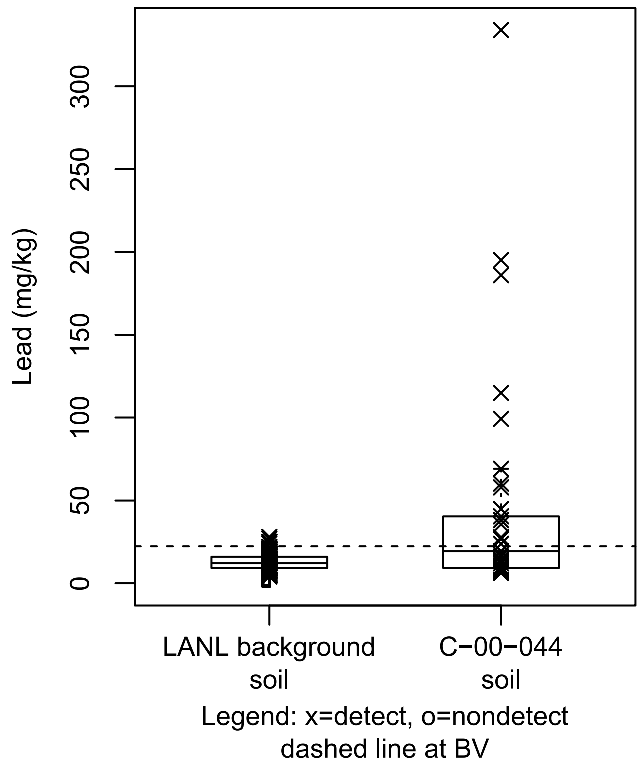

Figure F-17 Box plot for lead in soil at AOC C-00-044

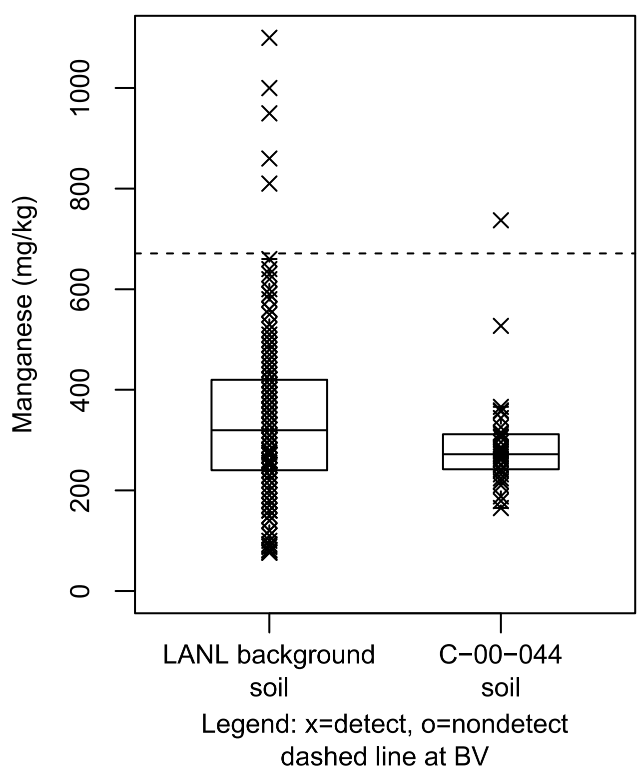

Figure F-18 Box plot for manganese in soil at AOC C-00-044

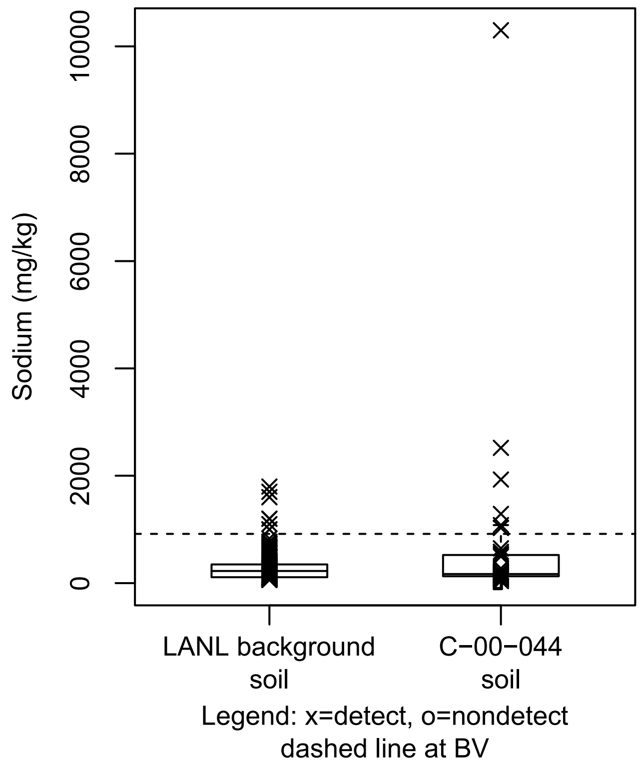

**Figure F-19	Box plot for sodium in soil at AOC C-00-044**

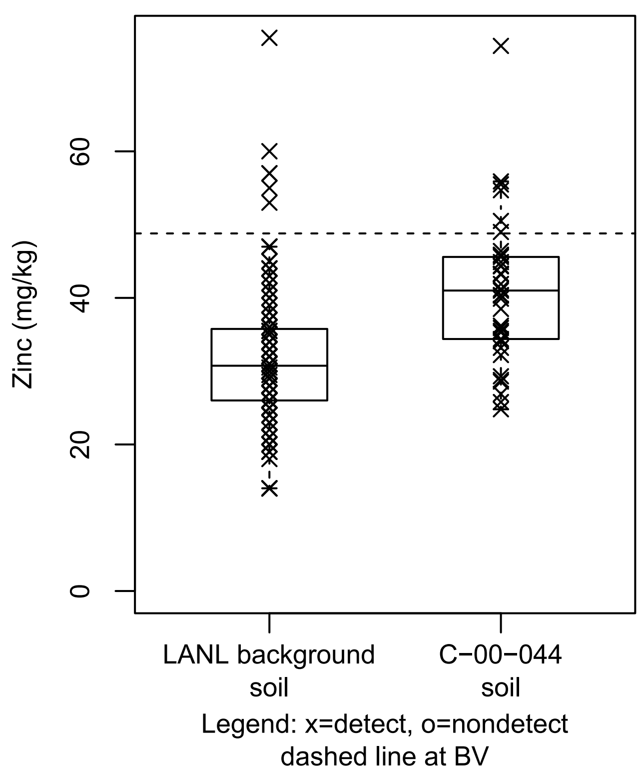

**Figure F-20	Box plot for zinc in soil at AOC C-00-044**

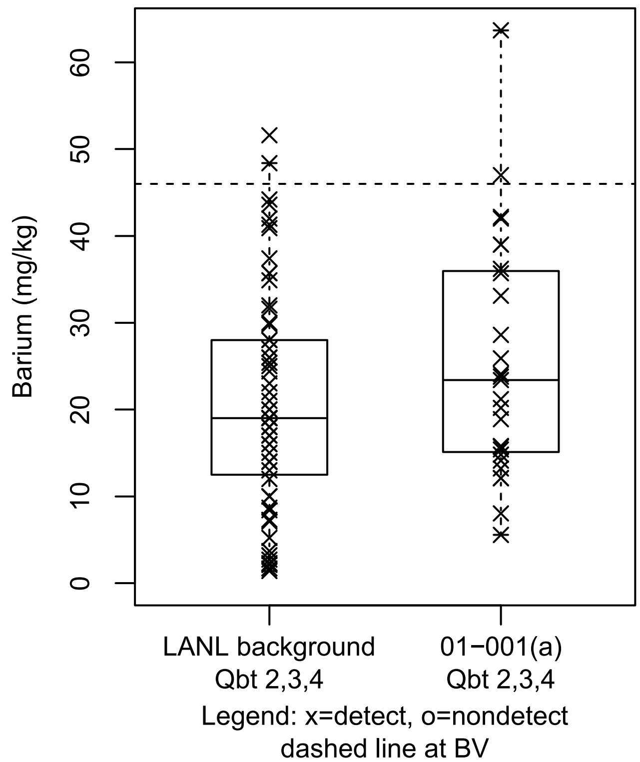

Figure F-21 Box plot for barium in tuff at SWMU 01-001(a)

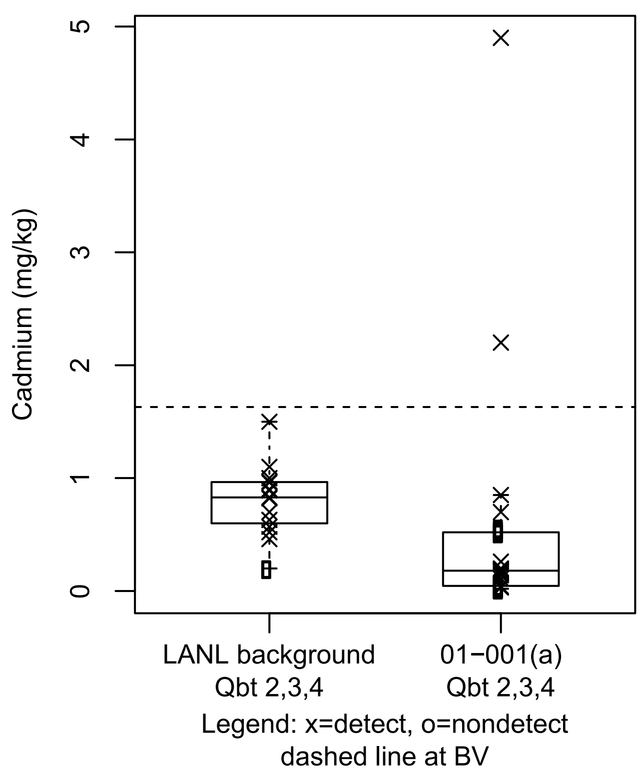

Figure F-22 Box plot for cadmium in tuff at SWMU 01-001(a)

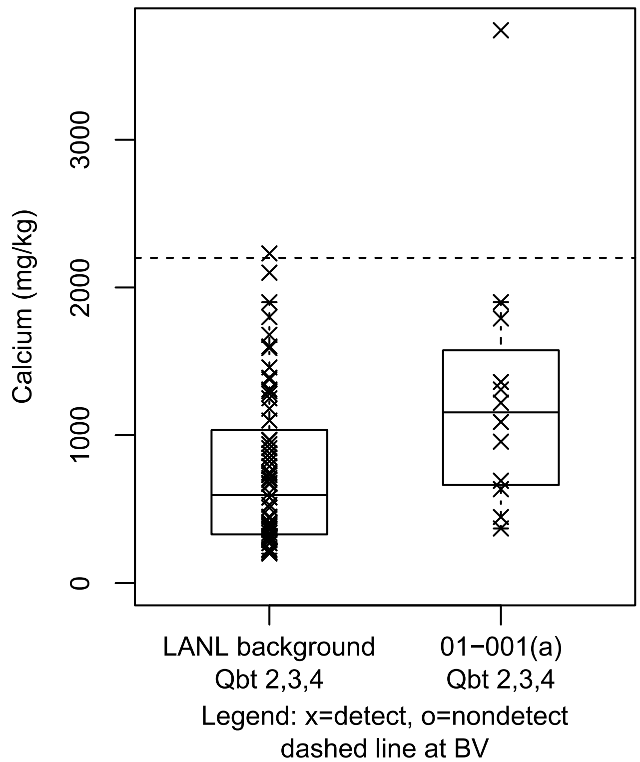

Figure F-23 Box plot for calcium in tuff at SWMU 01-001(a)

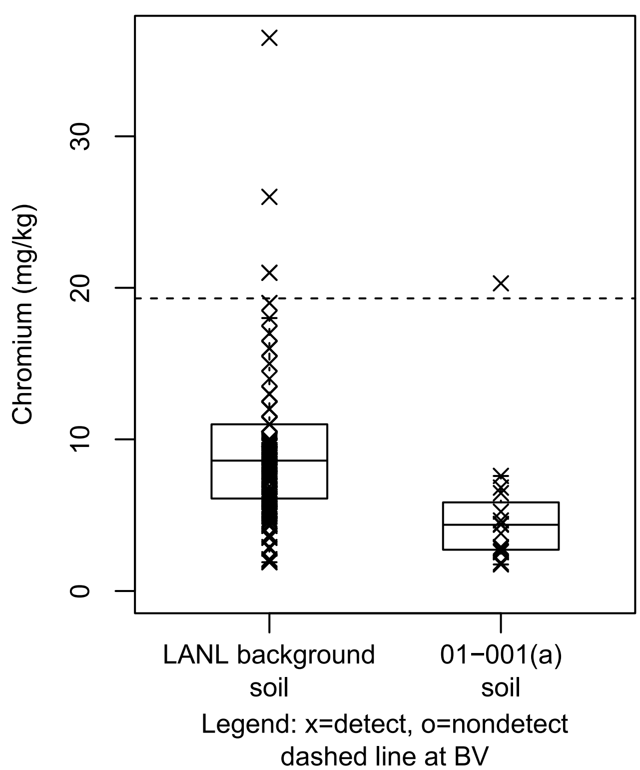

Figure F-24 Box plot for chromium in soil at SWMU 01-001(a)

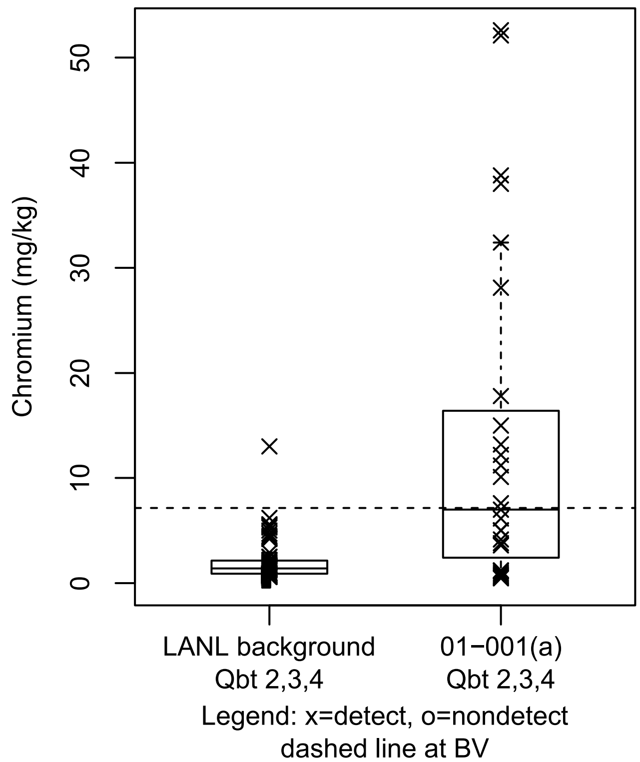

Figure F-25 Box plot for chromium in tuff at SWMU 01-001(a)

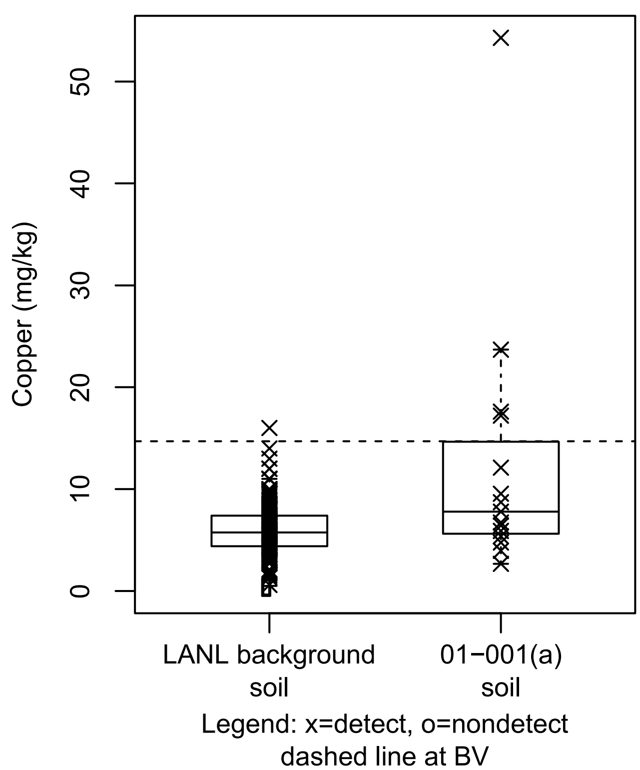

Figure F-26 Box plot for copper in soil at SWMU 01-001(a)

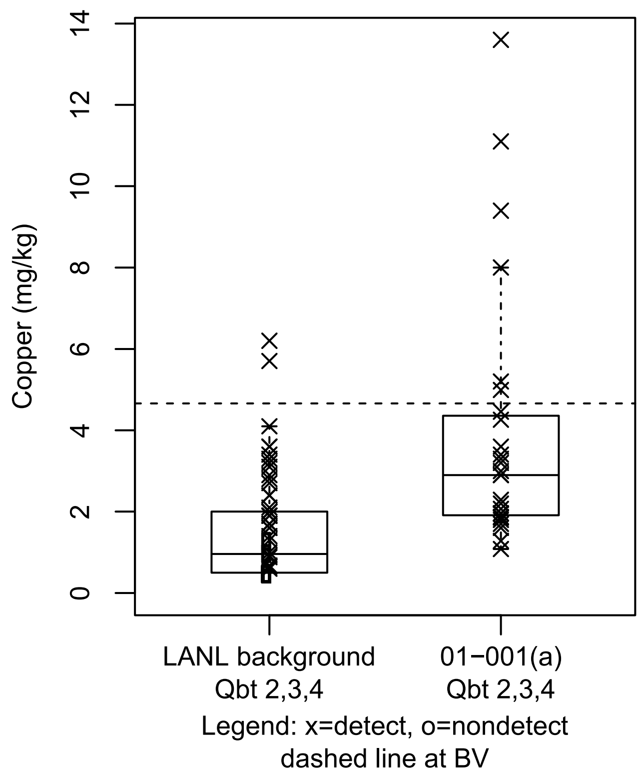

Figure F-27 Box plot for copper in tuff at SWMU 01-001(a)

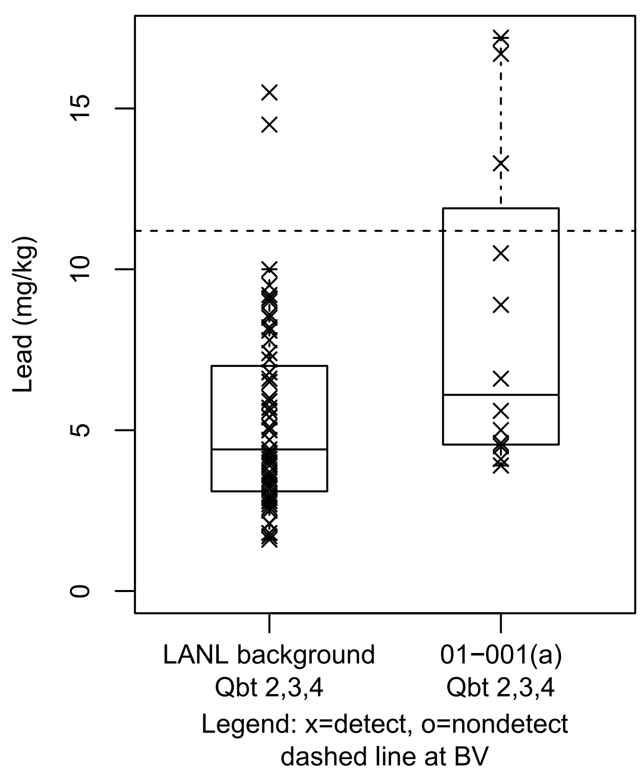

Figure F-28 Box plot for lead in tuff at SWMU 01-001(a)

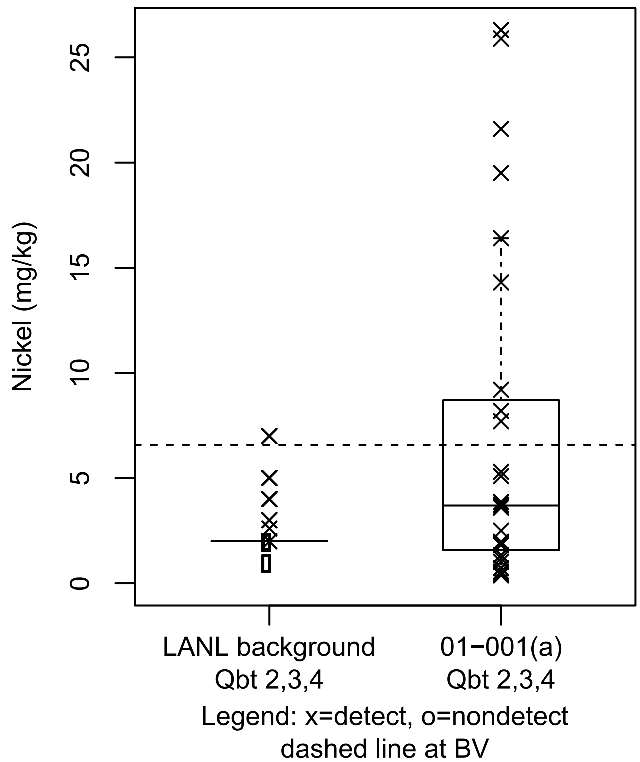

Figure F-29 Box plot for nickel in tuff at SWMU 01-001(a)

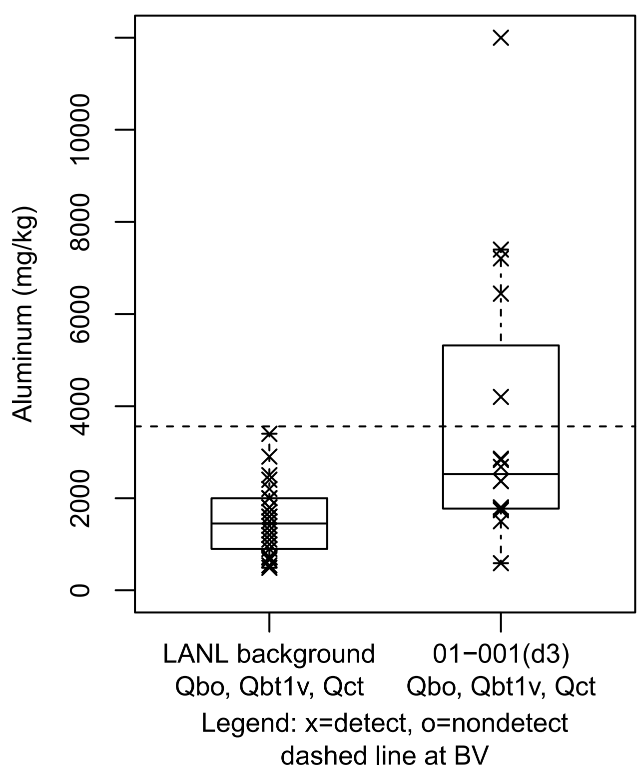

Figure F-30 Box plot for aluminum in lower tuff at SWMU 01-001(d3)

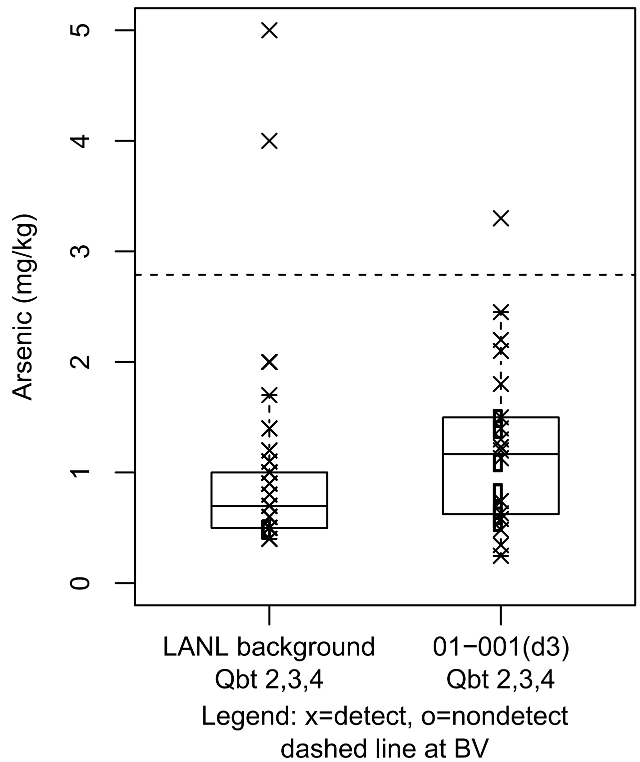

Figure F-31 Box plot for arsenic in upper tuff at SWMU 01-001(d3)

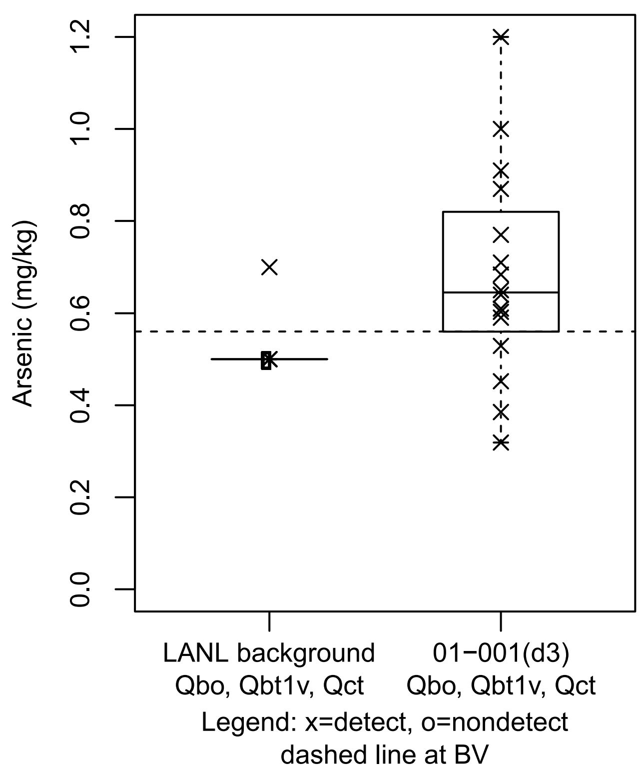

Figure F-32 Box plot for arsenic in lower tuff at SWMU 01-001(d3)

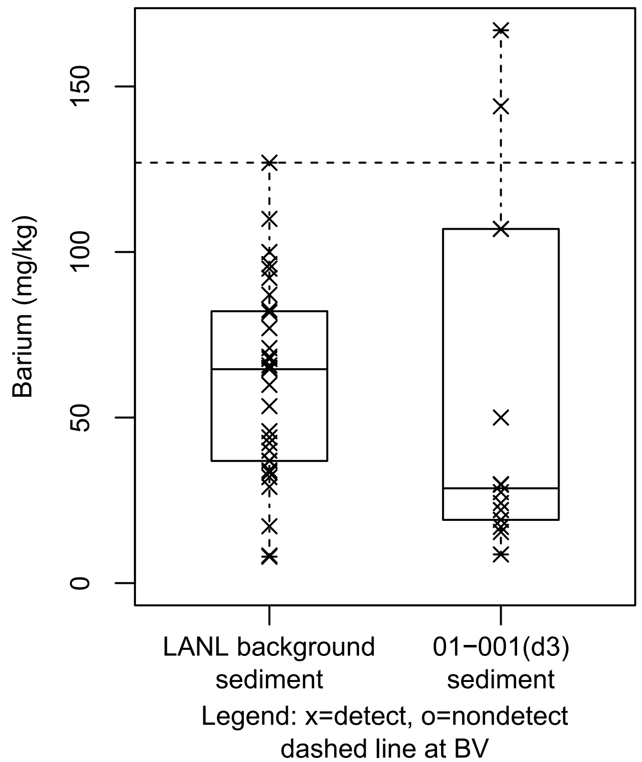

Figure F-33 Box plot for barium in sediment at SWMU 01-001(d3)

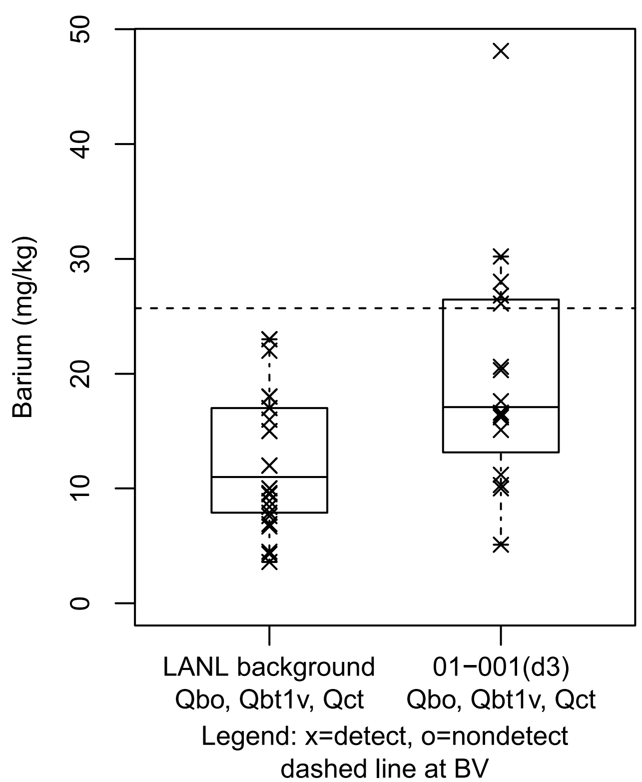

Figure F-34 Box plot for barium in lower tuff at SWMU 01-001(d3)

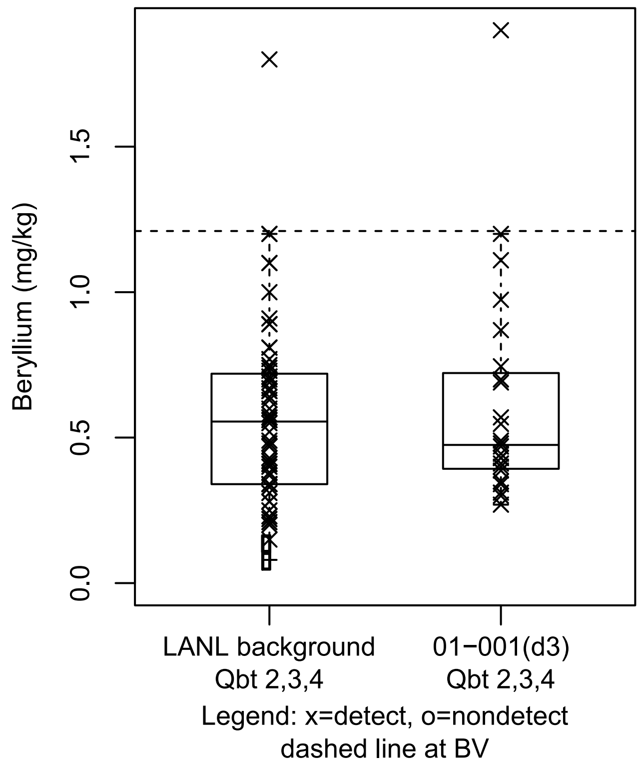

Figure F-35 Box plot for beryllium in upper tuff at SWMU 01-001(d3)

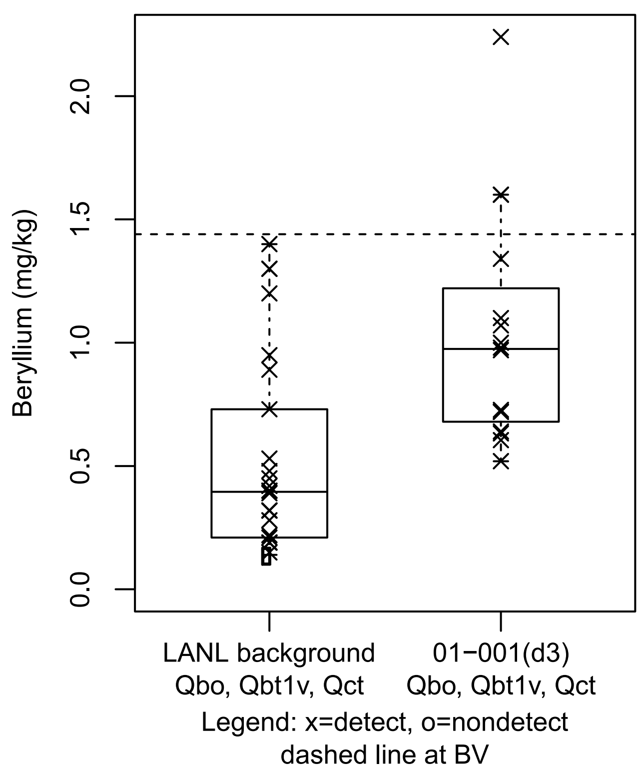

Figure F-36 Box plot for beryllium in lower tuff at SWMU 01-001(d3)

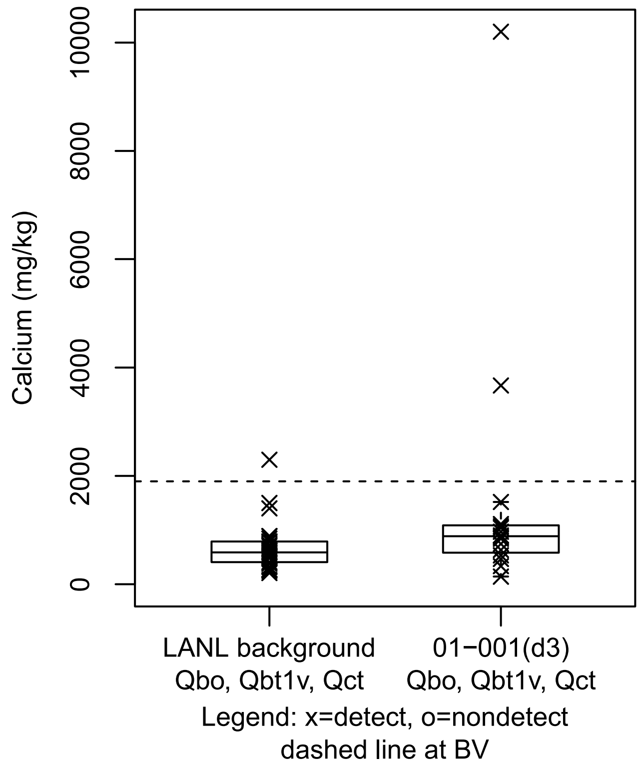

Figure F-37 Box plot for calcium in lower tuff at SWMU 01-001(d3)

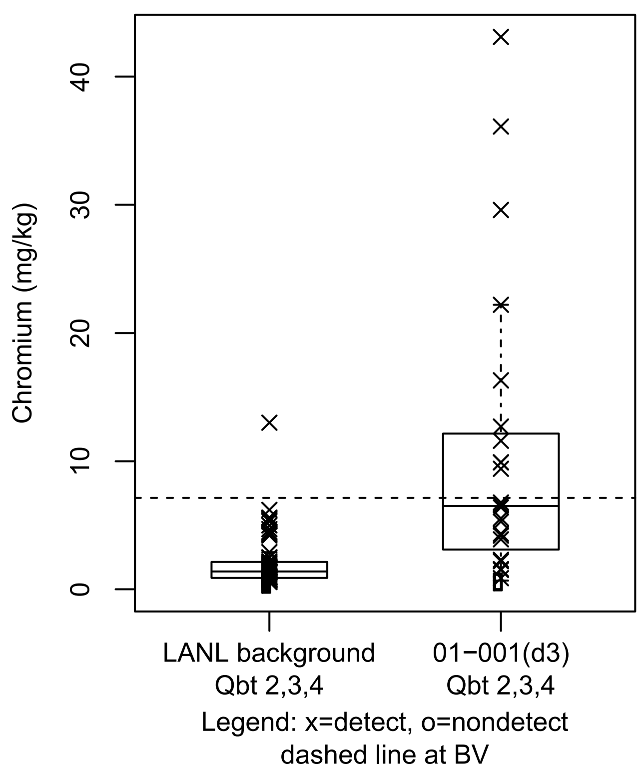

Figure F-38 Box plot for chromium in upper tuff at SWMU 01-001(d3)

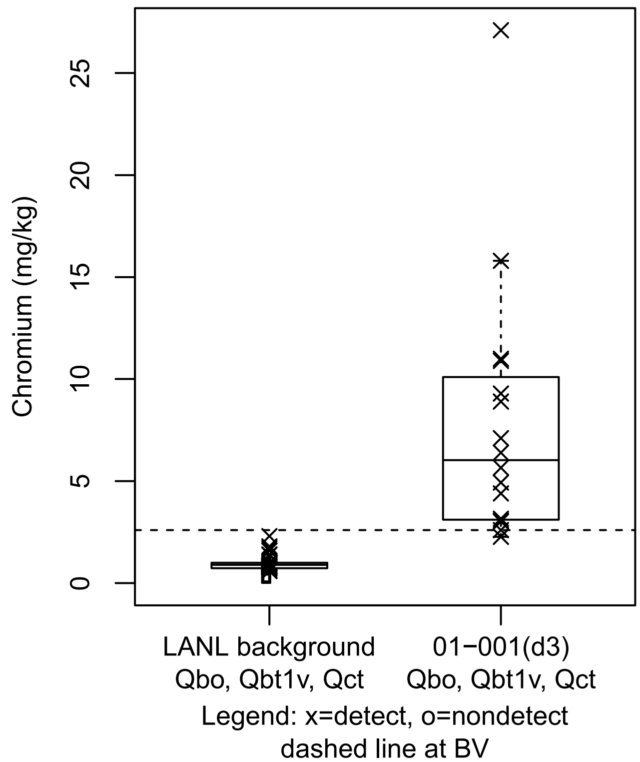

Figure F-39 Box plot for chromium in lower tuff at SWMU 01-001(d3)

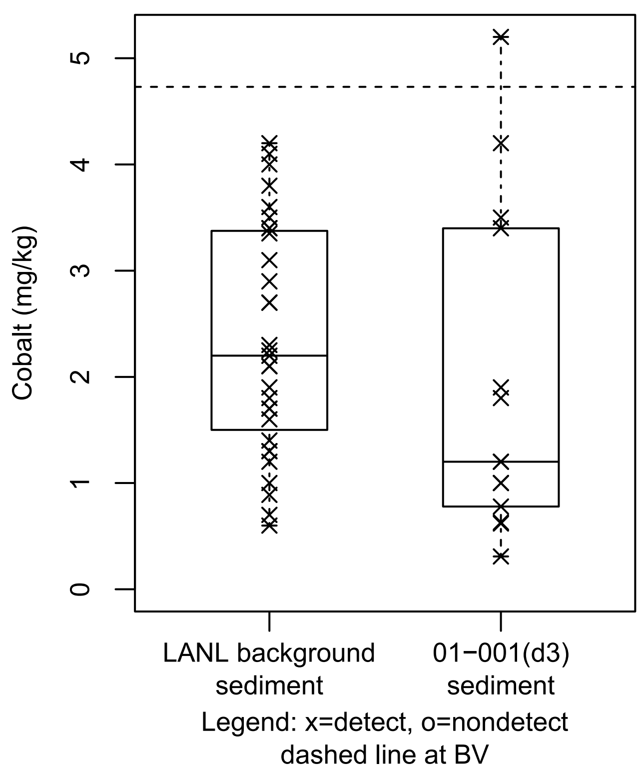

Figure F-40 Box plot for cobalt in sediment at SWMU 01-001(d3)

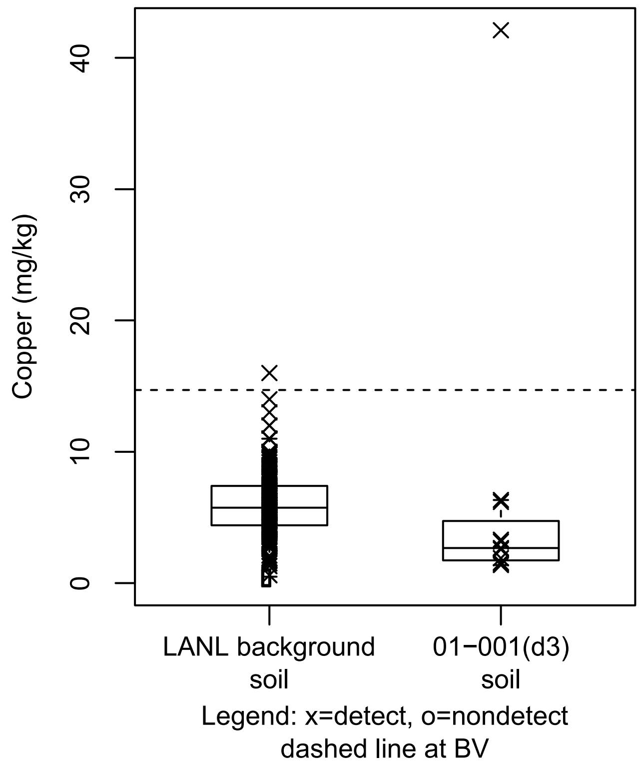

Figure F-41 Box plot for copper in soil at SWMU 01-001(d3)

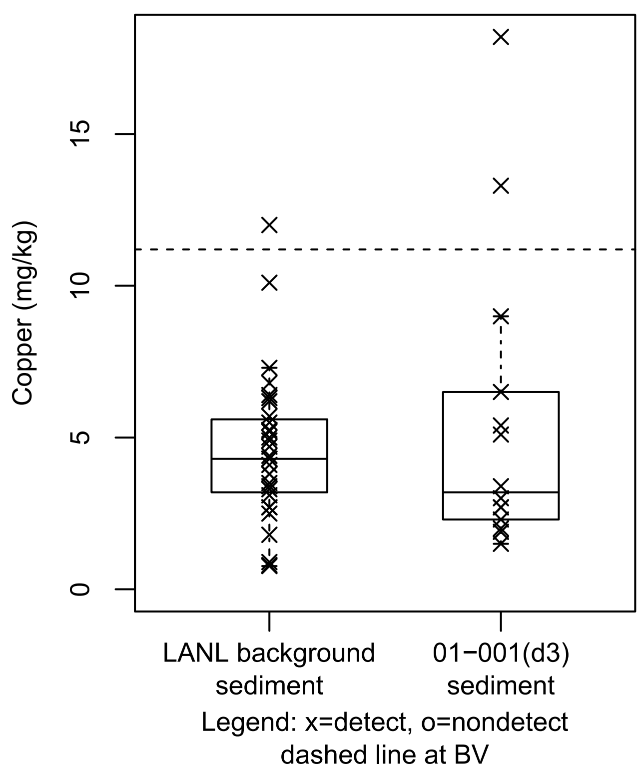

Figure F-42 Box plot for copper in sediment at SWMU 01-001(d3)

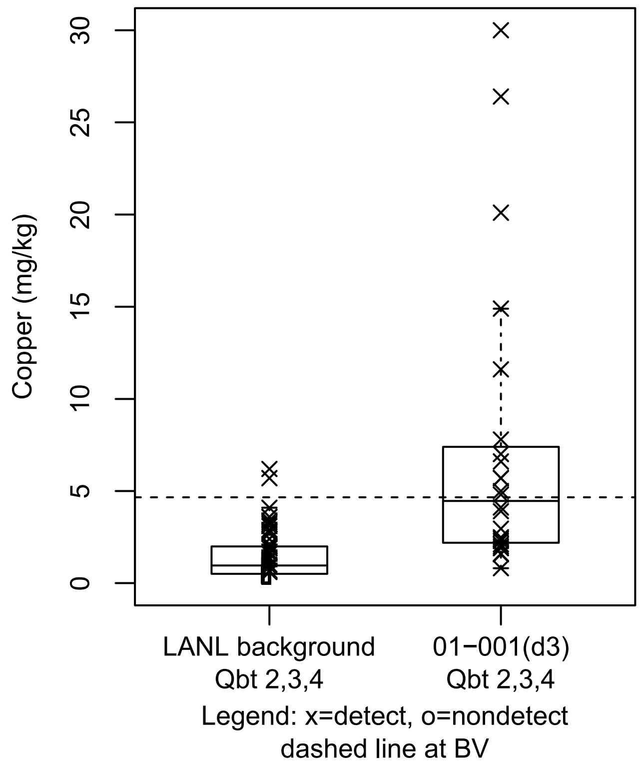

Figure F-43 Box plot for copper in upper tuff at SWMU 01-001(d3)

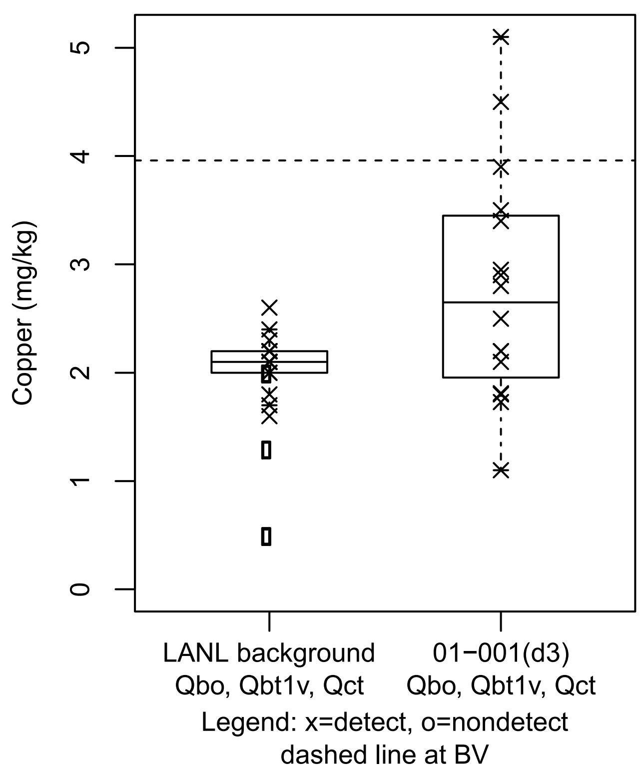

Figure F-44 Box plot for copper in lower tuff at SWMU 01-001(d3)

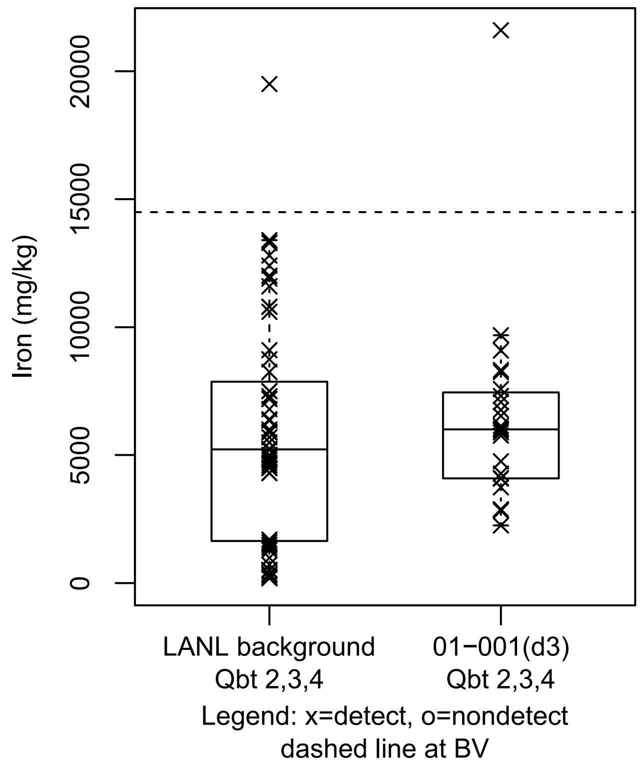

Figure F-45 Box plot for iron in upper tuff at SWMU 01-001(d3)

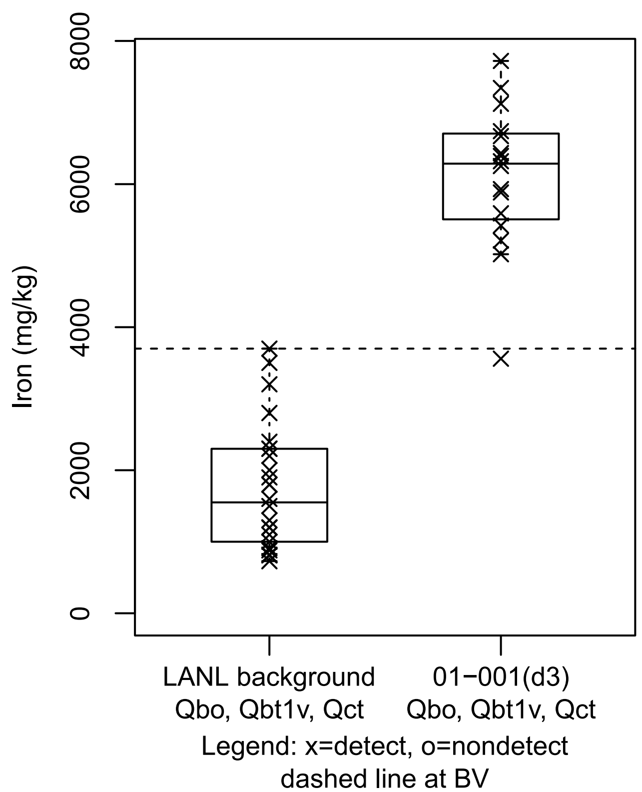

Figure F-46 Box plot for iron in lower tuff at SWMU 01-001(d3)

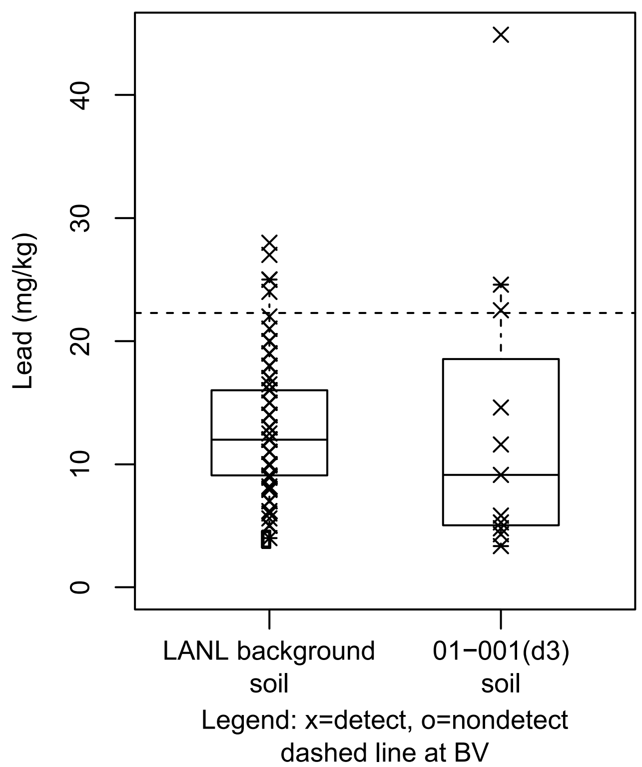

Figure F-47 Box plot for lead in soil at SWMU 01-001(d3)

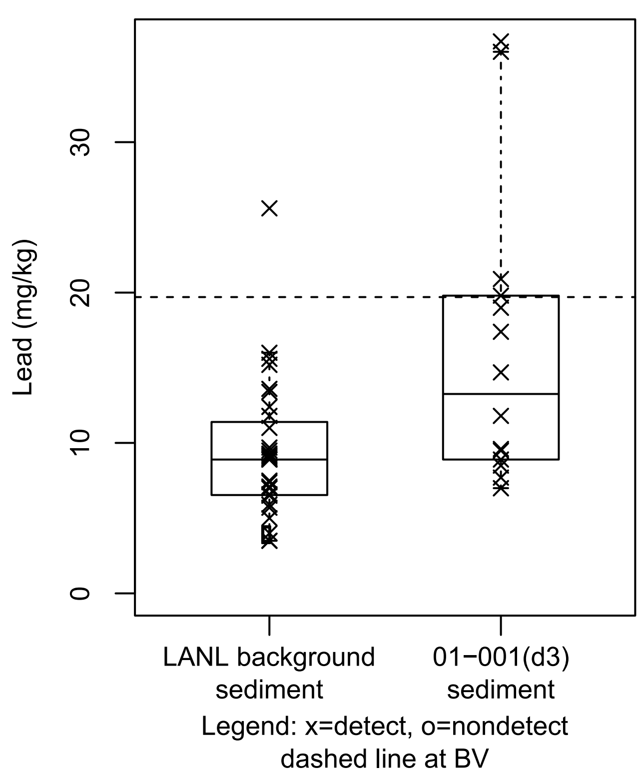

Figure F-48 Box plot for lead in sediment at SWMU 01-001(d3)

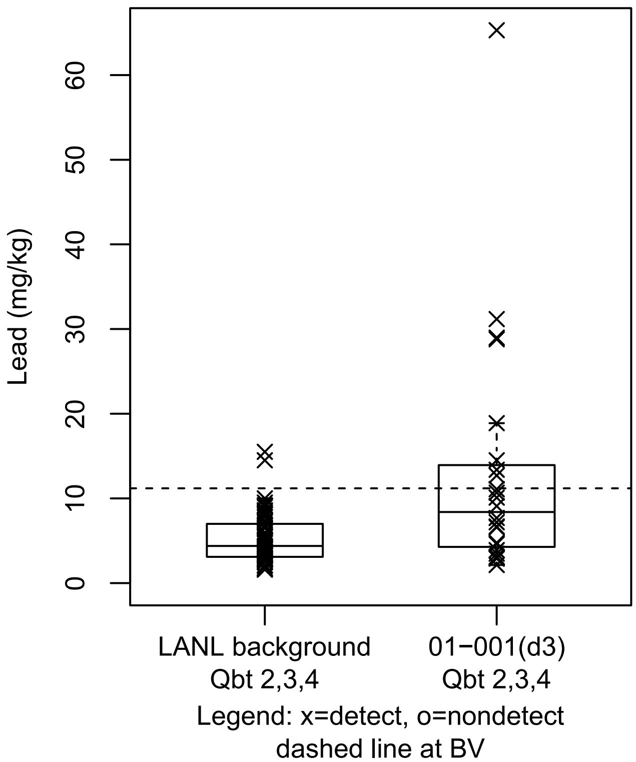

Figure F-49 Box plot for lead in upper tuff at SWMU 01-001(d3)

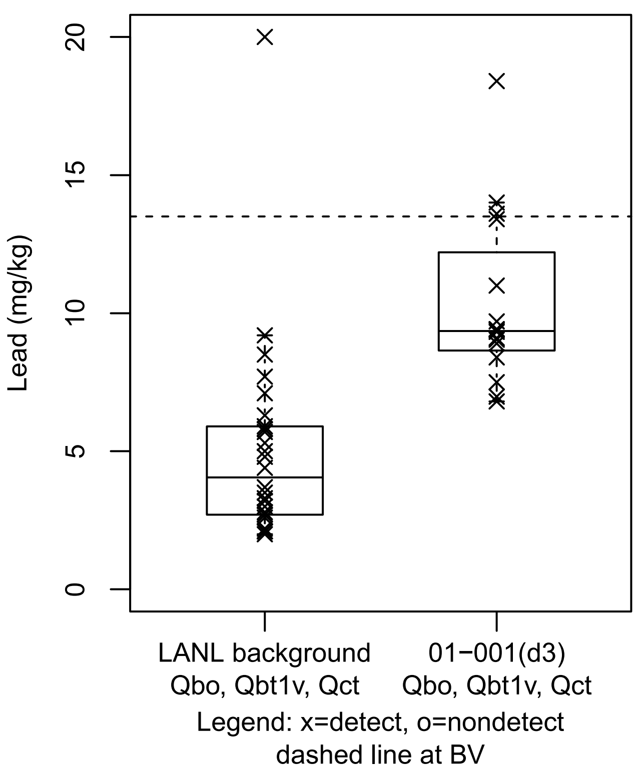

Figure F-50 Box plot for lead in lower tuff at SWMU 01-001(d3)

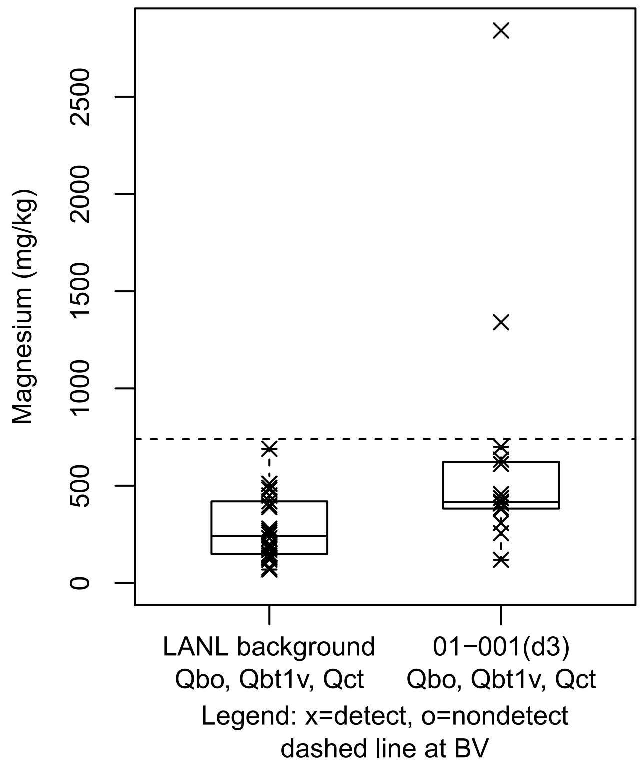

Figure F-51 Box plot for magnesium in lower tuff at SWMU 01-001(d3)

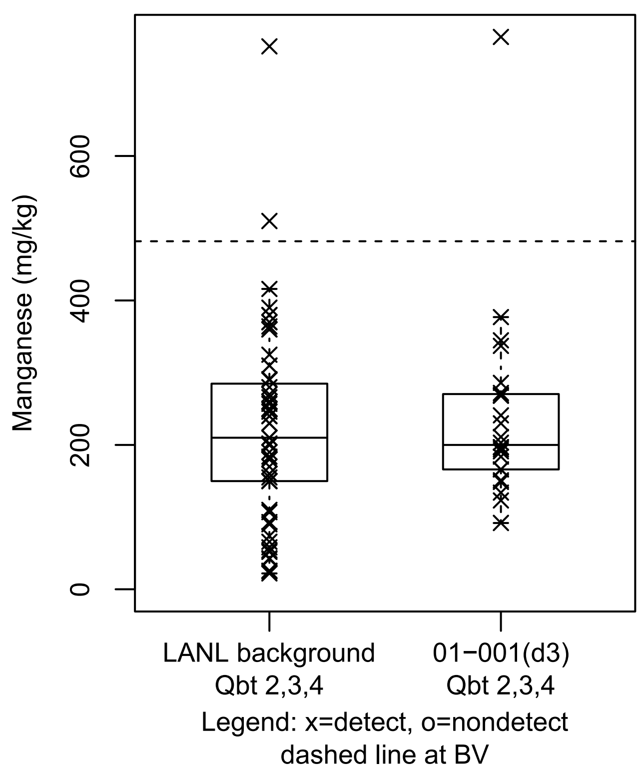

Figure F-52 Box plot for manganese in upper tuff at SWMU 01-001(d3)

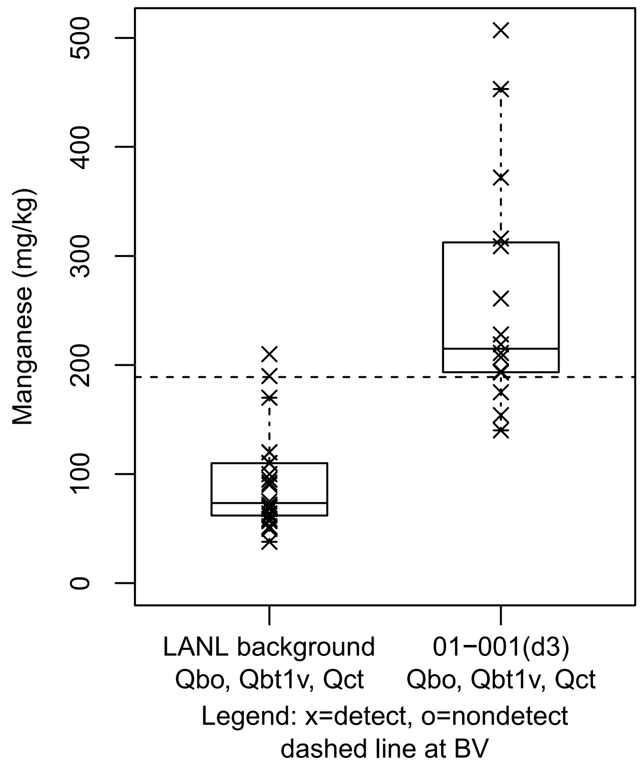

Figure F-53 Box plot for manganese in lower tuff at SWMU 01-001(d3)

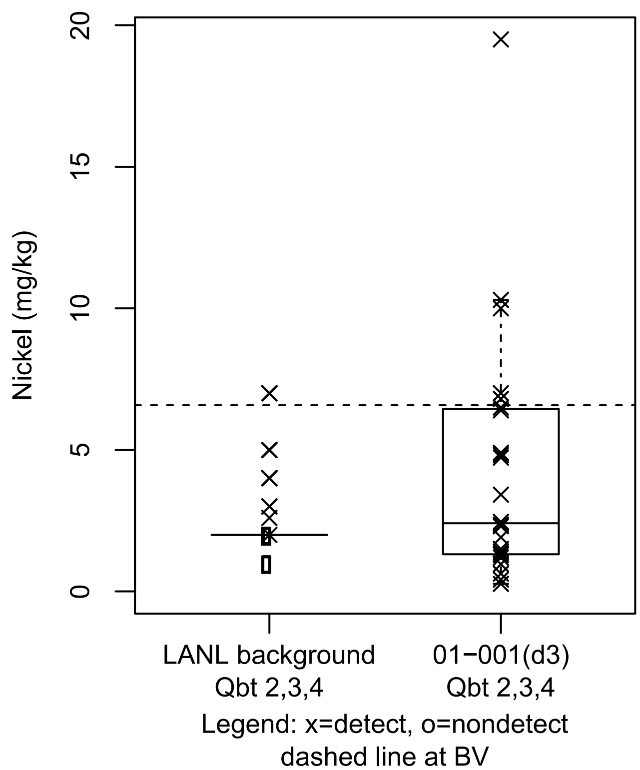

Figure F-54 Box plot for nickel in upper tuff at SWMU 01-001(d3)

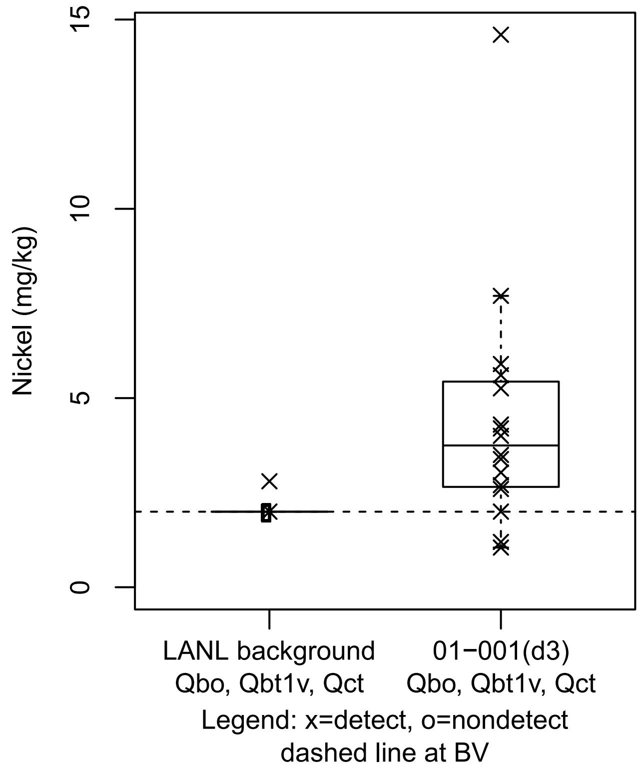

Figure F-55 Box plot for nickel in lower tuff at SWMU 01-001(d3)

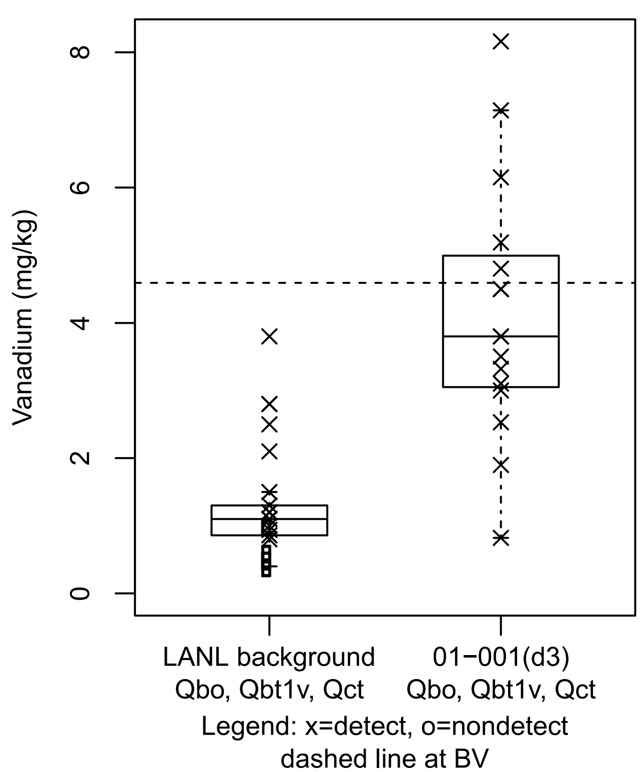

Figure F-56 Box plot for vanadium in lower tuff at SWMU 01-001(d3)

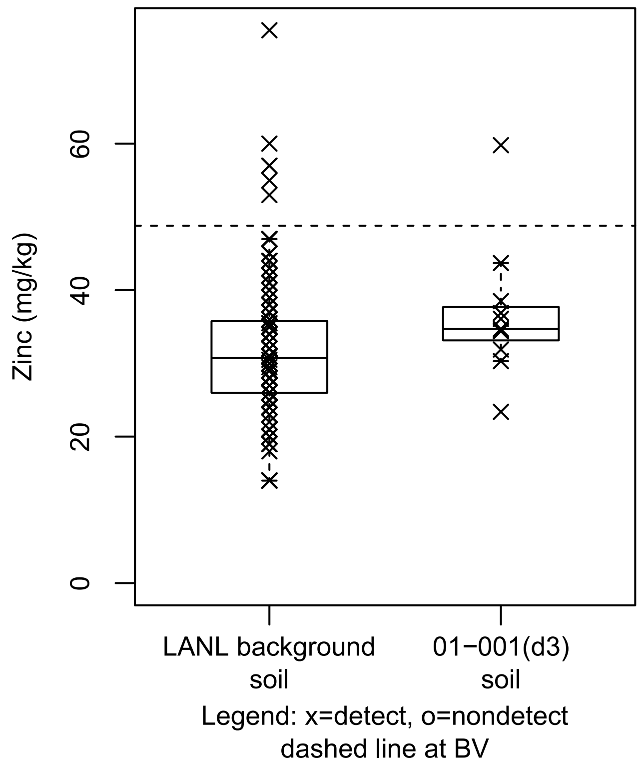

Figure F-57 Box plot for zinc in soil at SWMU 01-001(d3)

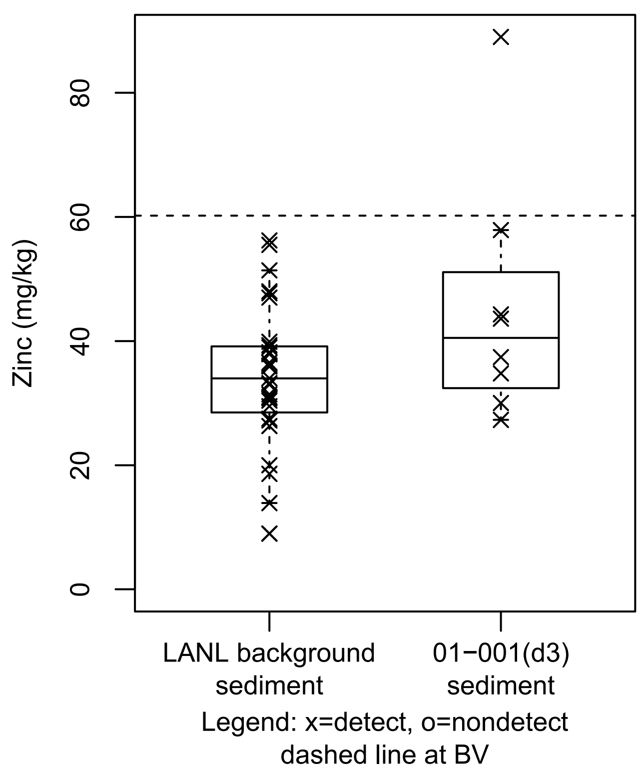

Figure F-58 Box plot for zinc in sediment at SWMU 01-001(d3)

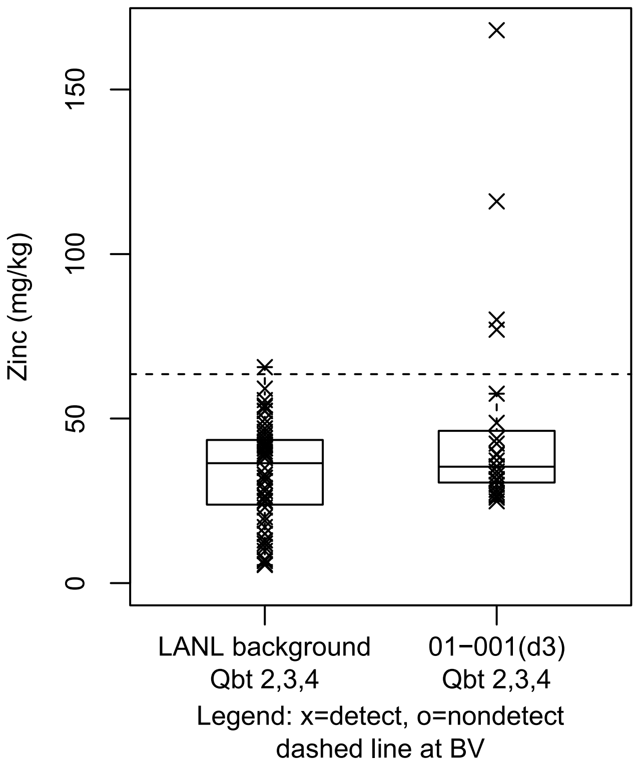

Figure F-59 Box plot for zinc in upper tuff at SWMU 01-001(d3)

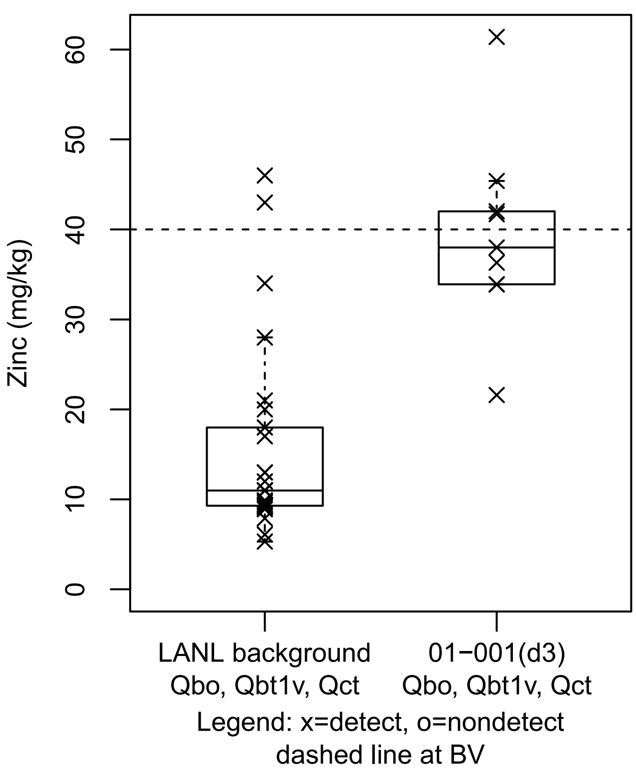

Figure F-60 Box plot for zinc in lower tuff at SWMU 01-001(d3)

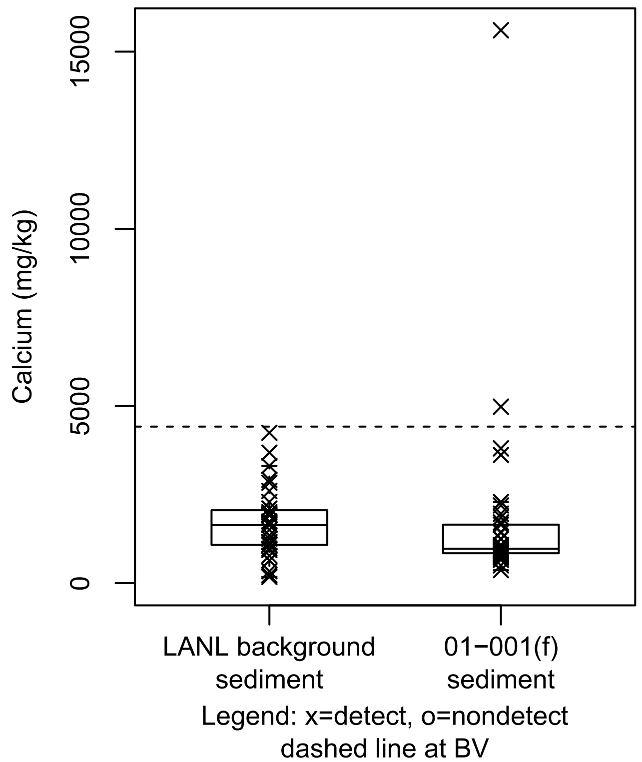

Figure F-61 Box plot for calcium in sediment at SWMU 01-001(f)

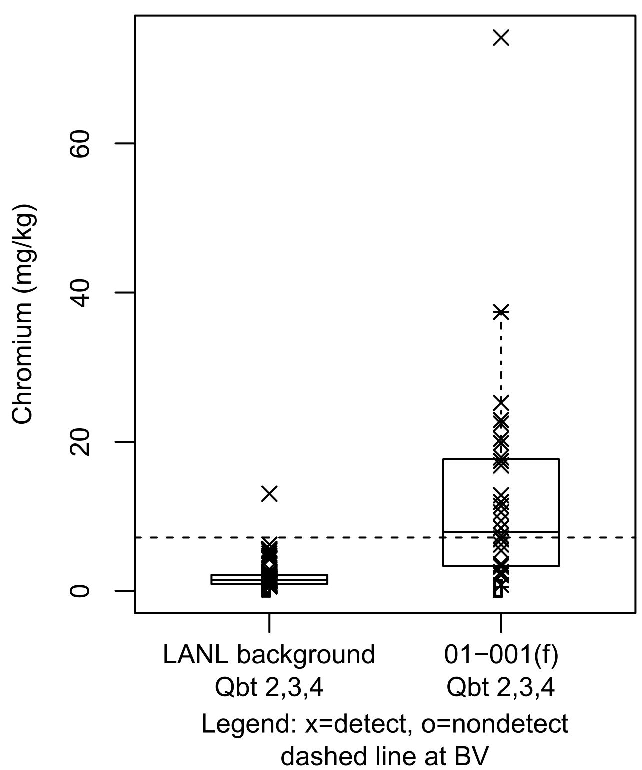

Figure F-62 Box plot for chromium in tuff at SWMU 01-001(f)

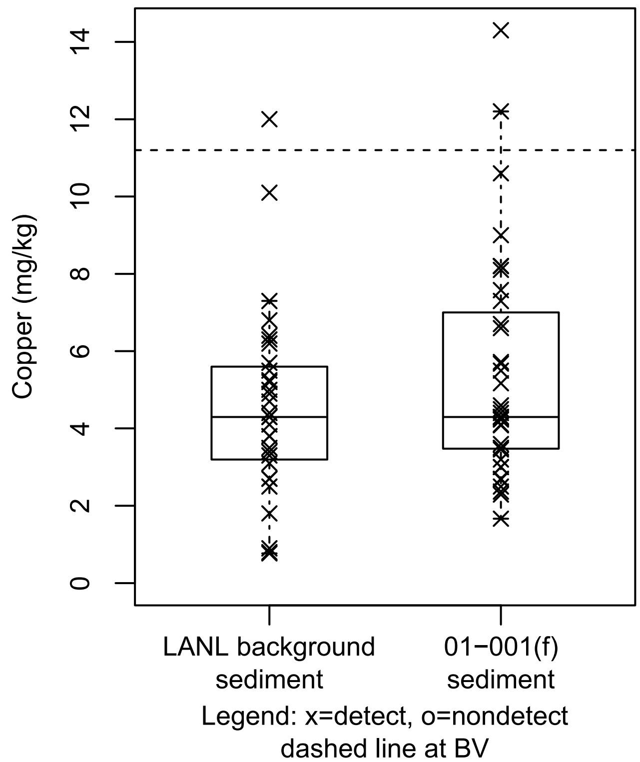

Figure F-63 Box plot for copper in sediment at SWMU 01-001(f)

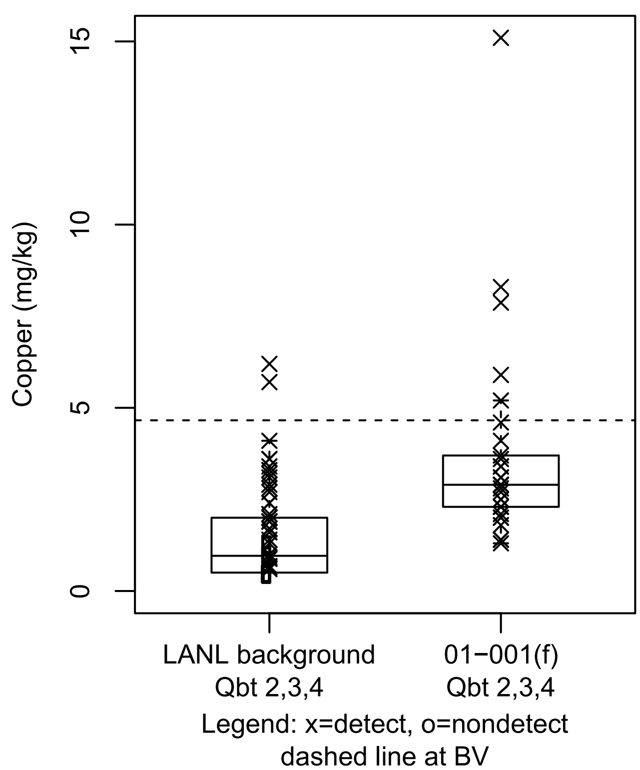

Figure F-64 Box plot for copper in tuff at SWMU 01-001(f)

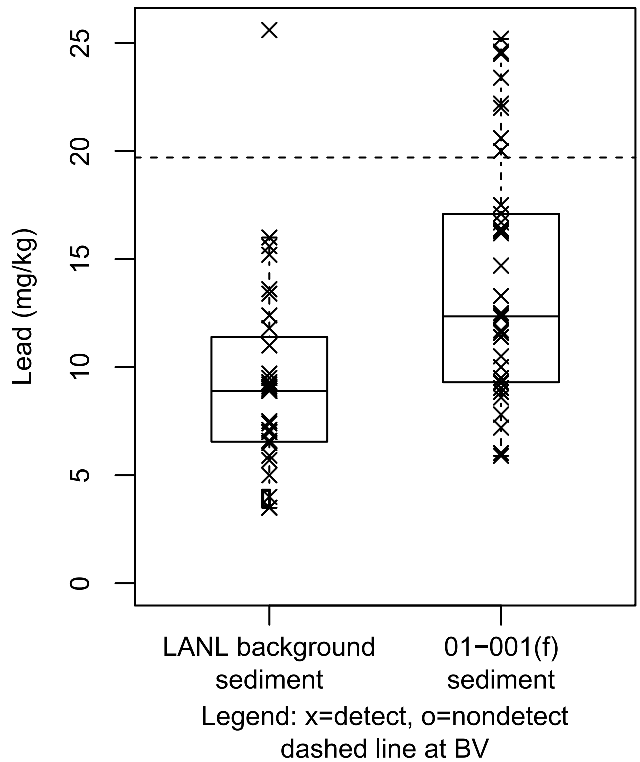

Figure F-65 Box plot for lead in sediment at SWMU 01-001(f)

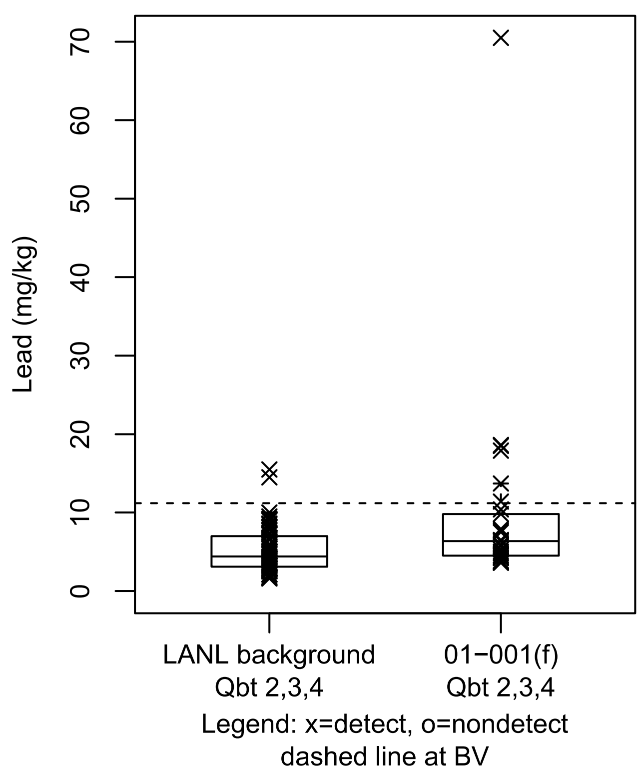

Figure F-66 Box plot for lead in tuff at SWMU 01-001(f)

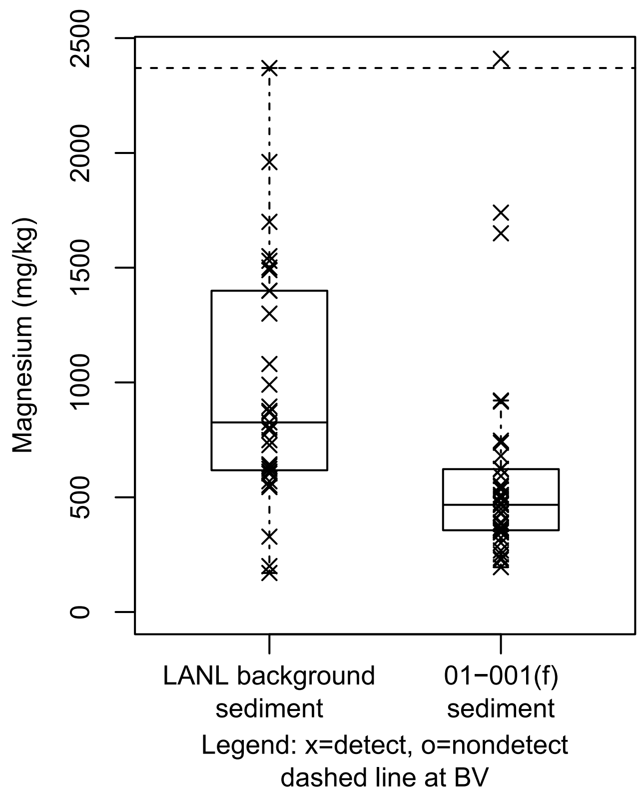

Figure F-67 Box plot for magnesium in sediment at SWMU 01-001(f)

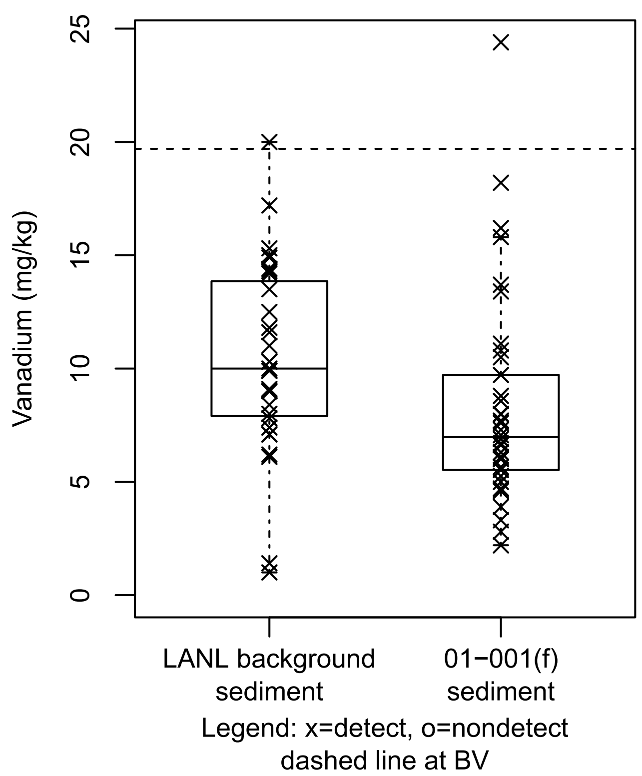

Figure F-68 Box plot for vanadium in sediment at SWMU 01-001(f)

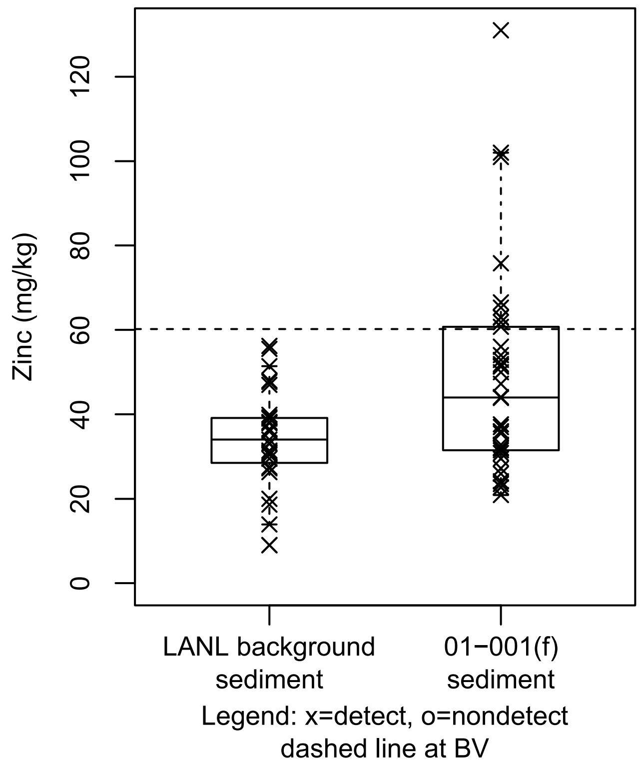

Figure F-69 Box plot for zinc in sediment at SWMU 01-001(f)

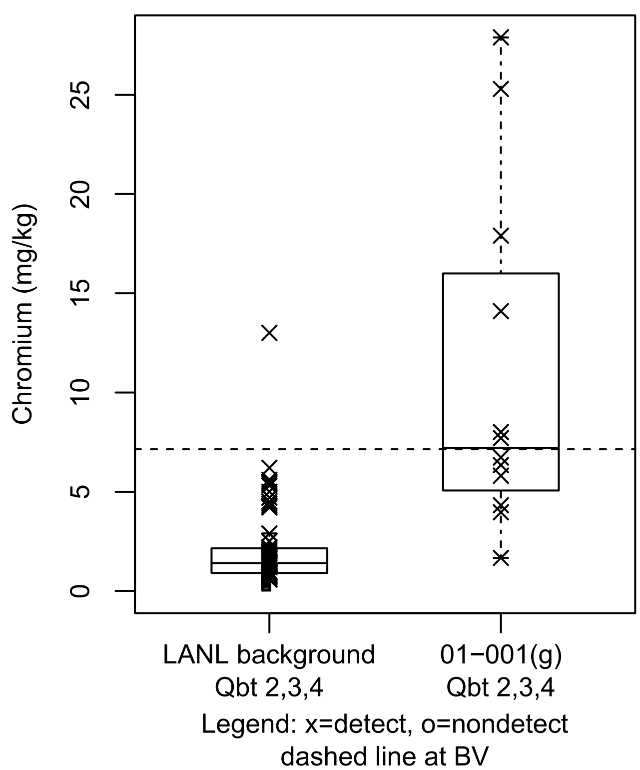

Figure F-70 Box plot for chromium in tuff at SWMU 01-001(g)

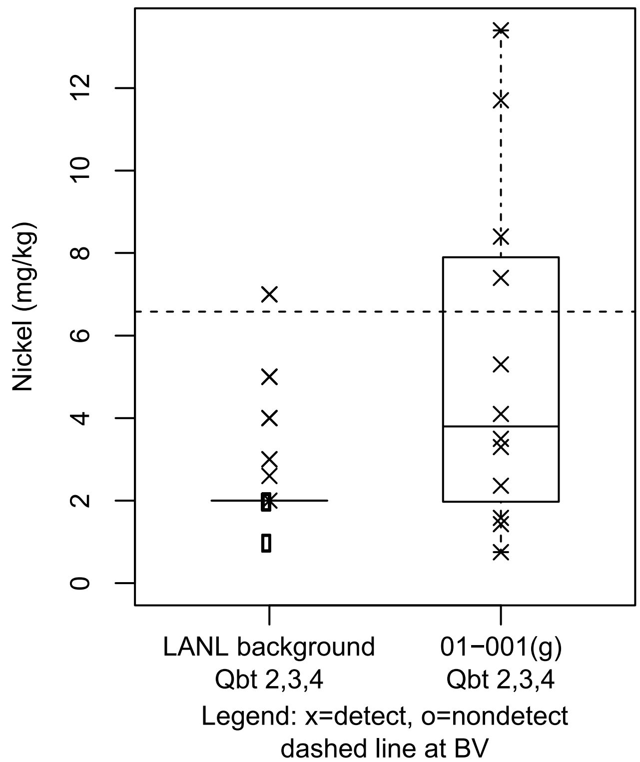

Figure F-71 Box plot for nickel in tuff at SWMU 01-001(g)

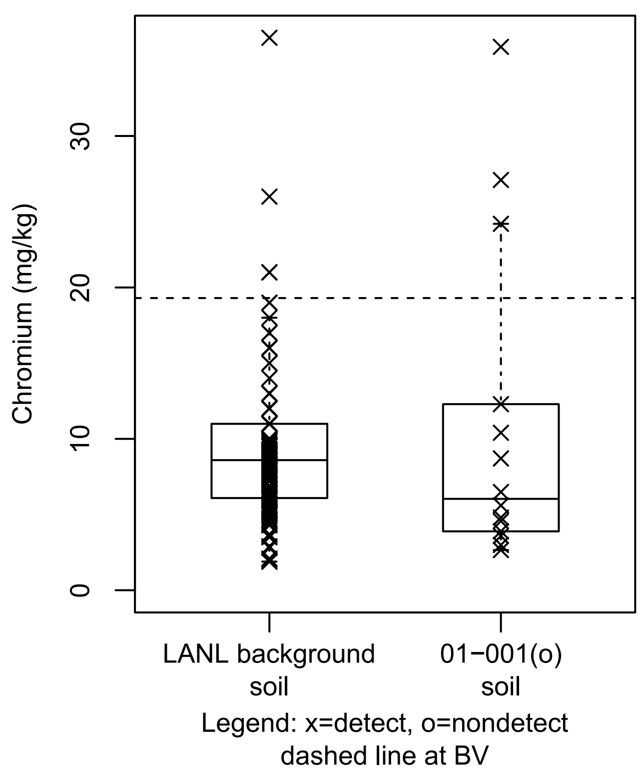

Figure F-72 Box plot for chromium in soil at SWMU 01-001(o)

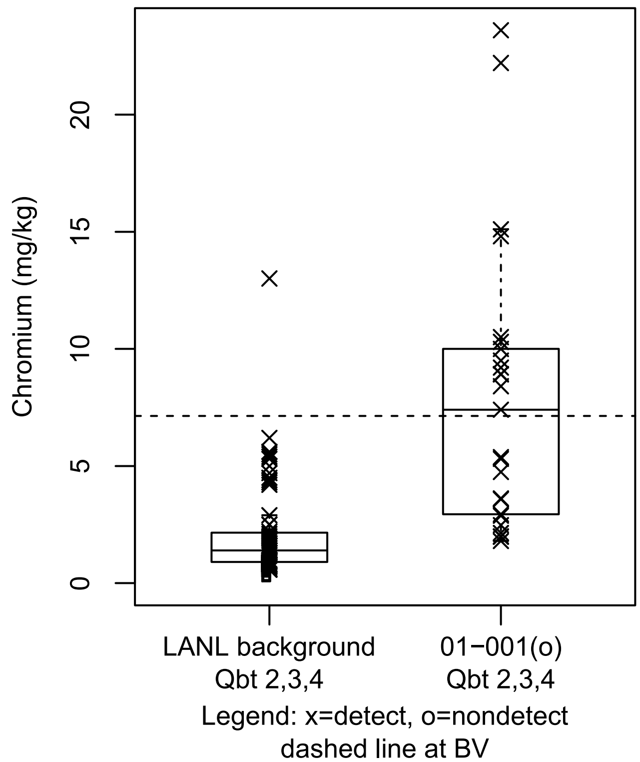

Figure F-73 Box plot for chromium in tuff at SWMU 01-001(o)

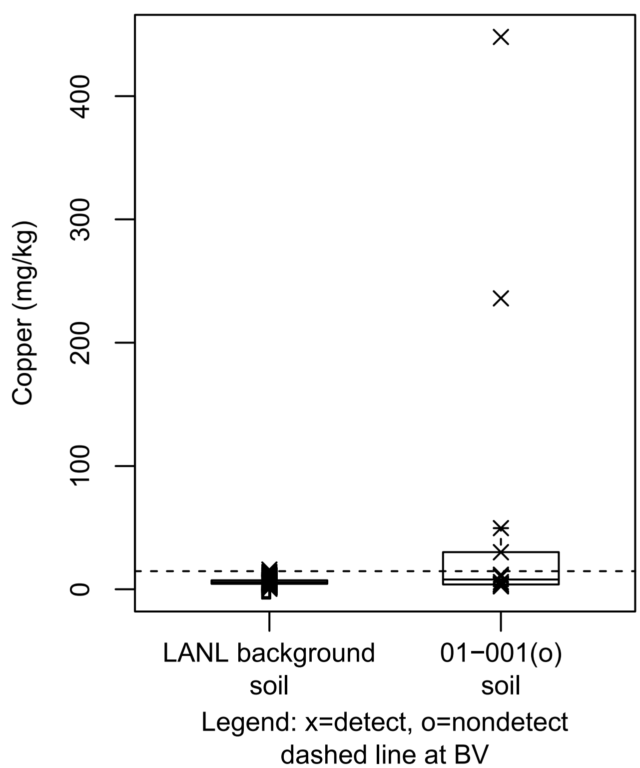

Figure F-74 Box plot for copper in soil at SWMU 01-001(o)

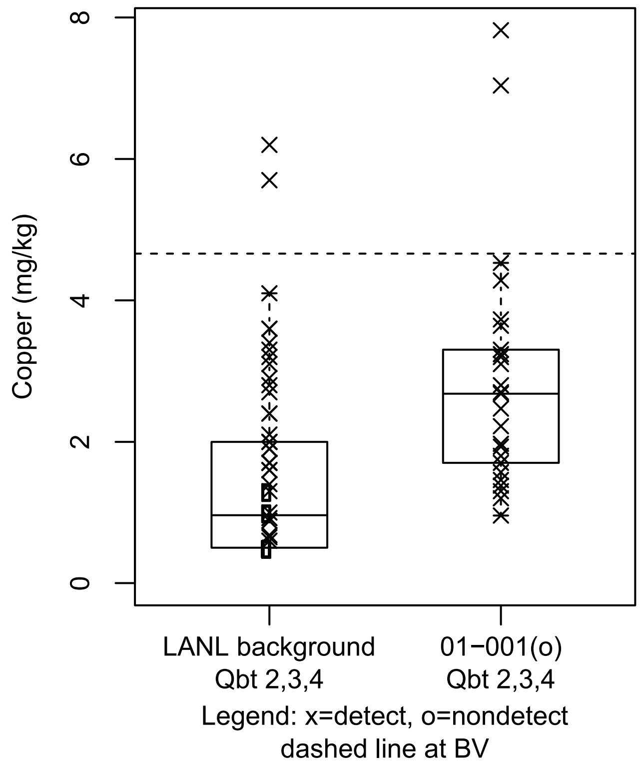

Figure F-75 Box plot for copper in tuff at SWMU 01-001(o)

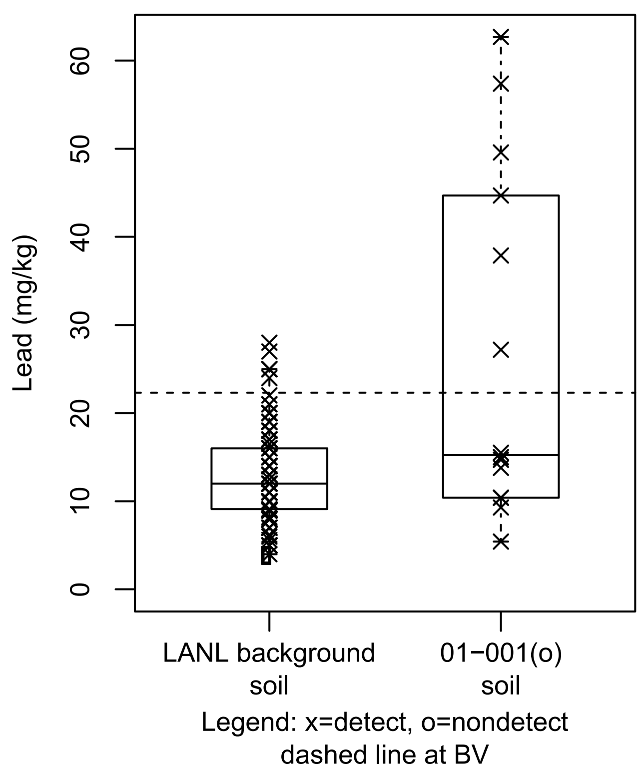

Figure F-76 Box plot for lead in soil at SWMU 01-001(o)

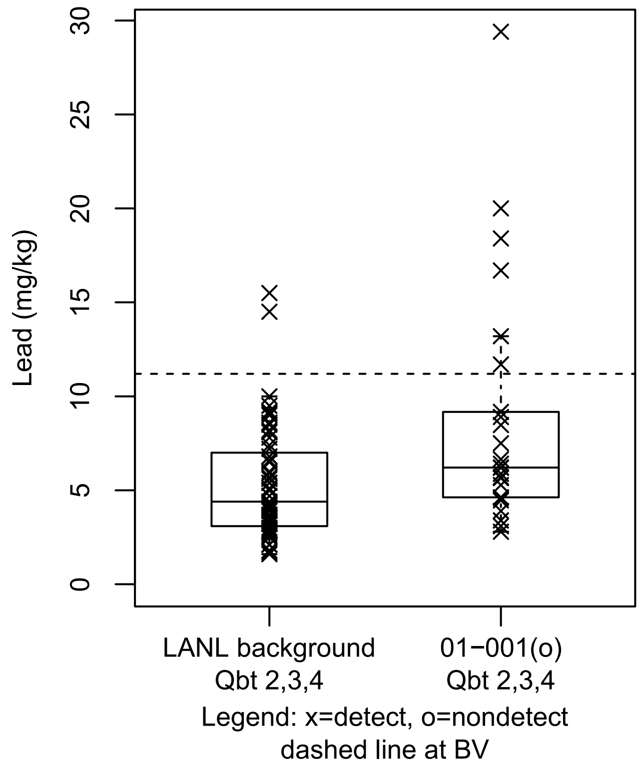

Figure F-77 Box plot for lead in tuff at SWMU 01-001(o)

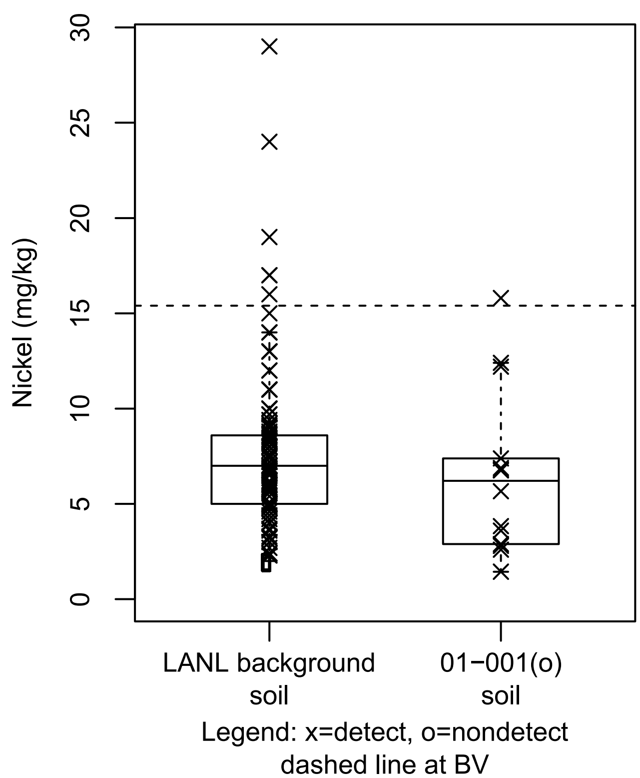

Figure F-78 Box plot for nickel in soil at SWMU 01-001(o)

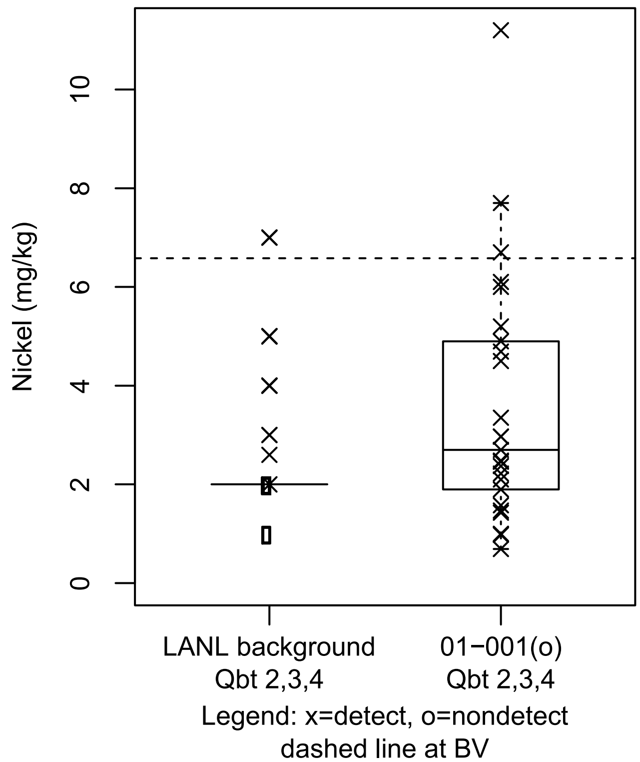

Figure F-79 Box plot for nickel in tuff at SWMU 01-001(o)

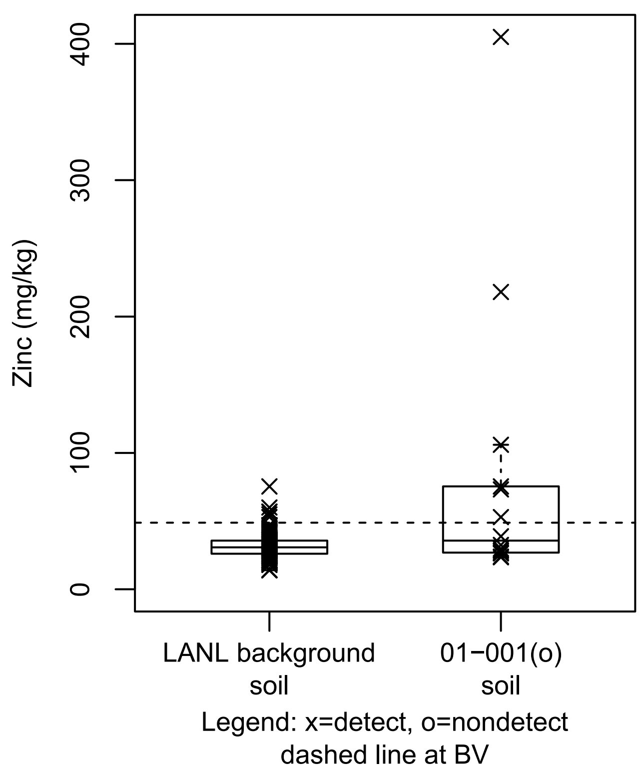

Figure F-80 Box plot for zinc in soil at SWMU 01-001(o)

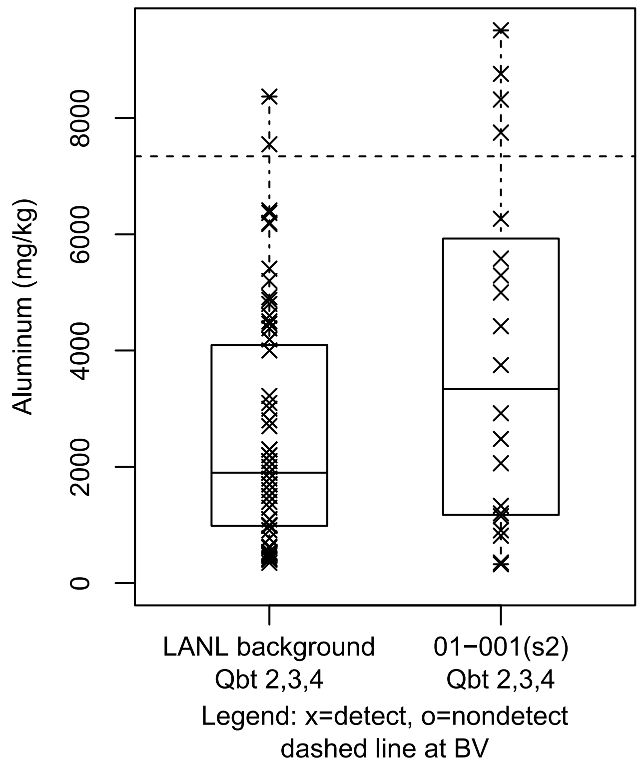

Figure F-81 Box plot for aluminum in tuff at SWMU 01-001(s2)

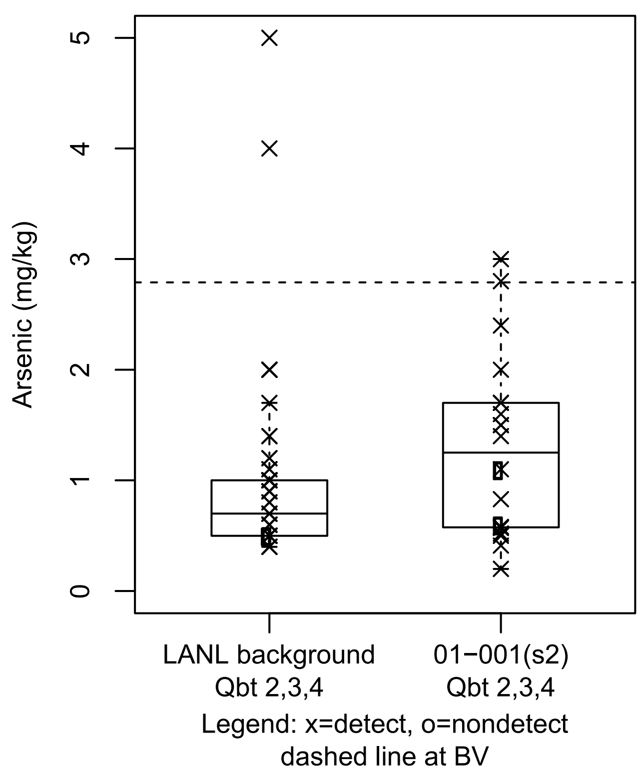

Figure F-82 Box plot for arsenic in tuff at SWMU 01-001(s2)

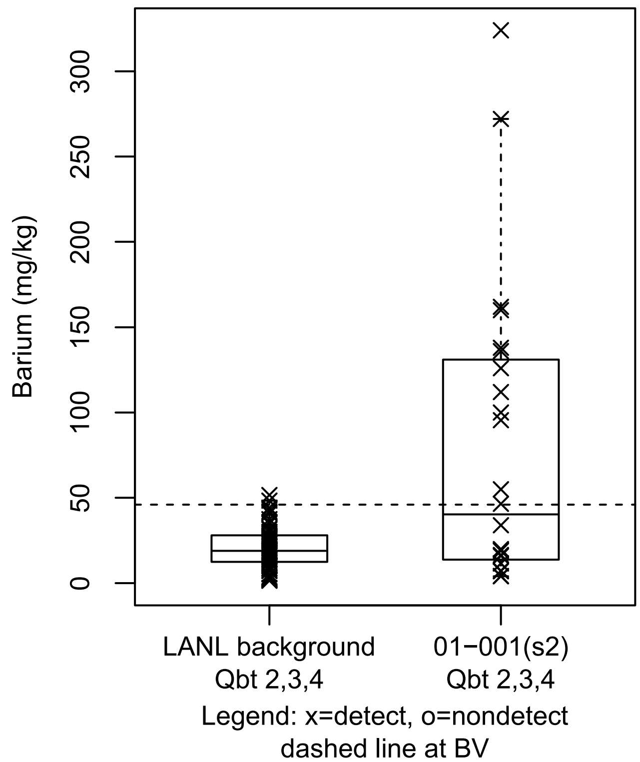

Figure F-83 Box plot for barium in tuff at SWMU 01-001(s2)

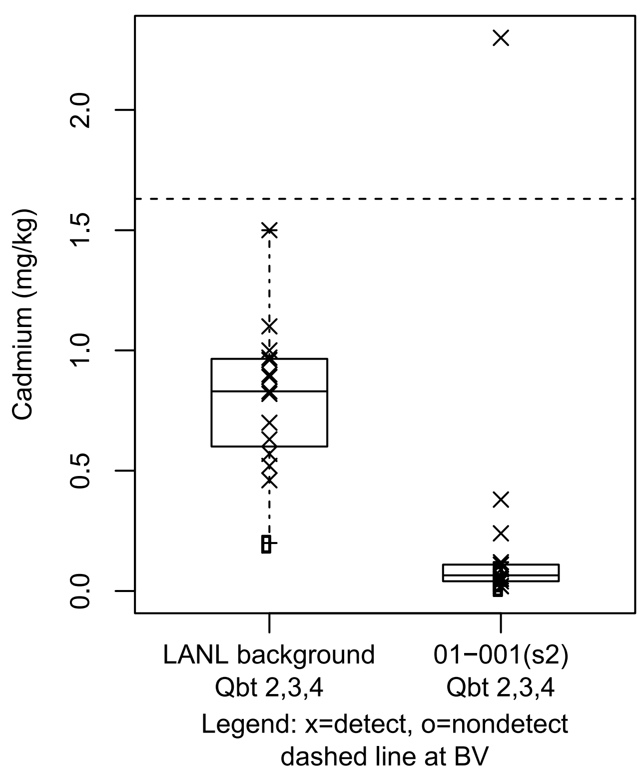

Figure F-84 Box plot for cadmium in tuff at SWMU 01-001(s2)

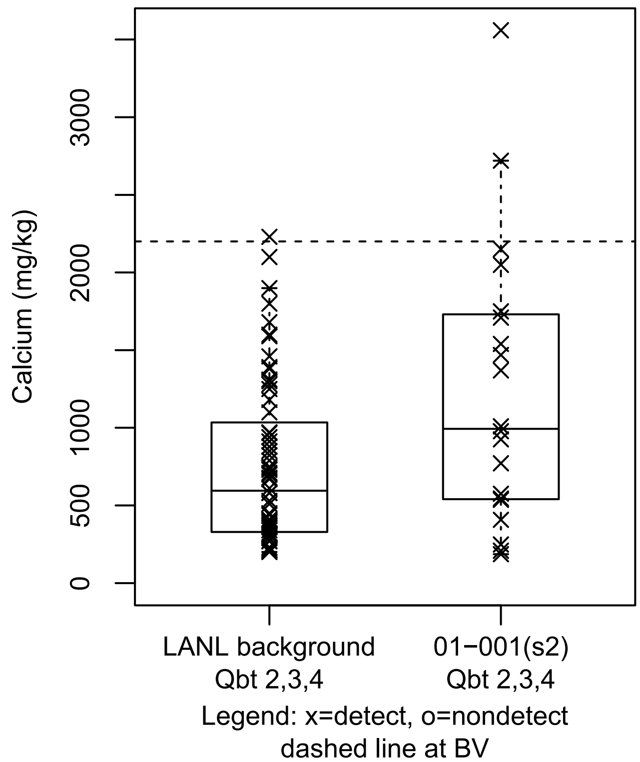

Figure F-85 Box plot for calcium in tuff at SWMU 01-001(s2)

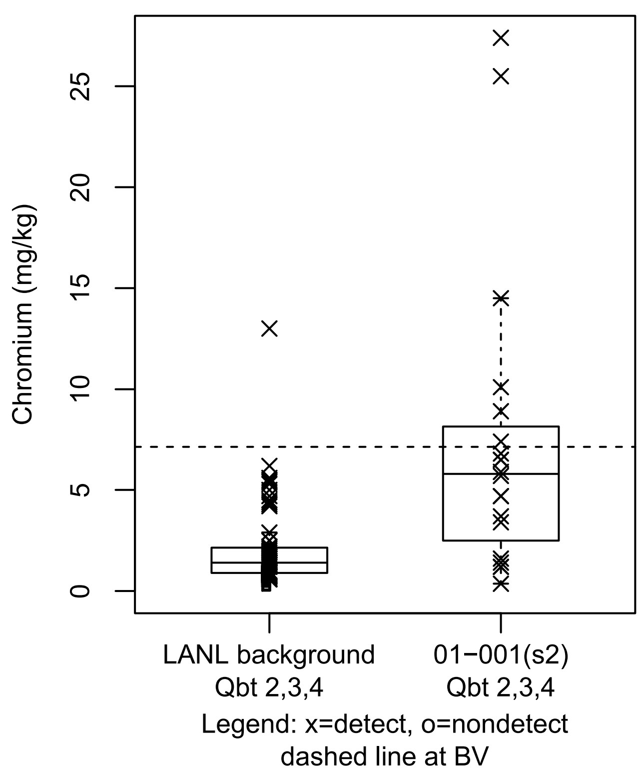

Figure F-86 Box plot for chromium in tuff at SWMU 01-001(s2)

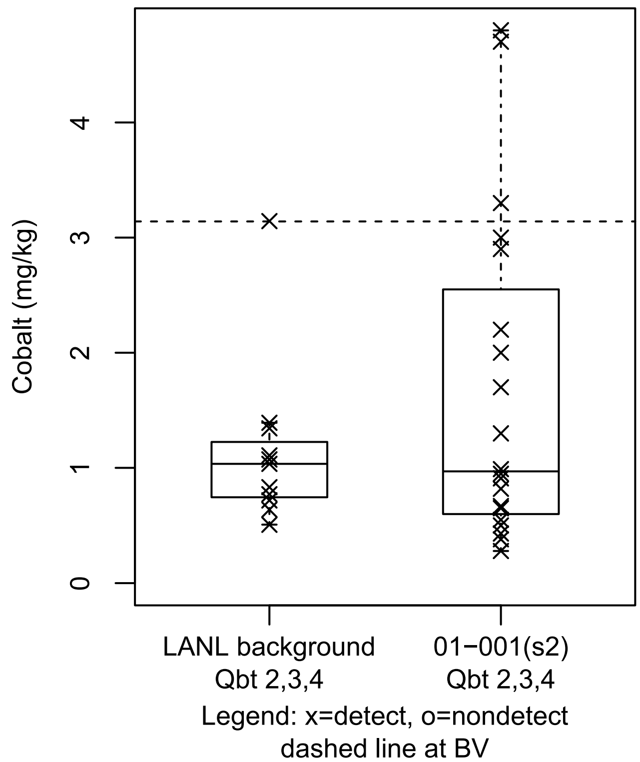

Figure F-87 Box plot for cobalt in tuff at SWMU 01-001(s2)

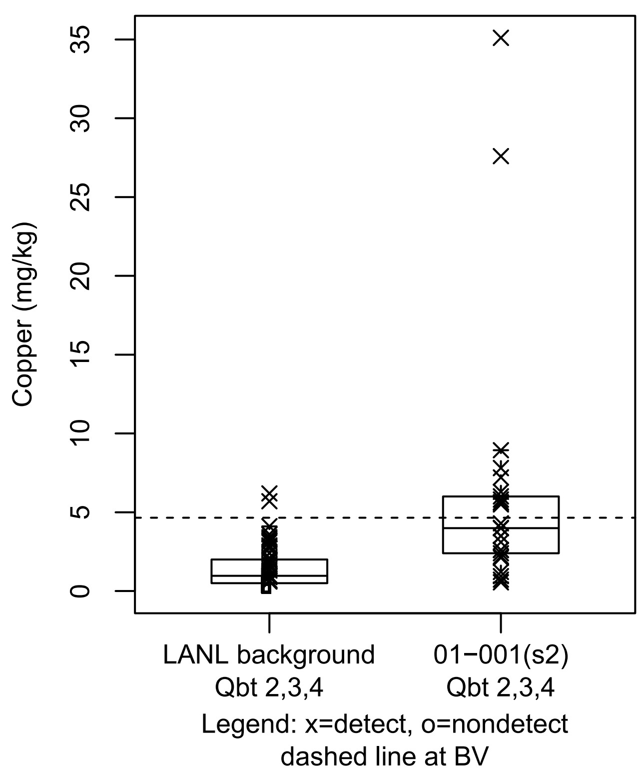

Figure F-88 Box plot for copper in tuff at SWMU 01-001(s2)

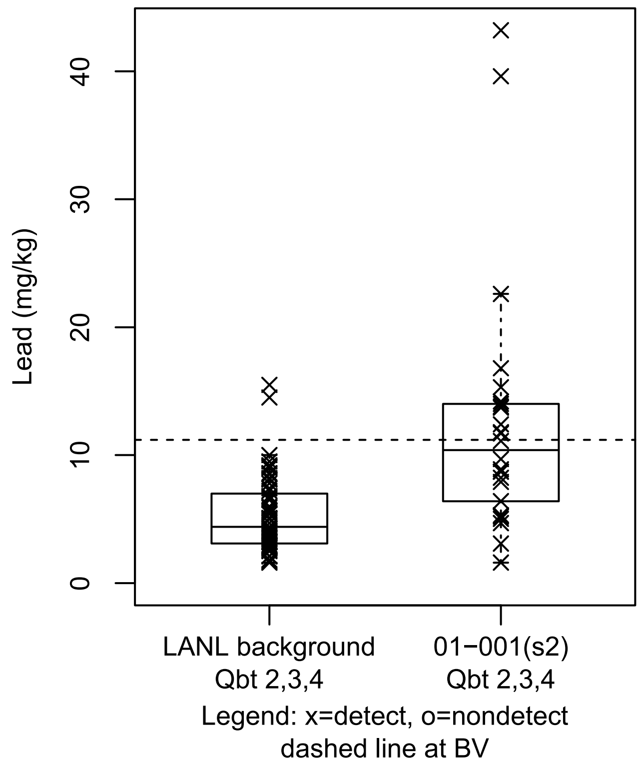

Figure F-89 Box plot for lead in tuff at SWMU 01-001(s2)

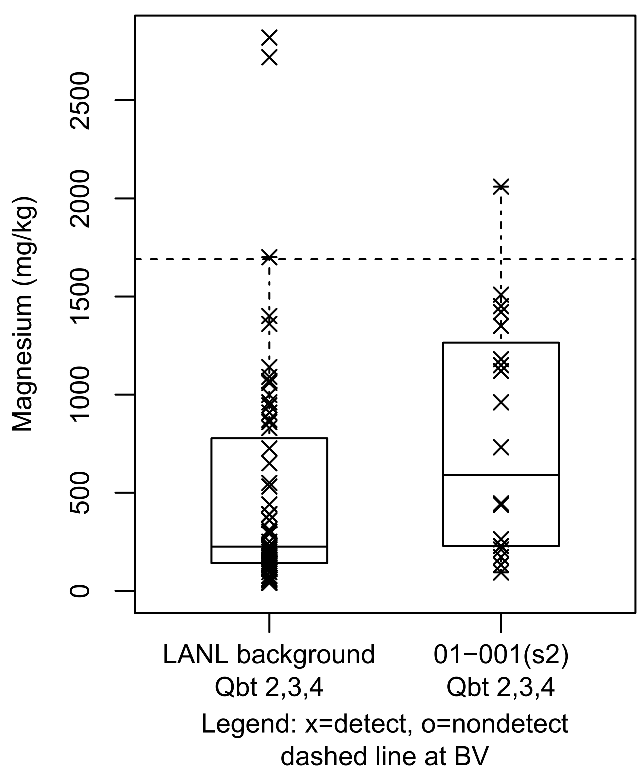

Figure F-90 Box plot for magnesium in tuff at SWMU 01-001(s2)

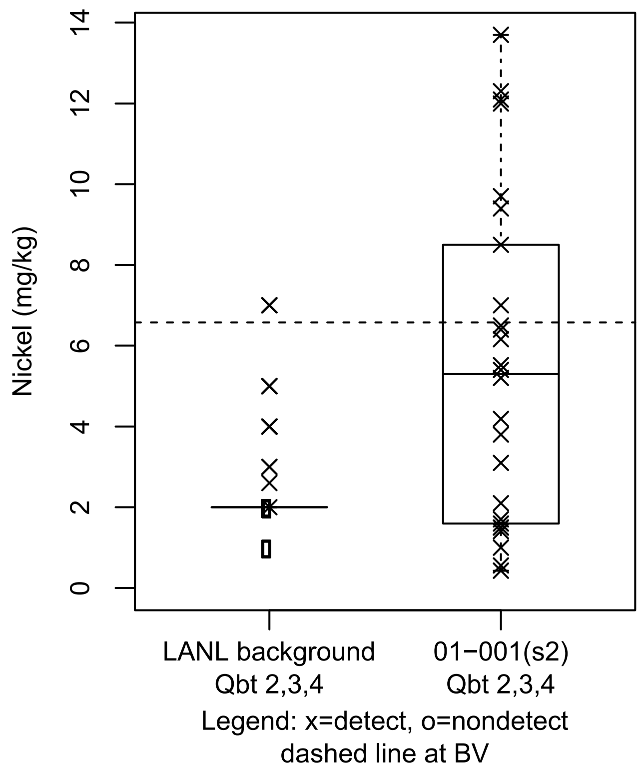

Figure F-91 Box plot for nickel in tuff at SWMU 01-001(s2)

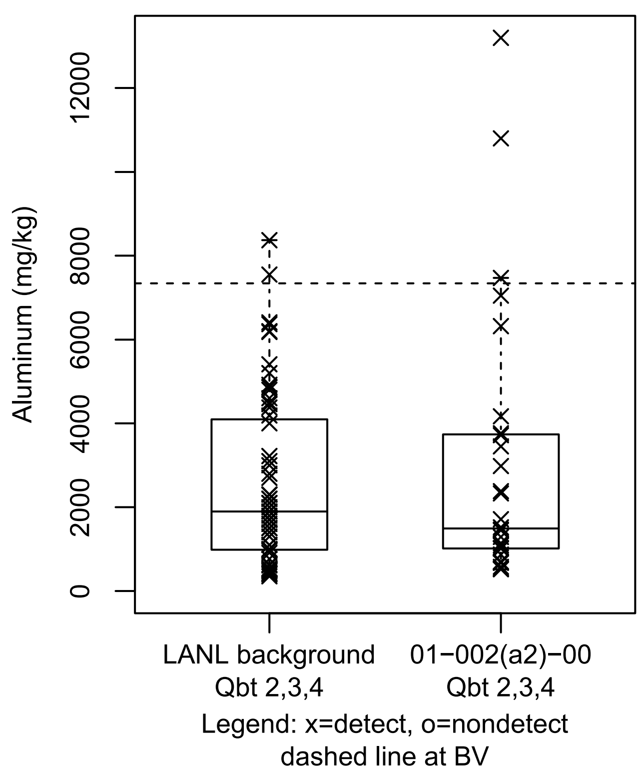

Figure F-92 Box plot for aluminum in tuff at SWMU 01-002(a2)-00

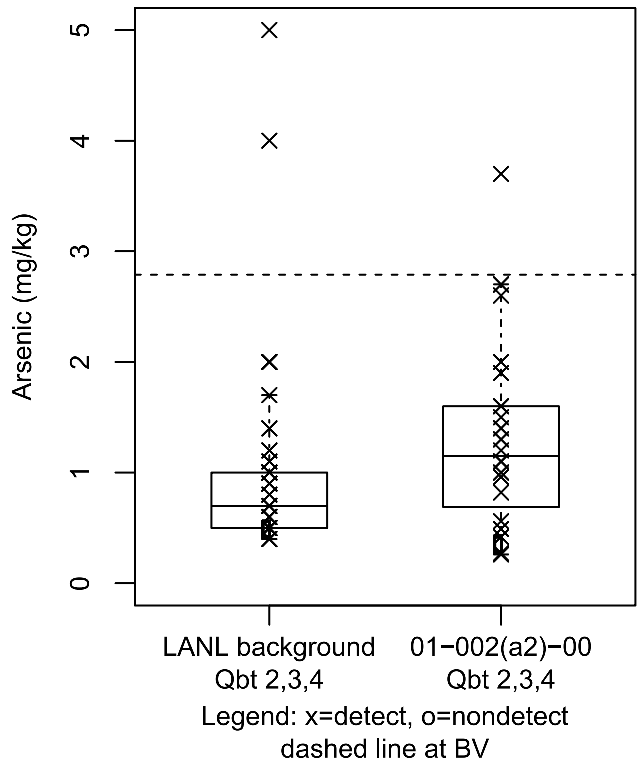

Figure F-93 Box plot for arsenic in tuff at SWMU 01-002(a2)-00

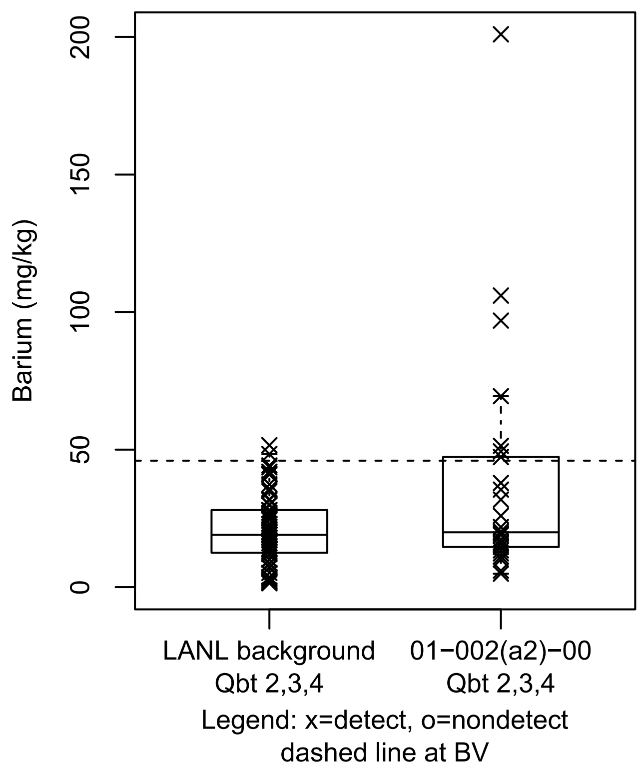

Figure F-94 Box plot for barium in tuff at SWMU 01-002(a2)-00

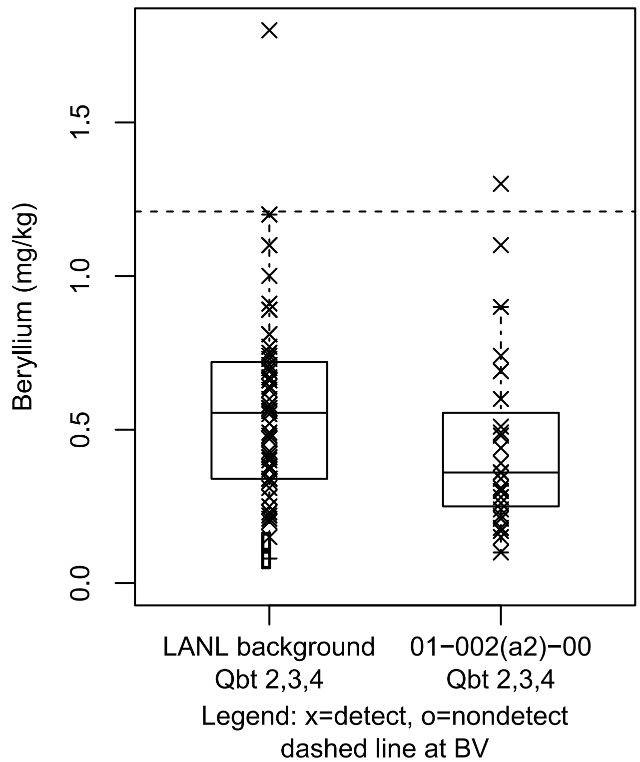

Figure F-95 Box plot for beryllium in tuff at SWMU 01-002(a2)-00

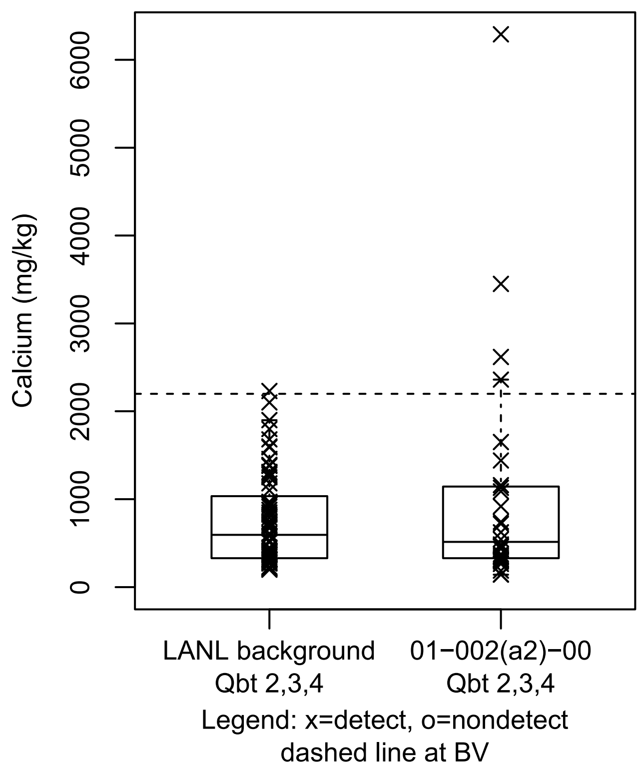

Figure F-96 Box plot for calcium in tuff at SWMU 01-002(a2)-00

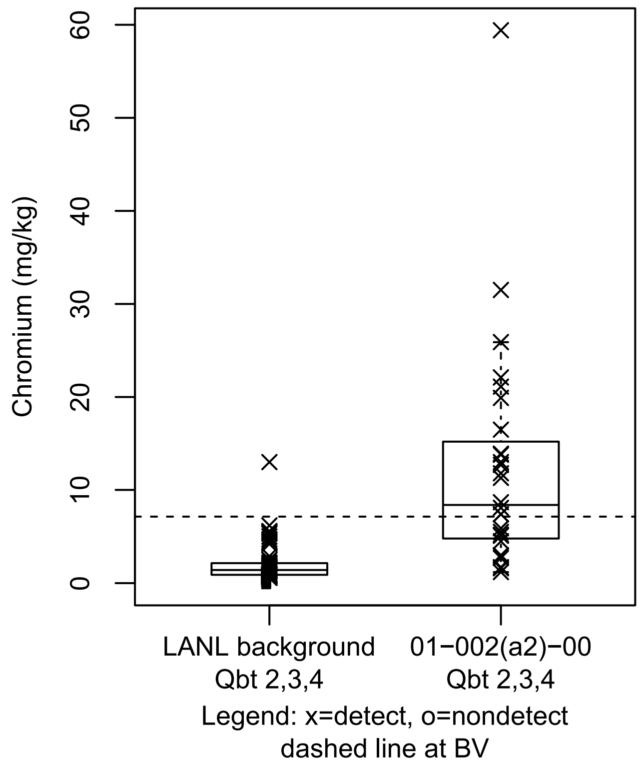

Figure F-97 Box plot for chromium in tuff at SWMU 01-002(a2)-00

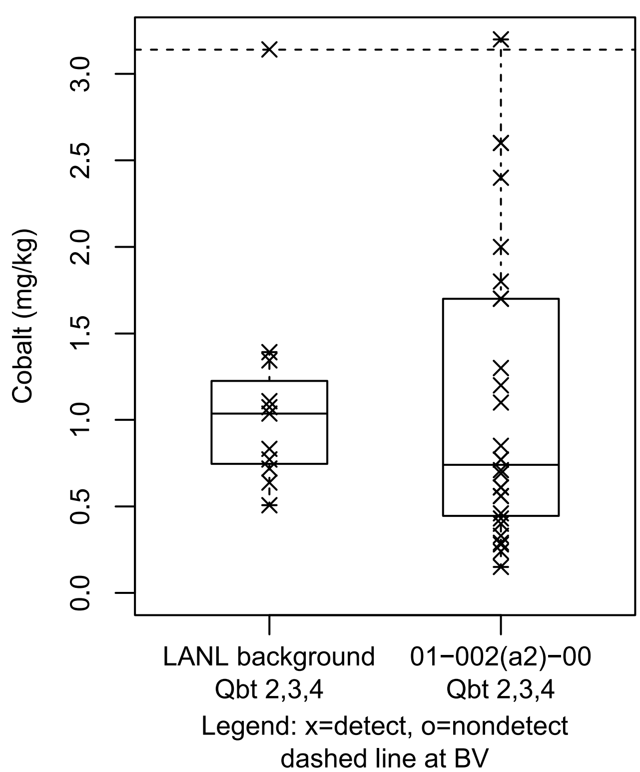

Figure F-98 Box plot for cobalt in tuff at SWMU 01-002(a2)-00

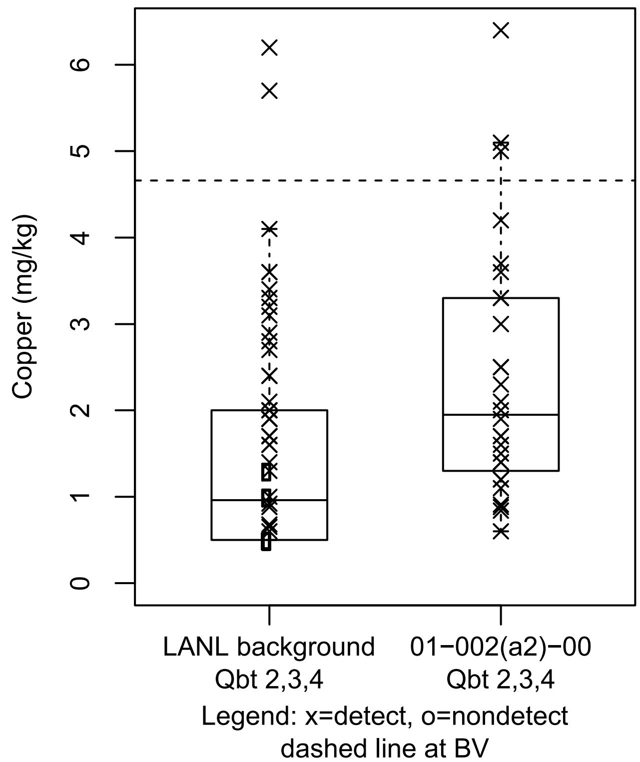

Figure F-99 Box plot for copper in tuff at SWMU 01-002(a2)-00

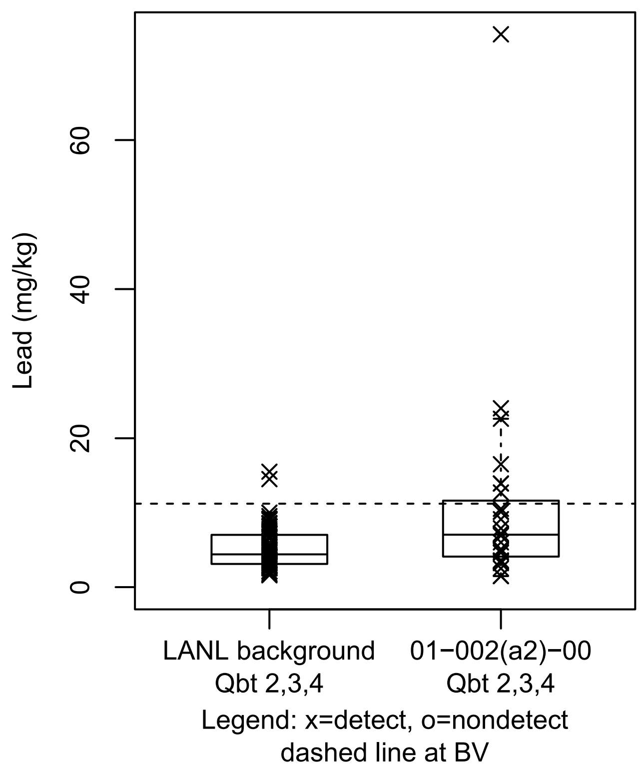

Figure F-100 Box plot for lead in tuff at SWMU 01-002(a2)-00

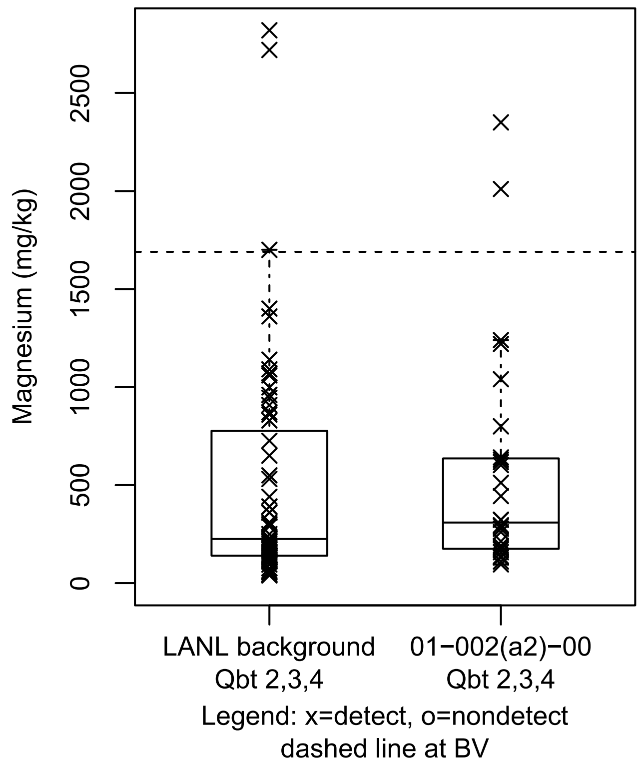

Figure F-101 Box plot for magnesium in tuff at SWMU 01-002(a2)-00

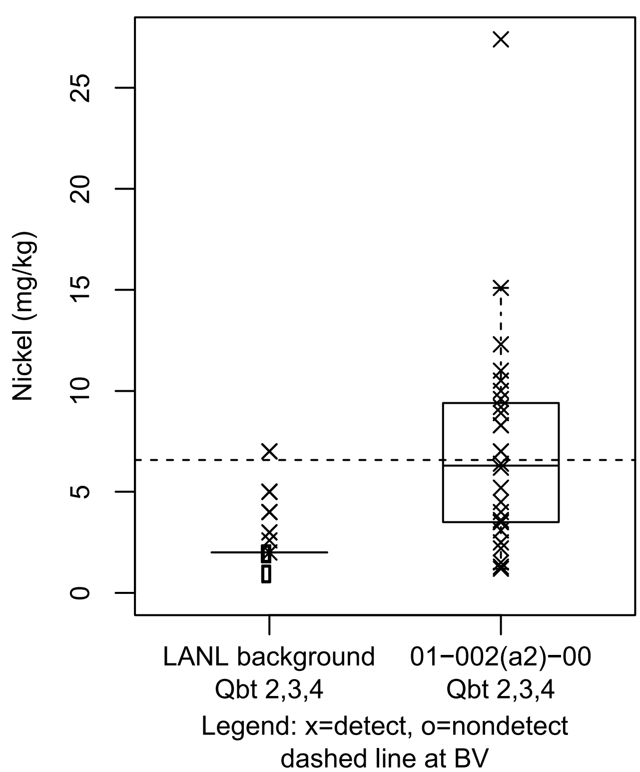

Figure F-102 Box plot for nickel in tuff at SWMU 01-002(a2)-00

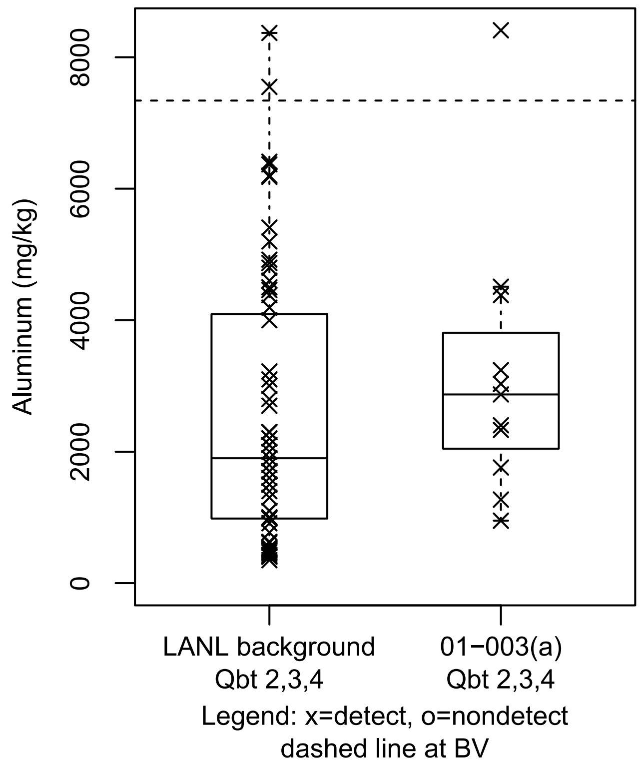

Figure F-103 Box plot for aluminum in upper tuff at SWMU 01-003(a)

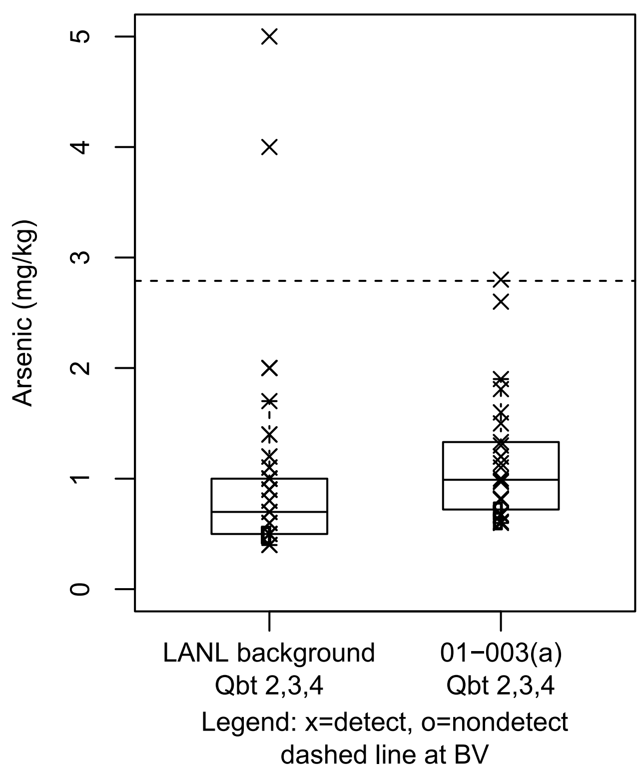

Figure F-104 Box plot for arsenic in upper tuff at SWMU 01-003(a)

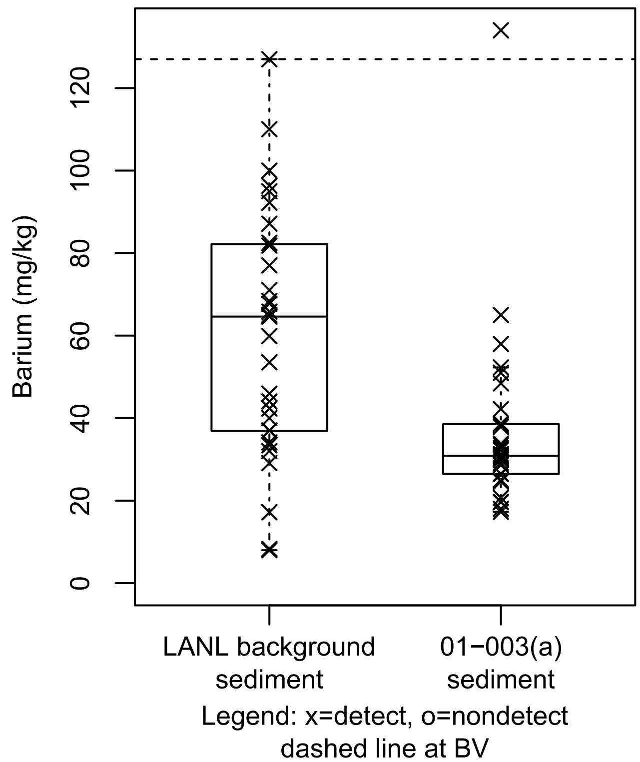

Figure F-105 Box plot for barium in sediment at SWMU 01-003(a)

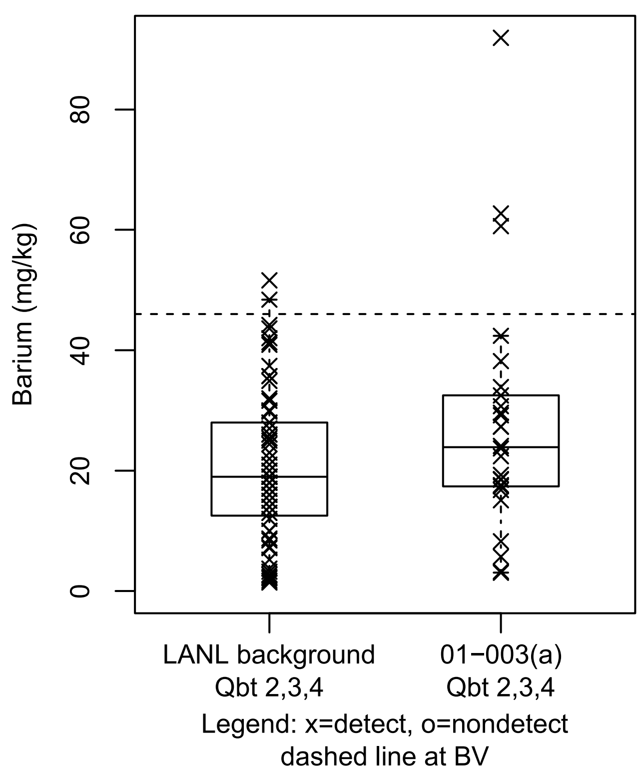

Figure F-106 Box plot for barium in upper tuff at SWMU 01-003(a)

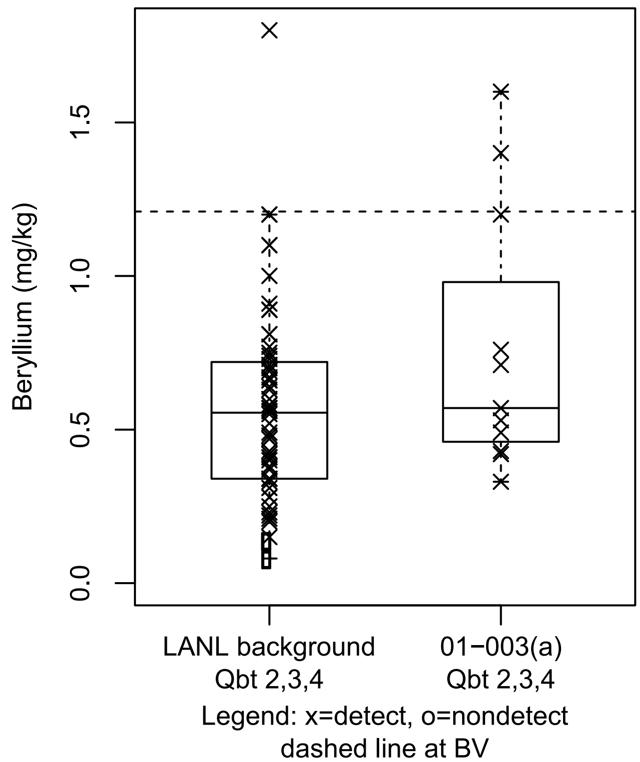

Figure F-107 Box plot for beryllium in upper tuff at SWMU 01-003(a)

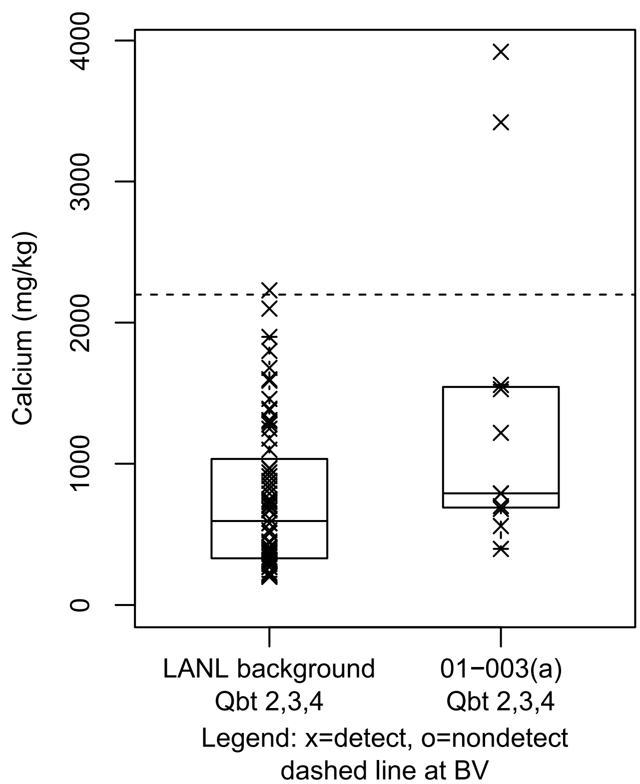

Figure F-108 Box plot for calcium in upper tuff at SWMU 01-003(a)

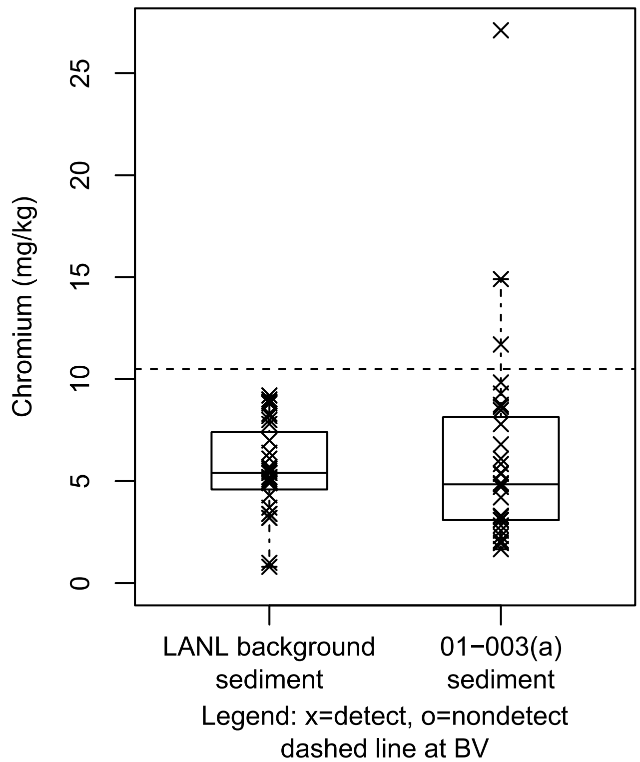

Figure F-109 Box plot for chromium in sediment at SWMU 01-003(a)

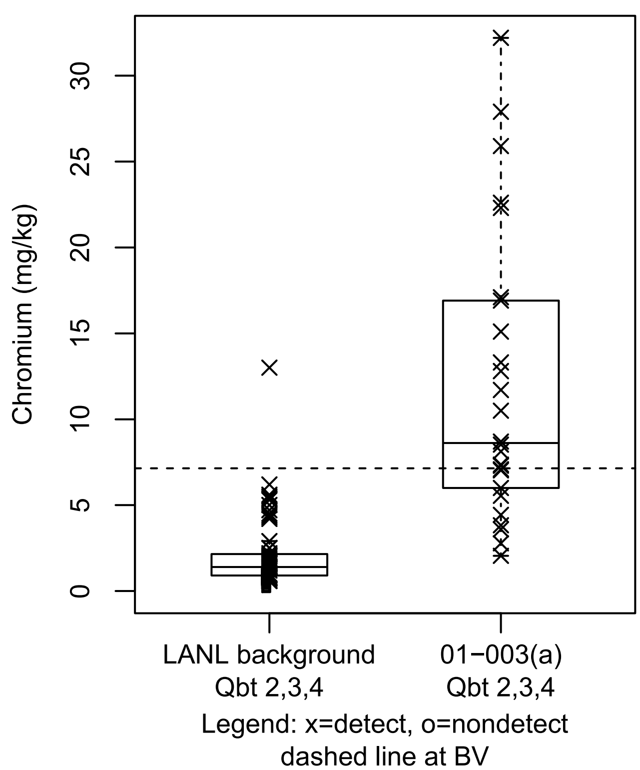

Figure F-110 Box plot for chromium in upper tuff at SWMU 01-003(a)

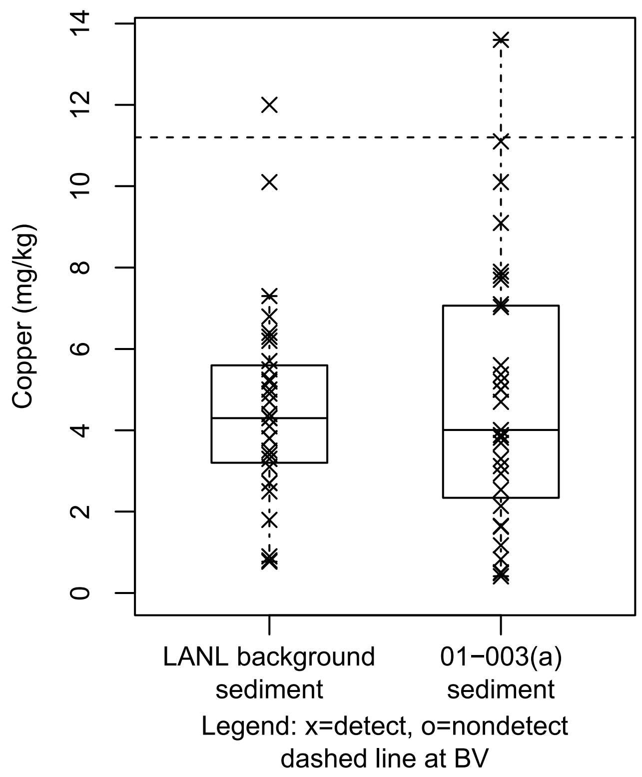

Figure F-111 Box plot for copper in sediment at SWMU 01-003(a)

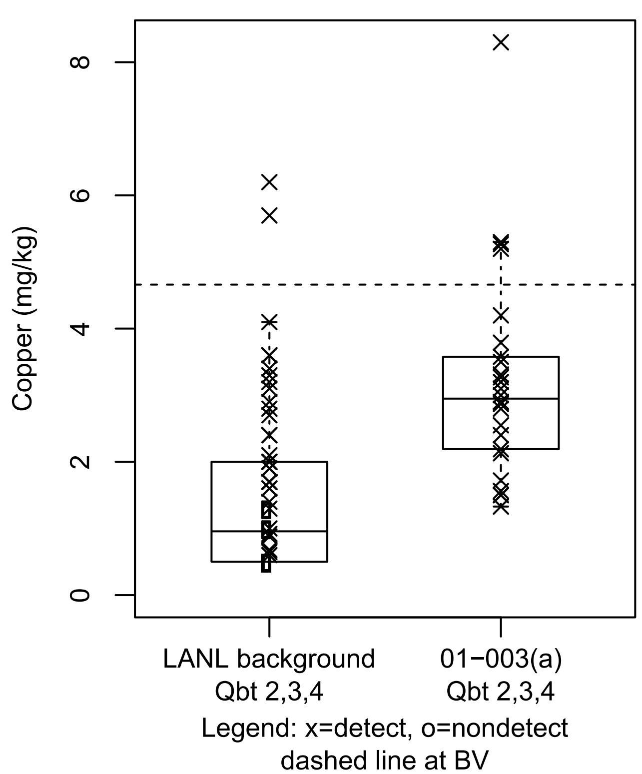

Figure F-112 Box plot for copper in upper tuff at SWMU 01-003(a)

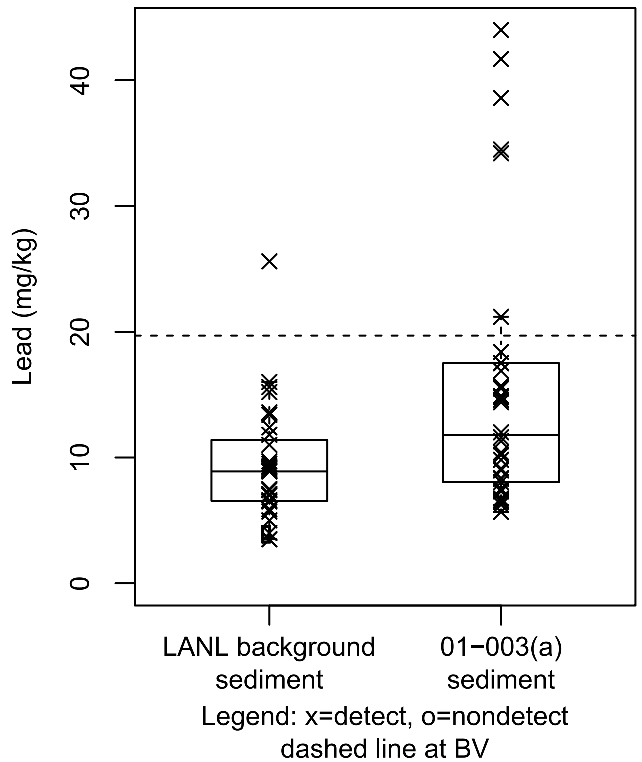

Figure F-113 Box plot for lead in sediment at SWMU 01-003(a)

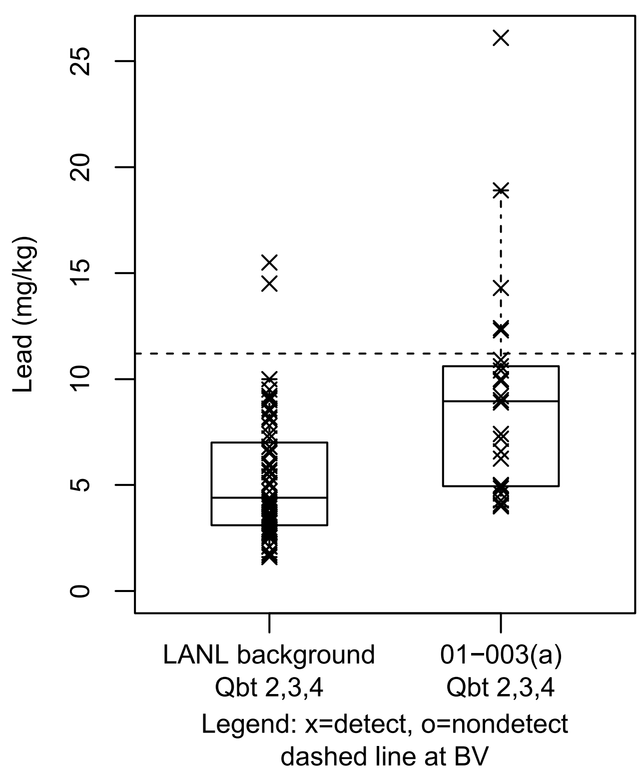

Figure F-114 Box plot for lead in upper tuff at SWMU 01-003(a)

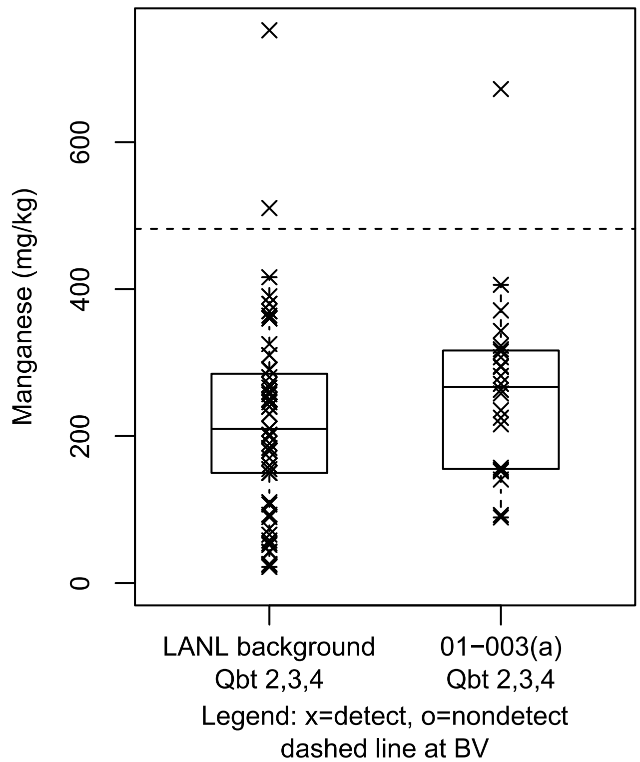

Figure F-115 Box plot for manganese in upper tuff at SWMU 01-003(a)

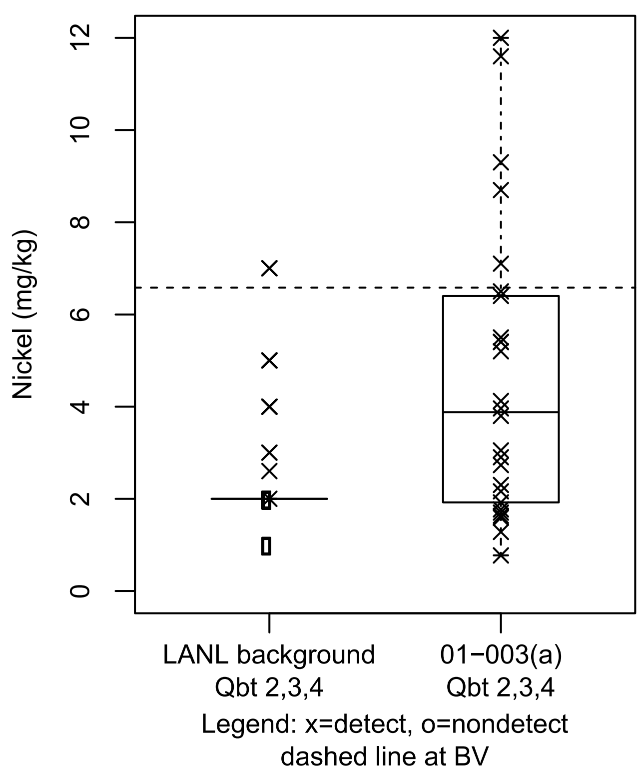

Figure F-116 Box plot for nickel in upper tuff at SWMU 01-003(a)

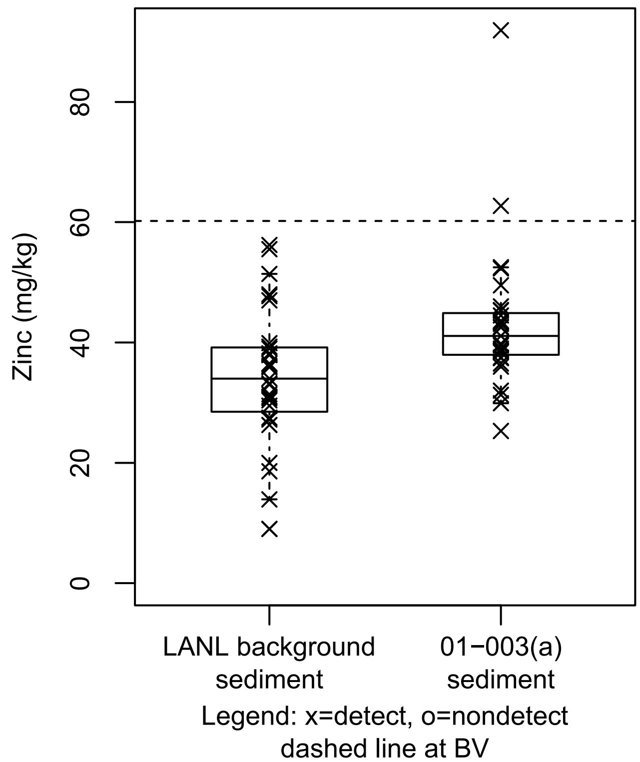

Figure F-117 Box plot for zinc in sediment at SWMU 01-003(a)

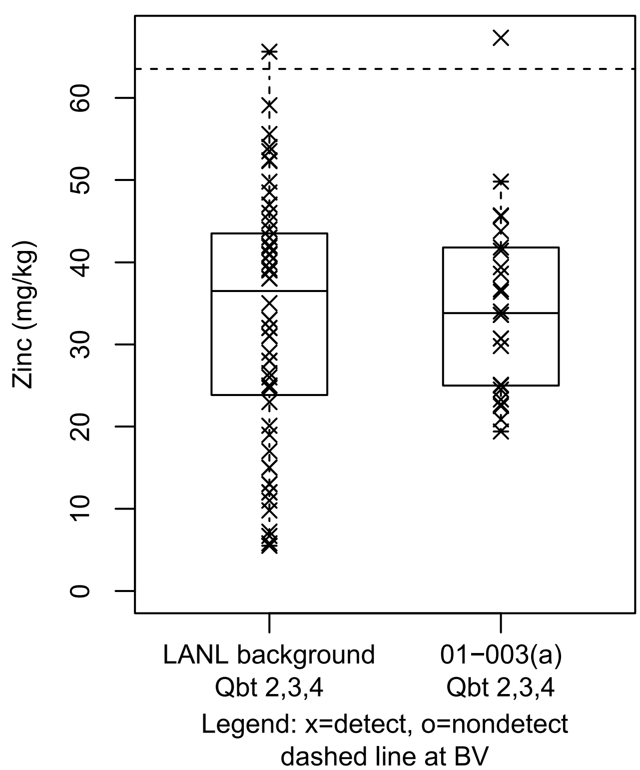

Figure F-118 Box plot for zinc in upper tuff at SWMU 01-003(a)

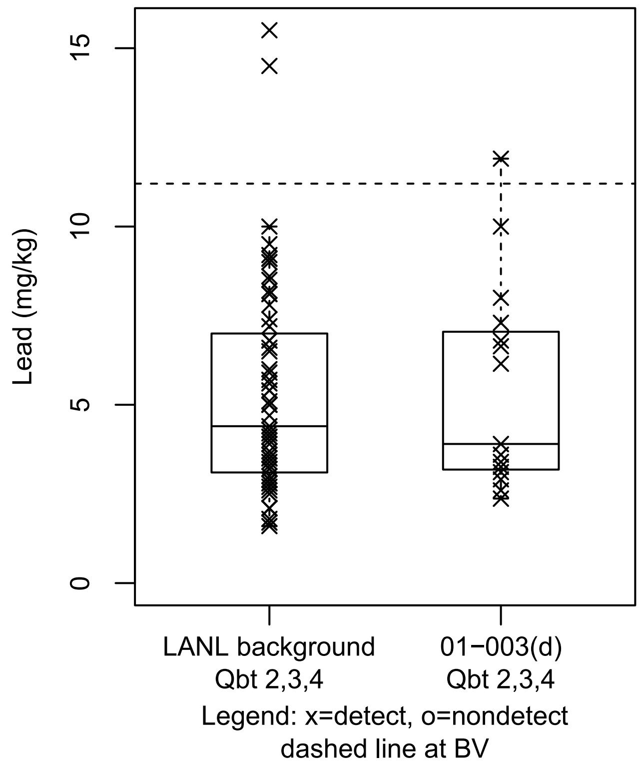

Figure F-119 Box plot for lead in tuff at SWMU 01-003(d)

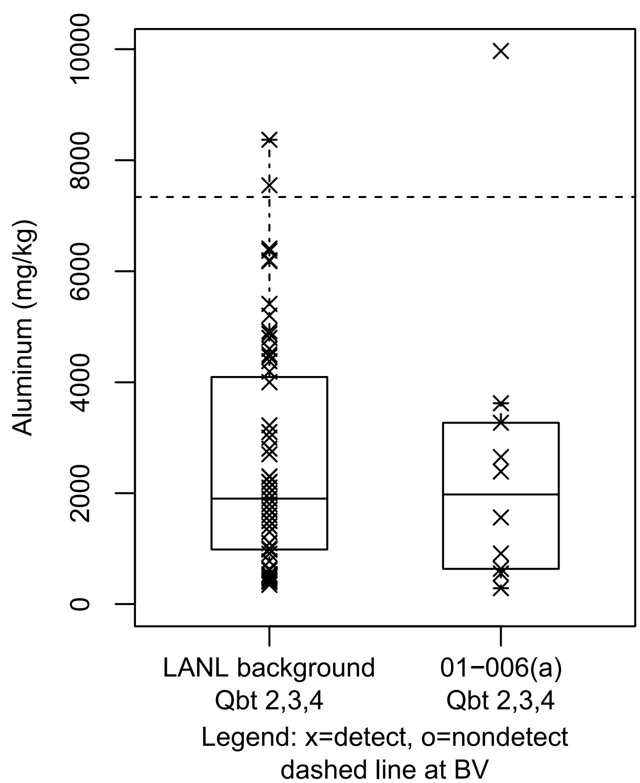

Figure F-120 Box plot for aluminum in tuff at SWMU 01-006(a)

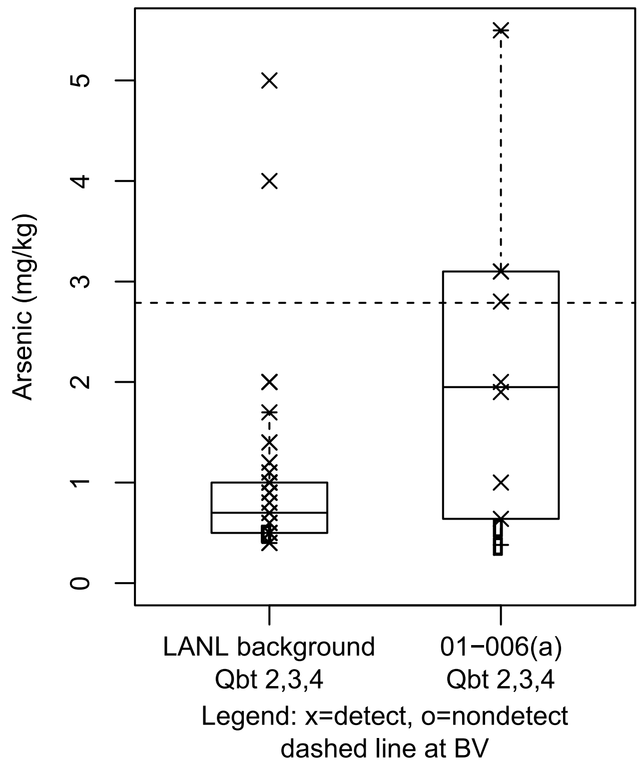

Figure F-121 Box plot for arsenic in tuff at SWMU 01-006(a)

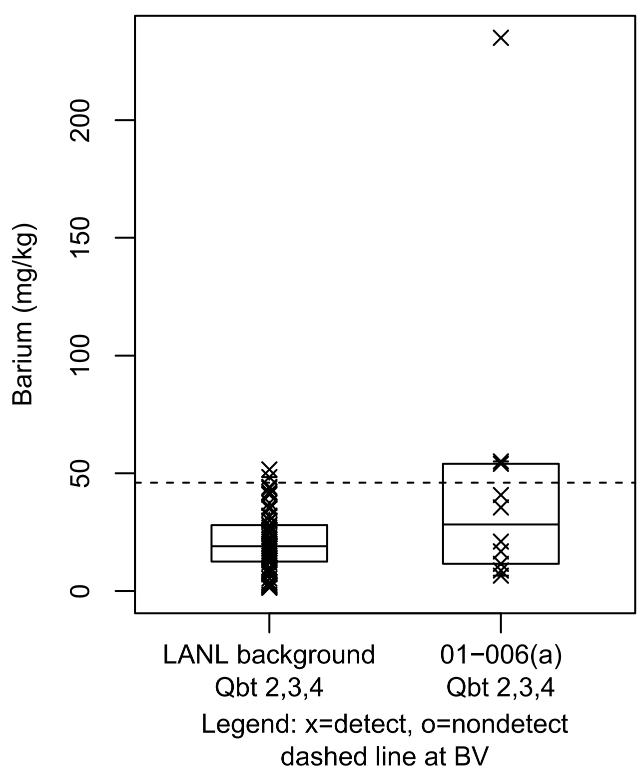

Figure F-122 Box plot for barium in tuff at SWMU 01-006(a)

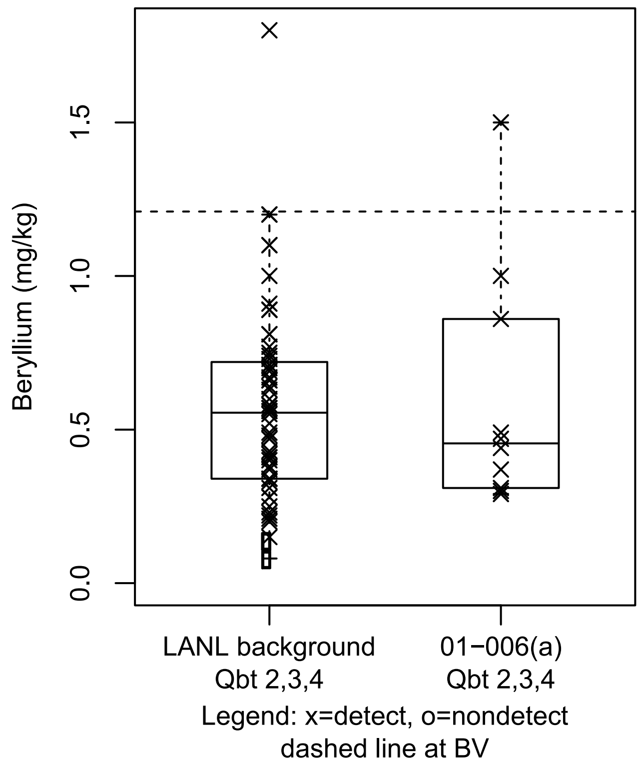

Figure F-123 Box plot for beryllium in tuff at SWMU 01-006(a)

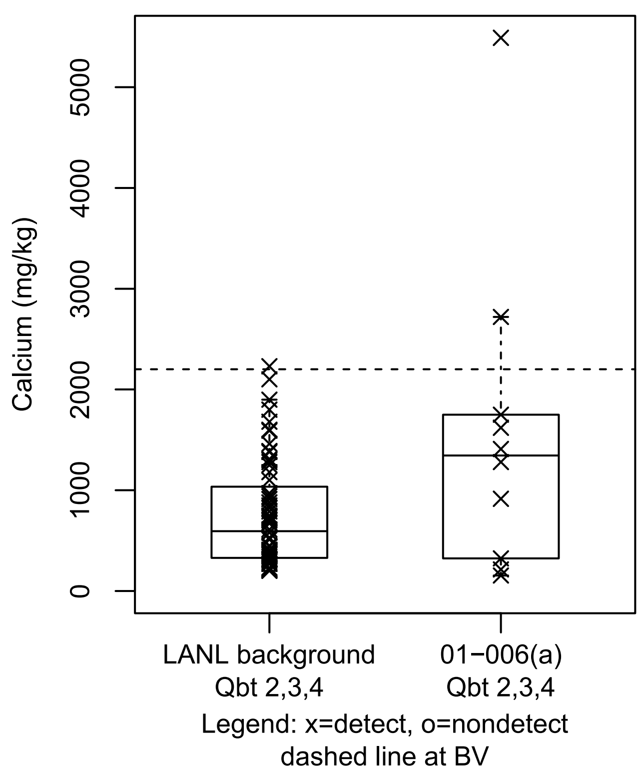

Figure F-124 Box plot for calcium in tuff at SWMU 01-006(a)

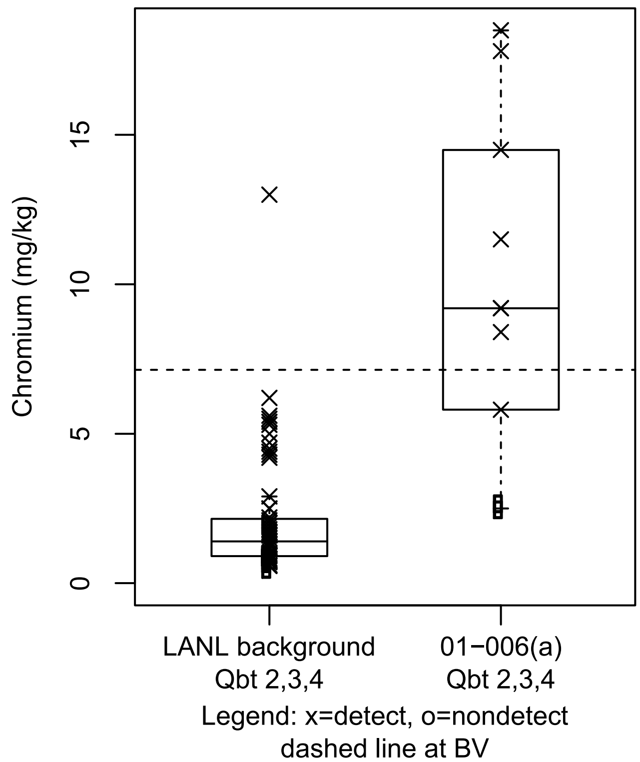

Figure F-125 Box plot for chromium in tuff at SWMU 01-006(a)

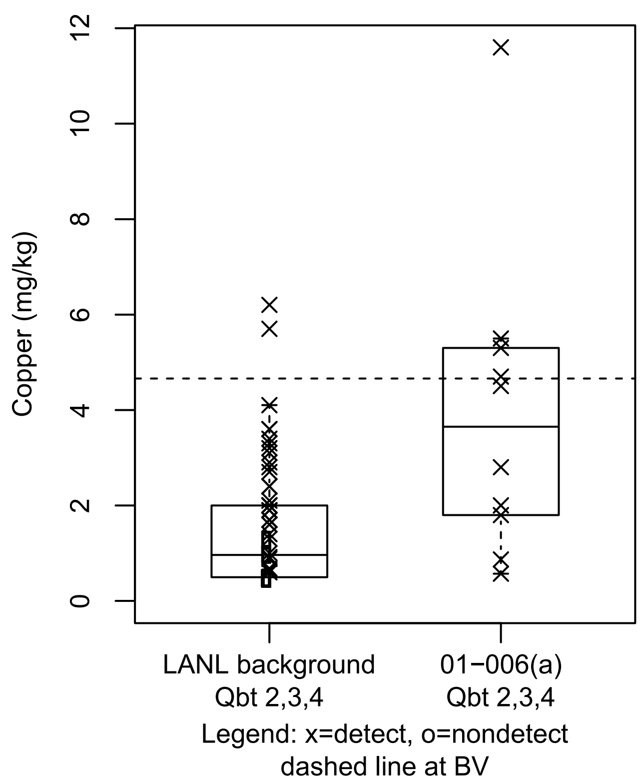

Figure F-126 Box plot for copper in tuff at SWMU 01-006(a)

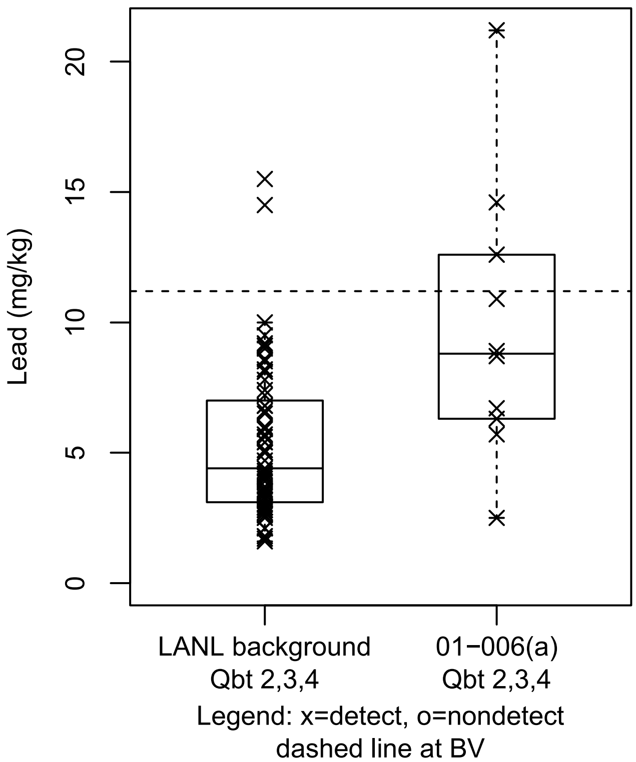

Figure F-127 Box plot for lead in tuff at SWMU 01-006(a)

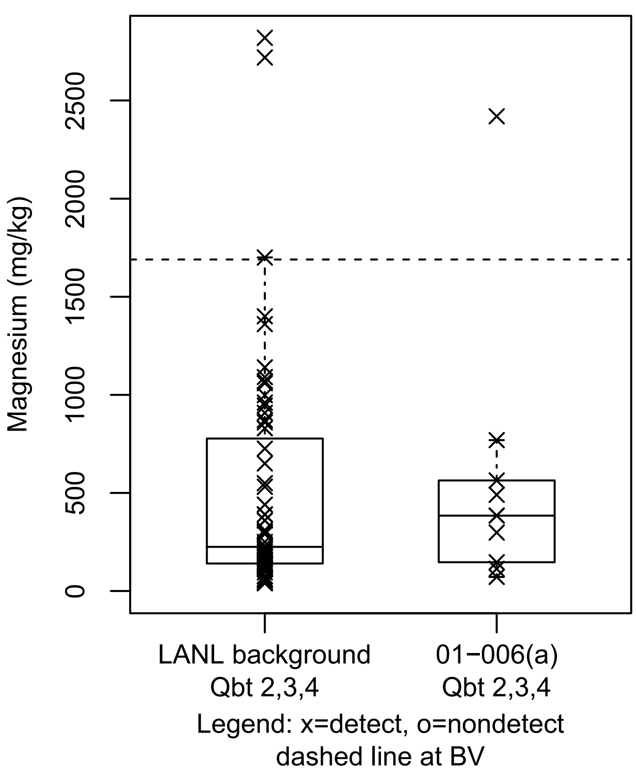

Figure F-128 Box plot for magnesium in tuff at SWMU 01-006(a)

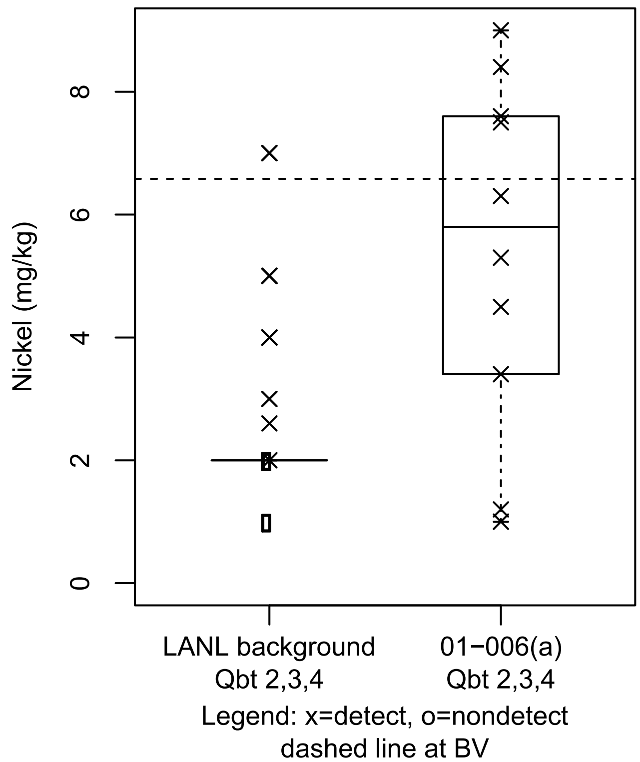

Figure F-129 Box plot for nickel in tuff at SWMU 01-006(a)

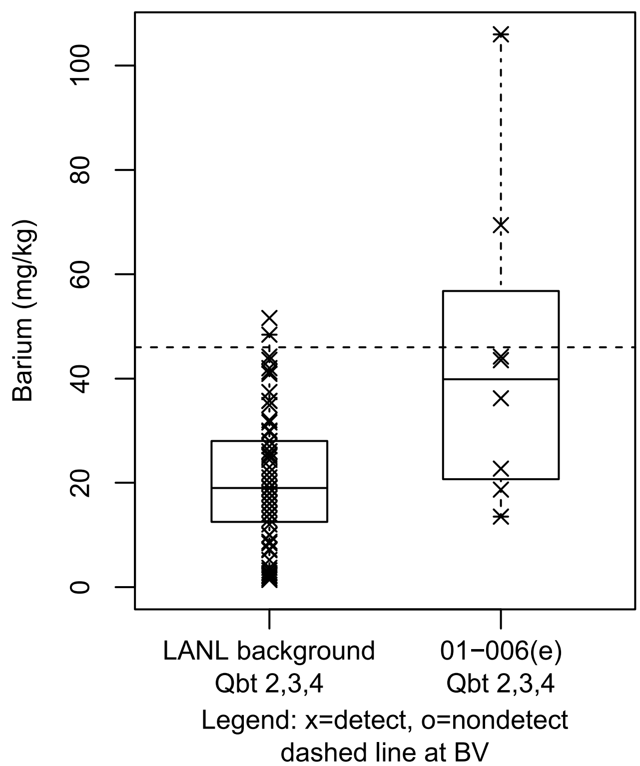

Figure F-130 Box plot for barium in tuff at AOC 01-006(e)

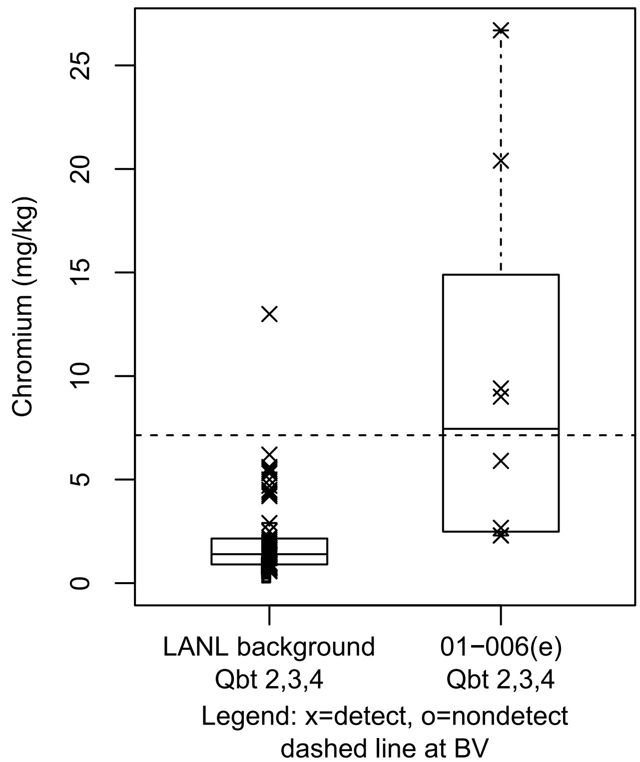

Figure F-131 Box plot for chromium in tuff at SWMU 01-006(e)

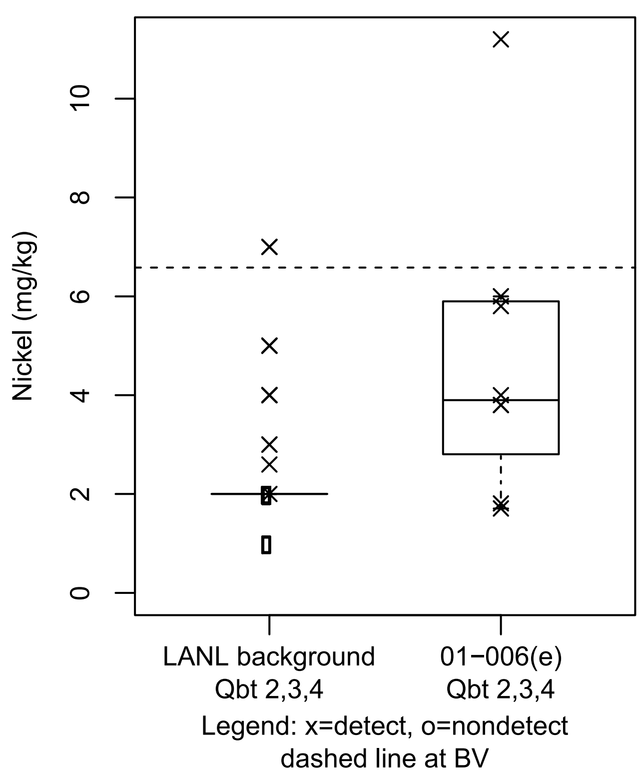

Figure F-132 Box plot for nickel in tuff at AOC 01-006(e)

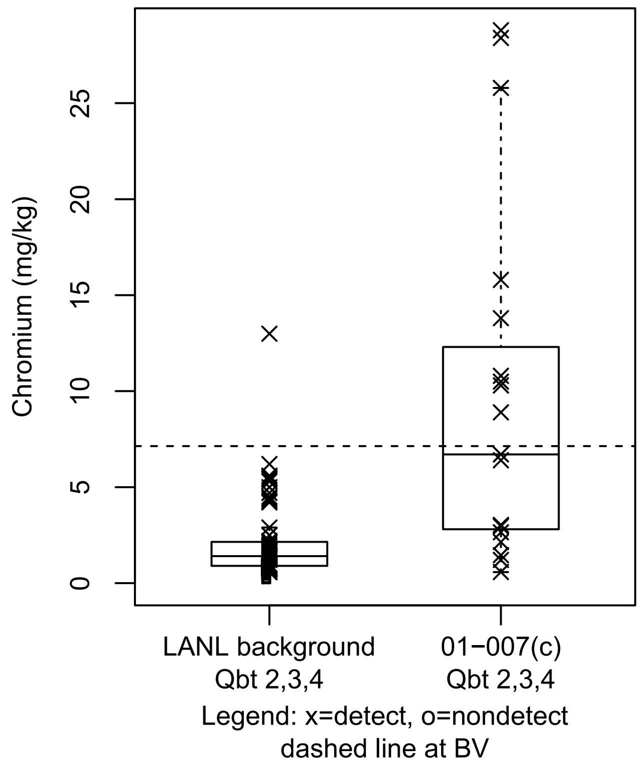

Figure F-133 Box plot for chromium in tuff at SWMU 01-007(c)

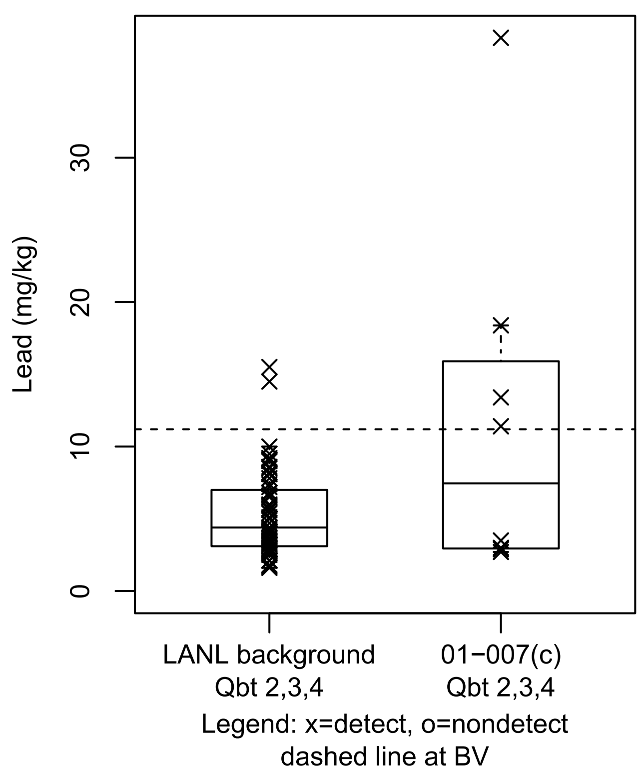

Figure F-134 Box plot for lead in tuff at SWMU 01-007(c)

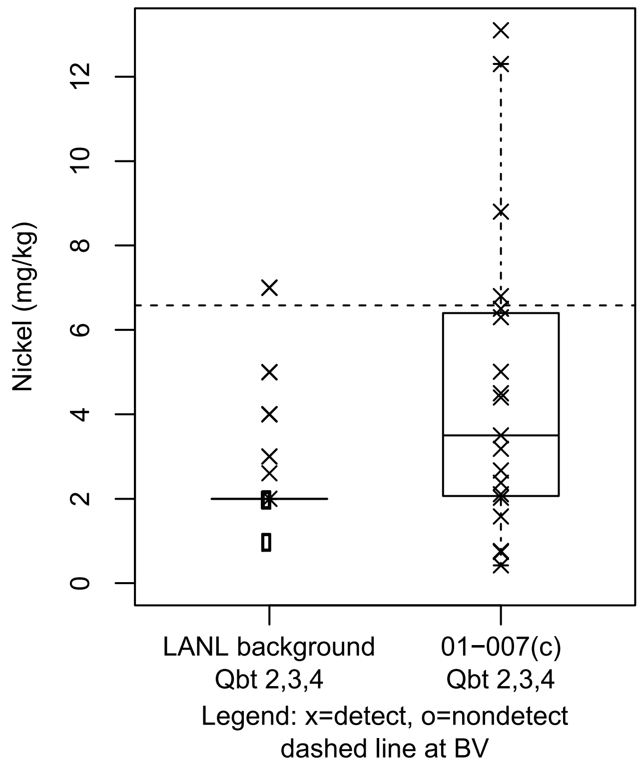

Figure F-135 Box plot for nickel in tuff at SWMU 01-007(c)

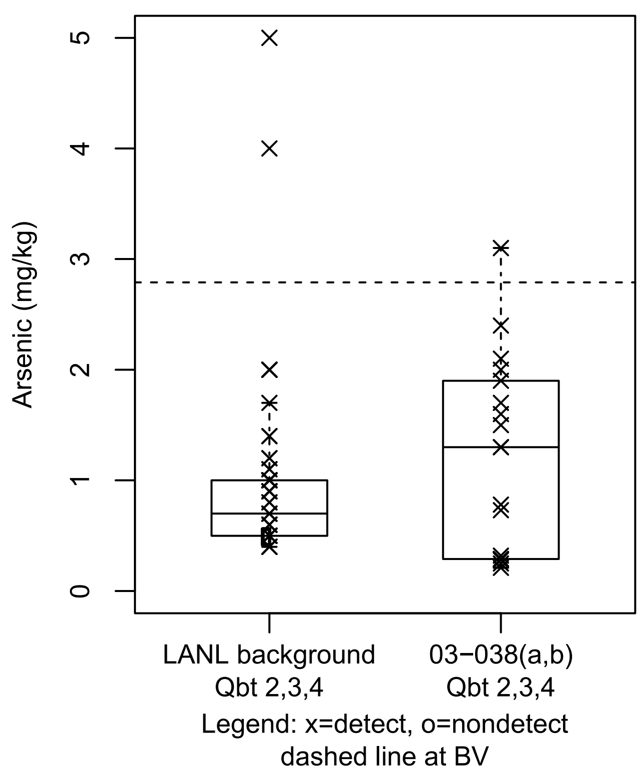

Figure F-136 Box plot for arsenic in tuff at SWMUs 03-038(a,b)

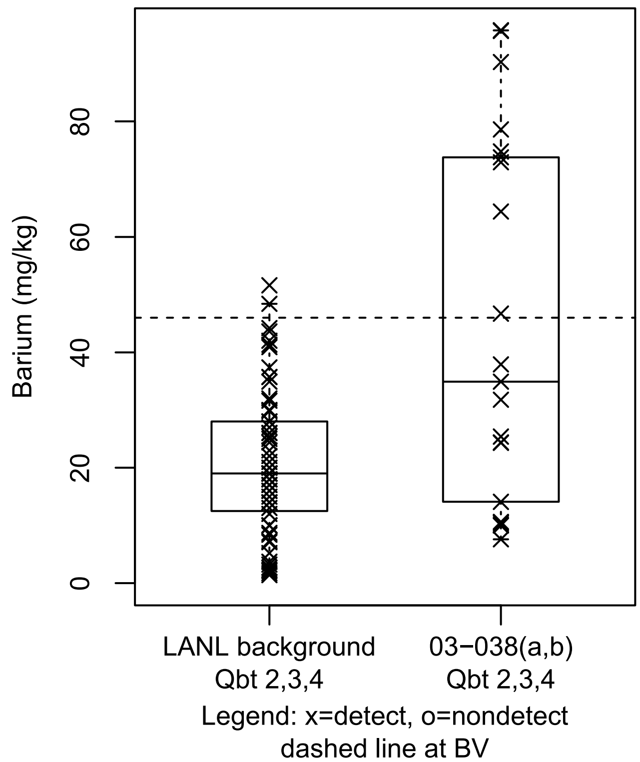

Figure F-137 Box plot for barium in tuff at SWMUs 03-038(a,b)

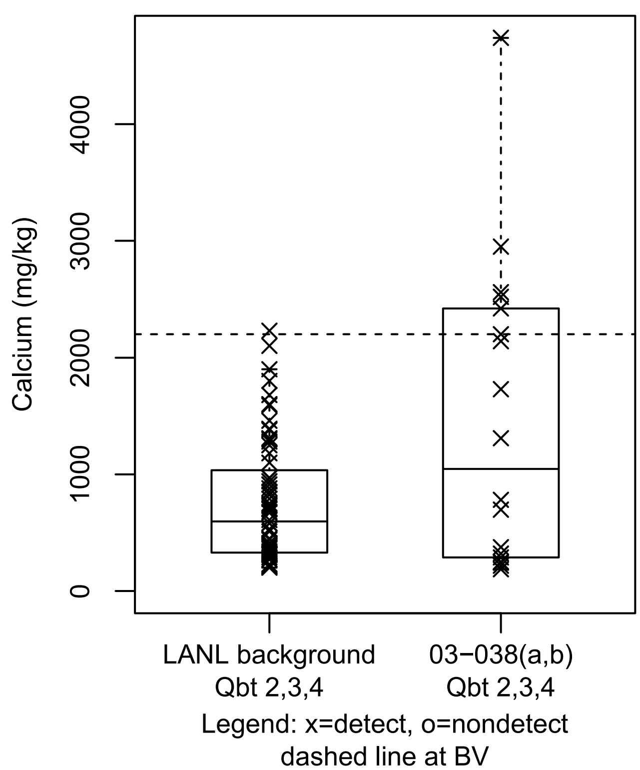

Figure F-138 Box plot for calcium in tuff at SWMUs 03-038(a,b)

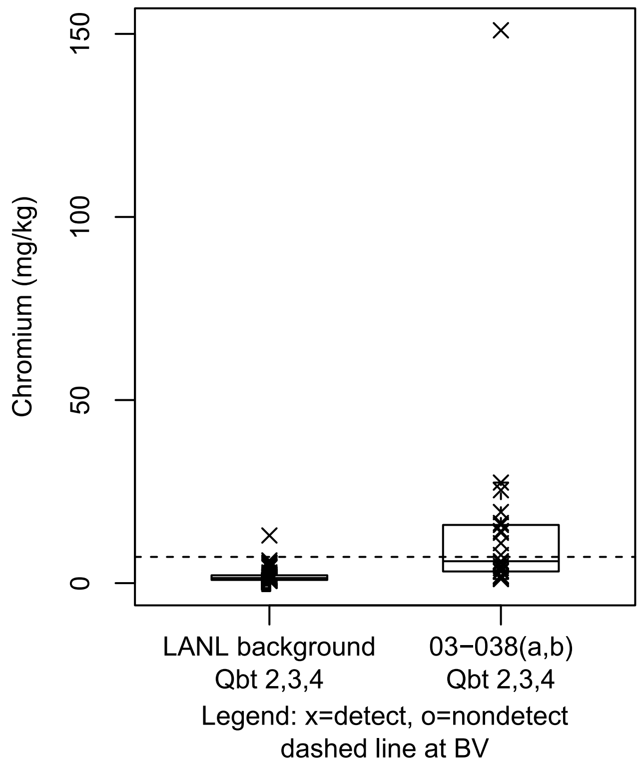

Figure F-139 Box plot for chromium in tuff at SWMUs 03-038(a,b)

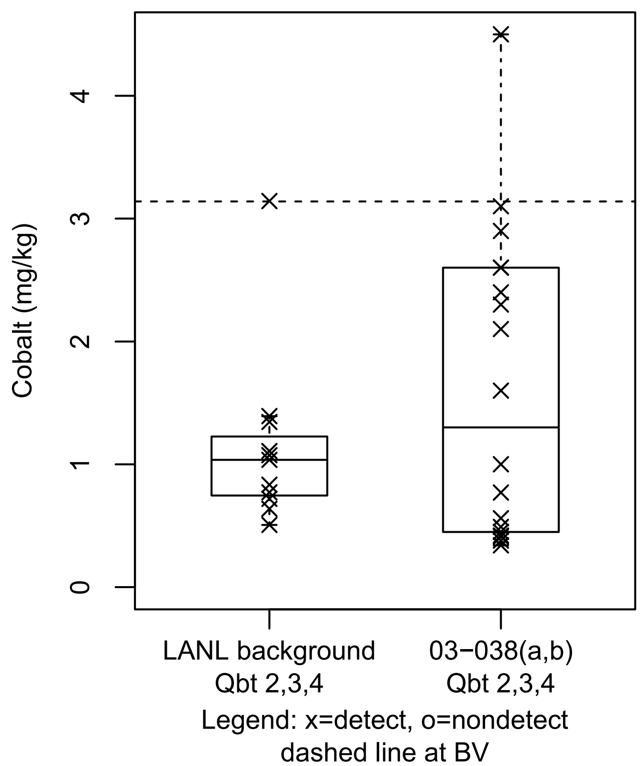

Figure F-140 Box plot for cobalt in tuff at SWMUs 03-038(a,b)

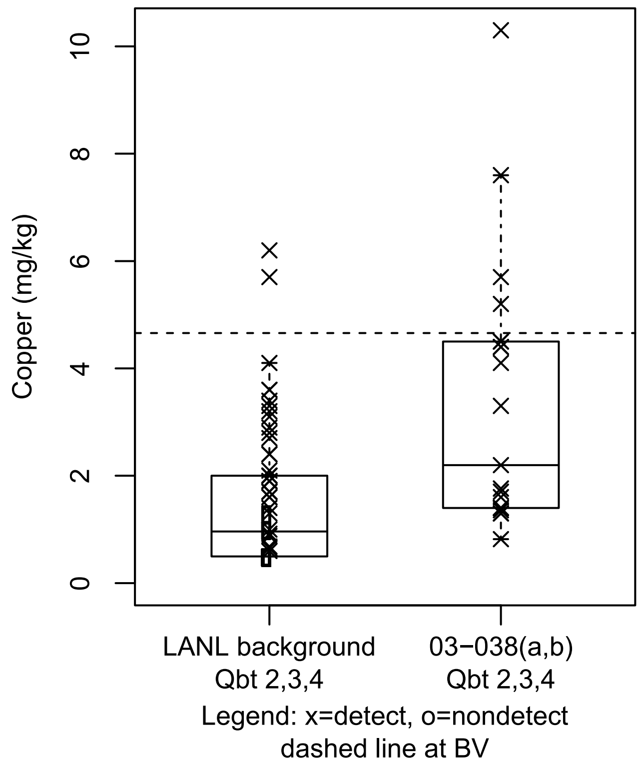

Figure F-141 Box plot for copper in tuff at SWMUs 03-038(a,b)

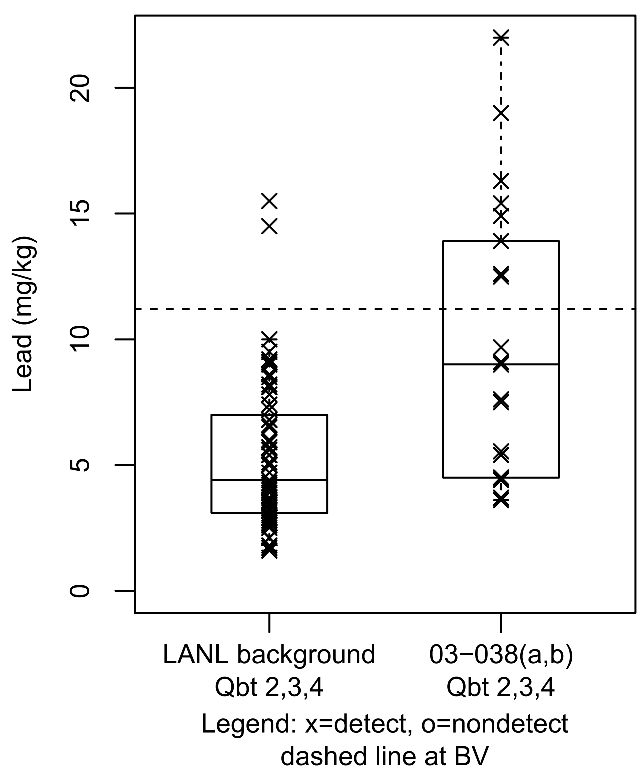

Figure F-142 Box plot for lead in tuff at SWMUs 03-038(a,b)

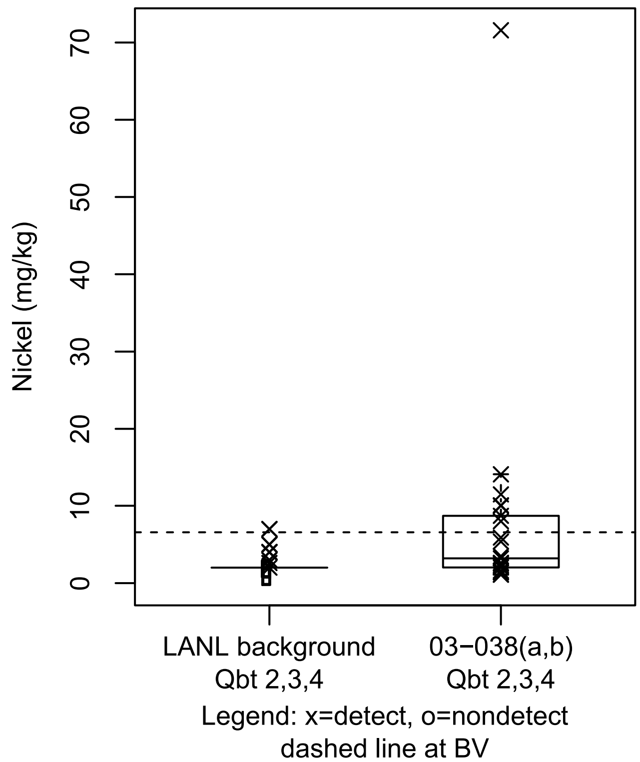

Figure F-143 Box plot for nickel in tuff at SWMUs 03-038(a,b)

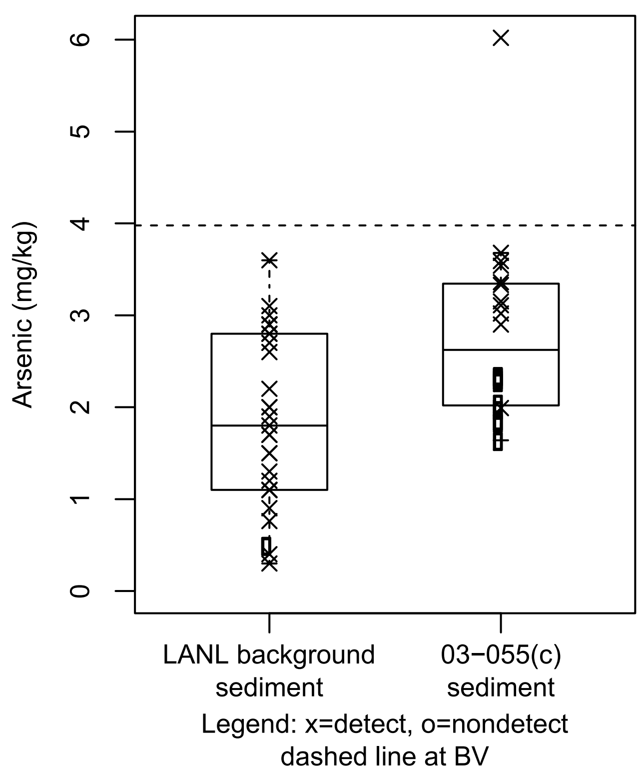

Figure F-144 Box plot for arsenic in sediment at SWMU 03-055(c)

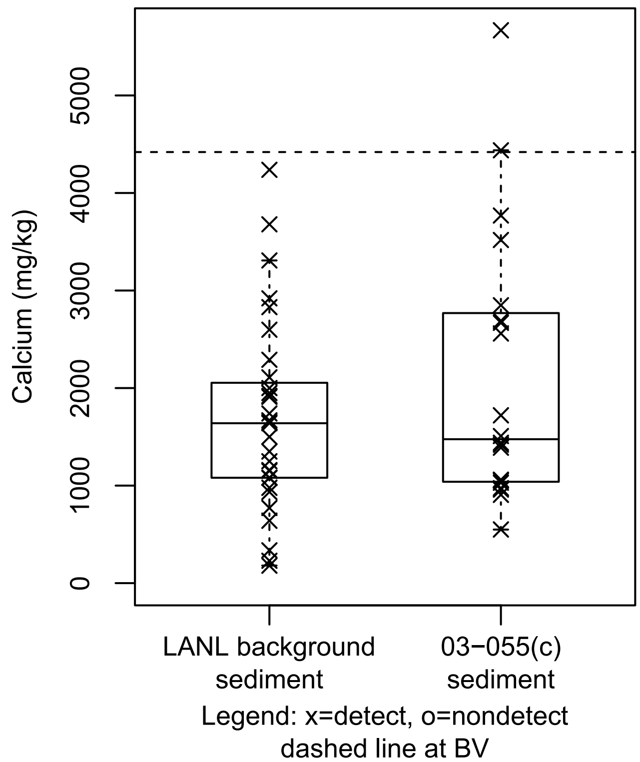

Figure F-145 Box plot for calcium in sediment at SWMU 03-055(c)

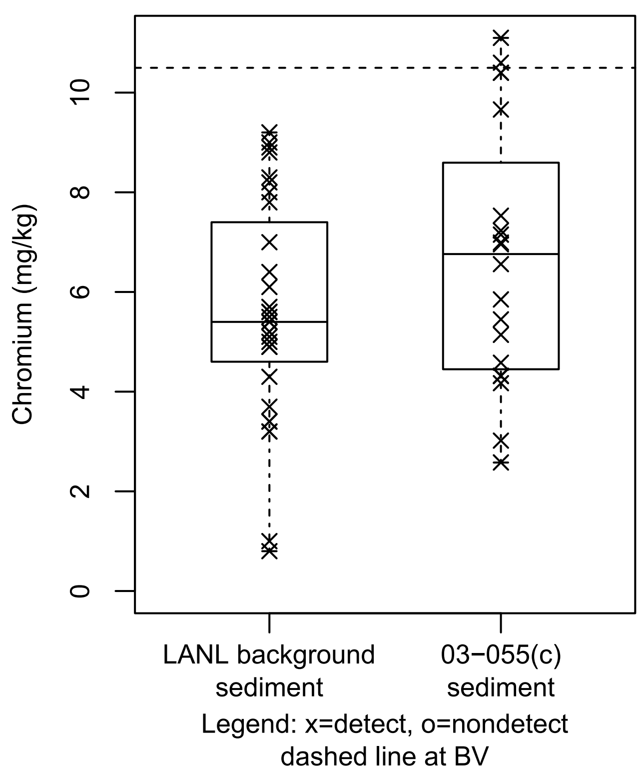

Figure F-146 Box plot for chromium in sediment at SWMU 03-055(c)

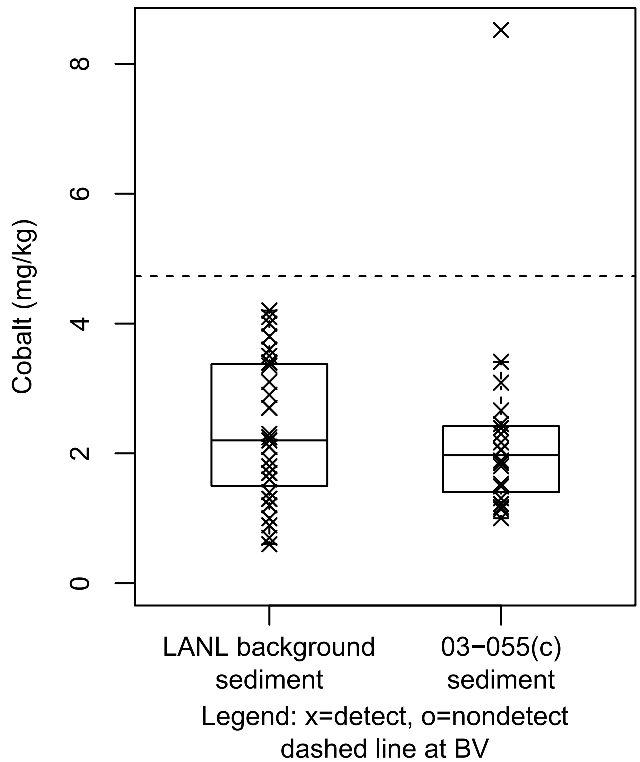

Figure F-147 Box plot for cobalt in sediment at SWMU 03-055(c)

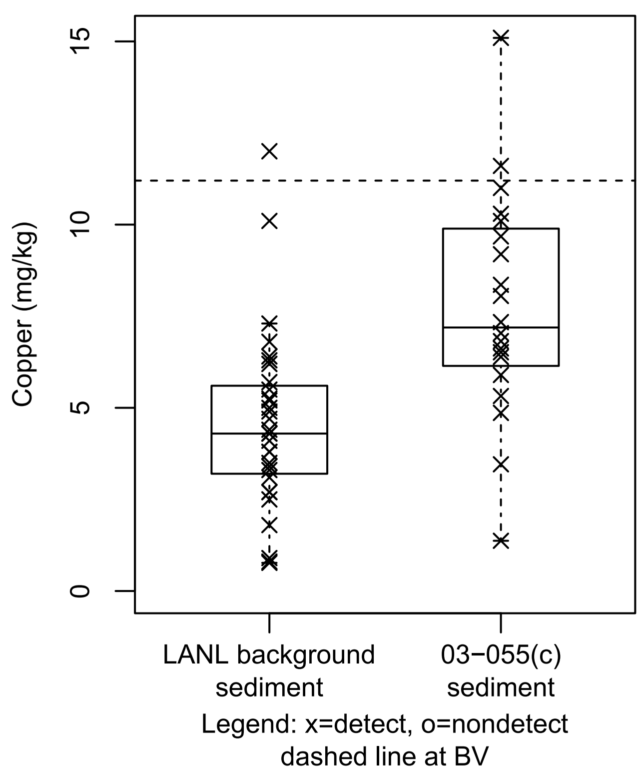

Figure F-148 Box plot for copper in sediment at SWMU 03-055(c)

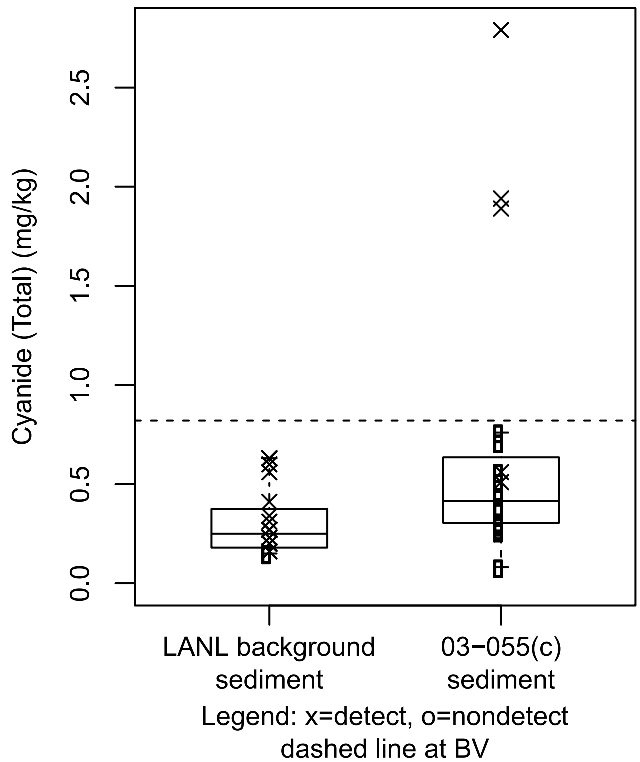

Figure F-149 Box plot for cyanide in sediment at SWMU 03-055(c)

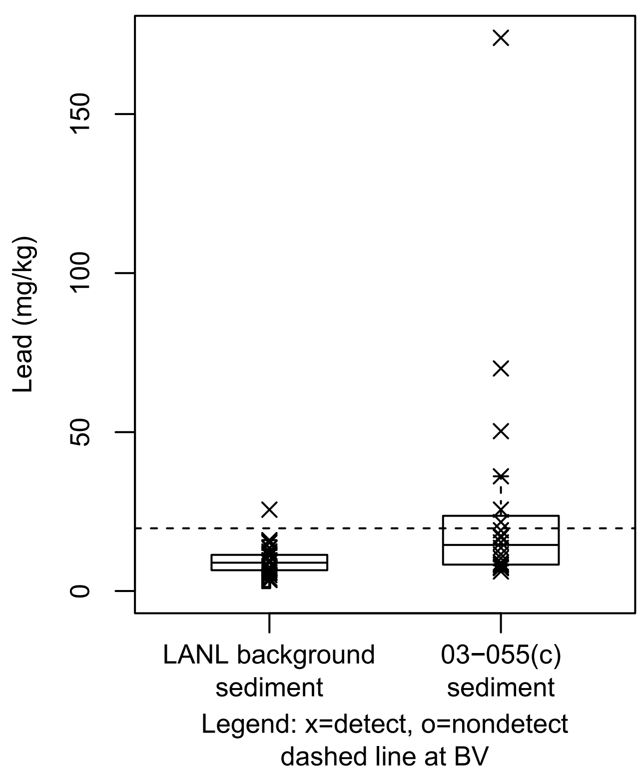

Figure F-150 Box plot for lead in sediment at SWMU 03-055(c)

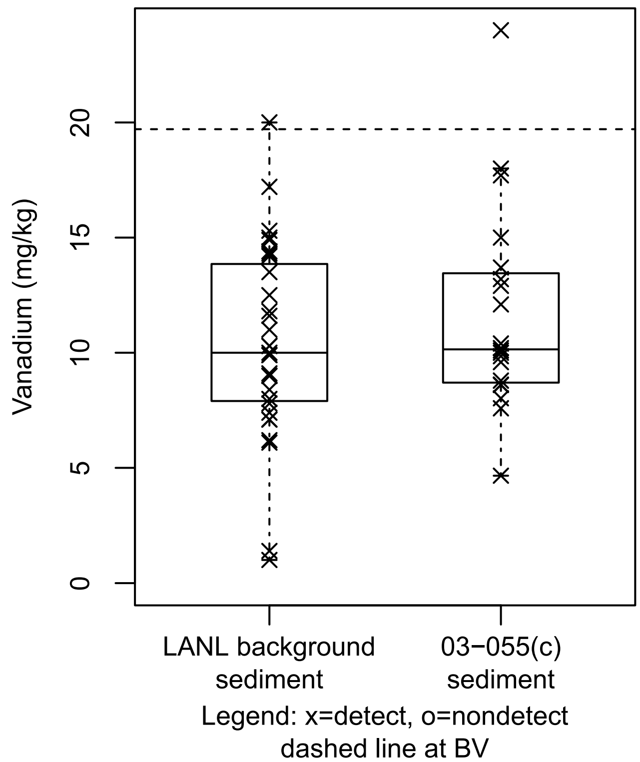

Figure F-151 Box plot for vanadium in sediment at SWMU 03-055(c)

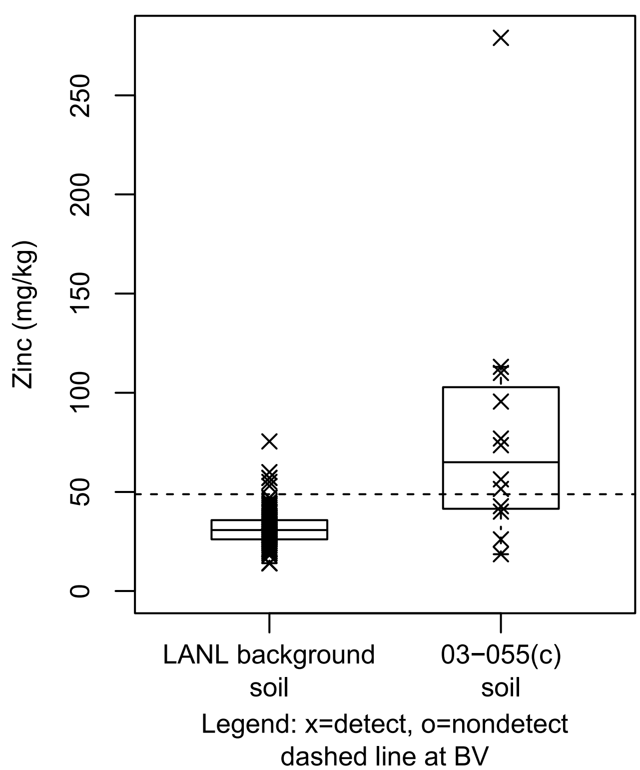

Figure F-152 Box plot for zinc in soil at SWMU 03-055(c)

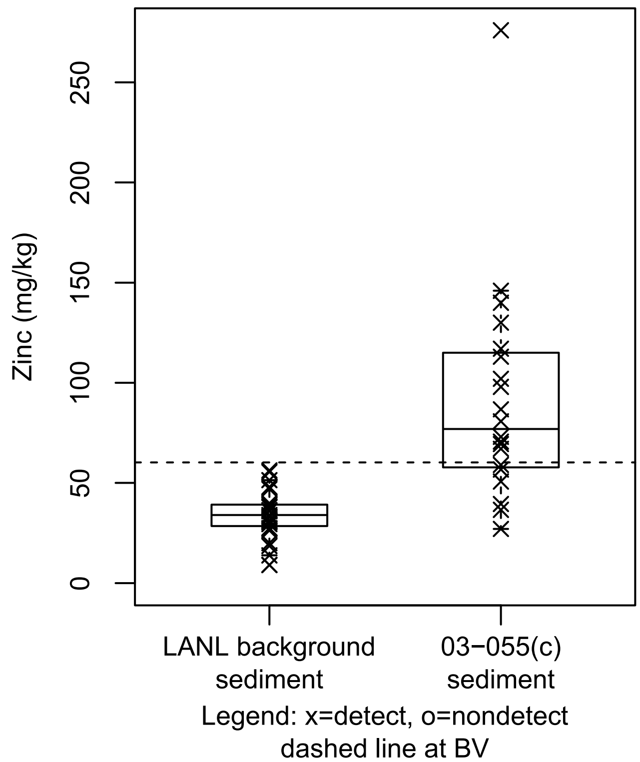

Figure F-153 Box plot for zinc in sediment at SWMU 03-055(c)

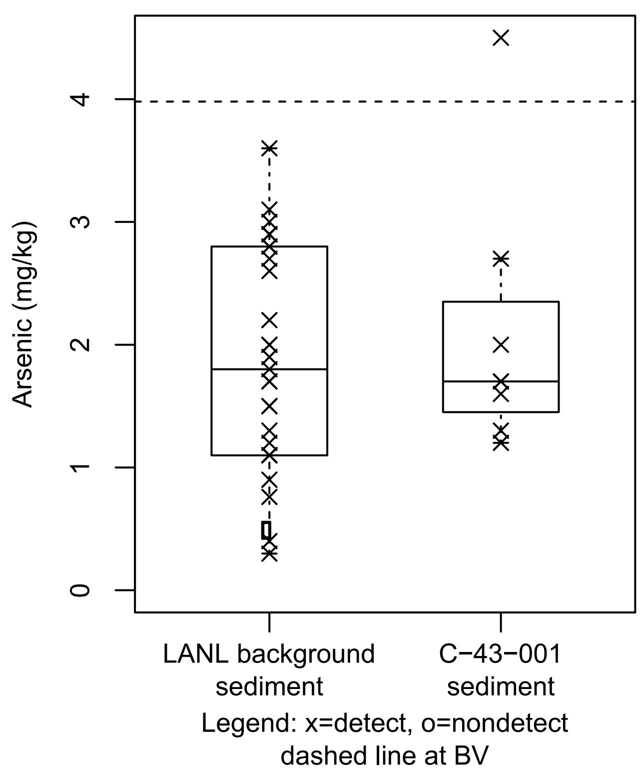

Figure F-154 Box plot for arsenic in sediment at AOC C-43-001

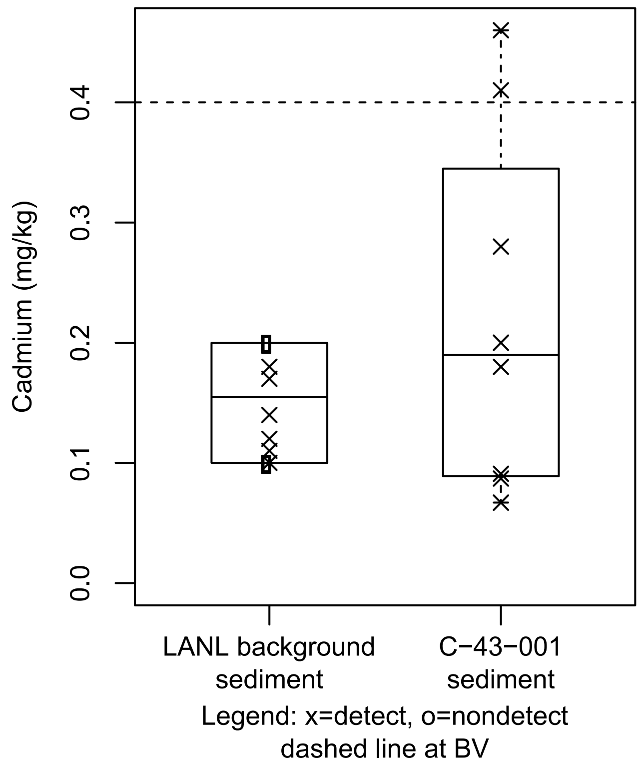

Figure F-155 Box plot for cadmium in sediment at AOC C-43-001

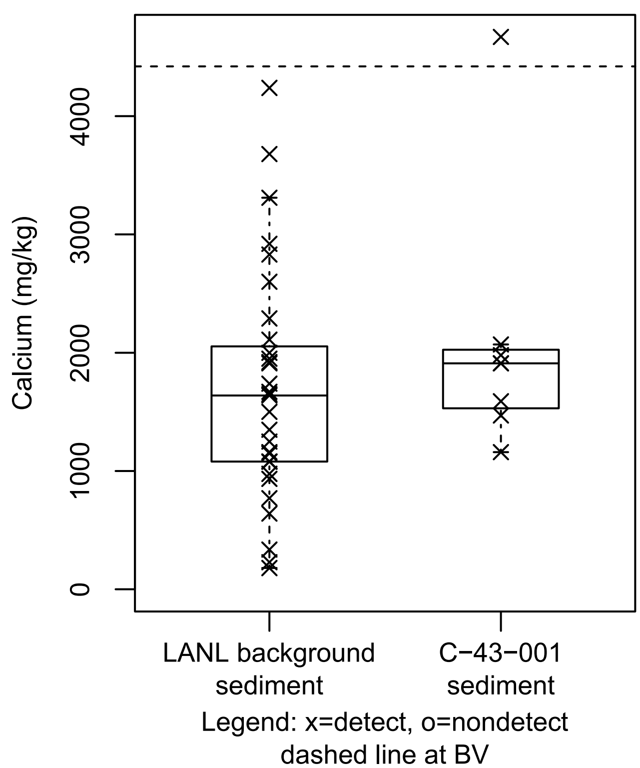

Figure F-156 Box plot for calcium in sediment at AOC C-43-001

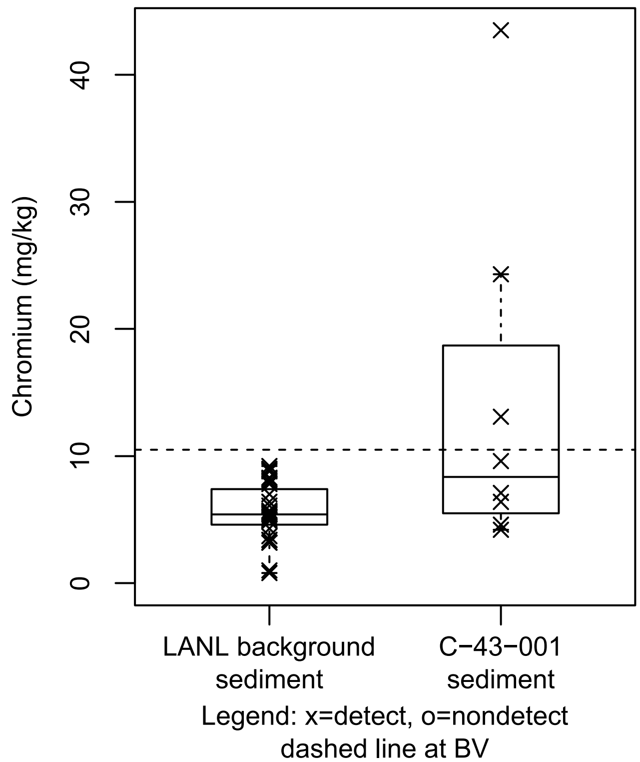

Figure F-157 Box plot for chromium in sediment at AOC C-43-001

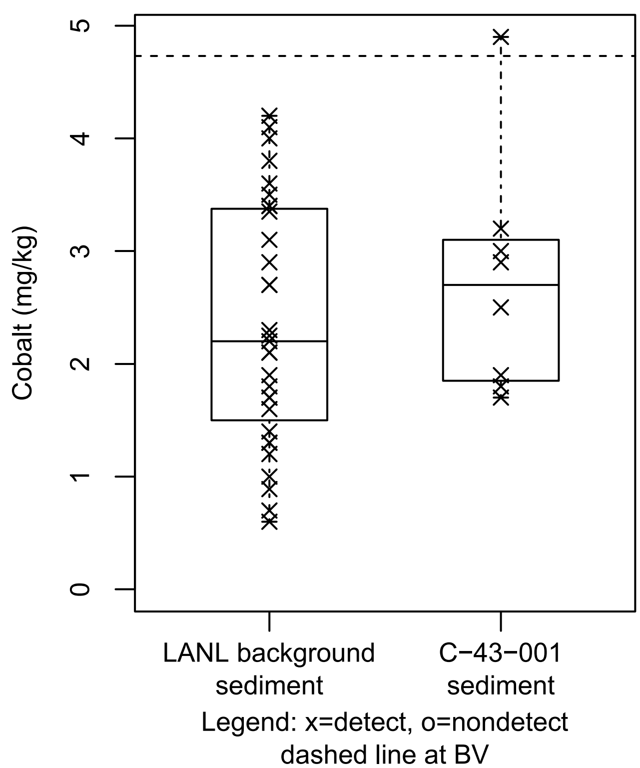

Figure F-158 Box plot for cobalt in sediment at AOC C-43-001

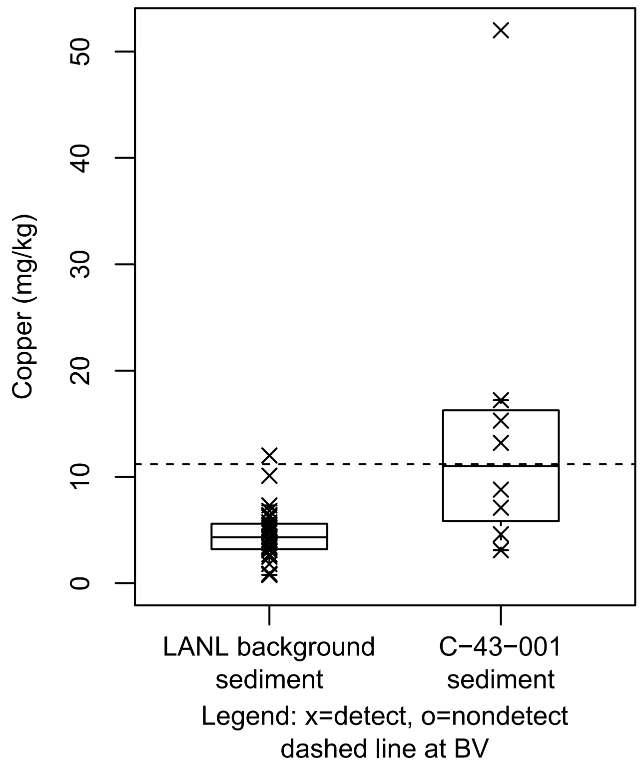

Figure F-159 Box plot for copper in sediment at AOC C-43-001

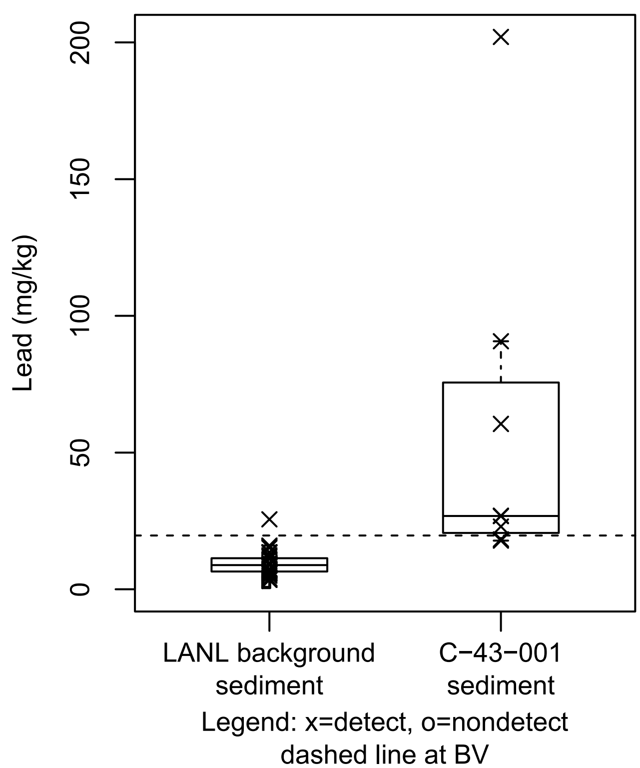

Figure F-160 Box plot for lead in sediment at AOC C-43-001

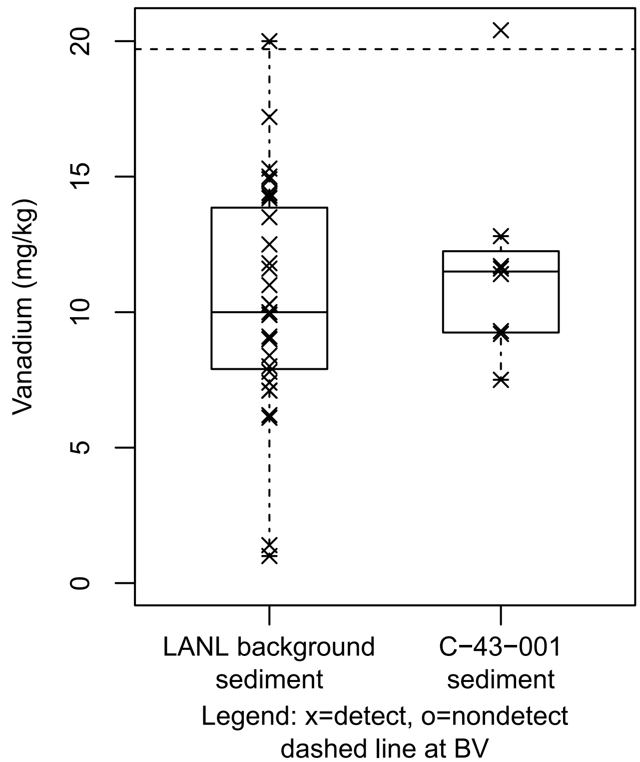

Figure F-161 Box plot for vanadium in sediment at AOC C-43-001

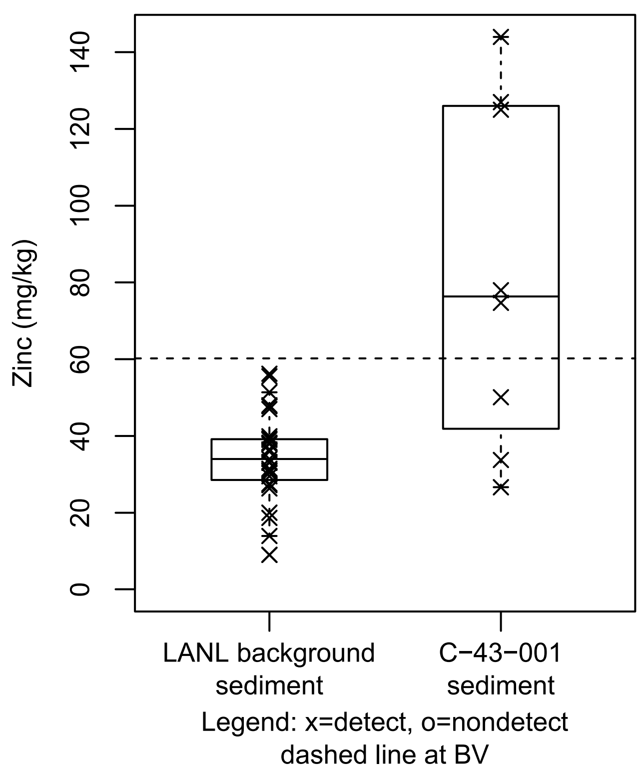

Figure F-162 Box plot for zinc in sediment at AOC C-43-001

Table F-1
Results for Statistical Tests for Inorganic Chemicals in Qbt 3 at SWMU 00-017

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Aluminum	0.0695	0.0211	<0.0001	Yes
Arsenic	<0.0001	<0.0001	1	Yes
Barium	0.000294	0.000935	<0.0001	Yes
Beryllium	0.0230	0.162	1	No
Calcium	0.000232	0.0194	0.0026	Yes
Chromium	<0.0001	<0.0001	0.0026	Yes
Cobalt	0.0104	0.296	0.0906	No
Copper	<0.0001	0.0194	0.000199	Yes
Iron	0.000328	0.0194	1	Yes
Lead	<0.0001	<0.0001	<0.0001	Yes
Magnesium	0.000117	0.0631	0.319	No
Nickel	n/a*	<0.0001	<0.0001	Yes
Vanadium	<0.0001	0.0631	1	No

* n/a = Not applicable.

Table F-2
Results for Statistical Tests for Inorganic Chemicals in Soil at SWMU 00-017

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Chromium	0.863	0.809	1	No
Lead	0.229	0.128	0.000149	No

Table F-3
Results for Statistical Tests for Inorganic Chemicals in Sediment at SWMU 00-017

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Lead	<0.0001	<0.0001	<0.0001	Yes

Table F-4
Results for Statistical Tests for Inorganic Chemicals in Soil at AOC C-00-044

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Lead	0.000470	<0.0001	<0.0001	Yes
Manganese	0.984	0.998	1	No
Sodium	0.645	0.081	0.00503	No
Zinc	<0.0001	<0.0001	1	Yes

Table F-5
Results for Statistical Tests for Inorganic Chemicals in Qbt 3 at SWMU 01-001(a)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Barium	0.097	0.115	0.3	No
Cadmium	1	0.998	0.408	No
Calcium	0.00919	0.148	0.158	No
Chromium	<0.0001	<0.0001	<0.0001	Yes
Copper	<0.0001	0.00203	0.00657	Yes
Lead	0.0102	0.0555	0.0238	Yes
Nickel	n/a*	0.00226	<0.0001	Yes

* n/a = Not applicable.

Table F-6
Results for Statistical Tests for Inorganic Chemicals in Soil at SWMU 01-001(a)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Chromium	1	0.946	1	No
Copper	0.00966	0.0124	<0.0001	Yes

Table F-7
Results for Statistical Tests for Inorganic Chemicals in Qbo at SWMU 01-001(d3)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Aluminum	0.000786	0.0247	0.00514	Yes
Arsenic	n/a*	0.00313	0.00178	Yes
Barium	0.00496	0.121	0.00514	Yes
Beryllium	0.000202	0.351	0.0488	Yes
Calcium	0.0198	0.133	0.146	No
Chromium	<0.0001	0.00011	<0.0001	Yes
Copper	0.00178	0.000109	0.000109	Yes
Iron	<0.0001	0.000109	<0.0001	Yes
Lead	<0.0001	0.00263	1	Yes
Magnesium	0.00412	0.121	0.0488	Yes
Manganese	<0.0001	0.000109	<0.0001	Yes
Nickel	n/a	0.000109	<0.0001	Yes
Vanadium	<0.0001	0.000424	0.000424	Yes
Zinc	0.000115	0.00642	0.257	Yes

* n/a = Not applicable.

Table F-8
Results for Statistical Tests for Inorganic Chemicals in Qbt 3 at SWMU 01-001(d3)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Arsenic	0.0928	0.136	1	No
Beryllium	0.361	0.521	0.273	No
Chromium	<0.0001	<0.0001	0.00108	Yes
Copper	<0.0001	<0.0001	<0.0001	Yes
Iron	0.274	0.907	0.273	No
Lead	0.000875	0.000163	0.00115	Yes
Manganese	0.426	0.796	0.273	No
Nickel	n/a*	0.00258	0.0191	Yes
Zinc	0.106	0.355	0.005	No

* n/a = Not applicable.

Table F-9
Results for Statistical Tests for Inorganic Chemicals in Sediment at SWMU 01-001(d3)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Barium	0.924	0.28	0.0919	No
Cobalt	0.937	0.583	0.311	No
Copper	0.634	0.28	0.0919	No
Lead	0.00362	0.0171	0.0919	Yes
Zinc	0.0903	0.446	0.0378	Yes

Table F-10
Results for Statistical Tests for Inorganic Chemicals in Soil at SWMU 01-001(d3)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Copper	0.998	0.907	0.0595	No
Lead	0.815	0.331	0.0598	No
Zinc	0.0178	0.427	1	No

Table F-11
Results for Statistical Tests for Inorganic Chemicals in Sediment at SWMU 01-001(f)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Calcium	0.976	0.848	0.3	No
Copper	0.192	0.153	0.307	No
Lead	0.0001	0.00231	1	Yes
Magnesium	1	0.998	0.551	No
Vanadium	0.9982	0.9501	0.551	No
Zinc	0.00979	0.0168	0.00139	Yes

Table F-12
Results for Statistical Tests for Inorganic Chemicals in Qbt 3 at SWMU 01-001(f)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Chromium	<0.0001	<0.0001	<0.0001	Yes
Copper	<0.0001	0.00356	0.0282	Yes
Lead	0.00192	0.151	0.0085	Yes

Table F-13
Results for Statistical Tests for Inorganic Chemicals in Qbt 3 at SWMU 01-001(g)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Chromium	<0.0001	<0.0001	0.000386	Yes
Nickel	n/a*	0.00449	0.000407	Yes

* n/a = Not applicable.

Table F-14
Results for Statistical Tests for Inorganic Chemicals in Soil at SWMU 01-001(o)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Chromium	0.834	0.253	1	No
Copper	0.131	0.00797	<0.0001	Yes
Lead	0.00834	0.0357	<0.0001	Yes
Nickel	0.854	0.525	1	No
Zinc	0.0293	0.0085	0.000345	Yes

Table F-15
Results for Statistical Tests for Inorganic Chemicals in Qbt 3 at SWMU 01-001(o)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Chromium	<0.0001	<0.0001	0.00518	Yes
Copper	<0.0001	0.0151	0.0766	Yes
Lead	0.00264	0.0582	0.00543	Yes
Nickel	n/a*	0.00958	0.0784	Yes

* n/a = Not applicable.

Table F-16
Results for Statistical Tests for Inorganic Chemicals in Qbt 3 at SWMU 01-001(s2)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Aluminum	0.0522	0.0115	0.0558	No
Arsenic	0.0161	0.00341	1	Yes
Barium	0.00740	<0.0001	<0.0001	Yes
Cadmium	1	0.999	0.571	No
Calcium	0.0172	0.0106	0.0545	Yes
Chromium	<0.0001	<0.0001	0.0120	Yes
Cobalt	0.426	0.284	0.254	No
Copper	<0.0001	<0.0001	0.00037	Yes
Lead	<0.0001	<0.0001	0.00612	Yes
Magnesium	0.00474	0.0106	1	Yes
Nickel	n/a*	<0.0001	<0.0001	Yes

* n/a = Not applicable.

Table F-17
Results for Statistical Tests for Inorganic Chemicals in Qbt 3 at SWMU 01-002(a2)-00

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Aluminum	0.423	0.717	0.0923	No
Arsenic	0.00565	0.0288	1	Yes
Barium	0.085	0.0987	0.00612	No
Beryllium	0.971	0.902	1	No
Calcium	0.488	0.486	0.00733	No
Chromium	<0.0001	<0.0001	<0.0001	Yes
Cobalt	0.837	0.346	0.718	No
Copper	0.000186	0.045	0.304	Yes
Lead	0.00525	0.00301	0.00766	Yes
Magnesium	0.133	0.706	1	No
Nickel	n/a*	<0.0001	<0.0001	Yes

* n/a = Not applicable.

Table F-18
Results for Statistical Tests for Inorganic Chemicals in Qbt 3 at SWMU 01-003(a)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Aluminum	0.0713	0.666	0.149	No
Arsenic	0.00347	0.0928	1	No
Barium	0.075	0.3674	0.0229	No
Beryllium	0.0806	0.382	1	No
Calcium	0.0155	0.145	0.0198	Yes
Chromium	<0.0001	<0.0001	<0.0001	Yes
Copper	<0.0001	0.00424	0.289	Yes
Lead	<0.0001	<0.0001	0.083	Yes
Manganese	0.0675	0.521	1	No
Nickel	n/a*	0.00165	0.00159	Yes
Zinc	0.498	0.650	0.289	No

* n/a = Not applicable.

Table F-19
Results for Statistical Tests for Inorganic Chemicals in Sediment at SWMU 01-003(a)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Barium	1	1	0.5	No
Chromium	0.818	0.168	0.0263	No
Copper	0.517	0.0528	0.5	No
Lead	0.00229	0.0168	0.023	Yes
Zinc	0.00124	0.626	0.246	No

Table F-20
Results for Statistical Tests for Inorganic Chemicals in Qbt 3 at SWMU 01-003(d)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Lead	0.432	0.844	1	No

Table F-21
Inorganic Chemicals in Qbt 3 at SWMU 01-006(a)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Aluminum	0.592	0.899	0.137	No
Arsenic	0.011	0.0022	0.135	Yes
Barium	0.107	0.0911	0.00193	No
Beryllium	0.528	0.326	1	No
Calcium	0.061	0.0174	0.0167	Yes
Chromium	<0.0001	<0.0001	0.00185	Yes
Copper	0.000645	0.0174	0.135	Yes
Lead	0.00231	0.00239	0.137	Yes
Magnesium	0.298	0.895	1	No
Nickel	n/a*	0.000188	0.000193	Yes

* n/a = Not applicable.

Table F-22
Inorganic Chemicals in Qbt 3 at SWMU 01-006(e)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Barium	0.00816	0.00401	0.0113	Yes
Chromium	<0.0001	0.00559	0.011	Yes
Nickel	n/a*	0.0703	0.113	No

* n/a = Not applicable.

Table F-23
Inorganic Chemicals in Qbt 3 at SWMU 01-007(c)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Chromium	<0.0001	<0.0001	0.0004	Yes
Lead	0.161	0.0431	0.0113	Yes
Nickel	n/a*	0.00139	0.0109	Yes

* n/a = Not applicable.

Table F-24
Inorganic Chemicals in Qbt 3 at SWMUs 03-038(a,b)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Arsenic	0.159	0.00545	1	No
Barium	0.00232	0.00296	<0.0001	Yes
Calcium	0.101	0.00545	0.000314	Yes
Chromium	<0.0001	<0.0001	<0.0001	Yes
Cobalt	0.491	0.238	0.621	No
Copper	<0.0001	0.000776	0.0588	Yes
Lead	0.000113	0.000866	0.014	Yes
Nickel	n/a*	0.00296	<0.0001	Yes

* n/a = Not applicable.

Table F-25
Inorganic Chemicals in Sediment at SWMU 03-055(c)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Arsenic	0.0437	0.00501	0.149	Yes
Calcium	0.278	0.334	0.149	No
Chromium	0.114	0.334	0.0066	No
Cobalt	0.813	0.965	0.392	No
Copper	<0.0001	0.00501	0.392	Yes
Cyanide (Total)	n/a*	0.0861	0.0711	No
Lead	0.00153	0.000422	0.0194	Yes
Vanadium	0.247	0.613	0.392	No
Zinc	<0.0001	<0.0001	<0.0001	Yes

* n/a = Not applicable.

Table F-26
Inorganic Chemicals in Soil at SWMU 03-055(c)

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Zinc	<0.0001	<0.0001	<0.0001	Yes

Table F-27
Inorganic Chemicals in Sediment at AOC 43-C-001

Analyte	Gehan Test p-Value	Quantile Test p-Value	Slippage p-Value	COPC?
Arsenic	0.404	0.872	0.205	No
Cadmium	n/a*	0.00151	0.0113	Yes
Calcium	0.14	0.829	0.205	No
Chromium	0.02	0.0222	0.000851	Yes
Cobalt	0.222	0.829	0.205	No
Copper	0.00242	0.00175	0.000851	Yes
Lead	<0.0001	<0.0001	<0.0001	Yes
Vanadium	0.243	0.829	0.205	No
Zinc	0.00284	0.00175	<0.0001	Yes

* n/a = Not applicable.

Appendix G

Risk Assessments

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G-1.0 INTRODUCTION

This appendix presents the results of the human health and ecological risk-screening evaluations conducted in support of the environmental characterization of the Upper Los Alamos Canyon Aggregate Area sites, located in the northern portion of Los Alamos National Laboratory (LANL or the Laboratory). The evaluations of potential risk at seventeen solid waste management units (SWMUs) and three areas of concern (AOCs) are based on decision-level data from the years 1996, 1998, 1999, and 2007 through 2017.

G-2.0 BACKGROUND

Brief descriptions of the Upper Los Alamos Canyon Aggregate Area sites assessed for potential risks and dose are presented below.

G-2.1 Site Descriptions and Operational History (TA-00, TA-01, TA-03, TA-32, TA-43, and TA-61)

TA-00 Background

Between 1943 and 1965, research work on nuclear weapons was carried out at Technical Area 00 (TA-00). These activities generated releases from septic tanks, sanitary lines, the industrial waste line, outfalls, storm water drains, accidental spills or leaks, and placement of contaminated materials at landfills.

TA-01 Background

Starting in 1976, land located in former TA-01 was transferred from the U.S. Department of Energy (DOE) to Los Alamos County and private parties. Except for the sites located on the slope of Los Alamos Canyon that are still on DOE land, the majority of these sites are located within the Los Alamos townsite on private land or County property. These sites have been backfilled, regraded, and recontoured and have undergone significant construction since the property transfer. No evidence of previous TA-01 Laboratory structures exists in the area.

TA-03 Background

TA-03 is located on South Mesa between Los Alamos Canyon to the north and Twomile Canyon to the south, and is the Laboratory's main technical area. It contains most of the Laboratory's administrative buildings and public and corporate access facilities. In addition, TA-03 houses several Laboratory activities such as experimental sciences, special nuclear materials, theoretical/computations, and physical support operations.

TA-32 Background

The site of former TA-32 was occupied by the medical research facility in 1944, and after the research group expanded, operations were moved to TA-43 in 1953. All the structures at former TA-32 were removed after 1954. Currently, the site is mostly covered with asphalt pavement, and Los Alamos County uses the site to store equipment and materials for road work and maintenance. Maintenance activities may include the use of solvents, lubricants, and fuels; emptying of street sweeper contents until moved to a disposal facility; staging of asphalt, road salt, and other materials; and vehicle cleaning.

TA-43 Background

At TA-43, the Health Research Laboratory (HRL) Complex is the focal point of biosciences and biotechnology at the Laboratory.

TA-61 Background

Only one site at TA-61 (SWMU 61-007) is addressed in this report. SWMU 61-007 is a former transformer-staging site along the south side of East Jemez Road. Currently, the site is under a dirt road and parking lot area near the Los Alamos County landfill and is not occupied. Figure 11.1-1 of the main text shows the location of SWMU 61-007 in TA-61.

G-2.1.1 SWMU 00-017

SWMU 00-017 consists of former industrial waste line 167, former manhole (unassigned land release [ULR]) 33, and former industrial waste lines 170 and 171. Former waste line 167 and former manhole ULR-33 were removed before 1985, except for the concrete anchors and sections of drainpipe encased in the anchors. Lines 170 and 171 are the only sections of industrial waste line known to remain in Los Alamos townsite. The site of former waste line 167 and former manhole ULR-33 under the Omega Bridge in Los Alamos Canyon remains undeveloped. Nine concrete anchors and 3-ft-long sections of drainpipe encased in each of the anchors remain at the site.

The industrial waste lines were installed to serve the entire Laboratory from its beginning in 1943. With an estimated total length of 39,000 ft, the underground industrial waste lines and associated sumps and pumps were used to transport waste generated by various operations to treatment facilities. The estimated operation period for the majority of these waste lines is from the 1950s to the 1970s. Phased decommissioning and removal of the waste lines began in 1964, and various removal projects were completed through 1986.

G-2.1.2 AOC C-00-044

AOC C-00-044 consists of surface contamination resulting from the historical use of lead-based paint on the Omega Bridge. The bridge was constructed in 1951 and is located in both TA-00 and TA-03. This AOC was identified in 1999 during Resource Conservation and Recovery Act Facility Investigation (RFI) activities. Elevated lead concentrations were detected in surface samples collected from locations in Los Alamos Canyon under the north and south ends of the bridge during the investigation of SWMU 00-017. The lead could not reasonably be attributed to SWMU 00-017, an inactive underground industrial waste line. During further research and interviews with Los Alamos County and Laboratory maintenance staff, it was discovered that lead paint chips were deposited beneath the bridge on the north and south slopes of Los Alamos Canyon as a result of periodic bridge maintenance activities, including scraping and chipping old paint before new paint was applied. The use of lead-based paint has been discontinued.

G-2.1.3 SWMU 01-001(a)

SWMU 01-001(a) consists of a former sanitary septic system that included former septic tank 134 (structure 01-134), inlet and outlet drainlines, and an outfall at former TA-01. Former septic tank 134 measured 5 ft x 9 ft x 5.67 ft deep and was constructed of reinforced concrete in 1949. The septic tank was located south of the sheet metal shop (former building 01-104) and served warehouse 19 (former building 01-103) and the sheet metal shop from 1949 to 1964. Two separate sanitary waste lines from buildings 01-103 and 01-104 tied into the septic tank, which discharged through an outlet drainline to an outfall in Bailey Bridge Canyon (LANL 2001, 069946, p. 35). Warehouse 19 was reportedly used to store unknown nonradioactive materials. Buildings 01-103 and 01-104 were decommissioned and removed in 1964 as part of the relocation of all TA-01 activities to new Laboratory technical areas south of the Los Alamos townsite. During the final radioactive clearance screening for warehouse 19 in 1964, the concrete floor was found to be contaminated with uranium-238. The contaminated floor was demolished and disposed of in Bailey Bridge Canyon and covered with soil (Montoya 1965, 003711). Part of the floor drain associated with warehouse 19 was excavated and found to have no radiological contamination. The remainder of the floor drain was left in place (Montoya 1965, 003711). Septic tank 134 was removed during the Ahlquist radiological survey in 1975. The tank was found to have no evidence of radiological contamination and was disposed of at Material Disposal Area (MDA) G at TA-54 (Ahlquist et al. 1977, 005710).

G-2.1.4 SWMU 01-001(d3)

SWMU 01-001(d3) consists of a portion of the former outlet line from former septic tank 138 [SWMU 01-001(d2)] and the outfall through which wastewater from the tank discharged onto the canyon rim and north slope of Los Alamos Canyon. The outfall area, known as Hillside 138, is located on DOE-owned property in TA-41. The septic tank was a cylindrical metal tank measuring 4 ft in diameter x 4 ft high, installed in 1943, and located southeast of former building Y. Building K was a chemical stock room that housed a mercury still. Building V housed the original uranium and beryllium machine shop. Dry-grinding of boron was also conducted in building V. Building Y housed a physics laboratory that handled tritium, uranium-238, and polonium-210. In addition, a cooling tower (former structure 01-82) was associated with building Y and was removed in June 1956. Because no drainline or outfall was directly associated with the former cooling tower, blowdown could have been discharged to septic tank 138 through an existing drainline [new SWMU 01-001(d1)] associated with building Y. The septic tank and surrounding soil were removed in 1975 during the Ahlquist radiological survey conducted at TA-01 (Ahlquist et al. 1977, 005710). No radiological contamination was found in the septic tank, broken pipe shards from the inlet line, or in the outlet line; therefore, the section of the inlet line located beneath an office building was left in place. Samples collected from Hillside 138 indicated elevated levels of plutonium-239 and cesium-137; however, the hillside was not decontaminated during the survey because it was inaccessible. The area was fenced to prevent public access from the mesa top.

SWMU 01-001(d3) was originally part of former SWMU 01-001(d), which was split into SWMUs 01-001(d1), 01-001(d2), and 01-001(d3) in a request for modification of the Laboratory's Hazardous Waste Facility Permit approved by the New Mexico Environment Department (NMED) on November 9, 2016 (LANL 2016, 601921). The Laboratory proposed to split SWMU 01-001(d) into three newly designated SWMUs because each component of the SWMU is located on property owned by different entities.

G-2.1.5 SWMU 01-001(f)

SWMU 01-001(f) is the former location of septic tank 140 (former structure 01-140), its associated inlet and outlet drainlines, and outfall in former TA-01. Septic tank 140 measured 3 ft x 6 ft x 5 ft deep and was constructed of reinforced concrete in 1945. The tank was located west of former K-1 Building (building 01-98) and served HT Building (01-29) [SWMU 01-007(p)] and FP Building (01-20). The septic system outfall discharged into Los Alamos Canyon to an area later designated as Hillside 140, which is situated in TA-43 downslope from former TA-01. HT Building was used to heat-treat and machine natural and enriched uranium. FP Building was a foundry for nonradioactive and nonferrous metals and was not radiologically contaminated (Buckland 1964, 004810; Ahlquist et al. 1977, 005710, p. 39). The heat treatment and machining operations likely resulted in discharges of radioactive waste to the tank and outfall, and the machining operations were likely the source of the polychlorinated biphenyls (PCBs) found in the SWMU 01-001(f) outfall and drainage below. In 1946, low levels of plutonium and polonium were detected in the drain to the waste line from HT Building. Buildings 01-98 and 01-29 were decommissioned and removed in 1965 as part of the relocation of all TA-01 activities to new Laboratory technical areas south of the Los Alamos townsite. HT Building was found to be radioactively contaminated during its decontamination and demolition and was disposed of at an unspecified MDA. Use of the septic system ceased in 1965. During the 1975–1976 Ahlquist radiological survey conducted at SWMU 01-001(f), septic tank 140 was found to be filled with sludge with high levels of uranium activity (Ahlquist et al. 1977, 005710, p. 111). Both inlet and outlet lines were contaminated. The septic tank, all inlet and outlet drainlines, and approximately 351 yd^3 of contaminated soil were removed in 1976. Although the mesa-top portion of SWMU 01-001(f) was determined to be decontaminated, steep terrain prevented the removal of all known contamination on the hillside south and west of the outlet excavation. Currently, the mesa-top area of SWMU 01-001(f) is developed; former drainline locations are under pavement and buildings in the Ridge Park Village residential development. The location of former septic tank 140 is partially covered by a building. The outfall location and the hillside drainage into which it discharged are located on undeveloped land owned by DOE.

G-2.1.6 SWMU 01-001(g)

SWMU 01-001(g) consists of a former sanitary septic system that included former septic tank 141 (former structure 01-141), inlet and outlet drainlines, and an outfall at former TA-01. Former septic tank 141 was a cylindrical steel tank with dimensions measuring approximately 4 ft in diameter and 4 ft deep that was installed in 1943 (Ahlquist et al. 1977, 003270). The septic tank was located south of X Building (building 01-79) near the edge of Los Alamos Canyon and received sanitary waste from X Building through a single sanitary waste line. X Building housed a cyclotron (accelerator) in which radioactive targets were tested. Wastewater from the septic tank flowed through an outlet line and discharged to an outfall on the rim of Los Alamos Canyon. X Building was decommissioned and removed in 1954 as part of the relocation of all TA-01 activities to new Laboratory technical areas south of the Los Alamos townsite. Septic tank 141 was removed during the Ahlquist radiological survey in 1975 (Ahlquist et al. 1977, 005710). The tank, its contents, and surrounding soil were found to have no evidence of radiological contamination and were removed and disposed of at an unnamed MDA. Currently, the location of the former inlet drainline is under one of the Los Arboles condominium buildings and the outfall location is on undeveloped land owned by DOE.

G-2.1.7 SWMU 01-001(o)

SWMU 01-001(o) is the former sanitary waste line that was located east of Bailey Bridge and served former J Building (structure 01-34) and former ML Building (structure 01-42). J Building housed a laboratory of unknown nature, and ML Building housed a medical laboratory. The former sanitary waste line from former Q Building discharge was tied into the SWMU 01 001(o) waste line. Q Building was used by the medical and health-monitoring group. Film calibration was conducted in the north basement of former Q Building, where a small radium spill contaminated part of the basement. The spill was cleaned up, but some contamination remained. The SWMU waste line discharged directly to the head of Bailey Bridge Canyon. Accidents in 1955 and 1957 resulted in radioactive contamination in Building ML. Decontamination activities were not totally successful after the 1957 accident because floor areas remained contaminated. Some of the floor was painted and covered with cardboard until the building was demolished in 1958; building debris was disposed of at MDAs C and G. Concrete with gross-alpha activities less than 2500 counts per minute (cpm) was disposed of in Bailey Bridge Canyon. In 1959, monitoring of the sanitary waste systems indicated the SWMU 01-001(o) waste line from Buildings J and

ML was contaminated. The sanitary waste line was removed in 1959 and disposed of at MDA G. During the 1974 to 1976 Ahlquist radiological survey conducted at SWMU 01-001(o), results of the survey indicated a portion of the waste line remained in place; the remaining waste line was subsequently removed and disposed of at MDA G (Ahlquist et al. 1977, 005710). Currently, the locations of the former waste line run across Loma Vista Drive and under a Los Arboles condominium building.

G-2.1.8 SWMU 01-001(s2)

SWMU 01-001(s2) is the portion of the western sanitary waste line (WSWL) located west of the former LA Inn property [SWMU 01-001(s1)] and west and south of the Hutton Team, LLC property [SWMU 01-001(s3)] at former TA-01. The WSWL consisted of vitrified clay pipe (VCP) and served former buildings A and B; former boiler house 2; and former buildings C, D, G, M, V, and Sigma. The buildings that were served by former SWMU 01-001(s) housed most of the plutonium and uranium processing and production operations in the early days of the Laboratory. Building A housed administrative offices. Building B had administrative offices and electronic and metallurgical laboratories; small amounts of radionuclide foils were stored in a concrete vault in the building. Boiler house 2 supplied steam to TA-01 buildings. Building C housed a uranium machine shop and other machining (e.g., graphite machining) operations; before its removal in 1964, building C was found to be free of radioactive contamination, except for the concrete building pad, which was removed to an unspecified MDA. Building D was used to process plutonium. Building G housed the Sigma Pile, a small pile of graphite and uranium; leak-testing of radium sources was also performed in building G. In 1959, the building G structure was found to be uncontaminated and was removed. The concrete floor was found to be slightly contaminated with radioactivity and, along with drainlines, was taken to an unspecified MDA. Building M was used to process and recover enriched uranium. Building V contained offices and a toolmaker's shop; it was the original machine shop for machining uranium and beryllium and for dry-grinding boron at TA-01. The Sigma Building was used for machining radionuclides for casting and powder metallurgy. Former SWMU 01-001(s) exited from building D, ran parallel to most of the main industrial waste line [SWMUs 01-002(a1)-00 and 01-002(a2)-00], and passed near the southwest corner of building C. It then proceeded west along the former Finch Street and turned north between buildings T-221 and T-225 [SWMU 01-001(s2)]. This sanitary waste line connected to a septic tank [SWMU 00-030(g)], which discharged into Acid Canyon. The portion of the WSWL leading from building C to the east end of the eastern building of the Trinity Village apartments was removed in the 1960s. The grading plan and the building foundation plan for Trinity Village indicated that the sanitary line would have been removed beneath the central and western Trinity Village buildings before construction. However, the section of drainline beneath the eastern Trinity Village building may still be in place.

SWMU 01-001(s2) was originally part of former SWMU 01-001(s), which was split into SWMUs 01-001(s1) and 01-001(s2) in a request for modification of the Laboratory's Hazardous Waste Facility Permit approved by NMED on November 9, 2016 (LANL 2016, 601921). The Laboratory proposed to split SWMU 01-001(s) into two newly designated SWMUs because each component of the SWMU is located on property owned by different entities. SWMU 01-001(s2) was subsequently split into SWMUs 01 001(s2) and 01-001(s3) in a request for modification of the Laboratory's Hazardous Waste Facility Permit approved by NMED on May 24, 2017 (LANL 2017, 602346; NMED 2017, 602409). The Laboratory proposed to split SWMU 01-001(s2) into two newly designated SWMUs because each component of the SWMU is located on property owned by different entities.

G-2.1.9 SWMU 01-002(a2)-00

SWMU 01-002(a2)-00 consists of the majority of a former industrial waste line [former SWMU 01-002(a)-00] located in the southern and western portion of former TA-01. SWMU 01-002(a2)-00 includes all sections of the former industrial waste line located outside the former LA Inn property. SWMU 01-002(a2)-00 includes the area around former boiler house 2; former buildings D, H, J-2, M, ML, Q, and Sigma; and several properties north of Trinity Drive extending to Canyon Road (near the location of former TA-45). These former buildings were the sources of major process discharges from former TA-01. From 1943 to 1951, chemical and radioactive process wastes flowed through this section of waste line and were ultimately discharged to Acid Canyon at the outfall near former TA-45 [SWMU 01-002(b)--00]. Boiler house 2 supplied steam for TA-01. Building D was used to process plutonium. Building H was used for source preparation of polonium-210. Building J-2 was used for radiochemistry work. Building M was used to recover enriched uranium-235. Building ML was a medical laboratory. Building Q was used to calibrate laboratory equipment using radium-226 as a check source. Sigma Building was used for machining radionuclides for casting and powder metallurgy. The former TA-01 industrial waste line [former SWMU 01-002(a)-00] consisted of two sections: the main industrial waste line south of Trinity Drive ran from former building D, and the western industrial waste line ran from former building J-2 to its junction with the main industrial waste line outside the former TA-01 boundary. From the junction, the line ran north as a single unit. From 1943 to 1951 the line discharged untreated effluent into Acid Canyon. When the former TA-45 waste treatment facility was built at the disposal line outfall in 1951, liquid waste conveyed by the line was treated at the former TA-45 plant before disposal to the canyon. During the Ahlquist radiological survey conducted in 1975 and 1976, the former SWMU 01-002(a)-00 industrial waste line in former TA-01 [including new SWMU 01-002(a2)-00] was completely removed along with a substantial amount of contaminated soil associated with the industrial waste line. Areas along the western industrial-waste line that were remediated by excavation and disposal in 1976 are designated as SWMU 01-007(j). In 1985, the last remnants of the industrial waste line between former TA-01 and the Acid Canyon outfall near former TA-45 were removed. Currently, the location of SWMU 01-002(a2)-00 is developed.

SWMU 01-002(a2)-00 was originally part of SWMU 01-002(a)-00, which was split into SWMUs 01-002(a1)-00 and 01-002(a2)-00 in a request for modification of the Laboratory’s Hazardous Waste Facility Permit approved by NMED on November 9, 2016 (LANL 2016, 601921). The Laboratory proposed to split SWMU 01-002(a)-00 into two newly designated SWMUs because each component of the SWMU is located on property owned by different entities.

G-2.1.10 SWMU 01-003(a)

SWMU 01-003(a) is the inactive Bailey Bridge landfill located at the head of Bailey Bridge Canyon at former TA-01. Demolition debris from former TA-01 structures was placed on the hillsides in the drainage at the head of Bailey Bridge Canyon between 1959 and 1978. The area measured approximately 200 ft x 100 ft x 100 ft deep. A September 1964 Zia Company memorandum regarding disposal of former TA-01 debris from demolition activities specified that concrete walls and flooring from the former Sigma Building (structure 01-56) with radioactivity levels below 2500 cpm of surface alpha contamination were to be broken up and disposed of in Bailey Bridge Canyon; the disposed concrete was covered with 4 ft of earthen fill (Hill 1964, 004821). Demolition debris with less than 2500 cpm surface alpha contamination from several other buildings (the D-5 vault [01-11], HT [01-29], warehouse 19 [01-103], and the sheet metal shop [structure 01-104]) located in the western portion of former TA- 01 was also disposed of in Bailey Bridge Canyon and covered with soil (Ahlquist et al. 1977, 005710; DOE 1987, 008663). Additional fill was placed over the landfill and the area regraded before the area was developed for residential housing. As a result of all the debris and fill placed at the head of Bailey Bridge Canyon, the canyon edge was extending to the south by approximately 100 ft. The mesa-top portion of SWMU 01-003(a) is currently under pavement and one building of the Los Arboles townhouses. The area downslope of the landfill is undeveloped DOE land.

G-2.1.11 AOC 01-003(b2)

AOC 01-003(b2) is the primary portion of a suspected surface disposal site [former AOC 01-003(b)], reported to be located below the north rim of Los Alamos Canyon approximately 450 ft east of Bailey Bridge Canyon. AOC 01-003(b2) includes all of former AOC 01-003(b) except the northeast area now designated as AOC 01-003(b1) located within the southwest corner of the former LA Inn property. Evidence of the reported disposal area was not observed during several site visits conducted between the late 1980s and late 1990s (LANL 1990, 007511, p. 1-003). Several pieces of metal piping were found, a few objects were found scattered over more than an acre on the hillside, and the portable beta/gamma instruments used to screen each object registered only background radiation. Currently, the location of the area now designated as AOC 01-003(b2) is undeveloped.

AOC 01-003(b2) was originally part of AOC 01-003(b), which was split into AOCs 01-003(b1) and 01-003(b2) in a request for modification of the Laboratory's Hazardous Waste Facility Permit approved by NMED on November 9, 2016 (LANL 2016, 601921). The Laboratory proposed to split AOC 01-003(b) into two newly designated AOCs because each component of the AOC is located on property owned by different entities.

G-2.1.12 SWMU 01-003(d)

SWMU 01-003(d), also known as Can Dump Site, was an area used for the surface disposal of empty solvent and paint cans during Zia Company operations (paint, carpentry, furniture repair, and sign shops) at former TA-01. The former Zia Company operated several warehouses on the mesa top between Trinity Drive and Los Alamos Canyon from the early 1940s to the late 1950s in support of former TA-01 operations. The Zia Company warehouses formerly located in this area were used as paint, carpentry, furniture repair, and sign shops and were likely the source of the waste at the former Can Dump Site. No radioactive materials were handled in these warehouses because they were outside the TA-01 security fence. SWMU 01-003(d) is located on the undeveloped hillside of Los Alamos Canyon south of the current CenturyLink communications building and Trinity Drive (LANL 1990, 007511). Currently, the area is located on undeveloped DOE land.

G-2.1.13 SWMU 01-006(a)

SWMU 01-006(a) consists of a former drainline and outfall that served cooling tower 80 (former structure 01-80) at former TA-01. The drainline and outfall were located on the east side of the cooling tower and south of X Building (former structure 01-79) near the north rim of Los Alamos Canyon. Cooling tower 80 was installed in 1944 and removed in 1954; the drainline was left in place. Biocides containing chromium may have been added to the cooling tower as was standard practice at the time. Currently, the location of the former drainline is under one of the Los Arboles condominium buildings. Although no record can be found of the removal of the drainline, it was likely removed during the construction of the residential building.

G-2.1.14 AOC 01-006(e)

AOC 01-006(e) consists of two drainlines and two outfalls that discharged to Ashley Pond. One drainline originated at building P (former building 01-46); the other drainline served the cleaning plant. Building P was used for personnel offices, and no radioactive materials or hazardous chemicals except toluene were used in the building. Cleaning solvents were probably used at the cleaning plant. The building P drainline was a 4-in.-diameter pipe that extended northeast from the building for approximately 100 ft underground to the southwest side of the pond. The drainline from the cleaning plant originated at the northwest corner of the building and extended underground to the southeast side of the pond. The cleaning plant was replaced by a parking lot in 1959, and the location of the former cleaning plant is now under Trinity Drive (LANL 1992, 043454, pp. 6-46–6-47). Currently, the locations of former pipelines are either landscaped or under pavement. The site is currently owned and operated by Los Alamos County.

G-2.1.15 SWMU 01-007(c)

SWMU 01-007(c) is an area of potential shallow subsurface radioactive contamination north and west of former D Building (former building 01-6). Plutonium contamination was discovered during the 1974–1976 Ahlquist radiological survey conducted at SWMU 01-007(c) (Ahlquist et al. 1977, 005710, pp. 11, 70–77). Approximately 1300 m^3 of soil and remaining sections of a clay-tile waste line from former D Building was excavated and disposed of at an unspecified location (Ahlquist et al. 1977, 005710, p. 40). The clay-tile waste line was a portion of SWMU 01-001(s). Currently, the location of SWMU 01-007(c) is under pavement and residential buildings on private property or Los Alamos County streets.

G-2.1.16 SWMUs 03-038(a,b)

SWMU 03-038(a) is the location of a former acid-neutralizing and pumping building (former building 03-700) located on DOE property near the southwest end of Omega Bridge on the mesa top near the south rim of Los Alamos Canyon in TA-03. The building was constructed in 1952 and consisted of a 16-ft x 22-ft x 11-ft concrete-block pump house and two 14-ft x 22-ft x 14-ft concrete underground tanks. The pumping building was the central collection point for industrial wastes from the Chemical and Metallurgical Research Building (building 03-29), the Sigma Building (building 03-66), and other Laboratory buildings. Once collected, the industrial waste was pumped from the storage tanks into a waste line (line 167, SWMU 00-017) and transferred to the TA-50 radioactive liquid waste treatment facility (RLWTF). In 1975 and 1976, the areas around building 03-700 and structure 03-738 [SWMU 03-038(b)] were remediated by the Zia Company after elevated gross alpha contamination was discovered near building 03-700. Soil was tested for radionuclides; one-third of the 72 samples taken from the west, south, and east sides of the building and structure 03-738 were positive for gross-alpha. Soil was excavated around building 03-700 and structure 03-738 before the samples were collected. No leaks were discovered from the SWMU 03-038(a) or SWMU 03-038(b) tanks. Building 03-700 and associated sections of inlet and outlet waste lines, the pump station, the underground concrete tanks, and structure 03-738 were removed and disposed of at TA-54 in 1981 and 1982 as part of the Laboratory's 1981–1986 Radioactive Liquid Waste Lines Removal Project (Elder et al. 1986, 006666, p. 41). Screening data for samples collected from the tank excavations confirmed none of the tanks had ever leaked. Building 03-700, structure 03-738, and associated sections of inlet and outlet waste lines, the pump station, and the underground concrete tanks were removed and disposed of at TA-54.

G-2.1.17 SWMU 03-055(c)

SWMU 03-055(c) is an outfall and associated storm drain located north of the fire station (building 03-41) in the northeast corner of TA-03. Storm water is channeled toward Los Alamos Canyon through a galvanized corrugated metal pipe (CMP) to the SWMU 03-055(c) outfall. From the early 1960s until 1991, floor drains in the fire station were tied into the SWMU 03-055(c) storm drain. In 1992, the fire station floor drains were connected to the TA-03 sanitary sewer system. Currently, the storm drain collects and channels only storm water runoff from parking lots located in the northern portion of TA-03 to the SWMU 03-055(c) outfall. The site is currently an undeveloped wooded area on DOE property.

G-2.1.18 SWMU 32-002(b2)

Former SWMU 32-002(b2) is part of a former septic system that served former buildings 32-01 and 32-02. SWMU 32-002(b2) is the portion of the former septic system located on property currently owned by DOE. The remainder of the septic system is located on property owned by Los Alamos Public Schools and is designated as SWMU 32-002(b1). The septic system was installed directly northwest and slightly upgradient of the SWMU 32-002(a) septic tank, near the edge of Los Alamos Canyon. This system was installed when the SWMU 32-002(a) septic system could no longer meet the usage requirement of a laboratory building (former building 32-01) and consisted of a reinforced concrete tank (former structure 32-08) measuring 9 ft x 5 ft x 6 ft with an outlet drainline that discharged to an outfall at the edge of Los Alamos Canyon. The influent line from the SWMU 32-002(a) septic system was diverted to the former SWMU 32-002(b) septic system, which also received effluent from former building 32-02, the medical research annex. The outfall was located at the edge of Los Alamos Canyon, approximately 15 ft southwest of the SWMU 32-002(a) outfall. The septic tank was removed in 1988 (LANL 1990, 007513), and the influent drainline was removed in 1996 (LANL 1996, 059178, pp. 12, 71). Research activities in former building 32-01 involved radionuclides. Inorganic and organic chemicals may also have been used. Because no industrial waste line served former TA-32, it is possible chemical and radioactive wastes may have been disposed of in sinks and drains connected to the former SWMU 32-002(b2) septic system.

SWMU 32-002(b2) was part of former SWMU 32-002(b), which was split into two new SWMUs [32-002(b1) and 32-002(b2)] in December 2012 to expedite completion of corrective actions on the portion of the site owned by the Los Alamos Public Schools (DOE 2012, 232356).

G-2.1.19 AOC C-43-001

AOC C-43-001 is a storm drain system and outfall that discharges to Los Alamos Canyon in TA-43. The storm drain system collects storm water runoff from the HRL (building 43-1) loading dock and also functions as the overflow for a sanitary lift station (structure 43-10). The overflow line is an 8-in.-diameter VCP that extends from structure 43-10 130 ft south to a manhole. A 12-in.-diameter CMP, which receives storm water from two storm drains and any effluent from the overflow, flows southwest for 160 ft and discharges into Los Alamos Canyon south of the HRL. The sanitary waste lines for the HRL [SWMU 43-001(a1) and AOC 43-001(a2)] may have become clogged from time-to-time, causing an overflow at the lift station (structure 43-10). Any sanitary waste carried through the sewer lines could have discharged to the storm drain system. Although no documentation was found to confirm any routine releases to the storm drains, the outfall may have received radioactive, nonsanitary cooling water. Currently, the outfall is located on the undeveloped north slope of Los Alamos Canyon on DOE property.

G-2.1.20 SWMU 61-007

SWMU 61-007 is an area of subsurface PCB-contaminated soil discovered along the south side of East Jemez Road in 1989. During the 1950s and 1960s, the south side of East Jemez Road was previously known as “contractors’ alley,” when various private contractors had storage areas along this portion of the road. The location of SWMU 61-007 is thought to be the former location of a transformer-staging area used by an electrical contracting firm that once operated in the vicinity. The firm is no longer in existence, and its years of operation are not known (LANL 1990, 007511). In 1989, workers detected an organic odor in the spoils from a “pothole” excavated to locate buried utilities ahead of trenching operations for a new sewer line along the south side of East Jemez Road, approximately 0.75 mi east of the intersection of East Jemez Road and Diamond Drive. A chemical analysis of the soil determined that the soil was contaminated with PCBs and 1,2,4-trichlorobenzene (Nylander 1989, 062843). The maximum PCB detected concentration was 4300 ppm. The Laboratory proceeded to characterize and remediate the PCB contamination in accordance with Toxic Substances Control Act (TSCA) requirements. Ten locations, 6 ft apart west and east of the original “pothole” along the route of the new sewer line, were augured and sampled to determine the PCB contamination profile along the path of the utility trench. PCB contamination was detected in five of the auger hole locations at concentrations ranging from 1 ppm to 3800 ppm. Contaminated soil was excavated to between 4 and 5 ft below ground surface (bgs) at four of the auger hole locations and to a depth of 17 ft bgs at the “hot spot” location where the PCB concentration at the bottom of the excavation was 13.6 ppm. The excavation was backfilled with clean fill and the PCB waste was disposed of at the chemical waste landfill at TA-54. Currently, the site is under a dirt road/parking area on the south side of East Jemez Road and remains vacant. The Los Alamos County municipal landfill is located south of SWMU 61-007.

G-2.2 Investigation Sampling

The final data set used to identify chemicals of potential concern (COPCs) for the Upper Los Alamos Canyon Aggregate Area sites and used in this appendix to evaluate the potential risks to human health and the environment are the qualified analytical results from the investigations spanning the years 1996, 1998–1999, and 2007–2017. Only those data determined to be of decision-level quality following the data quality assessment (Appendix E) are included in the final data set evaluated in this appendix.

G-2.3 Determination of COPCs

Section 5.0 of the investigation report summarizes the COPC selection process. Only COPCs detected above background (inorganic chemicals and naturally occurring radionuclides); with detection limits greater than background values (BVs) (inorganic chemicals); and detected organic chemicals, inorganic chemicals with no BVs, and fallout radionuclides were retained. The industrial scenario, the recreational scenario, and the ecological screening used data for samples collected from 0.0 to 1.0 ft, 0.0 to 1.0 ft, and 0.0 to 5.0 ft bgs, respectively. The residential and construction worker scenarios used data for samples collected from 0.0 to 10.0 ft bgs. However, sampling depths often overlapped because of multiple investigations; therefore, samples with a starting depth less than the lower bound of the interval were included in the risk-screening assessments for a given scenario as appropriate.

Tables G-2.3-1 to G-2.3-53 summarize the COPCs evaluated for potential risk for each of the sites in the Upper Los Alamos Canyon Aggregate Area. Some of the COPCs identified in this report may not be evaluated for potential risk under one or more scenarios because they were not within the specified depth intervals associated with a given scenario.

G-3.0 CONCEPTUAL SITE MODEL

The sites investigated as part of the Upper Los Alamos Canyon Aggregate Area are classified according to four types of release mechanisms. The first type is industrial waste lines, sanitary waste lines, septic tanks, holding tanks, drainlines, and storm drains. The second type is potentially contaminated subsurface soil. The third type is outfalls to the hillsides. The fourth type is surface disposal areas and landfills. The primary mechanisms of release are related to historical contaminant sources summarized in the investigation work plan (LANL 2006, 091916).

The lack of saturated conditions in the source area restricts the vertical migration of contaminants. No zones of perched groundwater have been identified beneath Upper Los Alamos Canyon Aggregate Area.

G-3.1 Receptors and Exposure Pathways

The primary exposure pathway for human receptors is surface soil and subsurface soil/tuff that may be brought to the surface through intrusive activities. Migration of contamination to groundwater through the vadose zone is unlikely given the depth to groundwater (greater than 1000 ft bgs). Human receptors may be exposed through direct contact with soil or suspended particulates by ingestion, inhalation, dermal contact, and external irradiation pathways. Direct contact exposure pathways from subsurface contamination to human receptors are complete for the resident and the construction worker. The exposure pathways are the same as those for surface soil. Sources, exposure pathways, and receptors are shown in the conceptual site model (CSM) (Figure G-3.1-1).

The sites of the Upper Los Alamos Canyon Aggregate Area are in residential areas, on the slopes or bottoms of canyons, in the business areas of Los Alamos, or on Laboratory property. The sites provide potential habitat for ecological receptors, except where sites are covered with asphalt and buildings. For unpaved sites or areas of sites, exposure pathways are complete to surface soil and tuff for ecological receptors. Exposure is assessed across the site to a depth of 0–5 ft. Weathering of tuff is the only viable natural process that may result in the exposure of receptors to COPCs in tuff. However, because of the slow rate of weathering expected for tuff, exposure to COPCs in tuff is negligible, although it is included in the assessments. Exposure pathways to subsurface contamination below 5 ft are not complete unless contaminated soil or tuff were excavated and brought to the surface. The potential pathways are root uptake by plants, inhalation of vapors (burrowing animals only), inhalation of dust, dermal contact, incidental ingestion of soil, external irradiation, and food web transport. Surface water was not evaluated because of the lack of surface water features. Sources and exposure pathways are presented in the CSM (Figure G-3.1-1).

G-3.2 Environmental Fate and Transport

The evaluation of environmental fate addresses the chemical processes affecting the persistence of chemicals in the environment, and the evaluation of transport addresses the physical processes affecting mobility along a migration pathway. Migration into soil and tuff depends on precipitation or snowmelt, soil moisture content, depth of soil, soil hydraulic properties, and properties of the COPCs. Migration into and through tuff also depends on the unsaturated flow properties of the tuff and the presence of joints and fractures.

The most important factor with respect to the potential for COPCs to migrate to groundwater is the presence of saturated conditions. Downward migration in the vadose zone is also limited by a lack of hydrostatic pressure as well as the lack of a source for the continued release of contamination. Without sufficient moisture and a source, little or no potential migration of materials through the vadose zone to groundwater occurs.

Contamination at depth is addressed in the discussion of nature and extent in the Phase II investigation report. Results from the deepest samples collected at most sites showed either no detected concentrations of COPCs or low- to trace-level concentrations of only a few inorganic, radionuclide, and/or organic COPCs in tuff. The limited extent of contamination is related to the absence of the key factors that facilitate migration, as discussed above. Given how long the contamination has been present in the subsurface, the physical and chemicals properties of the COPCs, and the lack of saturated conditions, the potential for contaminant migration to groundwater is very low.

NMED guidance (NMED 2017, 602273) contains screening levels that consider the potential for contaminants in soil to result in groundwater contamination. These screening levels consider equilibrium partitioning of contaminants among solid, aqueous, and vapor phases and account for dilution and attenuation in groundwater through the use of dilution attenuation factors (DAFs). These DAF soil screening levels (SSLs) may be used to identify chemical concentrations in soil that have the potential to contaminate groundwater (EPA 1996, 059902). Screening contaminant concentrations in soil against these DAF SSLs does not, however, provide an indication of the potential for contaminants to migrate to groundwater. The assumptions used in the development of these DAF SSLs include an assumption of uniform contaminant concentrations from the contaminant source to the water table (i.e., it is assumed that migration to groundwater has already occurred). Furthermore, this assumption is inappropriate for cases such as Upper Los Alamos Canyon Aggregate Area where sampling has shown that contamination is vertically bounded near the surface and the distance from the surface to the water table is large. For these reasons, screening of contaminant concentrations in soil against the DAF SSLs was not performed.

The relevant release and transport processes of the COPCs are a function of chemical-specific properties that include the relationship between the physical form of the constituents and the nature of the constituent transport processes in the environment. Specific properties include the degree of saturation and the potential for ion exchange (barium and other inorganic chemicals) or sorption and the potential for natural bioremediation. The transport of volatile organic compounds (VOCs) occurs primarily in the vapor phase by diffusion or advection in subsurface air.

The primary release and transport mechanisms that may lead to the potential exposure of receptors in the Upper Los Alamos Canyon Aggregate Area include

- dissolution and/or particulate transport of surface contaminants from precipitation and runoff,
- airborne transport of contaminated surface soil or particulates,
- continued dissolution and advective/dispersive transport of chemical and radiological contaminants contained in subsurface soil and bedrock,
- biotic perturbation and/or translocation of contaminants in subsurface contaminated media, and
- uptake of contaminants from soil and water by biota.

Contaminant distributions at the sites indicate that after the initial deposition of contaminants from operational activities and historical remediation efforts, elevated levels of COPCs tend to remain concentrated in the vicinity of the original release points.

G-3.2.1 Inorganic Chemicals

In general, and particularly in a semiarid climate such as the Upper Los Alamos Canyon Aggregate Area, inorganic chemicals are not highly soluble or mobile in the environment. The primary physical and chemical factors that determine and describe the distribution of inorganic COPCs within the soil and tuff are the water solubility of the inorganic chemical and the soil-water partition coefficient (K_d). Other factors besides the K_d values, such as speciation in soil, oxidation/reduction potential (Eh), and pH, also play a role in the likelihood that inorganic chemicals will migrate. The K_d values provide a general assessment of the potential for migration through the subsurface; chemicals with higher K_d values are less likely to be mobile than those with lower K_d values. Inorganic chemicals with K_d values greater than 40 are very unlikely to migrate through soil towards the water table (Kincaid et al. 1998, 093270). Table G-3.2-1 presents the K_d values for the inorganic COPCs identified within the Upper Los Alamos Canyon Aggregate Area. Based on this criterion, the following COPCs have a low potential to mobilize and migrate through soil and the vadose zone: aluminum, antimony, barium, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, thallium, vanadium, and zinc. The K_d values for arsenic, copper, cyanide, hexavalent chromium, iron, selenium, and silver are less than 40 and may indicate a greater potential to mobilize and migrate through soil and the vadose zone beneath the sites.

It is important to note that other factors besides the K_d values (e.g., speciation in soil, Eh, pH, and soil mineralogy) also play significant roles in the likelihood that inorganic chemicals will migrate. The COPCs with K_d values less than 40 are discussed further below. Information about the fate and transport properties of inorganic chemicals was obtained from individual chemical profiles published by the Agency for Toxic Substances and Disease Registry (ATSDR) (ATSDR 1997, 056531, and http://www.atsdr.cdc.gov/toxpro2).

Arsenic may undergo a variety of reactions, including oxidation-reduction reactions, ligand exchange, precipitation, and biotransformation. Arsenic forms insoluble complexes with iron, aluminum, and magnesium oxides found in soil and in this form, arsenic is relatively immobile. However, under low pH and reducing conditions, arsenic can become soluble and may potentially leach into groundwater or result in runoff of arsenic into surface waters.

Copper movement in soil is determined by physical and chemical interactions with the soil components. Most copper deposited in soil will be strongly adsorbed and remains in the upper few centimeters of soil. Copper will adsorb to organic matter, carbonate minerals, clay minerals, or hydrous iron, and manganese oxides. In most temperate soil, pH, organic matter, and ionic strength of the soil solutions are the key factors affecting adsorption. Soil in the area is neutral to slightly alkaline, so the leaching of copper is not a concern at this site. Copper binds to soil much more strongly than other divalent cations, and the distribution of copper in the soil solution is less affected by pH than other metals. Copper is expected to be bound to the soil and move in the system by way of transport of soil particles by water as opposed to movement as dissolved species.

Cyanide tends to adsorb onto various natural media, including clay and sediment; however, sorption is insignificant relative to the potential for cyanide to volatilize and/or biodegrade. At soil surfaces, volatilization of hydrogen cyanide is a significant mechanism for cyanide loss. Cyanide at low concentrations in subsurface soil is likely to biodegrade under both aerobic and anaerobic conditions. Cyanide is present at the site in trace to low levels and is not expected to be mobile.

Chromium is a naturally occurring element found in rocks, animals, plants, and soil and in volcanic dust and gases. Chromium is present in the environment in several different forms. The most common forms are chromium(0); trivalent [or chromium(III)]; and hexavalent [or chromium(VI)]. Chromium(III) occurs naturally in the environment and is an essential nutrient required by the human body to promote the action of insulin in body tissues so that sugar, protein, and fat can be used by the body. Chromium(VI) and chromium(0) are generally produced by industrial processes. Chromium can attach strongly to soil and is therefore not very mobile. The movement of chromium in soil depends on the type and condition of the soil and other environmental factors. Organic matter in soil is expected to convert soluble chromate, chromium (VI), to insoluble chromium (III) oxide. The reduction of chromium (VI) to chromium (III) is facilitated by low pH.

Nitrate is highly soluble in water and may migrate with water molecules in saturated soil. As noted above, the subsurface material beneath the Upper Los Alamos Canyon Aggregate Area sites has low moisture content, which inhibits the mobility of nitrate as well as most other inorganic chemicals.

Perchlorate is somewhat soluble in water and may migrate with water molecules in saturated soil. As noted above, the subsurface material beneath the sites has low moisture content, which inhibits the mobility of perchlorate as well as most other inorganic chemicals.

Iron is naturally occurring in soil and tuff and may be relatively mobile under reducing conditions. Iron is sensitive to soil pH conditions, occurring in two oxidation states, iron(III), the insoluble oxidized form, and iron(II), the reduced soluble form. Most iron in well-drained neutral-to-alkaline soil is present as precipitates of iron(III) hydroxides and oxides. With time, these precipitates are mineralized and form various iron minerals, such as lepidcrocite, hematite, and goethite.

Selenium is not often found in the environment in its elemental form but is usually combined with sulfide minerals or with silver, copper, lead, and nickel minerals. In soil, pH and Eh are determining factors in the transport and partitioning of selenium. In soil with a pH of greater than 7.5, selenates, which have high solubility and a low tendency to adsorb onto soil particles, are the major selenium species and are very mobile. The soil pH at sites in the Upper Los Alamos Canyon Aggregate Area is neutral to slightly alkaline, indicating that selenium is not likely to migrate.

Silver sorbs onto soil and sediment and tends to form complexes with inorganic chemicals and humic substances in soil. Natural processes, such as the weathering of rock and the erosion of soil release silver to air and water. Organic matter complexes with silver and reduces its mobility. Silver compounds tend to leach from well-drained soil so that it may potentially migrate into the subsurface.

G-3.2.2 Organic Chemicals

Table G-3.2-2 presents the physical and chemical properties (organic carbon-water partition coefficient [K_{oc}], logarithm to the base 10 octanol/water partition coefficient [log K_{ow}], and solubility) of the organic COPCs identified within the Upper Los Alamos Canyon Aggregate Area. The physical and chemical properties of organic chemicals are important when evaluating their fate and transport. The following information illustrates some aspects of the fate and transport tendencies of the Upper Los Alamos Canyon Aggregate Area organic COPCs. The information is summarized from Ney (1995, 058210).

Water solubility may be the most important chemical characteristic used to assess mobility of organic chemicals. The higher the water solubility of a chemical, the more likely it is to be mobile and the less likely it is to accumulate, bioaccumulate, volatilize, or persist in the environment. A highly soluble chemical (water solubility greater than 1000 mg/L) is prone to biodegradation and metabolism that may detoxify the parent chemical. Several chemicals detected at sites in the Upper Los Alamos Canyon Aggregate Area have water solubilities greater than 1000 mg/L, including acetone, benzene, benzyl alcohol, bromomethane, 2-butanone, chloroform, 2-hexanone, methylene chloride, and vinyl chloride.

The lower the water solubility of a chemical, especially below 10 mg/L, the more likely it will be immobilized by adsorption. Chemicals with lower water solubilities are more likely to accumulate or bioaccumulate and persist in the environment, are slightly prone to biodegradation, and are metabolized in plants and animals. The chemicals identified as having water solubilities less than 10 mg/L are the polycyclic aromatic hydrocarbons (PAHs), PCBs, benzoic acid, bis(2-ethylhexyl)phthalate, butylbenzylphthalate, and dibenzofuran.

Vapor pressure is a characteristic used to evaluate the tendency of organic chemicals to volatize. Chemicals with vapor pressure greater than 0.01 mmHg are likely to volatilize and, therefore, concentrations at the site are reduced over time; vapors of these chemicals are more likely to travel toward the atmosphere and not migrate towards groundwater. Acetone, benzene, benzyl alcohol, bromomethane, 2-butanone, n-butylbenzene, sec-butylbenzene, chloroform, 1,2-dichlorobenzene, ethylbenzene, 2-hexanone, 4-isopropyltoluene, methylene chloride, 2-methylnaphthalene, naphthalene, 1-propylbenzene, styrene, toluene, trichlorofluoromethane, 1,2,4-trimethylbenzene, vinyl chloride, 1,2-xylene, and 1,3-xylene+1,4-xylene have vapor pressures greater than 0.01 mmHg.

Chemicals with vapor pressures less than 0.000001 mmHg are less likely to volatilize and, therefore, tend to remain immobile. Benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene have vapor pressures less than 0.000001 mmHg.

The K_{ow} is an indicator of a chemical's potential to bioaccumulate or bioconcentrate in the fatty tissues of living organisms. The unitless K_{ow} value is an indicator of water solubility, mobility, sorption, and bioaccumulation. The higher the K_{ow} above 1000, the greater the affinity the chemical has for bioaccumulation/bioconcentration in the food chain, the greater the potential for sorption in the soil, and the lower the mobility (Ney 1995, 058210).

No chemicals have a K_{ow} greater than 1000. A K_{ow} of less than 500 indicates high water solubility, mobility, little to no affinity for bioaccumulation, and degradability by microbes, plants, and animals. Acenaphthene, acetone, anthracene, Aroclor-1254, Aroclor-1260, benzene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, benzoic acid, benzyl alcohol, bis(2-ethylhexyl)phthalate, bromomethane, 2-butanone, n-butylbenzene, sec-butylbenzene, butylbenzylphthalate, chloroform, chrysene, di-n-butylphthalate, dibenz(a,h)anthracene, dibenzofuran, 1,2-dichlorobenzene, ethylbenzene, fluoranthene, fluorene, 2-hexanone, indeno(1,2,3-cd)pyrene, 4-isopropyltoluene, methylene chloride, 2-methylnaphthalene, naphthalene, pentachlorophenol, phenanthrene, 1-propylbenzene, pyrene, styrene, toluene, trichlorofluoromethane, 1,2,4-trimethylbenzene, vinyl chloride, 1,2-xylene, and 1,3-xylene+1,4-xylene all have a K_{ow} much less than 500.

The K_{oc} measures the tendency of a chemical to adsorb to organic carbon in soil. K_{oc} values above 500 cm^3/g indicate a strong tendency to adsorb to soil, leading to low mobility (NMED 2017, 602273). Most organic chemicals detected have K_{oc} values above 500 cm^3/g, indicating a very low potential to migrate toward groundwater. The organic chemicals with K_{oc} values less than 500 cm^3/g include acetone, benzene, benzoic acid, benzyl alcohol, bromomethane, 2-butanone, chloroform, 1,2-dichlorobenzene, ethylbenzene, 2-hexanone, methylene chloride, styrene, toluene, trichloroethane, trichlorofluoromethane, vinyl chloride, 1,2-xylene, and 1,3-xylene+1,4-xylene.

The PAHs, PCBs, and bis(2-ethylhexyl)phthalate are the least mobile and the most likely to bioaccumulate. Acetone, 2-hexanone, methylene chloride, and toluene are more soluble and volatile and are more likely to travel toward the atmosphere and not migrate toward groundwater. Because the organic chemicals detected were at low concentrations and extent is defined, they are not likely to migrate to groundwater.

G-3.2.3 Radionuclides

Radionuclides are generally not highly soluble or mobile in the environment, particularly in the semiarid climate of the Laboratory. The physical and chemical factors that determine the distribution of radionuclides within soil and tuff are the K_d, the pH of the soil and other soil characteristics (e.g., sand or clay content), and the Eh. The interaction of these factors is complex, but K_d values provide a general assessment of the potential for migration through the subsurface: chemicals with higher K_d values are less likely to be mobile than those with lower values. Radionuclides with K_d values greater than 40 are very unlikely to migrate through soil towards the water table (Kincaid et al. 1998, 093270).

Table G-3.2-3 gives physical and chemical properties of the radionuclide COPCs identified at sites in the Upper Los Alamos Canyon Aggregate Area. Based on K_d values, americium-241, cesium-134, cesium-137, plutonium-238, plutonium-239 and plutonium-239/240 have a very low potential to migrate towards groundwater at the sites in the Upper Los Alamos Canyon Aggregate Area. The K_d values for strontium-90, tritium, uranium-234, uranium-235/236, and uranium-238 are less than 40 and indicate a potential to migrate towards groundwater.

Strontium-90 is relatively immobile in the subsurface as indicated by the K_d value (Table G-3.2-3). A portion of stable and radioactive strontium in soil dissolves in water, so there is the potential to move deeper into the subsurface.

Tritium's initial behavior in the environment is determined by the source. If it is released as a gas or vapor to the atmosphere, substantial dispersion can be expected, and the rapidity of deposition is dependent on climatic factors. If tritium is released in liquid form, it is diluted in surface water and is subject to physical dispersion, percolation, and evaporation (Whicker and Schultz 1982, 058209, p. 147). Tritium concentrations in the subsurface at the area of elevated radioactivity are low (generally <1 pCi/g), indicating the area of elevated radioactivity is not a significant source of tritium, although this radionuclide is relatively mobile. Because tritium migrates in association with moisture, the low moisture content of the subsurface limits the potential for tritium to migrate to groundwater.

Uranium is a natural and commonly occurring radioactive element that is present in nearly all rock and soil. The mobility of uranium in soil and its vertical transport to groundwater depend on properties of the soil such as pH, Eh, concentration of complexing anions, porosity of the soil, soil-particle size, and sorption properties as well as the amount of water available. In general, the actinide nuclides form comparatively insoluble compounds in the environment and therefore are not considered biologically mobile. The actinides are transported in ecosystems mainly by physical and sometimes chemical processes. They tend to attach, sometimes strongly, to surfaces and tend to accumulate in soil and sediment, which ultimately serve as strong reservoirs. Subsequent movement is largely associated with geological processes such as erosion and sometimes leaching.

G-3.3 Exposure Point Concentration Calculations

The exposure point concentrations (EPCs) represent upper-bound concentrations of COPCs. For comparison with risk-screening levels, the upper confidence limit (UCL) of the arithmetic mean was calculated when possible and used as the EPC. The UCLs were calculated using all available decision-level data within the depth range of interest. If an appropriate UCL of the mean could not be calculated or if the UCL exceeded the maximum concentration, the maximum detected concentration of the COPC was used as the EPC (maximum detection limits were used as the EPCs for some inorganic COPCs). The summary statistics, including the EPC for each COPC for the human health and the ecological risk-screening assessments and the distribution used for the calculation, are presented in Tables G-2.3-1 to G-2.3-53.

Calculation of UCLs of the mean concentrations was done using the EPA ProUCL 5.1.002 software (EPA 2015, 601725), which is based on EPA guidance (EPA 2002, 085640). Consistent with the ProUCL v5.1 Technical Guide, a minimum of eight samples and five detections are needed to calculate UCLs (EPA 2015, 601724). The ProUCL program calculates 95%, 97.5%, and 99% UCLs and recommends a distribution and UCL. The 95% UCL for the recommended calculation method was used as the EPC. The ProUCL software performs distributional tests on the data set for each COPC and calculates the most appropriate UCL based on the distribution of the data set. Environmental data may have a normal, lognormal, or gamma distribution but are often nonparametric (no definable shape to the distribution). The ProUCL documentation strongly recommends against using the maximum detected concentration for the EPC. The maximum detected concentration was used to represent the EPC for COPCs only when there were too few detections to calculate a UCL. Input and output data files for ProUCL calculations are provided on CD as Attachment G-1.

G-4.0 HUMAN HEALTH RISK-SCREENING EVALUATIONS

The human health risk-screening assessments were conducted for sites in the Upper Los Alamos Canyon Aggregate Area. All sites were screened for the residential and construction worker scenarios using data from 0.0 to 10.0 ft bgs. Sites were also screened for the industrial and recreational (where appropriate) scenario using data from 0.0 to 1.0 ft bgs, where available. The human health risk-screening assessments compared either the 95% UCL of the mean concentration, the maximum detected concentration, or the maximum detection limit of each COPC with SSLs for chemicals and screening action levels (SALs) for radionuclides.

G-4.1 Human Health SSLs and SALs

Human health risk-screening assessments were conducted using SSLs for the industrial, construction worker, and residential scenarios obtained from NMED guidance (NMED 2017, 602273). The NMED SSLs are based on a target hazard quotient (HQ) of 1 and a target cancer risk of 1×10^{-5} (NMED 2017, 602273). If SSLs were not available from NMED guidance, the EPA regional screening tables (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2018) were used. EPA regional screening levels are not available for construction workers; therefore, when regional screening levels were used for a COPC, the construction worker SSLs were calculated using toxicity values from EPA regional screening (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2018) and exposure parameters from NMED guidance (NMED 2017, 602273). The EPA regional screening levels for carcinogens were multiplied by 10 to adjust from a 10^{-6} cancer risk level to the NMED target cancer risk level of 10^{-5}. Recreational SSLs were obtained from Laboratory guidance (LANL 2017, 602581) and are based on the same target risk levels as the NMED SSLs. Surrogate chemicals were also used for some COPCs without an SSL based on structural similarity or because the COPC is a breakdown product (NMED 2003, 081172). Exposure parameters used to calculate the industrial, recreational, construction worker, and residential SSLs are presented in Table G-4.1-1.

Radionuclide SALs were used for comparison with radionuclide COPC EPCs and were derived using the RESRAD model, Version 7.0 (LANL 2015, 600929). The SALs are based on a 25-mrem/yr dose as authorized by DOE Order 458.1. Exposure parameters used to calculate the SALs are presented in Tables G-4.1-2, G-4.1-3, and G-4.1-4.

G-4.2 Results of Human Health Screening Evaluation

The EPC of each COPC was compared with the SSLs for the industrial, recreational, construction worker, and residential scenarios, as appropriate. For carcinogenic chemicals, the EPCs were divided by the SSL and multiplied by 1×10^{-5}. The sum of the carcinogenic risks was compared with the NMED target cancer risk level of 1×10^{-5}. For noncarcinogenic chemicals, an HQ was generated for each COPC by dividing the EPC by the SSL. The HQs were summed to generate a hazard index (HI). The HI was compared with the NMED target HI of 1. The radionuclide EPCs were divided by the SAL and multiplied by 25 mrem/yr. The total doses were compared with the DOE target level of 25 mrem/yr, as authorized by DOE Order 458.1. The results are presented in Tables G-4.2-1 to G-4.2-156 and are described below for each SWMU and AOC evaluated.

G-4.2.1 SWMU 00-017

The results of the risk-screening assessment for the industrial scenario are presented in Tables G-4.2-1, G-4.2-2, and G-4.2-3. The total excess cancer risk for the industrial worker scenario is 2×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.4, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.004 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-4, G-4.2-5, and G-4.2-6. The total excess cancer risk for the construction worker scenario is 2×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 1, which is equivalent to the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.5 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-7, G-4.2-8, and G-4.2-9. The total excess cancer risk for the residential scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 4, which is greater than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 2 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

G-4.2.2 AOC C-00-044

The results of the risk-screening assessment for the industrial scenario are presented in Tables G-4.2-10 and G-4.2-11. The total excess cancer risk for the industrial scenario is 6×10^{-9}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–1.0 ft depth interval.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-12 and G-4.2-13. The total excess cancer risk for the construction worker scenario is 2×10^{-9}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-10.0 ft depth interval.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-14 and G-4.2-15. The total excess cancer risk for the residential scenario is 3×10^{-8}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-10.0 ft depth interval.

G-4.2.3 SWMU 01-001(a)

The results of the risk-screening assessment for the industrial scenario are presented in Tables G-4.2-16 and G-4.2-17. The total excess cancer risk for the industrial scenario is 2×10^{-8}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.004, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–1.0 ft depth interval.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-18 and G-4.2-19. The total excess cancer risk for the construction worker scenario is 3×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–10.0 ft depth interval.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-20 and G-4.2-21. The total excess cancer risk for the residential scenario is 5×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-10.0 ft depth interval.

G-4.2.4 SWMU 01-001(d3)

The results of the risk-screening assessment for the industrial scenario are presented in Tables G-4.2-22, G-4.2-23, and G-4.2-24. The total excess cancer risk for the industrial scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 6 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-25, G-4.2-26, and G-4.2-27. The total excess cancer risk for the construction worker scenario is 5×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 1, which is equivalent to the NMED target HI of 1 (NMED 2017, 602273). The total dose is17 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-28, G-4.2-29, and G-4.2-30. The total excess cancer risk for the residential scenario is 8×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 2, which is greater than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 44 mrem/yr, which is greater than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

G-4.2.5 SWMU 01-001(f)

The results of the risk-screening assessment for the industrial scenario are presented in Tables G-4.2-31, G-4.2-32, and G-4.2-33. The total excess cancer risk for the industrial scenario is 4×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.7 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the recreational scenario are presented in Tables G-4.2-34, G-4.2-35, and G-4.2-36. The total excess cancer risk for the recreational scenario is 4×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The recreational HI is 0.5, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.2 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-37, G-4.2-38, and G-4.2-39. The total excess cancer risk for the construction worker scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 2, which is greater than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.9 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-40, G-4.2-41, and G-4.2-42. The total excess cancer risk for the residential scenario is 5×10^{-5}, which is greater than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 5, which is greater than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 3 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

G-4.2.6 SWMU 01-001(g)

The results of the risk-screening assessment for the industrial scenario are presented in Tables G-4.2-43, G-4.2-44, and G-4.2-45. The total excess cancer risk for the industrial scenario is 2×10^{-8}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.000006, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.4 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-46, G-4.2-47, and G-4.2-48. The total excess cancer risk for the construction worker scenario is 4×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 3 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-49, G-4.2-50, and G-4.2-51. The total excess cancer risk for the residential scenario is 2×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.006, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 7 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

G-4.2.7 SWMU 01-001(o)

The results of the risk-screening assessment for the industrial scenario are presented in Tables G-4.2-52, G-4.2-53, and G-4.2-54. The total excess cancer risk for the industrial scenario is 2×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.3 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-55, G-4.2-56, and G-4.2-57. The total excess cancer risk for the construction worker scenario is 4×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.3 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-58, G-4.2-59, and G-4.2-60. The total excess cancer risk for the residential scenario is 4×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.7, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 1 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

G-4.2.8 SWMU 01-001(s2)

The samples at SWMU 01-001(s2) were collected from depths greater than 0.0 to 1.0 ft bgs; therefore, no complete exposure pathways exist for the industrial scenario.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-61, G-4.2-62, and G-4.2-63. The total excess cancer risk for the construction worker scenario is 3×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.07 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-64, G-4.2-65, and G-4.2-66. The total excess cancer risk for the residential scenario is 4×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.4, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.2 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

G-4.2.9 SWMU 01-002(a2)-00

The results of the risk-screening assessment for the industrial scenario are presented in Tables G-4.2-67, G-4.2-68, and G-4.2-69. The total excess cancer risk for the industrial scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.003, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.04 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-70, G-4.2-71, and G-4.2-72. The total excess cancer risk for the construction worker scenario is 5×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.07 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-73, G-4.2-74, and G-4.2-75. The total excess cancer risk for the residential scenario is 5×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.4, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.2 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

G-4.2.10 SWMU 01-003(a)

The results of the risk-screening assessment for the industrial scenario are presented in Tables G-4.2-76, G-4.2-77, and G-4.2-78. The total excess cancer risk for the industrial scenario is 9×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.09 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-79, G-4.2-80, and G-4.2-81. The total excess cancer risk for the construction worker scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 1, which is equivalent to the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.5 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-82, G-4.2-83, and G-4.2-84. The total excess cancer risk for the residential scenario is 9×10^{-5}, which is greater than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 3, which is greater than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 1 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

G-4.2.11 AOC 01-003(b2)

The results of the risk-screening assessment for the industrial scenario are presented in Tables G-4.2-85, G-4.2-86, and G-4.2-87. The total excess cancer risk for the industrial scenario is 5×10^{-11}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.04, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.04 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-88, G-4.2-89, and G-4.2-90. The total excess cancer risk for the construction worker scenario is 2×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.2 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-91, G-4.2-92, and G-4.2-93. The total excess cancer risk for the residential scenario is 7×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.4 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

G-4.2.12 SWMU 01-003(d)

The results of the risk-screening assessment for the industrial scenario are presented in Tables G-4.2-94, G-4.2-95, and G-4.2-96. The total excess cancer risk for the industrial scenario is 4×10^{-8}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.08, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.01 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-97, G-4.2-98, and G-4.2-99. The total excess cancer risk for the construction worker scenario is 1×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.6, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.03 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-100, G-4.2-101, and G-4.2-102. The total excess cancer risk for the residential scenario is 8×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 3, which is greater than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.07 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

G-4.2.13 SWMU 01-006(a)

The results of the risk-screening assessment for the industrial scenario are presented in Tables G-4.2-103, G-4.2-104, and G-4.2-105. The total excess cancer risk for the industrial scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.05, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.5 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-106, G-4.2-107, and G-4.2-108. The total excess cancer risk for the construction worker scenario is 3×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 1 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-109, G-4.2-110, and G-4.2-111. The total excess cancer risk for the residential scenario is 5×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 3 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

G-4.2.14 AOC 01-006(e)

The samples at AOC 01-006(e) were collected from depths greater than 0.0 to 1.0 ft bgs; therefore, no complete exposure pathways exist for the industrial scenario.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-112 and G-4.2-113. The total excess cancer risk for the construction worker scenario is 6×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-10.0 ft depth interval.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-114 and G-4.2-115. The total excess cancer risk for the residential scenario is 3×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.06, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-10.0 ft depth interval.

G-4.2.15 SWMU 01-007(c)

The samples at SWMU 01-007(c) were collected from depths greater than 0.0 to 1.0 ft bgs; therefore, no complete exposure pathways exist for the industrial scenario.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-116, G-4.2-117, and G-4.2-118. The total excess cancer risk for the construction worker scenario is 3×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.07 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-119, G-4.2-120, and G-4.2-121. The total excess cancer risk for the residential scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.07, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.2 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

G-4.2.16 SWMUs 03-038(a,b)

The samples at SWMUs 03-038(a) and 03-038(b) were collected from depths greater than 0.0 to 1.0 ft bgs; therefore, no complete exposure pathways exist for the industrial scenario.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-122 and G-4.2-123. The total excess cancer risk for the construction worker scenario is 6×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-10.0 ft depth interval.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-124 and G-4.2-125. The total excess cancer risk for the residential scenario is 3×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-10.0 ft depth interval.

G-4.2.17 SWMU 03-055(c)

The results of the risk-screening assessment for the industrial scenario are presented in Tables G-4.2-126 and G-4.2-127. The total excess cancer risk for the industrial scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.04, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-1.0 ft depth interval.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-128, G-4.2-129, and G-4.2-130. The total excess cancer risk for the construction worker scenario is 2×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.000002 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-131, G-4.2-132, and G-4.2-133. The total excess cancer risk for the residential scenario is 2×10^{-5}, which is greater than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.4, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.002 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

G-4.2.18 SWMU 32-002(b2)

The results of the risk-screening assessment for the industrial scenario are presented in Tables G-4.2-134, G-4.2-135, and G-4.2-136. The total excess cancer risk for the industrial scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.004 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-137, G-4.2-138, and G-4.2-139. The total excess cancer risk for the construction worker scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.6, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.05 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-140, G-4.2-141, and G-4.2-142. The total excess cancer risk for the residential scenario is 9×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential

HI is 0.6, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.8 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

G-4.2.19 AOC C-43-001

The results of the risk-screening assessment for the industrial scenario are presented in Tables G-4.2-143 and G-4.2-144. The total excess cancer risk for the industrial scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.07, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-1.0 ft depth interval.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-145, G-4.2-146, and G-4.2-147. The total excess cancer risk for the construction worker scenario is 4×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.00003 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-148, G-4.2-149, and G-4.2-150. The total excess cancer risk for the residential scenario is 2×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.03 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1.

G-4.2.20 SWMU 61-007

The results of the risk-screening assessment for the industrial scenario are presented in Tables G-4.2-151 and G-4.2-152. The total excess cancer risk for the industrial scenario is 2×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.0001, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-1.0 ft depth interval.

The results of the risk-screening assessment for the construction worker scenario are presented in Tables G-4.2-153 and G-4.2-154. The total excess cancer risk for the construction worker scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.0003, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-10.0 ft depth interval.

The results of the risk-screening assessment for the residential scenario are presented in Tables G-4.2-155 and G-4.2-156. The total excess cancer risk for the residential scenario is 4×10^{-5}, which is greater than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.001, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–10.0 ft depth interval.

G-4.3 Vapor-Intrusion Pathway

NMED guidance (NMED 2017, 602273) requires an evaluation of the vapor-intrusion pathway. The vapor-intrusion pathway of VOCs into a building was evaluated where appropriate. The evaluation can be qualitative for a potentially complete pathway if the following criteria are met:

- Volatile and toxic compounds are minimally detected.

- Concentrations are below NMED's vapor-intrusion screening levels for soil-gas and/or groundwater. There is no suspected source(s) for volatile and toxic compounds.
- Concentrations are decreasing with depth (for soil).

Because only bulk soil data are available for these sites, the vapor-intrusion screening levels are not applicable for the evaluation. The vapor-intrusion pathway was qualitatively evaluated as part of the residential scenario for some of the sites in this report. Among the factors considered for the vapor-intrusion pathway to be relevant to human health risk is the current extent of structures and their proximity to the VOC source. One may also consider if construction of buildings is possible or proposed in the reasonably foreseeable future. Structures do exist in the Upper Los Alamos Canyon Aggregate Area SWMUs or AOCs.

No VOCs were detected at SWMU 00-017. Therefore, the vapor-intrusion pathway is incomplete for this site. Organic chemicals were not analyzed at AOC 01-003(b2) in accordance with the approved work plan (LANL 2006, 091916; NMED 2006, 095460). Therefore, the vapor-intrusion pathway is not evaluated for this site. The potential for the vapor-intrusion pathway is discussed for each of the remaining sites.

Samples collected at AOC C-00-044, SWMU 01-001(d3), SWMU 01-003(d), SWMU 03-055(c), SWMU 32-002(b2) and AOC C-43-001 were located on hill slopes, drainages or under a bridge (AOC C-43-001) and not suitable for placement of a structure. In addition, part of SWMU 01-001(f) and SWMU 01-001(g) are also on a hill slope and not buildable; there were no VOCs detected at the mesa-top sampling locations for these SWMUs. Therefore, the vapor-intrusion pathway was not evaluated for these sites.

G-4.3.1 SWMU 01-001(a)

SWMU 01-001(a) consists of a former sanitary septic system that included former septic tank 134 (structure 01-134), inlet and outlet drainlines, and an outfall at former TA-01. Former septic tank 134 measured 5 ft x 9 ft x 5.67 ft deep and was constructed of reinforced concrete in 1949. The septic tank was located south of the sheet metal shop (former building 01-104) and served warehouse 19 (former building 01-103) and the sheet metal shop from 1949 to 1964. Two separate sanitary waste lines from buildings 01-103 and 01-104 tied into the septic tank, which discharged through an outlet drainline to an outfall in Bailey Bridge Canyon (LANL 2001, 069946, p. 35). Warehouse 19 was reportedly used to store unknown nonradioactive materials. Buildings 01-103 and 01-104 were decommissioned and removed in 1964 as part of the relocation of all TA-01 activities to new Laboratory technical areas south of the Los Alamos townsite. During the final radioactive clearance screening for warehouse 19 in 1964, the concrete floor was found to be contaminated with uranium-238. The contaminated floor was demolished and disposed of in Bailey Bridge Canyon and covered with soil (Montoya 1965, 003711). Part of the floor drain associated with warehouse 19 was excavated and found to have no radiological contamination. The remainder of the floor drain was left in place (Montoya 1965, 003711). Septic tank 134 was removed during the Ahlquist radiological survey in 1975. The tank was found to have no evidence of radiological contamination and was disposed of at MDA G at TA-54 (Ahlquist et al. 1977, 005710).

Two VOCs were detected at this site: acetone and methylene chloride. Methylene chloride was frequently detected and similar to the EQL. Acetone was minimally detected and much less than the EQL.

Acetone was detected in 3 of 17 samples with concentrations ranging from 0.002 mg/kg to 0.0034 mg/kg; the depths of all samples were up to 10.0 ft bgs and the maximum detected concentration was from a depth of 6.0 to 7.0 ft bgs. No detected concentrations were at depths below the maximum detected concentration.

Methylene chloride was detected in 9 of 17 samples with concentrations ranging from 0.002 mg/kg to 0.0058 mg/kg; the depths of all samples were up to 11.0 ft bgs and the maximum detected concentration was from a depth of 4.0 to 5.0 ft bgs. The four largest detected concentrations were from the 2.0 to 5.0 ft bgs interval (0.0056–0.0058 mg/kg). The three samples collected below 5.0 ft bgs were detections (0.002 mg/kg to 0.0042 mg/kg from depths of 5.75 to 11.0 ft bgs).

The site description does not indicate that VOCs were used at SWMU 01-001(a), but reports indicated that unknown nonradioactive materials were stored in a warehouse associated with the sanitary septic system. Many structures were removed and the site is inactive. The vapor-intrusion pathway is potentially complete for methylene chloride based on NMED guidance (NMED 2017, 602273), but no additional evaluation is necessary because the detected concentrations are similar to the EQLs and the site is inactive.

G-4.3.2 SWMU 01-001(o)

SWMU 01-001(o) is the former sanitary waste line that was located east of Bailey Bridge and served former J Building J (structure 01-34) and former ML Building (structure 01-42). J Building housed a laboratory of unknown nature, and ML Building housed a medical laboratory. The former sanitary waste line from former Q Building discharge was tied into the SWMU 01-001(o) waste line. Q Building was used by the medical and health-monitoring group. Film calibration was conducted in the north basement of former Q Building, where a small radium spill contaminated part of the basement. The spill was cleaned up, but some contamination remained. The SWMU waste line discharged directly to the head of Bailey Bridge Canyon. Accidents in 1955 and 1957 resulted in radioactive contamination in Building ML. Decontamination activities were not totally successful after the 1957 accident because floor areas remained contaminated. Some of the floor was painted and covered with cardboard until the building was demolished in 1958; building debris was disposed of at MDAs C and G. Concrete with gross-alpha activities less than 2500 cpm was disposed of in Bailey Bridge Canyon. In 1959, monitoring of the sanitary waste systems indicated the SWMU 01-001(o) waste line from Buildings J and ML was contaminated. The sanitary waste line was removed in 1959 and disposed of at MDA G. During the 1974 to 1976 Ahlquist Radiological Survey conducted at SWMU 01-001(o), results of the survey indicated a portion of the waste line remained in place; the remaining waste line was subsequently removed and disposed of at MDA G (Ahlquist et al. 1977, 005710). Currently, the locations of the former waste line run across Loma Vista Drive and under a Los Arboles condominium building.

Three VOCs were detected at this site. Acetone and 1,2,4-trimethylbenzene were minimally detected and methylene chloride was infrequently detected at the site. The detected concentrations were all much less than the respective EQLs for these VOCs.

Acetone was detected in 2 of 16 samples with a maximum concentration of 0.0049 mg/kg; the depth of these samples was from 0.0 to 1.0 ft bgs. The depths of all acetone samples were up to 8.25 ft bgs. No detected concentrations were at depths below the maximum detected concentration. Methylene chloride was detected in 1 of 16 samples with a maximum concentration of 0.00073 mg/kg; the depth of this sample was from of 1.0 to 2.0 ft bgs. The depths of all methylene chloride samples were up to 8.25 ft bgs. Trimethylbenzene[1,2,4-] was detected in 2 of 16 samples with a maximum concentration of 0.00048 mg/kg; the depth of this sample was from of 6.75 to 7.75 ft bgs. One detected concentration was at a depth below the maximum detected concentration, 0.00046 mg/kg, in the depth interval of 8.75 to 10.0 ft bgs. The depths of all 1,2,4-trimethylbenzene samples were up to 10 ft bgs.

The site description does not indicate that VOCs were used at the site, but the site did receive sanitary waste from several laboratory buildings. Most structures were removed and new structures have been built over the site. The vapor-intrusion pathway is therefore potentially complete based on NMED guidance (NMED 2017, 602273), but no additional evaluation is necessary because the VOCs were minimally detected and similar or much less than the EQLs.

G-4.3.3 SWMU 01-001(s2)

SWMU 01-001(s2) is the portion of the WSWL located west of the former LA Inn property [SWMU 01-001(s1)] and west and south of the Hutton Team, LLC, property [SWMU 01-001(s3)] at former TA-01. The WSWL consisted of VCP and served former buildings A and B; former boiler house 2; and former buildings C, D, G, M, V, and Sigma. The buildings that were served by former SWMU 01-001(s) housed most of the plutonium and uranium processing and production operations in the early days of the Laboratory. Building A housed administrative offices. Building B had administrative offices and electronic and metallurgical laboratories; small amounts of radionuclide foils were stored in a concrete vault in the building. Boiler house 2 supplied steam to TA-01 buildings. Building C housed a uranium machine shop and other machining (e.g., graphite machining) operations; before its removal in 1964, building C was found to be free of radioactive contamination, except for the concrete building pad, which was removed to an unspecified MDA. Building D was used to process plutonium. Building G housed the Sigma Pile, a small pile of graphite and uranium; leak-testing of radium sources was also performed in building G. In 1959, the building G structure was found to be uncontaminated and was removed. The concrete floor was found to be slightly contaminated with radioactivity and, along with drainlines, was taken to an unspecified MDA. Building M was used to process and recover enriched uranium. Building V contained offices and a toolmaker's shop; it was the original machine shop for machining uranium and beryllium and for dry-grinding boron at TA-01. The Sigma Building was used for machining radionuclides for casting and powder metallurgy. Former SWMU 01-001(s) exited from building D, ran parallel to most of the main industrial waste line [SWMUs 01-002(a1)-00 and 01-002(a2)-00], and passed near the southwest corner of building C. It then proceeded west along the former Finch Street and turned north between buildings T-221 and T-225 [SWMU 01-001(s2)]. This sanitary waste line connected to a septic tank [SWMU 00-030(g)], which discharged into Acid Canyon. The portion of the WSWL leading from building C to the east end of the eastern building of the Trinity Village apartments was removed in the 1960s. The grading plan and the building foundation plan for Trinity Village indicated that the sanitary line would have been removed beneath the central and western Trinity Village buildings before construction. However, the section of drainline beneath the eastern Trinity Village building may still be in place.

SWMU 01-001(s2) was originally part of former SWMU 01-001(s), which was split into SWMUs 01-001(s1) and 01-001(s2) in a request for modification of the Laboratory's Hazardous Waste Facility Permit approved by NMED on November 9, 2016 (LANL 2016, 601921). The Laboratory proposed to split SWMU 01-001(s) into two newly designated SWMUs because each component of the SWMU is located on property owned by different entities. SWMU 01-001(s2) was subsequently split into SWMUs 01-001(s2) and 01-001(s3) in a request for modification of the Laboratory's Hazardous Waste Facility Permit approved by NMED on May 24, 2017 (LANL 2017, 602346; NMED 2017, 602409). The Laboratory proposed to split SWMU 01-001(s2) into two newly designated SWMUs because each component of the SWMU is located on property owned by different entities.

Four VOCs were minimally detected at this site: acetone, methylene chloride, naphthalene and 1-propylbenzene. The detected concentrations for acetone and methylene chloride were marginally greater than the EQLs for these VOCs while the detected concentrations for naphthalene and 1-propylbenzene were much less than their EQLs.

Acetone was detected in 8 of 19 samples with a maximum concentration of 0.062 mg/kg; the depth of the sample with the maximum detected concentration was from 10.5 to 11.5 ft bgs. The depths of all acetone samples were up to 11.5 ft bgs. No detected concentrations were at depths below the maximum detected concentration.

Methylene chloride was detected in 2 of 20 samples with a maximum concentration of 0.032 mg/kg; the depth of the sample with the maximum detected concentration was from 5.25 to 6.25 ft bgs. The depths of all methylene chloride samples were up to 9.5 ft bgs. No detected concentrations were at depths below the maximum detected concentration.

Naphthalene was detected in 1 of 20 samples with a concentration of 0.1 mg/kg; the depth of this sample was from 3.5 to 4.5 ft bgs. The depths of all naphthalene samples were up to 11.5 ft bgs.

Propylbenzene[1-] was detected in 1 of 20 samples with a concentration of 0.0013 mg/kg; the depth of this sample was from of 3 to 4 ft bgs. The depths of all 1-propylbenzene samples were up to 11.5 ft bgs.

The site description does not indicate that VOCs were used at SWMU 01-001(s2), but the site did receive sanitary waste from several laboratory buildings. Most structures were removed and new structures have been built over the site. The vapor-intrusion pathway is therefore potentially complete based on NMED guidance (NMED 2017, 602273), but no additional evaluation is necessary because the VOCs were minimally detected and marginally greater or much less than the EQLs.

G-4.3.4 SWMU 01-002(a2)-00

SWMU 01-002(a2)-00 consists of the majority of a former industrial waste line [former SWMU 01-002(a)-00] located in the southern and western portion of former TA-01. SWMU 01-002(a2)-00 includes all sections of the former industrial waste line located outside the former LA Inn property. SWMU 01-002(a2)-00 includes the area around former boiler house 2; former buildings D, H, J-2, M, ML, Q, and Sigma; and several properties north of Trinity Drive extending to Canyon Road (near the location of former TA-45). These former buildings were the sources of major process discharges from former TA-01. From 1943 to 1951, chemical and radioactive process wastes flowed through this section of waste line and were ultimately discharged to Acid Canyon at the outfall near former TA-45 [SWMU 01-002(b)-00]. Boiler house 2 supplied steam for TA-01. Building D was used to process plutonium. Building H was used for source preparation of polonium-210. Building J-2 was used for radiochemistry work. Building M was used to recover enriched uranium-235. Building ML was a medical laboratory. Building Q was used to calibrate laboratory equipment using radium-226 as a check source. Sigma Building was used for machining radionuclides for casting and powder metallurgy. The former TA-01 industrial waste line [former SWMU 01-002(a)-00] consisted of two sections: the main industrial waste line south of Trinity Drive ran from former building D, and the western industrial waste line ran from former building J-2 to its junction with the main industrial waste line outside the former TA-01 boundary. From the junction, the line ran north as a single unit. From 1943 to 1951 the line discharged untreated effluent into Acid Canyon. When the former TA-45 waste treatment facility was built at the disposal line outfall in 1951, liquid waste conveyed by the line was treated at the former TA-45 plant before disposal to the canyon. During the Ahlquist radiological survey conducted in 1975 and 1976, the former SWMU 01-002(a)-00 industrial waste line in former TA-01 [including new SWMU 01-002(a2)-00] was completely removed along with a substantial amount of contaminated soil associated with the industrial waste line. Areas along the western industrial-waste line that were remediated by excavation and disposal in 1976 are designated as SWMU 01-007(j). In 1985, the last remnants of the industrial waste line between former TA-01 and the Acid Canyon outfall near former TA-45 were removed. Currently, the location of SWMU 01-002(a2)-00 is developed.

SWMU 01-002(a2)-00 was originally part of SWMU 01-002(a)-00, which was split into SWMUs 01-002(a1)-00 and 01-002(a2)-00 in a request for modification of the Laboratory's Hazardous Waste Facility Permit approved by NMED on November 9, 2016 (LANL 2016, 601921). The Laboratory proposed to split SWMU 01-002(a)-00 into two newly designated SWMUs because each component of the SWMU is located on property owned by different entities.

Four VOCs were minimally detected at this site: acetone, methylene chloride, toluene and trichlorofluoromethane. The detected concentrations were all much less than the EQLs.

Acetone was detected in 4 of 28 samples with concentrations ranging from 0.003 mg/kg to 0.0053 mg/kg; the depths of the samples with detected concentrations were up to 4.25 ft bgs. The depths of the two samples with the maximum detected concentration were from 0.75 to 1.75 ft bgs and 2.75 to 3.75 ft bgs, respectively. The depths of all acetone samples were up to 14 ft bgs. One detected concentration, 0.0033 mg/kg in the depth interval of 3.25 to 4.25 ft bgs, was at a depth below the maximum detected concentration.

Methylene chloride was detected in 7 of 28 samples with concentrations ranging from 0.00084 mg/kg to 0.0058 mg/kg. The depths of the samples with detected concentrations were up to 7.0 ft bgs. The maximum detected concentration was in two samples at depths of 0.75 to 1.75 ft bgs and 1.25 to 2.25 ft bgs, respectively. The depth of all samples was up to 14 ft bgs. Four detected concentrations, 0.0018 mg/kg, 0.0027 mg/kg, 0.00084 mg/kg, and 0.0009 mg/kg, were at depths below the maximum detected concentration and in the depth intervals of 2.75 to 3.75 ft bgs, 3.25 to 4.25 ft bgs, 3.25 to 4.25 ft bgs, and 6 to 7 ft bgs, respectively.

Toluene was detected in 1 of 28 samples with a concentration of 0.001 mg/kg; the depth of this sample was from 6.0 to 7.0 ft bgs. The depths of all toluene samples were up to 14 ft bgs. No detected concentrations were at depths below the maximum detected concentration.

Trichlorofluoromethane was detected in 1 of 28 samples with a maximum concentration of 0.00055 mg/kg; the depth of this sample was from 1.75 to 2.75 ft bgs. The depths of all trichlorofluoromethane samples were up to 10.25 ft bgs.

The site description does not indicate that VOCs were used at SWMU 01-002(a2)-00, but the site did receive industrial waste from several laboratory buildings. Some structures were removed and new structures have been built over the site. The vapor-intrusion pathway is therefore potentially complete based on NMED guidance (NMED 2017, 602273), but no additional evaluation is necessary because the VOCs were minimally detected and much less than the EQLs.

G-4.3.5 SWMU 01-003(a)

SWMU 01-003(a) is the inactive Bailey Bridge landfill located at the head of Bailey Bridge Canyon at former TA-01. Demolition debris from former TA-01 structures was placed on the hillsides in the drainage at the head of Bailey Bridge Canyon between 1959 and 1978. The area measured approximately 200 ft x 100 ft x 100 ft deep. A September 1964 Zia Company memorandum regarding disposal of former TA-01 debris from demolition activities specified that concrete walls and flooring from the former Sigma Building (structure 01-56) with radioactivity levels below 2500 cpm of surface alpha contamination were to be broken up and disposed of in Bailey Bridge Canyon; the disposed concrete was covered with 4 ft of earthen fill (Hill 1964, 004821). Demolition debris with less than 2500 cpm surface alpha contamination from several other buildings (the D-5 vault [01-11], HT [01-29], warehouse 19 [01-103], and the sheet metal shop [structure 01-104]) located in the western portion of former TA- 01 was also disposed of in Bailey Bridge Canyon and covered with soil (Ahlquist et al. 1977, 005710; DOE 1987, 008663). Additional fill was placed over the landfill and the area regraded before the area was developed for residential housing. As a result of all the debris and fill placed at the head of Bailey Bridge Canyon, the canyon edge was extending to the south by approximately 100 ft. The mesa-top portion of SWMU 01-003(a) is currently under pavement and one building of the Los Arboles townhouses. The area downslope of the landfill is undeveloped DOE land.

Three VOCs were minimally detected at this site: acetone, 4-isopropyltoluene and naphthalene. The detected concentrations for acetone and 4-isopropyltoluene were marginally greater than the EQLs and the detected concentration for naphthalene was much less than the EQL.

Acetone was detected in 4 of 31 samples with concentrations ranging from 0.012 mg/kg to 0.078 mg/kg; the depth of the samples with detected concentrations was up to 5.75 ft bgs, and the sample with the maximum detected concentration was from a depth of 3.75 to 5 ft bgs. The depths of all acetone samples were up to 14 ft bgs. One detected concentration, 0.023 mg/kg in the depth interval of 5 to 5.75 ft bgs, was at a depth below the maximum detected concentration.

Isopropyltoluene[4-] was detected in 1 of 31 samples with a maximum concentration of 0.015 mg/kg; the depth of this sample was from 1.75 to 2.75 ft bgs. The depths of all 4-isopropyltoluene samples were up to 5.75 ft bgs.

Naphthalene was detected in 1 of 31 samples with a maximum concentration of 0.044 mg/kg; the depth of this sample was from 0.0 to 1.0 ft bgs. The depths of all naphthalene samples were up to 5.75 ft bgs.

The site description does not indicate that VOCs were used at SWMU 01-003(a), but the site was a landfill for many contaminated materials from demolition debris. Most of it was covered with soil and regraded for new buildings, except for the downslope of the landfill, which is not developed. The vapor-intrusion pathway is therefore potentially complete based on NMED guidance (NMED 2017, 602273), but no additional evaluation is necessary because the VOCs were minimally detected and marginally greater than or much less than the EQLs.

G-4.3.6 SWMU 01-006(a)

SWMU) 01-006(a) consists of a former drainline and outfall that served cooling tower 80 (former structure 01-80) at former TA-01. The drainline and outfall were located on the east side of the cooling tower and south of X Building (former structure 01-79) near the north rim of Los Alamos Canyon. Cooling tower 80 was installed in 1944 and removed in 1954; the drainline was left in place. Biocides containing chromium may have been added to the cooling tower as was standard practice at the time. Currently, the location of the former drainline is under one of the Los Arboles condominium buildings. Although no record can be found of the removal of the drainline, it was likely removed during the construction of the residential building.

Two VOCs were minimally detected at this site: acetone and methylene chloride. The acetone detected concentration was much less than the EQL and the methylene chloride detected concentration was marginally higher than the EQL.

Acetone was detected in 1 of 19 samples with a maximum concentration of 0.0049 mg/kg; the depth of this sample was from 2.25 to 3.25 ft bgs. The depths of all acetone samples were up to 5.0 ft bgs.

Methylene chloride was detected in 8 of 19 samples with concentrations ranging from 0.0014 mg/kg to 0.025 mg/kg; the depth of the samples with detected concentrations were up to 4.25 ft bgs. The depths of all methylene chloride samples were up to 5 ft bgs. No detected concentrations were at depths below the maximum detected concentration.

SWMU 01-006(a) was a drainline and outfall for a cooling tower that may have used biocides as a standard practice. The site is currently under new buildings. The vapor-intrusion pathway is therefore potentially complete based on NMED guidance (NMED 2017, 602273), but no additional evaluation is necessary because the VOCs were minimally detected and at concentrations marginally greater or much less than the EQLs.

G-4.3.7 AOC 01-006(e)

AOC 01-006(e) consists of two drainlines and two outfalls that discharged to Ashley Pond. One drainline originated at building P (former building 01-46); the other drainline served the cleaning plant. Building P was used for personnel offices, and no radioactive materials or hazardous chemicals except toluene were used in the building. Cleaning solvents were probably used at the cleaning plant. The building P drainline was a 4-in.-diameter pipe that extended northeast from the building for approximately 100 ft underground to the southwest side of the pond. The drainline from the cleaning plant originated at the northwest corner of the building and extended underground to the southeast side of the pond. The cleaning plant was replaced by a parking lot in 1959, and the location of the former cleaning plant is now under Trinity Drive (LANL 1992, 043454, pp. 6-46–6-47). Currently, the locations of former pipelines are either landscaped or under pavement. The site is currently owned and operated by Los Alamos County.

One VOC, acetone, was minimally detected at this site with a concentration much less than the EQL.

Acetone was detected in two of six samples with concentrations ranging from 0.0033 mg/kg to 0.0063 mg/kg; the depth of the sample with the maximum concentration was from 11 to 12 ft bgs. The depths of all acetone samples were up to 12 ft bgs. No detected concentrations were at depths below the maximum detected concentration.

AOC 01-006(e) was a drainline and outfall for a cleaning plant using cleaning solvents including toluene. The site is currently under landscape or pavement. The vapor-intrusion pathway is therefore potentially complete based on NMED guidance (NMED 2017, 602273), but no additional evaluation is necessary because the VOC was minimally detected and at a concentration much less than the EQL.

G-4.3.8 SWMU 01-007(c)

SWMU 01-007(c) is an area of potential shallow subsurface radioactive contamination north and west of former D Building (former building 01-6). Plutonium contamination was discovered during the 1974–1976 Ahlquist radiological survey conducted at SWMU 01-007(c) (Ahlquist et al. 1977, 005710, pp. 11, 70–77). Approximately 1300 m^3 of soil and remaining sections of a clay-tile waste line from former D Building was excavated and disposed of at an unspecified location (Ahlquist et al. 1977, 005710, p. 40). The clay-tile waste line was a portion of SWMU 01-001(s). Currently, the location of SWMU 01-007(c) is under pavement and residential buildings on private property or Los Alamos County streets.

Nine VOCs were minimally detected at this site: benzene, n-butylbenzene, sec-butylbenzene, chloroform, 4-isopropyltoluene, styrene, toluene, vinyl chloride and xylene (total). The detected concentrations were all less than the respective EQLs.

Benzene was detected in one of eight samples with a maximum concentration of 0.0002 mg/kg; the depth of this sample was from 7.5 to 8.5 ft bgs. The depths of all benzene samples were up to 8.5 ft bgs.

N-butylbenzene was detected in one of eight samples with a maximum concentration of 0.00041 mg/kg; the depth of this sample was from 7.5 to 8.5 ft bgs. The depths of all n-butylbenzene samples were up to 8.5 ft bgs.

Sec-butylbenzene was detected in one of eight samples with a maximum concentration of 0.00019 mg/kg; the depth of this sample was from 7.5 to 8.5 ft bgs. The depths of all sec-butylbenzene samples were up to 8.5 ft bgs.

Chloroform was detected in one of eight samples with a maximum concentration of 0.00012 mg/kg; the depth of this sample was from 7.5 to 8.5 ft bgs. The depths of all chloroform samples were up to 8.5 ft bgs.

Isopropyltoluene[4-] was detected in one of eight samples with a maximum concentration of 0.00023 mg/kg; the depth of this sample was from 7.5 to 8.5 ft bgs. The depths of all 4-isopropyltoluene samples were up to 8.5 ft bgs.

Styrene was detected in one of eight samples with a maximum concentration of 0.00041 mg/kg; the depth of this sample was from 3.25 to 4.5 ft bgs. The depths of all styrene samples were up to 8.5 ft bgs.

Toluene was detected in one of eight samples with a maximum concentration of 0.00038 mg/kg; the depth of this sample was from 7.5 to 8.5 ft bgs. The depths of all toluene samples were up to 8.5 ft bgs.

Vinyl chloride was detected in one of eight samples with a maximum concentration of 0.0017 mg/kg; the depth of this sample was from 7.5 to 8.5 ft bgs. The depths of all vinyl chloride samples were up to 8.5 ft bgs.

Xylene (total) was detected in one of eight samples with a maximum concentration of 0.0051 mg/kg; the depth of this sample was from 7.5 to 8.5 ft bgs. The depths of all xylene (total) samples were up to 8.5 ft bgs.

SWMU 01-007(c) is an area of potential shallow subsurface radioactive contamination associated with a waste line for a building. Structures were removed. The site is currently under buildings or pavement. The vapor-intrusion pathway is therefore potentially complete based on NMED guidance (NMED 2017, 602273), but no additional evaluation is necessary because the VOCs were minimally detected and at concentrations much less than the EQLs.

G-4.3.9 SWMU 03-038(a,b)

SWMU 03-038(a) is the location of a former acid-neutralizing and pumping building (former building 03-700) located on DOE property near the southwest end of Omega Bridge on the mesa top near the south rim of Los Alamos Canyon in TA-03. The building was constructed in 1952 and consisted of a 16-ft x 22-ft x 11-ft concrete-block pump house and two 14-ft x 22-ft x 14-ft concrete underground tanks. The pumping building was the central collection point for industrial wastes from the Chemical and Metallurgical Research Building (building 03-29), the Sigma Building (building 03-66), and other Laboratory buildings. Once collected, the industrial waste was pumped from the storage tanks into a waste line (line 167, SWMU 00-017) and transferred to the TA-50 RLWTF. In 1975 and 1976, the areas around building 03-700 and structure 03-738 [SWMU 03-038(b)] were remediated by the Zia Company after elevated gross alpha contamination was discovered near building 03-700. Soil was tested for radionuclides; one-third of the 72 samples taken from the west, south, and east sides of the building and structure 03-738 were positive for gross-alpha. Soil was excavated around building 03-700 and structure 03-738 before the samples were collected. No leaks were discovered from the SWMU 03-038(a) or SWMU 03-038(b) tanks. Building 03-700 and associated sections of inlet and outlet waste lines, the pump station, the underground concrete tanks, and structure 03-738 were removed and disposed of at TA-54 in 1981 and 1982 as part of the Laboratory’s 1981–1986 Radioactive Liquid Waste Lines Removal Project (Elder et al. 1986, 006666, p. 41). Screening data for samples collected from the tank excavations confirmed none of the tanks had ever leaked. Building 03-700, structure 03-738, and associated sections of inlet and outlet waste lines, the pump station, and the underground concrete tanks were removed and disposed of at TA-54.

Two VOCs were minimally detected at this site: 2-hexanone and toluene. The detected concentrations were all much less than the EQLs.

Hexanone[2-] was detected in 1 of 18 samples with a maximum concentration of 0.0056 mg/kg; the depth of this sample was from 4.25 to 5.25 ft bgs. The depths of all 2-hexanone samples were up to 8.5 ft bgs.

Toluene was detected in 2 of 18 samples ranging from 0.00057 mg/kg to 0.0006 mg/kg, and the maximum concentration was detected at a depth from 4.25 to 5.25 ft bgs. The depths of all toluene samples were up to 8.25 ft bgs One detected concentration, 0.00057 mg/kg in the depth interval of 7.25 to 8.25 ft bgs, was at a depth below the maximum detected concentration.

SWMU 03-038(a), along with SWMU 03-038(b), is the location of a former acid-neutralizing and pumping building and central collection point for industrial wastes from the Chemical and Metallurgical Research Building and other laboratories. Structures and soil were removed from the site. The area is on a mesa top and could potentially be built on with new structures. The vapor-intrusion pathway is therefore potentially complete based on NMED guidance (NMED 2017, 602273), but no additional evaluation is necessary because the VOCs were minimally detected and at concentrations much less than the EQLs.

G-4.3.10 SWMU 61-007

SWMU 61-007 is an area of subsurface PCB-contaminated soil discovered along the south side of East Jemez Road in 1989. During the 1950s and 1960s, the south side of East Jemez Road was previously known as “contractors’ alley,” when various private contractors had storage areas along this portion of the road. The location of SWMU 61-007 is thought to be the former location of a transformer-staging area used by an electrical contracting firm that once operated in the vicinity. The firm is no longer in existence, and its years of operation are not known (LANL 1990, 007511). In 1989, workers detected an organic odor in the spoils from a “pothole” excavated to locate buried utilities ahead of trenching operations for a new sewer line along the south side of East Jemez Road, approximately 0.75 mi east of the intersection of East Jemez Road and Diamond Drive. A chemical analysis of the soil determined that the soil was contaminated with PCBs and 1,2,4-trichlorobenzene (Nylander 1989, 062843). The maximum PCB detected concentration was 4300 ppm. The Laboratory proceeded to characterize and remediate the PCB contamination in accordance with TSCA requirements. Ten locations, 6 ft apart west and east of the original “pothole” along the route of the new sewer line, were augured and sampled to determine the PCB contamination profile along the path of the utility trench. PCB contamination was detected in five of the auger hole locations at concentrations ranging from 1 ppm to 3800 ppm. Contaminated soil was excavated to between 4 and 5 ft bgs at four of the auger hole locations and to a depth of 17 ft bgs at the “hot spot” location where the PCB concentration at the bottom of the excavation was 13.6 ppm. The excavation was backfilled with clean fill and the PCB waste was disposed of at the chemical waste landfill at TA-54. Currently, the site is under a dirt road/parking area on the south side of East Jemez Road and remains vacant. The Los Alamos County municipal landfill is located south of SWMU 61-007.

Three VOCs (acetone, 2-butanone, and toluene) were minimally detected at this site. The detected concentrations were similar or less than the EQLs, except for acetone which was much higher than the EQL.

Acetone was detected in 4 of 17 samples with a concentration range of 0.00479–0.91 mg/kg and the depth of the maximum detected concentration was from 31.5 to 32.5 ft bgs. The depths of all acetone samples were up to 32.5 ft bgs. No detected concentration was at a depth below the maximum detected concentration.

Butanone[2-] was detected in 1 of 6 samples with a maximum concentration of 0.029 mg/kg; the depth of this sample was from 31.5 to 32.5 ft bgs. The depths of all 2-butanone samples were up to 32.5 ft bgs.

Toluene was detected in 1 of 17 samples with a maximum concentration of 0.00044 mg/kg; the depth of this sample was from 31.5 to 32.5 ft bgs. The depths of all toluene samples were up to 32.5 ft bgs.

The site is an area of subsurface PCB-contaminated soil and possibly the former location of a transformer-staging area. Contaminated soil was excavated and backfilled with clean fill. Currently, the site is under a dirt road/parking area on the south side of East Jemez Road and remains vacant. The VOCs were minimally detected at concentrations that were similar or much less than the EQLs, except for acetone, which was much larger than the EQL. However, this area may not be built on because it is very near a highway intersection and near a municipal landfill. The vapor-intrusion pathway is therefore potentially complete based on NMED guidance (NMED 2017, 602273), but no additional evaluation is necessary.

G-4.4 Essential Nutrients

NMED has SSLs for evaluation of essential nutrients (NMED 2017, 602273). The maximum detected concentrations of calcium and magnesium were compared with the appropriate NMED SSLs at those sites where they were identified as COPCs. The results of the comparisons found calcium and magnesium concentrations to be substantially less than the SSLs, as presented in Table G-4.4-1. Further evaluation of calcium and magnesium at these sites is not necessary.

G-4.5 Uncertainty Analysis

G-4.5.1 Data Evaluation and COPC Identification Process

A primary uncertainty associated with the COPC identification process is the possibility that (1) a chemical may be inappropriately identified as a COPC when it is actually not a COPC or (2) a chemical may not be identified as a COPC when it actually should be identified as a COPC. Inorganic chemicals are appropriately identified as COPCs because only the chemicals detected or that have detection limits above background are retained for further analysis. There are no established BVs for organic chemicals, and all detected organic chemicals are identified as COPCs and are retained for further analysis. Other uncertainties may include errors in sampling, laboratory analysis, and data analysis. However, because concentrations used in the risk-screening evaluations include those detected below the EQLs and nondetections above BVs, data evaluation uncertainties are expected to have little effect on the risk-screening results.

G-4.5.2 Exposure Evaluation

The current and reasonably foreseeable future land use is generally industrial and residential. To the degree actual activity patterns are not represented by those activities assumed by the industrial and residential scenarios, uncertainties are introduced in the assessment, and the evaluation presented in this assessment overestimates potential risk. An individual may be subject to exposures in a different manner than the exposure assumptions used to derive the industrial or residential SSLs. For the sites evaluated, individuals might not be on-site at present or in the future for the assumed frequency and duration. The construction worker assumptions for the SSLs are that the potentially exposed individual is outside on-site for 8 h/d, 250 d/yr, and 1 yr (NMED 2017, 602273). The industrial assumptions for the SSLs are that the potentially exposed individual is outside on-site for 8 h/d, 225 d/yr, and 25 yr (NMED 2017, 602273). The residential SSLs are based on exposure of 24 h/d, 350 d/yr, and 30 yr (NMED 2017, 602273). As a result, the industrial, contraction worker, and residential scenarios evaluated at these sites likely overestimate the exposure and risk.

A number of assumptions are made relative to exposure pathways, including input parameters, completeness of a given pathway, the contaminated media to which an individual may be exposed, and intake rates for different routes of exposure. In the absence of site-specific data, the exposure assumptions used were consistent with default values (NMED 2017, 602273). When several upper-bound values (as are found in NMED 2017, 602273) are combined to estimate exposure for any one pathway, the resulting risk estimate can exceed the 99th percentile, and therefore, can exceed the range of risk that may be reasonably expected. Also, the assumption that residual concentrations of chemicals in the tuff are available and result in exposure in the same manner as if they were in soil overestimates the potential exposure and risk to receptors.

Uncertainty is introduced in the concentration aggregation of data for estimating the EPCs at a site. Risk from a single location or area with relatively high COPC concentrations may be underestimated by using a representative sitewide value. The use of a UCL is intended to provide a protective upper-bound (i.e., conservative) COPC concentration and is assumed to be representative of the average exposure to a COPC across the entire site. Potential risk and exposure from a single location or area with relatively high COPC concentrations may be overestimated if a representative sitewide value is used. The use of the maximum detected concentration for the EPC overestimates the exposure to contamination because receptors are not consistently exposed to the maximum detected concentration across the site. In addition, the maximum detection limit was used as the EPC for some inorganic COPCs with elevated detection limits above BVs.

SWMU 00-017

The construction worker and residential HIs at SWMU 00-017 were approximately 1 (0.886) and 4 (3.49), due primarily to thallium, with HQs of 0.68 and 3.08, respectively. Lead also contributed to the HIs for the construction worker and residential scenarios with HQs of 0.13 and 0.26, respectively. Because the lead SSL is based upon blood lead levels, lead is evaluated separately from the other noncarcinogenic COPCs. For the construction worker and residential scenarios, the lead EPC of 104 mg/kg at SWMU 00-017 is substantially below their respective SSLs of 800 mg/kg and 400 mg/kg. The EPC for thallium was the maximum detection limit of 2.4 mg/kg, which means that thallium was not detected in any samples; however, the detection limit is greater than the residential SSL of 0.78 mg/kg but not greater than the construction worker SSL of 3.54 mg/kg. Without thallium, the construction worker HI is reduced to approximately 0.21 and the residential HI is approximately 0.41, which are both less than the NMED target HI.

SWMU 01-001(d3)

The construction worker and residential HIs at SWMU 01-001(d3) were approximately 1 and 2. The construction worker HI was due primarily to manganese (HQ = 0.55), while the residential HI was due primarily to antimony (HQ = 0.88) and mercury (HQ = 0.31). Lead also contributed to the HIs for the construction worker and residential scenarios with HQs of 0.02 and 0.04, respectively. Because the lead SSL is based upon blood lead levels, lead is evaluated separately from the other noncarcinogenic COPCs. For the construction worker and residential scenarios, the lead EPC of 17.8 mg/kg at SWMU 00-001(d3) is substantially below their respective SSLs of 800 and 400 mg/kg.

For the construction worker scenario, the EPC for manganese is 257 mg/kg, which is below the SSL of 464 mg/kg. Similarly, for the residential scenario, antimony has an EPC of 27.4 mg/kg, which is below its SSL of 31.3 mg/kg and mercury has an EPC of 7.26 mg/kg, which is also below its SSL of 23.5 mg/kg. Without manganese, the construction worker HI is reduced to approximately 0.45 and without antimony and mercury, the residential HI is reduced to 0.81, which are both less than the NMED target HI.

Construction worker and residential dose at SWMU 01-001(d3) were 20 and 40 mrem/yr, respectively, where the residential dose is greater than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. Plutonium-239/240 was primarily responsible for all of the calculated dose, at 42.7 mrem/yr for the residential dose.

SWMU 01-001(f)

The residential total excess cancer risk at SWMU 01-001(f) was approximately 5×10^{-5}, from Aroclor-1254 and dibenz(a,h)anthracene. The Aroclor-1254 residential EPC of 5.39 mg/kg was greater than its SSL of 2.43 mg/kg. The dibenz(a,h)anthracene EPC of 0.171 mg/kg was slightly greater than its SSL of 0.15 mg/kg. The construction worker and residential HIs at SWMU 01-001(f) were approximately 2 and 5, with Aroclor-1254 being the primary contributor (HQs = 1.1 and 4.73, respectively). For the construction worker and residential scenarios, the Aroclor-1254 EPC of 5.39 mg/kg at SWMU 01-001(f) is substantially above the respective SSLs of 4.91 and 1.14 mg/kg. Lead also contributed to the HIs for the construction worker and residential scenarios with HQs of 0.02, and 0.04, respectively. Because the lead SSL is based upon blood lead levels, lead is evaluated separately from the other noncarcinogenic COPCs. For the construction worker and residential scenarios, the lead EPC of 14.8 mg/kg at SWMU 01-001(f) is substantially below their respective SSLs of 800 and 400 mg/kg.

SWMU 01-003(a)

The residential total excess cancer risk at SWMU 01-003(a) was approximately 9×10^{-5}, primarily from Aroclor-1254, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenz(a,h)anthracene. The Aroclor-1254 EPC of 2.44 mg/kg is just slightly greater than the SSL of 2.43 mg/kg. The EPCs for the four PAHs, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenz(a,h)anthracene, of 1.7 mg/kg, 1.42 mg/kg, 1.99 mg/kg, and 0.45 mg/kg were all greater than the SSLs of 1.53 mg/kg, 1.12 mg/kg, 1.53 mg/kg, and 0.15 mg/kg, respectively.

The construction worker and residential HIs at SWMU 01-003(a) were approximately 1 and 2, respectively. Manganese and Aroclor-1254 were the primary contributors (HQs = 0.56 and 0.5, respectively) to the construction worker HI. Aroclor-1254 was also the primary contributor (HQ = 2.14) to the residential HI. For the construction worker scenario, the Aroclor-1254 EPC of 2.44 mg/kg at SWMU 01-003(a) is less than its SSL of 4.91 mg/kg and the manganese EPC of 258 mg/kg is less than its SSL of 464 mg/kg. For the residential scenario, the Aroclor-1254 EPC of 2.44 mg/kg at SWMU 01-003(a) is greater than its SSL of 1.14 mg/kg. Lead also contributed to the HIs for the construction worker and residential scenarios with HQs of 0.02, and 0.05, respectively. Because the lead SSL is based upon blood lead levels, lead is evaluated separately from the other noncarcinogenic COPCs. For the construction worker and residential scenarios, the lead EPC of 19.3 mg/kg at SWMU 01-003(a) is substantially below their respective SSLs of 800 and 400 mg/kg.

SWMU 01-003(d)

The residential HI at SWMU 01-003(d) was approximately 3 with antimony being the primary contributor (HQ = 2.5). The EPC for antimony for the residential scenario is 78.5 mg/kg, which is greater than its residential SSL of 31.3 mg/kg.

SWMU 03-055(c)

The residential total excess cancer risk at SWMU 03-055(c) was approximately 2×10^{-5}, with arsenic contributing 4.4×10^{-6}, benzo(a)anthracene contributing 3.3×10^{-6}, benzo(a)pyrene contributing 2.9×10^{-6}, and benzo(b)fluoranthene contributing 3.6×10^{-6}. The EPC for arsenic is 3.09 mg/kg, which is less than its residential SSL of 7.07 mg/kg. The EPCs for the PAHs, benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene, are 0.507 mg/kg, 0.321 mg/kg, and 0.552 mg/kg, respectively. The benzo(a)pyrene EPC is less than its SSL of 1.12 mg/kg, and benzo(a)anthracene and benzo(b)fluoranthene EPCs are both less than their SSL of 1.53 mg/kg.

SWMU 61-007

The residential total excess cancer risk at SWMU 61-007 was approximately 4×10^{-5}, with Aroclor-1260 contributing all of the risk. The EPC for Aroclor-1260 of 10 mg/kg is greater than its SSL of 2.43 mg/kg.

G-4.5.3 Toxicity Evaluation

The primary uncertainty associated with the SSLs is related to the derivation of toxicity values used in their calculation. Toxicity values (reference doses [RfDs] and slope factors [SFs]) were used to derive the SSLs used in this risk-screening evaluation (NMED 2017, 602273). Uncertainties were identified in five areas with respect to the toxicity values: (1) extrapolation from other animals to humans, (2) interindividual variability in the human population, (3) the derivation of RfDs and SFs, (4) the chemical form of the COPC, and (5) the use of surrogate chemicals.

Extrapolation from Animals to Humans. The SFs and RfDs are often determined by extrapolation from animal data to humans, which may result in uncertainties in toxicity values because differences exist in chemical absorption, metabolism, excretion, and toxic responses between animals and humans. Differences in body weight, surface area, and pharmacokinetic relationships between animals and humans are taken into account to address these uncertainties in the dose-response relationship. However, conservatism is usually incorporated in each of these steps, resulting in the overestimation of potential risk.

Individual Variability in the Human Population. For noncarcinogenic effects, the degree of variability in human physical characteristics is important both in determining the risks that can be expected at low exposures and in defining the no observed adverse effect level (NOAEL). The NOAEL uncertainty factor approach incorporates a 10-fold factor to reflect individual variability within the human population that can contribute to uncertainty in the risk evaluation; this factor of 10 is generally considered to result in a conservative estimate of risk to noncarcinogenic COPCs.

Derivation of RfDs and SFs. The RfDs and SFs for different chemicals are derived from experiments conducted by different laboratories that may have different accuracy and precision that could lead to an over- or underestimation of the risk. The uncertainty associated with the toxicity factors for noncarcinogens is measured by the uncertainty factor, the modifying factor, and the confidence level. For carcinogens, the weight of evidence classification indicates the likelihood that a contaminant is a human carcinogen. Toxicity values with high uncertainties may change as new information is evaluated.

Chemical Form of the COPC. COPCs may be bound to the environment matrix and not available for absorption into the human body. However, the COPCs are assumed to be bioavailable. This assumption can lead to an overestimation of the total risk.

*Use of Surrogate Chemicals***.** The use of surrogates for chemicals that do not have EPA-approved or provisional toxicity values also contributes to uncertainty in the risk assessment. Surrogates were used to provide SSLs for benzo(g,h,i)perylene; 4-isopropyltoluene; and 1,3-xylene+1,4-xylene based on structural similarity. The overall impact of surrogates on the risk assessment is minimal because these COPCs were detected infrequently and at low concentrations.

G-4.5.4 Additive Approach

For noncarcinogens, the effects of exposure to multiple chemicals are generally unknown, and possible interactions could be synergistic or antagonistic, resulting in either an overestimation or underestimation of the potential risk. Additionally, RfDs used in the risk calculations typically are not based on the same endpoints with respect to severity, effects, or target organs. Therefore, the potential for noncarcinogenic effects may be overestimated for individual COPCs that act by different mechanisms or by different modes of action but are addressed additively.

G-4.6 Interpretation of Human Health Risk Screening Results

G-4.6.1 SWMU 00-017

Industrial Scenario

The total excess cancer risk for the industrial scenario is 2×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.4, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.004 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the industrial scenario is equivalent to a total risk of 2×10^{-8}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 2×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 1, which is equivalent to the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.5 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the construction worker scenario is equivalent to a total risk of 3×10^{-7}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Residential Scenario

The total excess cancer risk for the residential scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 4, which is greater than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 2 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the residential scenario is equivalent to a total risk of 2×10^{-5}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

G-4.6.2 AOC C-00-044

Industrial Scenario

The total excess cancer risk for the industrial scenario is 6×10^{-9}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-1.0 ft depth interval.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 2×10^{-9}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–10.0 ft depth interval.

Residential Scenario

The total excess cancer risk for the residential scenario is 3×10^{-8}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–10.0 ft depth interval.

G-4.6.3 SWMU 01-001(a)

Industrial Scenario

The total excess cancer risk for the industrial scenario is 2×10^{-8}, which is less than the NMED target risk level of 1 × 10–5 (NMED 2017, 602273). The industrial HI is 0.004, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–1.0 ft depth interval.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 3×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–10.0 ft depth interval.

Residential Scenario

The total excess cancer risk for the residential scenario is 5×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–10.0 ft depth interval.

G-4.6.4 SWMU 01-001(d3)

Industrial Scenario

The total excess cancer risk for the industrial scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 6 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the industrial scenario is equivalent to a total risk of 3×10^{-5}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 5×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 1, which is equivalent to the NMED target HI of 1 (NMED 2017, 602273). The total dose is 17 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the construction worker scenario is equivalent to a total risk of 3×10^{-6}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Residential Scenario

The total excess cancer risk for the residential scenario is 8×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 2, which is greater than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 44 mrem/yr, which is greater than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the residential scenario is equivalent to a total risk of 5×10^{-5}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

G-4.6.5 SWMU 01-001(f)

Industrial Scenario

The total excess cancer risk for the industrial scenario is 4×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.7 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the industrial scenario is equivalent to a total risk of 8×10^{-6}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Recreational Scenario

The total excess cancer risk for the recreational scenario is 4×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The recreational HI is 0.5, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.2 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the recreational scenario is equivalent to a total risk of 1×10^{-6}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 2, which is greater than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.9 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the construction worker scenario is equivalent to a total risk of 3×10^{-7}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Residential Scenario

The total excess cancer risk for the residential scenario is 5×10^{-5}, which is greater than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 5, which is greater than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 3 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the residential scenario is equivalent to a total risk of 2×10^{-5}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

G-4.6.6 SWMU 01-001(g)

Industrial Scenario

The total excess cancer risk for the industrial scenario is 2×10^{-8}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.000006, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.4 mrem/yr, which is less than the target dose of

25 mrem/yr as authorized by DOE Order 458.1. The total dose for the industrial scenario is equivalent to a total risk of 2 × 10^{-6}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 4 × 10^{-7}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The construction worker HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 3 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the construction worker scenario is equivalent to a total risk of 5 × 10^{-7}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Residential Scenario

The total excess cancer risk for the residential scenario is 2 × 10^{-6}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The residential HI is 0.006, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 7 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the residential scenario is equivalent to a total risk of 9 × 10^{-6}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

G-4.6.7 SWMU 01-001(o)

Industrial Scenario

The total excess cancer risk for the industrial scenario is 2 × 10^{-6}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The industrial HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.3 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the industrial scenario is equivalent to a total risk of 3 × 10^{-6}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 4 × 10^{-7}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.3 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the construction worker scenario is equivalent to a total risk of 7 × 10^{-8}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Residential Scenario

The total excess cancer risk for the residential scenario is 4 × 10^{-6}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The residential HI is 0.7, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 1 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the residential scenario is equivalent to a total risk of 7 × 10^{-6}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

G-4.6.8 SWMU 01-001(s2)

Industrial Scenario

The samples at SWMU 01-001(s2) were collected from depths greater than 0.0 to 1.0 ft bgs; therefore, no complete exposure pathways exist for the industrial scenario.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 3×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.07 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the construction worker scenario is equivalent to a total risk of 1×10^{-8}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Residential Scenario

The total excess cancer risk for the residential scenario is 4×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.4, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.2 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the residential scenario is equivalent to a total risk of 3×10^{-7}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

G-4.6.9 SWMU 01-002(a2)-00

Industrial Scenario

The total excess cancer risk for the industrial scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.003, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.04 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the industrial scenario is equivalent to a total risk of 7×10^{-7}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 5×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.07 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the construction worker scenario is equivalent to a total risk of 4×10^{-8}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Residential Scenario

The total excess cancer risk for the residential scenario is 5×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.4, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.2 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the residential scenario is equivalent to a total risk of 3×10^{-6}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

G-4.6.10 SWMU 01-003(a)

Industrial Scenario

The total excess cancer risk for the industrial scenario is 9×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.09 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the industrial scenario is equivalent to a total risk of 3×10^{-7}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 1×10^{-6}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 1, which is equivalent to the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.5 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the construction worker scenario is equivalent to a total risk of 2×10^{-7}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Residential Scenario

The total excess cancer risk for the residential scenario is 9×10^{-5}, which is greater than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 3, which is greater than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 1 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the residential scenario is equivalent to a total risk of 8×10^{-6}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

G-4.6.11 AOC 01-003(b2)

Industrial Scenario

The total excess cancer risk for the industrial scenario is 5×10^{-11}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The industrial HI is 0.04, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.04 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the industrial scenario is equivalent to a total risk of 2×10^{-7}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 2×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.2 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the construction worker scenario is equivalent to a total risk of 3×10^{-8}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Residential Scenario

The total excess cancer risk for the residential scenario is 7×10^{-7}, which is less than the NMED target risk level of 1×10^{-5} (NMED 2017, 602273). The residential HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.4 mrem/yr, which is less than the target dose of

25 mrem/yr as authorized by DOE Order 458.1. The total dose for the residential scenario is equivalent to a total risk of 4 × 10^{-7}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

G-4.6.12 SWMU 01-003(d)

Industrial Scenario

The total excess cancer risk for the industrial scenario is 4 × 10^{-8}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The industrial HI is 0.08, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.01 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the industrial scenario is equivalent to a total risk of 6 × 10^{-8}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 1 × 10^{-7}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The construction worker HI is 0.6, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.03 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the construction worker scenario is equivalent to a total risk of 5 × 10^{-9}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Residential Scenario

The total excess cancer risk for the residential scenario is 8 × 10^{-7}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The residential HI is 3, which is greater than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.07 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the residential scenario is equivalent to a total risk of 7 × 10^{-8}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

G-4.6.13 SWMU 01-006(a)

Industrial Scenario

The total excess cancer risk for the industrial scenario is 1 × 10^{-6}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The industrial HI is 0.05, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.5 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the industrial scenario is equivalent to a total risk of 4 × 10^{-6}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 3 × 10^{-7}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The construction worker HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 1 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the construction worker scenario is equivalent to a total risk of 3 × 10^{-7}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Residential Scenario

The total excess cancer risk for the residential scenario is 5 × 10^{-6}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The residential HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 3 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the residential scenario is equivalent to a total risk of 8 × 10^{-6}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

G-4.6.14 AOC 01-006(e)

Industrial Scenario

The samples at AOC 01-006(e) were collected from depths greater than 0.0 to 1.0 ft bgs; therefore, no complete exposure pathways exist for the industrial scenario.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 6 × 10^{-7}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–10.0 ft depth interval.

Residential Scenario

The total excess cancer risk for the residential scenario is 3 × 10^{-6}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The residential HI is 0.06, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–10.0 ft depth interval.

G-4.6.15 SWMU 01-007(c)

Industrial Scenario

The samples at SWMU 01-007(c) were collected from depths greater than 0.0 to 1.0 ft bgs; therefore, no complete exposure pathways exist for the industrial scenario.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 3 × 10^{-7}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The construction worker HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.07 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the construction worker scenario is equivalent to a total risk of 3 × 10^{-8}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Residential Scenario

The total excess cancer risk for the residential scenario is 1 × 10^{-6}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The residential HI is 0.07, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.2 mrem/yr, which is less than the target dose of

25 mrem/yr as authorized by DOE Order 458.1. The total dose for the residential scenario is equivalent to a total risk of 2 × 10^{-6}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

G-4.6.16 SWMUs 03-038(a,b)

Industrial Scenario

The samples at SWMUs 03-038(a) and 03-038(b) were collected from depths greater than 0.0 to 1.0 ft bgs; therefore, no complete exposure pathways exist for the industrial scenario.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 6 × 10^{-7}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–10.0 ft depth interval.

Residential Scenario

The total excess cancer risk for the residential scenario is 3 x 10^{-6}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The residential HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–10.0 ft depth interval.

G-4.6.17 SWMU 03-055(c)

Industrial Scenario

The total excess cancer risk for the industrial scenario is 1 × 10^{-6}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The industrial HI is 0.04, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–1.0 ft depth interval.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 2 × 10^{-7}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The construction worker HI is 0.2, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.000002 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the construction worker scenario is equivalent to a total risk of 2 × 10^{-9}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Residential Scenario

The total excess cancer risk for the residential scenario is 2 × 10^{-5}, which is greater than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The residential HI is 0.4, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.002 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the residential scenario is equivalent to a total risk of 4 × 10^{-8}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

G-4.6.18 SWMU 32-002(b2)

Industrial Scenario

The total excess cancer risk for the industrial scenario is 1 × 10^{-6}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The industrial HI is 0.1, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.004 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the industrial scenario is equivalent to a total risk of 3 × 10^{-5}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 1 × 10^{-6}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The construction worker HI is 0.6, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.05 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the construction worker scenario is equivalent to a total risk of 2 × 10^{-6}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Residential Scenario

The total excess cancer risk for the residential scenario is 9 × 10^{-6}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The residential HI is 0.6, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.8 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the residential scenario is equivalent to a total risk of 9 × 10^{-5}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

G-4.6.19 AOC C-43-001

Industrial Scenario

The total excess cancer risk for the industrial scenario is 1 × 10^{-6}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The industrial HI is 0.07, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-1.0 ft depth interval.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 4 × 10^{-7}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The construction worker HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.00003 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the construction worker scenario is equivalent to a total risk of 2 × 10^{-10}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Residential Scenario

The total excess cancer risk for the residential scenario is 2 × 10^{-6}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The residential HI is 0.3, which is less than the NMED target HI of 1 (NMED 2017, 602273). The total dose is 0.03 mrem/yr, which is less than the target dose of 25 mrem/yr as authorized by DOE Order 458.1. The total dose for the residential scenario is equivalent to a total risk of 3 × 10^{-7}, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

G-4.6.20 SWMU 61-007

Industrial Scenario

The total excess cancer risk for the industrial scenario is 2 × 10^{-6}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The industrial HI is 0.0001, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-1.0 ft depth interval.

Construction Worker Scenario

The total excess cancer risk for the construction worker scenario is 1 × 10^{-6}, which is less than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The construction worker HI is 0.0003, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0-10.0 ft depth interval.

Residential Scenario

The total excess cancer risk for the residential scenario is 4 × 10^{-5}, which is greater than the NMED target risk level of 1 × 10^{-5} (NMED 2017, 602273). The residential HI is 0.001, which is less than the NMED target HI of 1 (NMED 2017, 602273). No radionuclide COPCs were identified in the 0.0–10.0 ft depth interval.

G-5.0 ECOLOGICAL RISK-SCREENING EVALUATIONS

The approach for conducting ecological evaluations is described in the “Screening Level Ecological Risk Assessment Methods, Revision 5” (LANL 2017, 602649). The evaluation consists of four parts: a scoping evaluation, a screening evaluation, an uncertainty analysis, and an interpretation of the results.

G-5.1 Scoping Evaluation

The scoping evaluation establishes the breadth and focus of the screening evaluation. The ecological scoping checklist (Attachment G-2) is a useful tool for organizing existing ecological information. The information was used to determine whether ecological receptors might be affected, identify the types of receptors that might be present, and develop the ecological CSM for sites in the Upper Los Alamos Canyon Aggregate Area (Attachment G-2). Although the quality of the habitat varies, most of the land within the aggregate area has native grasses, forbs, and trees that can be suitable habitat for ecological receptors.

The scoping evaluation indicated that terrestrial receptors were appropriate for evaluating the concentrations of COPCs in soil and tuff. Exposure is assessed across a site to a depth of 0.0 to 5.0 ft bgs. Aquatic receptors were not evaluated because no aquatic communities and no aquatic habitat or perennial source of water exist at any of the sites. The depth of the regional aquifer (greater than 1000 ft bgs) and the semiarid climate limit transport to groundwater. The potential exposure pathways for terrestrial receptors in soil and tuff are root uptake, inhalation, soil ingestion, dermal contact, and food web transport. The weathering of tuff is the only viable natural process that may result in the exposure of receptors to contaminants in tuff. Because of the slow rate of weathering expected for tuff, exposure in tuff is negligible, although it is included in the assessment. Plant exposure in tuff is largely limited to fractures near the surface, which does not produce sufficient biomass to support an herbivore population. Consequently, the contaminants in tuff are unavailable to receptors.

The potential risk was evaluated in the risk-screening assessments for the following ecological receptors representing several trophic levels:

- plants
- soil-dwelling invertebrates (represented by the earthworm)
- the deer mouse (mammalian omnivore)
- the montane shrew (mammalian insectivore)
- cottontail (mammalian herbivore)
- fox (mammalian carnivore)
- American robin (avian insectivore, avian omnivore, and avian herbivore)
- American kestrel (avian insectivore and avian carnivore [surrogate for threatened and endangered (T&E) species (primarily the Mexican spotted owl)])

The rationale for using these receptors is presented in “Screening Level Ecological Risk Assessments Methods, Revision 5” (LANL 2017, 602649). The Mexican spotted owl is the only T&E species known to frequent the area and may use the Upper Los Alamos Canyon Aggregate Area for foraging.

G-5.2 Assessment Endpoints

An assessment endpoint is an explicit expression of the environmental value to be protected. The endpoints are ecologically relevant and help sustain the natural structure, function, and biodiversity of an ecosystem or its components (EPA 1998, 062809). In a screening-level ecological evaluation, receptors represent the populations and/or communities, and assessment endpoints are any adverse effects on the chosen ecological receptors. The purpose of the ecological evaluation is to protect populations and communities of biota rather than individual organisms, except for listed or candidate T&E species and treaty-protected species, when individuals must be protected (EPA 1999, 070086). Populations of protected species tend to be small, and the loss of an individual adversely affects the species as a whole (EPA 1997, 059370).

In accordance with this guidance, the Laboratory developed generic assessment endpoints (LANL 1999, 064137) to ensure that values at all levels of ecological organization are considered in the ecological screening process. These general assessment endpoints can be measured using impacts on reproduction, growth, and survival to represent categories of effects that may adversely impact populations. In addition, specific receptor species were chosen to represent each functional group. The receptor species were chosen because of their presence at the site, their sensitivity to the COPCs, and their potential for exposure to those COPCs. These categories of effects and the chosen receptor species were used to select the types of effects seen in toxicity studies considered in the development of the toxicity reference values (TRVs). Toxicity studies used in the development of TRVs included only studies in which the adverse effect evaluated affected reproduction, survival, and/or growth.

The selection of receptors and assessment endpoints is designed to be protective of both the representative species used as screening receptors and the other species within their feeding guilds and the overall food web for the terrestrial and aquatic ecosystems. Focusing the assessment endpoints on the general characteristics of species that affect populations (rather than the biochemical and behavioral changes that may affect only the studied species) also ensures the applicability to the ecosystem of concern.

G-5.3 Ecological Risk Screening Evaluation

The ecological screening evaluation identifies chemicals of potential ecological concern (COPECs) and is based on the comparison of EPCs (95% UCLs, maximum detected concentrations, or maximum detection limits) to ecological screening levels (ESLs). The EPCs used in the assessments for the Upper Los Alamos Aggregate Area are presented in Tables G-2.3-1 through G-2.3-53.

The ESLs were obtained from the ECORISK Database, Release 4.1 (LANL 2017, 602538) and are presented in Table G-5.3-1. The ESLs are based on similar species and are derived from experimentally determined NOAELs, lowest observed adverse effect levels (LOAELs), or doses determined lethal to 50% of the test population. Information relevant to the calculation of ESLs, including concentration equations, dose equations, bioconcentration factors, transfer factors, and TRVs, are presented in the ECORISK Database, Release 4.1 (LANL 2017, 602538).

The analysis begins with a comparison of the minimum ESL for a given COPC with the EPC. The HQ is defined as the ratio of the EPC to the concentration that has been determined to be acceptable to a given ecological receptor (i.e., the ESL). The higher the contaminant levels relative to the ESLs, the higher the potential risk to receptors; conversely, the higher the ESLs relative to the contaminant levels, the lower the potential risk to receptors. HQs greater than 0.3 are used to identify COPECs requiring additional evaluation (LANL 2017, 602649). Individual HQs for a receptor are summed to derive an HI; COPCs without ESLs are retained as COPECs and evaluated further in section G-5.4.8. An HI greater than 1 indicates further assessment may be needed to ensure exposure to multiple COPECs at a site will not lead to potential adverse impacts to a given receptor population. The HQ and HI analysis is a conservative indication of potential adverse effects and is designed to minimize the potential of overlooking possible COPECs at the site.

G-5.3.1 SWMU 00-017

The results of the minimum ESL comparisons are presented in Table G-5.3-2. Antimony, barium, cadmium, chromium (total), cyanide (total), lead, mercury, nickel, selenium, and thallium are retained as COPECs because the HQs were greater than 0.3.

Calcium does not have ESLs, is retained as a COPEC, and is discussed in the uncertainty section (G-5.4-8).

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-3. The HI analysis indicates that kestrel (intermediate carnivore), robin (all feeding guilds), cottontail, shrew, deer mouse, and plant have HIs greater than 1. The HI for the earthworm was equivalent to 1. The HIs for the fox and kestrel (top carnivore) were less than 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.2 AOC C-00-044

The results of the minimum ESL comparisons are presented in Table G-5.3-4. Antimony, lead, selenium, zinc, and bis(2-ethylhexyl)phthalate are retained as COPECs because the HQs were greater than 0.3.

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-5. The HI analysis indicates that kestrel (intermediate carnivore), robin (all feeding guilds), shrew, deer mouse, and plant have HIs greater than 1. The HI for the cottontail was equivalent to 1. The HIs for the fox, earthworm, and kestrel (top carnivore) were less than 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.3 SWMU 01-001(a)

The results of the minimum ESL comparisons are presented in Table G-5.3-6. Barium, chromium (total), copper, cyanide (total), lead, nickel, selenium, silver, vanadium, acenaphthene, Aroclor-1254, and bis(2-ethylhexyl)phthalate are retained as COPECs because the HQs were greater than 0.3.

Nitrate does not have an ESL, is retained as a COPEC, and is discussed in the uncertainty section (G-5.4-8).

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-7. The HI analysis indicates that kestrel (intermediate carnivore), robin (all feeding guilds), shrew, deer mouse, and plant have HIs greater than 1. The HIs for the fox, kestrel (top carnivore), cottontail, and earthworm were less than 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.4 SWMU 01-001(d3)

The results of the minimum ESL comparisons are presented in Table G-5.3-8. Antimony, beryllium, cadmium, chromium (total), chromium hexavalent ion, copper, lead, manganese, mercury, nickel, selenium, silver, vanadium, zinc, Aroclor-1254, bis(2-ethylhexyl)phthalate, di-n-butylphthalate, and pentachlorophenol are retained as COPECs because the HQs were greater than 0.3.

Potential ecological risks associated with aluminum are based on soil pH. Aluminum is retained only in soil with a pH lower than 5.5, in accordance with EPA guidance (EPA 2003, 085645). Aluminum was eliminated as a COPEC and was not evaluated further because the soil pH for the Upper Los Alamos Canyon Aggregate Area is neutral to slightly alkaline.

Iron, magnesium, and nitrate do not have ESLs, are retained as COPECs, and are discussed in the uncertainty section (G-5.4-8).

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-9. The HI analysis indicates that kestrel (top carnivore and intermediate carnivore), robin (all feeding guilds), cottontail, shrew, deer mouse, earthworm, and plant have HIs greater than 1. The HI for the fox was equivalent to 1 and no HIs were less than 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.5 SWMU 01-001(f)

The results of the minimum ESL comparisons are presented in Table G-5.3-10. Cadmium, copper, cyanide (total), lead, manganese, nickel, selenium, vanadium, zinc, Aroclor-1254, Aroclor-1260, benzo(a)anthracene, benzoic acid, and bis(2-ethylhexyl)phthalate are retained as COPECs because the HQs were greater than 0.3.

Calcium, chlorotoluene[4-], and nitrate do not have ESLs, are retained as a COPECs, and are discussed in the uncertainty section (G-5.4-8).

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-11. The HI analysis indicates that kestrel (top carnivore and intermediate carnivore), robin (all feeding guilds), shrew, deer mouse, and plant have HIs greater than 1. The HIs for the fox, cottontail, and earthworm are equivalent to 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.6 SWMU 01-001(g)

The results of the minimum ESL comparisons are presented in Table G-5.3-12. Chromium (total), nickel, selenium, and bis(2-ethylhexyl)phthalate are retained as COPECs because the HQs were greater than 0.3.

Nitrate does not have ESLs, is retained as a COPEC, and is discussed in the uncertainty section (G-5.4-8).

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-13. The HI analysis indicates that robin (omnivore and insectivore feeding guilds) has HIs greater than 1. The HIs for the kestrel (intermediate carnivore) and shrew were equivalent to 1. The HIs for the fox, kestrel (top carnivore), robin (herbivore), cottontail, deer mouse, earthworm, and plant were less than 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.7 SWMU 01-001(o)

The results of the minimum ESL comparisons are presented in Table G-5.3-14. Antimony, cadmium, chromium (total), copper, cyanide (total), lead, mercury, nickel, selenium, zinc, Aroclor-1254, benzoic acid, bis(2-ethylhexyl)phthalate, and di-n-butylphthalate are retained as COPECs because the HQs were greater than 0.3.

Nitrate does not have ESLs, is retained as a COPEC, and is discussed in the uncertainty section (G-5.4-8).

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-15. The HI analysis indicates that the kestrel (top carnivore and intermediate carnivore), robin (all feeding guilds), cottontail, shrew, deer mouse, earthworm, and plant have HIs greater than 1. The HI for the fox was less than 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.8 SWMU 01-001(s2)

The results of the minimum ESL comparisons are presented in Table G-5.3-16. Barium, chromium (total), copper, cyanide (total), lead, nickel, selenium, and Aroclor-1254 are retained as COPECs because the HQs were greater than 0.3.

Calcium, nitrate, and 1-propylbenzene do not have ESLs, are retained as COPECs, and are discussed in the uncertainty section (G-5.4-8).

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-17. The HI analysis indicates that kestrel (top carnivore and intermediate carnivore), robin (all feeding guilds), shrew, and plant have HIs greater than 1. The HI for deer mouse was equivalent to 1. The HIs for the fox, cottontail, and earthworm were less than 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.9 SWMU 01-002(a2)-00

The results of the minimum ESL comparisons are presented in Table G-5.3-18. Chromium (total), cyanide (total), lead, nickel, selenium, Aroclor-1254, and bis(2-ethylhexyl)phthalate are retained as COPECs because the HQs were greater than 0.3.

Nitrate does not have ESLs, is retained as a COPEC, and is discussed in the uncertainty section (G-5.4-8).

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-19. The HI analysis indicates that kestrel (intermediate carnivore), robin (all feeding guilds), shrew, and deer mouse have HIs greater than 1. The HI for the plant was equivalent to 1. The HIs for the fox, kestrel (top carnivore), cottontail, and earthworm were less than 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.10 SWMU 01-003(a)

The results of the minimum ESL comparisons are presented in Table G-5.3-20. Barium, chromium (total), copper, cyanide (total), lead, manganese, mercury, nickel, selenium, vanadium, zinc, acenaphthene, Aroclor-1254, Aroclor-1260, benzo(a)anthracene, benzoic acid, bis(2-ethylhexyl)phthalate, chrysene, di-n-butylphthalate, fluoranthene, phenanthrene, and pyrene are retained as COPECs because the HQs were greater than 0.3.

Calcium, iron, and 4-isopropyltoluene do not have ESLs, are retained as COPECs, and are discussed in the uncertainty section (G-5.4-8).

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-21. The HI analysis indicates that kestrel (top carnivore and intermediate carnivore), robin (all feeding guilds), cottontail, shrew, deer mouse, earthworm, and plant have HIs greater than 1. The HI for the fox was less than 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.11 AOC 01-003(b2)

The results of the minimum ESL comparisons are presented in Table G-5.3-22. Barium, beryllium, chromium (total), copper, lead, nickel, perchlorate, and selenium are retained as COPECs because the HQs were greater than 0.3.

Potential ecological risks associated with aluminum are based on soil pH. Aluminum is retained only in soil with a pH lower than 5.5, in accordance with EPA guidance (EPA 2003, 085645). Aluminum was eliminated as a COPEC and was not evaluated further because the soil pH for the Upper Los Alamos Canyon Aggregate Area is neutral to slightly alkaline.

Calcium and magnesium do not have ESLs, are retained as a COPECs, and are discussed in the uncertainty section (G-5.4-8).

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-23. The HI analysis indicates that robin (all feeding guilds), cottontail, shrew, deer mouse, and plant have HIs greater than 1. The HIs for the fox, kestrel (top carnivore and intermediate carnivore), and earthworm were less than 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.12 SWMU 01-003(d)

The results of the minimum ESL comparisons are presented in Table G-5.3-24. Antimony, lead, selenium, zinc, and bis(2-ethylhexyl)phthalate are retained as COPECs because the HQs were greater than 0.3.

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-25. The HI analysis indicates that fox, robin (omnivore and insectivore feeding guilds), cottontail, shrew, deer mouse, earthworm, and plant have HIs greater than 1. The HIs for the kestrel (intermediate carnivore) and robin (herbivore) were equivalent to 1. The HI for kestrel (top carnivore) was less than 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.13 SWMU 01-006(a)

The results of the minimum ESL comparisons are presented in Table G-5.3-26. Arsenic, chromium (total), copper, cyanide (total), lead, mercury, nickel, selenium, bis(2-ethylhexyl)phthalate, and di-n-butylphthalate are retained as COPECs because the HQs were greater than 0.3.

Calcium does not have ESLs, is retained as a COPEC, and is discussed in the uncertainty section (G-5.4-8).

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-27. The HI analysis indicates that kestrel (top carnivore and intermediate carnivore), robin (all feeding guilds), shrew, deer mouse, and earthworm have HIs greater than 1. The HI for plant was equivalent to 1. The HIs for the fox and cottontail were less than 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.14 AOC 01-006(e)

The results of the minimum ESL comparisons are presented in Table G-5.3-28. Chromium (total), cyanide (total), and selenium are retained as COPECs because the HQs were greater than 0.3.

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-29. The HI analysis indicates that kestrel (intermediate carnivore) and robin (all feeding guilds) have HIs greater than 1. The HIs for kestrel (top carnivore), shrew, and plant were equivalent to 1. The HIs for the fox, cottontail, deer mouse, and earthworm were less than 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.15 SWMU 01-007(c)

The results of the minimum ESL comparisons are presented in Table G-5.3-30. Chromium (total), cyanide (total), lead, nickel, and selenium are retained as COPECs because the HQs were greater than 0.3.

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-31. The HI analysis indicates that robin (all feeding guilds) and shrew have HIs greater than 1. The HIs for kestrel (intermediate carnivore), deer mouse, and plant were equivalent to 1. The HIs for the fox, kestrel (top carnivore), cottontail, and earthworm were less than 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.16 SWMUs 03-038(a,b)

The results of the minimum ESL comparisons are presented in Table G-5.3-32. Barium, chromium (total), copper, cyanide (total), lead, nickel, selenium, Aroclor-1254, and bis(2-ethylhexyl)phthalate are retained as COPECs because the HQs were greater than 0.3.

Calcium does not have an ESL, is retained as a COPEC, and is discussed in the uncertainty section (G-5.4-8).

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-33. The HI analysis indicates that kestrel (intermediate carnivore), robin (all feeding guilds), and shrew have HIs greater than 1. The HIs for kestrel (top carnivore), deer mouse, and plant were equivalent to 1. The HIs for the fox, cottontail, and earthworm were less than 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.17 SWMU 03-055(c)

The results of the minimum ESL comparisons are presented in Table G-5.3-34. Arsenic, copper, lead, selenium, zinc, acenaphthene, Aroclor-1254, benzo(a)anthracene, benzioic acid, and bis(2-ethylhexyl)phthalate are retained as COPECs because the HQs were greater than 0.3.

Ethylbenzene and 1,2-xylene do not have ESLs, are retained as a COPECs, and are discussed in the uncertainty section (G-5.4-8).

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-35. The HI analysis indicates that kestrel (intermediate carnivore), robin (all feeding guilds), shrew, deer mouse, earthworm, and plant have HIs greater than 1. The HI for cottontail was equivalent to 1. The HIs for the fox and kestrel (top carnivore) were less than 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.18 SWMU 32-002(b2)

The results of the minimum ESL comparisons are presented in Table G-5.3-36. Antimony, arsenic, barium, chromium (total), copper, cyanide (total), lead, mercury, nickel, selenium, silver, and bis(2-ethylhexyl)phthalate are retained as COPECs because the HQs were greater than 0.3.

Nitrate does not have ESLs, is retained as a COPEC, and is discussed in the uncertainty section (G-5.4-8).

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-37. The HI analysis indicates that kestrel (top carnivore and intermediate carnivore), robin (all feeding guilds), cottontail, shrew, deer mouse, earthworm, and plant have HIs greater than 1. The HI for the fox was less than 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.19 AOC C-43-001

The results of the minimum ESL comparisons are presented in Table G-5.3-38. Cadmium, chromium (total), copper, cyanide (total), lead, mercury, nickel, selenium, zinc, Aroclor-1254, and bis(2-ethylhexyl)phthalate are retained as COPECs because the HQs were greater than 0.3.

Bromomethane, calcium, and 4-isopropyltoluene do not have ESLs, are retained as a COPECs, and are discussed in the uncertainty section (G-5.4-8).

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-39. The HI analysis indicates that kestrel (top carnivore and intermediate carnivore), robin (all feeding guilds), shrew, deer mouse, earthworm, and plant have HIs greater than 1. The HIs for the fox and cottontail were less than 1. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.3.20 SWMU 61-007

The results of the minimum ESL comparisons are presented in Table G-5.3-40. Aroclor-1260 and bis(2-ethylhexyl)phthalate are retained as COPECs because the HQs were greater than 0.3.

The HQs and HIs for each COPEC and receptor combination are presented in Table G-5.3-41. The HI analysis indicates that kestrel (intermediate carnivore) and robin (omnivore and insectivore feeding guilds) have HIs greater than 1. The HIs for the fox, kestrel (top carnivore), robin (herbivore), cottontail, shrew, and deer mouse were less than 1. There are no HIs for earthworm and plant. The COPECs and receptors are discussed in the uncertainty section (G-5.4-7).

G-5.4 Uncertainty Analysis

The uncertainty analysis describes the key sources of uncertainty related to the screening evaluations. This analysis can result in either adding or removing chemicals from the list of COPECs for sites. The following narrative contains a qualitative uncertainty analysis of the issues relevant to evaluating the potential ecological risk at the Upper Los Alamos Canyon Aggregate Area.

G-5.4.1 Chemical Form

The assumptions used in the ESL derivations were conservative and not necessarily representative of actual conditions. These assumptions include maximum chemical bioavailability, maximum receptor ingestion rates, minimum bodyweight, and additive effects of multiple COPECs. Most of these factors tend to result in conservative estimates of the ESLs, which may lead to an overestimation of the potential risk. The assumption of additive effects for multiple COPECs may result in an over- or underestimation of the potential risk to receptors.

The chemical form of the individual COPCs was not determined as part of the investigation, largely a limitation on analytical quantitation of individual chemical species. Toxicological data are typically based on the most toxic and bioavailable chemical species not likely found in the environment. The inorganic, organic, and radionuclide COPECs are generally not 100% bioavailable to receptors in the natural environment because of the adsorption of chemical constituents to matrix surfaces (e.g., soil), or rapid oxidation or reduction changes that render harmful chemical forms unavailable to biotic processes. The ESLs were calculated to ensure a conservative indication of potential risk (LANL 2017, 602649), and the values were biased toward overestimating the potential risk to receptors.

G-5.4.2 Exposure Assumptions

The EPCs used in the calculations of HQs were the 95% UCL, the maximum detected concentration, or the maximum detection limit to a depth of 5.0 ft, thereby conservatively estimating the exposure to each COPC. As a result, the exposure of individuals within a population was evaluated using this specific concentration, which was assumed constant throughout the exposure area. The sampling also focused on areas of known contamination, and receptors were assumed to ingest 100% of their food and spend 100% of their time at the site. The assumptions made regarding exposure for terrestrial receptors results in an overestimation of the potential exposure and risk because COPECs varied across the site and were infrequently detected.

G-5.4.3 Toxicity Values

The HQs were calculated using ESLs, which are based on NOAELs as threshold effect levels; actual risk for a given COPEC/receptor combination occurs at a higher level, somewhere between the NOAEL-based threshold and the threshold based on the LOAEL. The use of NOAELs leads to an overestimation of potential risk to ecological receptors. ESLs are based on laboratory studies requiring extrapolation to wildlife receptors. Laboratory studies are typically based on “artificial” and maintained populations with genetically similar individuals and are limited to single chemical exposures in isolated and controlled conditions using a single exposure pathway. Wild species are concomitantly exposed to a variety of chemical and environmental stressors, potentially rendering them more susceptible to chemical stress. On the other hand, wild populations are likely more genetically diverse than laboratory populations, making wild populations, as a whole, less sensitive to chemical exposure than laboratory populations. The uncertainties associated with the ESLs may result in an under- or overestimation of potential risk.

G-5.4.4 Area Use Factors

In addition to the direct comparison of the EPC with the ESLs, area use factors (AUF) are used to account for the amount of time a receptor is likely to spend within the contaminated areas based on the size of the receptor's home range (HR). The AUF for individual organisms is calculated by dividing the size of the site by the HR for that receptor. Because T&E species must be assessed on an individual basis (EPA 1999, 070086), the AUF is used for the Mexican spotted owl. The HR for the Mexican spotted owl is 366 ha (EPA (1993, 059384). The site areas and AUFs for each site are presented in Table G-5.4-1. The kestrel (top carnivore) is used as the surrogate receptor for the Mexican spotted owl.

Ten sites had the HI for the kestrel (top carnivore) equivalent to or greater than 1 [01-001(d3), 01-001(f), 01-001(o), 01-001(s2), 01-003(a), 01-006(a), 01-006(e), 03-038(a,b), 32-002(b2), and C-43-001]. Application of the AUF for the Mexican spotted owl to the HI for the kestrel (top carnivore) resulted in an adjusted HI of 0.000000001 to 0.8. Therefore, there are no potential adverse impacts to the Mexican spotted owl at any of the sites.

G-5.4.5 Population Area Use Factors

EPA guidance is to manage the ecological risk to populations rather than to individuals, with the exception of T&E species (EPA 1999, 070086). One approach to address the potential effects on populations at these sites in the Upper Los Alamos Aggregate Area is to estimate the spatial extent of the area inhabited by the local population that overlaps with the contaminated area. The population area for a receptor is based on the individual receptor HR and its dispersal distance. Bowman et al. (2002, 073475) estimate that the median dispersal distance for mammals is 7 times the linear dimension of the HR (i.e., the square root of the HR area). If only the dispersal distances for the mammals with HRs within the range of the screening receptors are used (Bowman et al. 2002, 073475), the median dispersal distance becomes 3.6 times the square root of the HR (R^2=0.91). If it is assumed that the receptors can disperse the same distance in any direction, the population area is circular and the dispersal distance is the radius of the circle. Therefore, the population area can be derived by $\pi(3.6\sqrt{HR})^2$ or approximately 40HR.

The HRs for the kestrel, robin, deer mouse, shrew, cottontail, and fox were determined using the data in EPA's wildlife exposure factors handbook (EPA 1993, 059384). The HRs were either for specific environments or averages of different environments presented in the respective exposure parameter/population dynamic tables (EPA 1993, 059384). LANL (2017, 602649, Table 3.3-1) presents how the EPA data were used to derive the HRs for each receptor. The HRs were used to calculate the population areas for each receptor as described in the previous paragraph.

G-5.4.5.1 SWMU 00-017

The area of SWMU 00-017 is approximately 0.135 ha. The population area use factors (PAUFs) are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-2). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for SWMU 00-017 are less than 1 for all receptors (Table G-5.4-3). The plant had an unadjusted HI of 52 and the earthworm had an unadjusted HI of 1 (Table G-5.4-3).

G-5.4.5.2 AOC C-00-044

The area of AOC C-00-044 is approximately 2.18 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-4). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for AOC C-00-044 are less than 1 for fox, kestrel (top carnivore and intermediate carnivore), robin (herbivore), cottontail, and shrew and greater than 1 for robin (omnivore and insectivore) and deer mouse. (Table G-5.4-5). The plant had an unadjusted HI of 2 and the earthworm had an unadjusted HI of 0.6. (Table G-5.4-5).

G-5.4.5.3 SWMU 01-001(a)

The area of SWMU 01-001(a) is approximately 0.11 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-6). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for SWMU 01-001(a) are less than 1 for all receptors (Table G-5.4-7). The plant had an unadjusted HI of 2 and the earthworm had an unadjusted HI of 0.4 (Table G-5.4-7).

G-5.4.5.4 SWMU 01-001(d3)

The area of SWMU 01-001(d3) is approximately 0.798 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-8). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for SWMU 01-001(d3) are less than 1 for fox, kestrel (top carnivore and intermediate carnivore), cottontail, and shrew; and greater than 1 for robin (all feeding guilds) and deer mouse (Table G-5.4-9). The plant had an unadjusted HI of 10 and the earthworm had an unadjusted HI of 162 (Table G-5.4-9).

G-5.4.5.5 SWMU 01-001(f)

The area of SWMU 01-001(f) is approximately 0.258 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-10). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for SWMU 01-001(f) are less than 1 for fox, kestrel (top carnivore and intermediate carnivore), robin (herbivore), cottontail, shrew, and deer mouse and greater than 1 for robin (omnivore and insectivore) (Table G-5.4-11). The plant had an unadjusted HI of 3 and the earthworm had an unadjusted HI of 1 (Table G-5.4-11).

G-5.4.5.6 SWMU 01-001(g)

The area of SWMU 01-001(g) is approximately 0.013 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-12). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for SWMU 01-001(g) are less than 1 for all receptors (Table G-5.4-13). The plant had an unadjusted HI of 0.7 and the earthworm had an unadjusted HI of 0.09 (Table G-5.4-13).

G-5.4.5.7 SWMU 01-001(o)

The area of SWMU 01-001(o) is approximately 0.106 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-14). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for SWMU 01-001(o) are less than 1 for fox, kestrel (top carnivore and intermediate carnivore), robin (herbivore and omnivore), cottontail, shrew, and deer mouse and equivalent to 1 for robin (insectivore) (Table G-5.4-15). The plant had an unadjusted HI of 3 and the earthworm had an unadjusted HI of 5 (Table G-5.4-15).

G-5.4.5.8 SWMU 01-001(s2)

The area of SWMU 01-001(s2) is approximately 0.222 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-16). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for SWMU 01-001(s2) are less than 1 for all receptors (Table G-5.4-17). The plant had an unadjusted HI of 2 and the earthworm had an unadjusted HI of 0.6 (Table G-5.4-17).

G-5.4.5.9 SWMU 01-002(a2)-00

The area of SWMU 01-002(a2)-00 is approximately 0.158 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-18). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for SWMU 01-002(a2)-00 are less than 1 for fox, kestrel (top carnivore and intermediate carnivore), cottontail, shrew, and deer mouse; equivalent to 1 for the robin (herbivore and omnivore); and greater than 1 for the robin (insectivore) (Table G-5.4-19). The plant had an unadjusted HI of 1 and the earthworm had an unadjusted HI of 0.1 (Table G-5.4-19).

G-5.4.5.10 SWMU 01-003(a)

The area of SWMU 01-003(a) is approximately 0.513 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-20). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for SWMU 01-003(a) are less than 1 for fox, kestrel (top carnivore and intermediate carnivore), robin (herbivore), cottontail, and shrew; equivalent to 1 for the deer mouse; and greater than 1 for robin (omnivore and insectivore) (Table G-5.4-21). The plant had an unadjusted HI of 4 and the earthworm had an unadjusted HI of 5 (Table G-5.4-21).

G-5.4.5.11 AOC 01-003(b2)

The area of AOC 01-003(b2) is approximately 0.019 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-22). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for AOC 01-003(b2) are less than 1 for all receptors (Table G-5.4-23). The plant had an unadjusted HI of 4 and the earthworm had an unadjusted HI of 0.7 (Table G-5.4-23).

G-5.4.5.12 SWMU 01-003(d)

The area of SWMU 01-003(d) is approximately 0.123 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-24). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for SWMU 01-003(d) are less than 1 for fox, kestrel (top carnivore and intermediate carnivore), robin (all feeding guilds), cottontail, and shrew and equal to 1 for deer mouse. (Table G-5.4-25). The plant had an unadjusted HI of 9 and the earthworm had an unadjusted HI of 2 (Table G-5.4-25).

G-5.4.5.13 SWMU 01-006(a)

The area of SWMU 01-006(a) is approximately 0.046 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-26). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for SWMU 01-006(a) are less than 1 for all receptors (Table G-5.4-27). The plant had an unadjusted HI of 1 and the earthworm had an unadjusted HI of 2 (Table G-5.4-27).

G-5.4.5.14 AOC 01-006(e)

The area of AOC 01-006(e) is approximately 0.128 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-28). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for AOC 01-006(e) are less than 1 for all receptors (Table G-5.4-29). The plant had an unadjusted HI of 1 and the earthworm had an unadjusted HI of 0.1 (Table G-5.4-29).

G-5.4.5.15 SWMU 01-007(c)

The area of SWMU 01-007(c) is approximately 0.146 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-30). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for SWMU 01-007(c) are less than 1 for all receptors (Table G-5.4-31). The plant had an unadjusted HI of 2 and the earthworm had an unadjusted HI of 0.6 (Table G-5.4-31).

G-5.4.5.16 SWMUs 03-038(a,b)

The area of SWMUs 03-038(a,b) is approximately 0.065 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-32). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for SWMUs 03-038(a,b) are less than 1 for all receptors (Table G-5.4-33). The plant had an unadjusted HI of 1 and the earthworm had an unadjusted HI of 0.3 (Table G-5.4-33).

G-5.4.5.17 SWMU 03-055(c)

The area of SWMU 03-055(c) is approximately 0.035 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-34). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for SWMU 03-055(c) are less than 1 for all receptors (Table G-5.4-35). The plant had an unadjusted HI of 4 and the earthworm had an unadjusted HI of 2 (Table G-5.4-35).

G-5.4.5.18 SWMU 32-002(b2)

The area of SWMU 32-002(b2) is approximately 0.098 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-36). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for SWMU 32-002(b2) are less than 1 for fox, kestrel (top carnivore and intermediate carnivore), cottontail, shrew, and deer mouse and greater than 1 for robin (all feeding guilds). (Table G-5.4-37). The plant had an unadjusted HI of 7and the earthworm had an unadjusted HI of 87 (Table G-5.4-37).

G-5.4.5.19 AOC C-43-001

The area of AOC C-43-001 is approximately 0.215 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-38). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for AOC C-43-001 are less than 1 for all receptors (Table G-5.4-39). The plant had an unadjusted HI of 2 and the earthworm had an unadjusted HI of 4 (Table G-5.4-39).

G-5.4.5.20 SWMU 61-007

The area of SWMU 61-007 is approximately 0.011 ha. The PAUFs are estimated by dividing the site area by the population area of each receptor population (Table G-5.4-40). The HQs and HIs are recalculated using the PAUFs. The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs.

The adjusted HIs for SWMU 61-007 are less than 1 for all receptors (Table G-5.4-41). There are no HIs for earthworm and plant (Table G-5.4-41).

G-5.4.6 LOAEL Analysis

All of the sites have HIs greater than 1 for one or more receptors. To address the HIs and reduce the associated uncertainty, analyses were conducted using ESLs calculated based on a LOAEL rather than a NOAEL. The LOAEL-based ESLs were calculated based on toxicity information in the ECORISK Database, Release 4.1 (LANL 2017, 602538) and are presented in Table G-5.4-42. The analyses address some of the uncertainties and conservativeness of the ESLs used in the initial screening assessments. HI analyses and adjusted HI analyses were conducted using the LOAEL-based ESLs for COPECs having unadjusted or PAUF-adjusted HQs greater than 0.1 and a receptor HI greater than 1.

G-5.4.7 Site Discussions

G-5.4.7.1 SWMU 00-017

The plant HI for SWMU 00-017 is greater than 1, with antimony, barium, cadmium, lead, mercury, nickel, selenium, and thallium being the primary COPECs for one or more receptors. The HI analysis using LOAEL-based ESLs resulted in an HI of 0.4 deer mouse, 6 for the plant and 0.1 for the earthworm (Table G-5.4-43). The only COPEC with a HQ greater than 1 was thallium for the plant.

There were no detections of thallium in the 15 samples taken from the 0–5 ft depth interval. Thallium was identified as a COPC based on high detection limits with an EPC of the maximum detection limit, 2.4 mg/kg (unfiltered). All 4 1998 sediment samples were analyzed using inductively coupled plasma emission spectroscopy and had large DLs (2.3 mg/kg, 2.4 mg/kg). The 11 sediment and tuff samples collected in 2009 from 0–5 ft bgs were analyzed using inductively coupled plasma mass spectroscopy and resulted in smaller detection limits of 0.11 mg/kg to 0.25 mg/kg, which did not exceed the sediment and upper tuff BVs (0.73 mg/kg and 1.1 mg/kg [Qbt 2, Qbt 3], respectively). Therefore, the potential ecological risk to the plant is overestimated because of the high detection limits.

In addition, field observations made during the site visit found no indication of adverse effects from COPECs on the plant community (Attachment G-2). Field observations indicated the site is within a former industrially developed area, with plants and animals recolonizing the area. Therefore, the HI does not indicate potential risk to plants or other biota.

G-5.4.7.2 AOC C-00-044

The robin (insectivore) and robin (omnivore) HIs for AOC C-00-044 are greater than 1, with antimony, lead, selenium, zinc and bis(2-ethylhexyl)phthalate being the primary COPECs for one or more receptors. The HI analysis using LOAEL-based ESLs resulted in HIs of 8 for robin (insectivore), 5 for robin (omnivore), 0.9 for deer mouse, 0.1 for earthworm, and 0.4 for plant (Table G-5.4-44). The adjusted HI analysis using LOAEL-based ESLs resulted in HIs of 2 for robin (insectivore) and 3 for robin (omnivore) (Table G-5.4-45). There are no HQs above 1 for the robin (insectivore), but bis(2-ethylhexyl)phthalate has the largest HQ (0.62).

Bis(2-ethylhexyl)phthalate was detected in 1 of 44 samples in the 0.0−5.0 ft depth interval and the maximum concentration (0.945 mg/kg) was the EPC. The use of the maximum concentration and the infrequent detection of bis(2-ethylhexyl)phthalate overestimated the potential risk to the robin (insectivore).

G-5.4.7.3 SWMU 01-001(a)

The HI for SWMU 01-001(a) is 2 for the plant, with barium, copper, lead, nickel, selenium, vanadium, and acenaphthene being the primary COPECs. The HI analysis using LOAEL-based ESLs resulted in an HI of 0.5 for the plant (Table H-5.4-46). There were no COPECs with a HQs equal to or greater than 1.

G-5.4.7.4 SWMU 01-001(d3)

The HIs for SWMU 01-001(d3) are greater than 1 for the robin (all feeding guilds), deer mouse, earthworm and plant, with antimony, barium, beryllium, chromium hexavalent ion, copper, lead, manganese, mercury, nickel, selenium, zinc, bis(2-ethylhexyl)phthalate, di-n-butylphthalate, and pentachlorophenol being the primary COPECs for one or more receptors. The HI analysis using LOAEL-based ESLs resulted in HIs of 12 for robin (herbivore), 67 for robin (insectivore), 39 for robin (omnivore), 2 for the deer mouse, 0.8 for the shrew, 16 for earthworm and 2 for plant (Table G-5.4-47). The adjusted HI analysis using LOAEL-based ESLs resulted in HIs of 0.6 for robin (herbivore), 3 for robin (insectivore), 2 for robin (omnivore), and 0.5 for the deer mouse (Table G-5.4-48). The COPECs with HQs equal to or greater than 1 included mercury for robin (insectivore) (2.8) and robin (omnivore) (1.7).

Mercury was detected rarely in the samples from lower tuff (3 of 18 samples from Qbt 1v, Qbt 1g, Qct) but was detected in the majority of samples from upper tuff (Qbt 3), sediment, and soil for a total of 104 detected concentrations out of 129 sample results. The EPC of 30.34 mg/kg represents the average concentration. The BV for mercury is 0.1 mg/kg and the LOAEL-based ESLs range from 0.13 to 64 mg/kg, so the screening values are similar to or greater than the background value for mercury. The deer mouse, shrew, and plant have screening values (30 mg/kg, 17 mg/kg, and 64 mg/kg, respectively) similar to or greater than the EPC (30.34 mg/kg), and although above the BV, may not represent risk. The highest risk is potentially for the robin (all feeding guilds) and earthworm with screening values (0.13 mg/kg to 0.67 mg/kg) being much less than the EPC. However, the screening values are similar to or greater than the BV and may be overly conservative because they are based on laboratory conditions rather than field studies.

In addition, field observations made during the site visit found no indication of adverse effects from COPECs on the plant community (Attachment G-2). The site currently has no active operations and is becoming naturalized, with abundant habitat for ecological receptors, including plants. Therefore, the HI may not indicate potential risk to ecological receptors.

G-5.4.7.5 SWMU 01-001(f)

The HIs for SWMU 01-001(f) are greater than 1 for the robin (insectivore and omnivore); with cyanide (total), Aroclor-1254, and bis(2-ethylhexyl)phthalate being the primary COPECs for one or more receptors. The HI analysis using LOAEL-based ESLs resulted in an HI of 9 for the robin (insectivore), 2 for the robin (omnivore), 0.1 for the earthworm, and 0.6 for the plant (Table G-5.4-49). The adjusted HI analysis using LOAEL-based ESLs resulted in no HIs greater than 1 (Table G-5.4-50). No COPECs had adjusted HQs equal to or greater than 1.

G-5.4.7.6 SWMU 01-001(o)

The HIs for SWMU 01-001(o) are greater than 1 for the robin (insectivore) with Aroclor-1254 and di-n-butylphthalate being the primary COPECs. The HI analysis using LOAEL-based ESLs resulted in an HI of 12 for the robin (insectivore), 0.5 for the earthworm, and 0.4 for the plant (Table G-5.4-51). The adjusted HI analysis using LOAEL-based ESLs resulted in an HI of 0.06 for the robin (insectivore) (Table G-5.4-52). There were no COPECs with a HQs equal to or greater than 1.

G-5.4.7.7 SWMU 01-001(s2)

The only HI for SWMU 01-001(s2) that was greater than 1 was for the plant; with barium, copper, nickel, and selenium being the primary COPECs. The HI analysis using LOAEL-based ESLs resulted in an HI of 0.6 for the plant (Table G-5.4-53).

G-5.4.7.8 SWMU 01-002(a2)-00

The HIs for SWMU 01-001(a2)-00 were greater than 1 for the robin (insectivore) and equivalent to 1 for the robin (herbivore and omnivore) and plant; with lead, nickel, and selenium being the primary COPECs. The HI analysis using LOAEL-based ESLs resulted in an HI of 0.2 for the plant, 0.5 for robin (herbivore), 0.9 robin (insectivore), and 0.7 for robin (omnivore) (Table G-5.4-54).

G-5.4.7.9 SWMU 01-003(a)

The HIs for SWMU 01-003(a) are greater than 1 for the robin (insectivore and omnivore), earthworm, and plant and equivalent to 1 for the deer mouse; with barium, cyanide (total), lead, manganese, mercury, nickel, selenium, vanadium, zinc, acenaphthene, Aroclor-1254, benzoic acid, bis(2-ethylhexyl)phthalate, chrysene, di-n-butylphthalate, fluoranthene, phenanthrene, and pyrene being the primary COPECs for one or more receptors. The HI analysis using LOAEL-based ESLs resulted in an HI of 11 for the robin (insectivore), 6 for the robin (omnivore), 0.7 for the deer mouse, 1 for the earthworm, and 1 for the plant (Table G-5.4-55). The adjusted HI analysis using LOAEL-based ESLs resulted in an HI of 0.3 for the robin (insectivore) and 0.2 for the robin (omnivore) (Table G-5.4-56). There are no HQs equal to or greater than 1 for the robin (insectivore) or robin (omnivore), but the largest HQs were for Aroclor-1254 at 0.2 and 0.1, respectively. Also, there are no HQs equal to or greater than 1 for the earthworm, but the largest were for flouranthene (0.3) and pyrene (0.3). Also, there are no HQs equal to or greater than 1 for the plant, but the largest was for barium (0.487).

Aroclor-1254 was detected in 73 of 75 samples in the 0.0 to 5.0 ft depth interval collected from soil, sediment, and tuff (units Qbt 3, Qbt 1g) with an EPC of 2.65 mg/kg. The average detected concentrations were larger in fill (3.04 mg/kg) than in soil (1.99 mg/kg) and sediment (0.8 mg/kg) and smallest in tuff (0.159 mg/kg in Qbt 1g, 0.125 in Qbt 3). The data indicates that the LOAEL-based ESL for the robin (insectivore) (23 mg/kg) is exceeded; however, because the population foraging range is beyond this localized site, no impact to the robin population is expected.

Fluoranthene was detected in 22 of 30 samples in the 0.0 to 5.0 ft depth interval collected from soil, fill, sediment, and tuff (units Qbt 3, Qbt 1g) with an EPC of 6.357 mg/kg. The average detected concentrations were larger in sediment (5.86 mg/kg) than in lower tuff (2.35 mg/kg, Qbt 1g) and smallest in soil (0.047 mg/kg), fill (0.065 mg/kg), and upper tuff (0.34 mg/kg, Qbt 3). The data indicate that the LOAEL-based ESL for earthworm (23 mg/kg) is not likely to be exceeded, and no impact to the earthworm population is expected.

Pyrene was detected in 22 of 30 samples in the 0.0 to 5.0 ft depth interval collected from soil, fill, sediment and tuff (units Qbt 3, Qbt 1g) with an EPC of 5.584 mg/kg. The average detected concentrations were larger in sediment (5.12 mg/kg) than in lower tuff (2.23 mg/kg, Qbt 1g) and smallest in soil (0.056 mg/kg), fill (0.062 mg/kg), and upper tuff (0.30 mg/kg, Qbt 3). The data indicates that the LOAEL-based ESL for earthworm (20 mg/kg) is not likely to be exceeded, and no impact to the earthworm population is expected.

Barium was detected in all 45 samples in the 0.0 to 5.0 ft depth interval collected from soil, fill, sediment and tuff (units Qbt 3, Qbt 1g) with an EPC of 44.3 mg/kg. All soil and sediment concentrations were below the soil BV (295 mg/kg) and sediment BV (127 mg/kg). The EPC, which represents the average exposure concentration, is within the range of soil, sediment, and Qbt 3 background concentrations but greater than the maximum Qbt 1g background concentration. The plant LOAEL-based ESL for barium is 260 mg/kg and is similar to background concentrations (soil BV of 295 mg/kg) and all the soil and sediment concentrations were below background, which indicates that the potential for ecological risk to plants from barium is unlikely.

In addition, field observations made during the site visit found no indication of adverse effects from COPECs on the ecological community (Attachment G-2). The site currently has no active operations and is becoming naturalized, with abundant habitat for ecological receptors. Therefore, the HI may not indicate potential risk to ecological receptors.

G-5.4.7.10 AOC 01-003(b2)

The only HI greater than 1 for AOC 01-003(b2) is for the plant, with antimony, arsenic, barium, beryllium, lead, nickel, and selenium being the primary COPECs. The HI analysis using LOAEL-based ESLs resulted in an HI of 1 for the plant (Table G-5.4-57). There are no HQs equal to or greater than 1 for the plant, but the largest was for barium (0.5).

Barium was detected in all eleven samples in the 0.0 to 5.0 ft depth interval in soil, sediment, and upper tuff (unit Qbt 3) with an EPC of 117.1 mg/kg. Two of six concentrations of barium in tuff (63.9 mg/kg, 228 mg/kg) were above the BV (46 mg/kg). All soil and sediment concentrations were below the soil BV (295 mg/kg) and sediment BV (127 mg/kg). The EPC, which represents the average exposure concentration, is within the range of soil background concentrations and sediment background concentrations but greater than the maximum upper tuff background concentration. The plant LOAEL-based ESL for barium is 260 mg/kg is similar to background concentrations (soil BV of 295 mg/kg) and all the soil and sediment concentrations were below background, which indicates that the potential for ecological risk to plants from barium is unlikely.

In addition, field observations made during the site visit found no indication of adverse effects from COPECs on the ecological community (Attachment G-2). The site currently has no active operations and is becoming naturalized, with abundant habitat for ecological receptors. Therefore, the HI may not indicate potential risk to ecological receptors.

G-5.4.7.11 SWMU 01-003(d)

The HIs for SWMU 01-003(d) are greater than 1 for the earthworm and the plant and equivalent to 1 for the earthworm, with antimony, barium, beryllium, lead, selenium, and zinc being the primary COPECs for one or more receptors. The HI analysis using LOAEL-based ESLs resulted in an HI of 3 for the deer mouse, 0.2 for the earthworm, and 2 for the plant (Table G-5.4-58). The adjusted HI analysis using LOAEL-based ESLs resulted in an HI of 0.1 for the deer mouse (Table G-5.4-59). The only COPEC with an HQ greater than 1 was antimony for the plant (1.35).

Antimony was detected in 25 of 46 samples collected in the 0.0−5.0 ft depth interval from soil and upper tuff (unit Qbt 3) with an EPC of 269 mg/kg. All detected concentrations were above the soil BV (0.83 mg/kg) and upper tuff BV (0.5 mg/kg) in each of the years that samples were collected (2008, 2012, 2013, and 2017). The LOAEL-based screening value for antimony (58 mg/kg) may be overly conservative because it is based on laboratory studies and the bioavailability and plant species tested are likely different than at the site. Furthermore, this site is on a smaller area on an undeveloped hill slope and the plant community as a whole is not impacted. Field observations made during the site visit found no indication of adverse effects from COPECs on the ecological community (Attachment G-2). The site currently has no active operations and is becoming naturalized, with abundant habitat for ecological receptors. Therefore, the HI may not indicate potential risk to ecological receptors.

G-5.4.7.12 SWMU 01-006(a)

The HI for SWMU 01-006(a) is greater than 1 for the earthworm and equivalent to 1 for the plant with arsenic, lead, mercury, nickel, and selenium being the primary COPECs for one or more receptors. The HI analysis using LOAEL-based ESLs resulted in an HI of 0.1 for the earthworm and 0.2 for the plant (Table G-5.4-60).

G-5.4.7.13 AOC 01-006(e)

The HI for AOC 01-006(e) is equivalent to 1 for the plant with selenium being the primary COPEC. The HI analysis using LOAEL-based ESLs resulted in an HI of 0.2 for the plant (Table G-5.4-61).

G-5.4.7.14 SWMU 01-007(c)

The HI for SWMU 01-007(c) is greater than 1 for the plant with lead, nickel, and selenium being the primary COPECs. The HI analysis using LOAEL-based ESLs resulted in an HI of 0.2 for the plant (Table G-5.4-62).

G-5.4.7.15 SWMUs 03-038(a,b)

The HI for SWMUs 03-038(a,b) is equivalent to 1 for the plant with barium, lead, nickel, and selenium being the primary COPECs. The HI analysis using LOAEL-based ESLs resulted in an HI of 0.3 for the plant (Table G-5.4-63).

G-5.4.7.16 SWMU 03-055(c)

The HI for SWMU 03-055(c) is greater than 1 for the earthworm and plant with arsenic, copper, lead, selenium, zinc, and acenaphthene being the primary COPECs for one or more receptors. The HI analysis using LOAEL-based ESLs resulted in an HI of 0.2 for the earthworm and 0.8 for the plant (Table G-5.4-64).

G-5.4.7.17 SWMU 32-002(b2)

The HIs for SWMU 32-002(b2) are greater than 1 for robin (all feeding guilds), earthworm, and plant; with arsenic, barium, lead, mercury, nickel, selenium, thallium, zinc, and bis(2-ethylhexyl)phthalate being the primary COPECs for one or more receptors. The HI analysis using LOAEL-based ESLs resulted in an HI of 19 for the robin (insectivore), 35 for the robin (omnivore), 9 for the earthworm, and 1 for the plant (Table G-5.4-65). The adjusted HI analysis using LOAEL-based ESLs resulted in an HI of 0.1 for the robin (insectivore), and 0.2 for the robin (omnivore) (Table G-5.4-66). The COPEC with an HQ equal to or greater than 1 was for mercury for the earthworm (9).

Mercury was detected in a majority of the samples in the 0.0 to 5.0 ft depth interval collected from upper tuff (43 of 49 samples from Qbt 2, Qbt 3) and soil (69 of 72 samples) for a total of 112 detected concentrations out of 123 sample results. The EPC of 27.09 mg/kg represents the average concentration at the SWMU. The EPC is a conservative estimate of the average and larger than the arithmetic average of the detected concentrations at the SWMU (11.28 mg/kg).

In addition to the information discussed above, a site-specific study was conducted for SWMU 32-002(b2) for the High Angle Remediation Project (HARP). The COPEC of interest for this study was mercury. A wide range of mercury soil concentrations was available from this site, and four locations were tested using the earthworm bioaccumulation test. The results of those tests are documented in a laboratory report (TRE Environmental Strategies 2015, 601279) that provided information on the test conditions as well as survival and weight change of the earthworm. No adverse effects were noted at the maximum mercury concentration of 395 mg/kg tested.

G-5.4.7.18 AOC C-43-001

The HI for AOC C-43-001 is greater than 1 for the earthworm and plant with copper, lead, mercury, nickel, selenium, and zinc being the primary COPECs for one or more receptors (Table G-5.4-67). The HI analysis using LOAEL-based ESLs resulted in an HI of 0.4 for the earthworm and 0.3 for the plant (Table G-5.4-67).

G-5.4.7-19 SWMU 61-007

No adjusted HIs for SWMU 61-007 are greater than 1, so no LOAEL analysis was performed for this site.

G-5.4.8 Chemicals without ESLs

Several COPECs do not have ESLs for any receptor in Release 4.1 of the ECORISK Database (LANL 2016, 602538). In an effort to address this uncertainty and to provide a quantitative assessment of potential ecological risk, several online toxicity databases searches were conducted to determine if any relevant toxicity information is available. The online searches of the following databases were conducted: EPA Ecotox Database, EPA Office of Pesticide Programs Aquatic Life Benchmarks, U.S. Army Corps of Engineers/EPA Environmental Residue-Effects, California Cal/Ecotox Database, Pesticide Action Network Pesticide Database, U.S. Army Wildlife Toxicity Assessment Program, U.S. Department of Agriculture Integrated Pesticide Management Database, American Bird Conservancy Pesticide Toxicity Database, and Oak Ridge National Laboratory Risk Assessment Information System. Some COPECs without ESLs do not have chemical-specific toxicity data or surrogate chemicals to be used in the screening assessments and cannot be assessed quantitatively for potential ecological risk.

In the absence of a chemical-specific ESL, COPEC concentrations can be compared with ESLs for a surrogate chemical. Comparison with surrogate ESLs provides an estimate of potential effects of a chemically related compound and a line of evidence to indicate the likelihood that ecological receptors are potentially impacted.

Some COPECs without ESLs do not have chemical-specific toxicity data or surrogate chemicals to be used in the screening assessments and cannot be assessed quantitatively for potential ecological risk. These COPECs are often infrequently detected across the site. In these cases, comparisons with residential human health SSLs are presented as part of a qualitative assessment. The comparison of COPEC concentrations with residential human health SSLs is a viable alternative for several reasons. Animal studies are used to infer effects on humans and are the basic premise of modern toxicology (EPA 1989, 008021). In addition, toxicity values derived for the calculation of human health SSLs are often based on potential effects that are more sensitive than the ones used to derive ESLs (e.g., cellular effects for humans versus survival or reproductive effects for terrestrial animals). EPA also applies uncertainty factors or modifying factors to ensure that the toxicity values are protective (i.e., they are adjusted by uncertainty factors to values much lower than the study results). COPEC concentrations compared with these values are an order of magnitude or more below the SSLs, which corresponds to uncertainty factors of 10 or more. Therefore, it is assumed the differences in toxicity would not be more than an order of magnitude for any given chemical. The relative difference between values provides a weight of evidence that the potential toxicity of the COPC is likely to be low or very low to the receptor(s). The COPECs without ESLs were common to many of the sites and are discussed below for each site.

Toxicity data are not available for aluminum, calcium, iron, magnesium, nitrate, bromomethane, 4-chlrotoluene, ethylbenzene, 4-isopropyltoluene, 1-propylbenzene, 1,2,4-trimethylbenzene, and 1,2-xylene. For calcium, iron, magnesium, nitrate, and bromomethane, no surrogate or other toxicity information is available. For 4-chlrotoluene, ethylbenzene, 4-isopropyltoluene, 1-propylbenzene, 1,2,4-trimethylbenzene, and 1,2-xylene, a surrogate is used based on structural similarity to evaluate the potential toxicity.

Calcium was identified as a COPC from 0.0 to 5.0 ft at seven sites with maximum concentrations ranging from 2420 mg/kg to 15,100 mg/kg. As presented in Table G-4.4-1, concentrations of calcium are substantially less than the NMED essential nutrient SSLs. Calcium is eliminated as a COPEC.

Magnesium was identified as a COPC from 0.0 to 5.0 ft at two sites with maximum concentration of 2090 mg/kg. As presented in Table G-4.4-1, concentrations of magnesium are substantially less than the NMED essential nutrient SSLs. Magnesium is eliminated as a COPEC.

Nitrate was identified as a COPC from 0.0 to 5.0 ft at seven sites with maximum concentrations of 0.45 mg/kg to 44 mg/kg. The NMED residential SSL for nitrate is 125,000 mg/kg, indicating that potential toxicity is very low. Because nitrate concentrations are about four orders of magnitude less than the SSL, nitrate is eliminated as a COPEC.

Bromomethane was detected at one site from 0.0 to 5.0 ft with maximum concentration of 0.00072 mg/kg (3 detections in 15 samples at AOC C-43-001). No surrogate chemical is available for bromomethane. Given the low concentration of the maximum detection, bromomethane is not retained as a COPEC.

Chlorotoluene[4-] was detected at one site from 0.0 to 5.0 ft with maximum concentration of 0.000425 mg/kg [1 detection in 34 samples at SWMU 01-001(f)]. The minimum ESL for chlorobenzene (2.4 mg/kg for the deer mouse) is used to screen the 4-chlorotoluene concentrations and results in a maximum HQ of 0.0002. Because the maximum HQ is less than 0.3, 4-chlorotoluene is not retained as a COPEC.

Ethylbenzene was identified as a COPC from 0.0 to 5.0 ft at one site based on a maximum detected concentration of 0.0016 mg/kg [maximum of 4 detections in 20 samples from SWMU 03-055(c)]. The minimum ESL for benzene (24 mg/kg for the deer mouse) is used to screen the ethylbenzene concentrations and results in a maximum HQ of 0.00007. Because the maximum HQ is less than 0.3, ethylbenzene is eliminated as a COPEC.

Iron was identified as a COPC from 0.0 to 5.0 ft at two sites with a range of maximum detected concentrations of 11,300 mg/kg to 21,600 mg/kg. The maximum iron concentration is also approximately one-third the NMED residential SSL (54,800 mg/kg). In addition, the EPA Eco-SSL for iron (EPA 2003, 111415) suggests it is not phytotoxic at circumneutral soil pH (5 to 8). This soil pH range is consistent with nearly all measurements taken for the Upper Los Alamos Canyon Aggregate Area. Therefore, iron is eliminated as a COPEC.

Isopropyltoluene[4-] was identified as a COPC from 0.0 to 5.0 ft at three sites with a maximum detected concentration of 0.22 mg/kg [5 detections in 64 samples from SWMU 01-001(f), SWMU 01-003(a), and AOC C-43-001]. The minimum ESL for toluene (23 mg/kg for the shrew) is used to screen the 4-isopropyltoluene concentrations and results in a maximum HQ of 0.009. Because the maximum HQ is less than 0.3, 4-isopropyltoluene is eliminated as a COPEC.

Propylbenzene[1-] was identified as a COPC from 0.0 to 5.0 ft at one site with a maximum concentration of 0.0013 mg/kg.[1 detection in 19 samples at SWMU 01-001(s2)]. The minimum ESL for benzene (24 mg/kg for the deer mouse) is used to screen the 1-propylbenzene concentrations and results in a maximum HQ of 0.00005. Because the maximum HQ is less than 0.3, 1-propylbenzene is not retained as a COPEC.

Trimethylbenzene[1,2,4-] was detected at one site from 0.0 to 5.0 ft with maximum concentration of 0.00041 mg/kg [1 detection in 34 samples at SWMU 01-001(f)]. The minimum ESL for benzene (24 mg/kg for the deer mouse) is used to screen the 1,2,4-trimethylbenzene concentrations and results in a maximum HQ of 0.00002. Because the maximum HQ is less than 0.3, 1,2,4-trimethylbenzene is not retained as a COPEC.

Xylene[1,2-] was identified as a COPC from 0.0 to 5.0 ft at SWMU 03-055(c). The maximum concentration was 0.0015 mg/kg (1 detection in 20 samples). The minimum ESL for total xylene (1.4 mg/kg for the shrew) is used to screen the 1,2-xylene concentration and results in a maximum HQ of 0.001. Because the maximum HQ is less than 0.3, 1,2-xylene is eliminated as a COPEC.

G-5.5 Interpretation of Ecological Risk Screening Results

G-5.5.1 Receptor Lines of Evidence

Based on the ecological risk-screening assessments, several COPECs (including COPECs without an ESL) were identified for the Upper Los Alamos Canyon Aggregate Area. Receptors were evaluated using several lines of evidence: minimum ESL comparisons, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, and the relationship of detected concentrations and detection limits to background concentrations.

Plant

- Initial screening using the minimum ESLs eliminated a number of COPECs because the HQs for all of the receptors, including the plant, were less than 0.3.
- The HIs were greater than 1 for the plant at all sites, except SWMU 01-001(g). SWMU 61-007 did not have screening levels available for plant.
- The HI analyses using the LOAEL-based ESLs resulted in HIs less than or equivalent to 1 for all sites, except SWMU 00-017, SWMU 01-001(d3), and SWMU 01-003(d). LOAEL-based HQs are greater than 1 for thallium (5) at SWMU 00-017 and antimony (1) at SWMU 01-003(d).
- Field observations made during the site visits found no indication of adverse effects on the plant community from COPECs. These sites currently have minimal active operations and are becoming naturalized, with abundant habitat for ecological receptors, including plants.

These lines of evidence support the conclusion that no potential ecological risk to the plant exists at the Upper Los Alamos Canyon Aggregate Area.

Earthworm (Invertebrate)

- Initial screening using the minimum ESLs eliminated a number of COPECs because the HQs for all of the receptors, including the earthworm, were less than 0.3.
- The HIs were greater than 1 for the earthworm at all sites except SWMU 00-017, AOC C-00-044, SWMU 01-001(a), SWMU 01-001(f), SWMU 01-001(g), SWMU 01-001(s2), SWMU 01-002(a2)-00, AOC 01-006(e), SWMU 01-007(c), and SWMUs 03-038(a,b).
- The HI analyses using the LOAEL-based ESLs resulted in HIs less than or equivalent to 1 for all sites except SWMU 01-001(d3), SWMU 01-003(a), and SWMU 32-002(b2). LOAEL-based HIs and HQs are greater than 1 for mercury with HQs of 15.5 and 9 at SWMU 01-001(d3) and SWMU 32-002(b2), respectively; and for zinc with an HQ of 7 at SWMU 01-001(d3). Bioassay for earthworm at SWMU 32-002(b2) showed no toxicity for mercury in this receptor.
- Field observations made during the site visits found no indication of adverse effects on the earthworm community from COPECs. The sites currently have minimal active operations and are becoming naturalized, with abundant habitat for ecological receptors, including plants and other biota.

These lines of evidence support the conclusion that no potential ecological risk to the earthworm exists at the Upper Los Alamos Canyon Aggregate Area.

Montane Shrew (Insectivore)

- Initial screening using the minimum ESLs eliminated a number of COPECs because the HQs for all of the receptors, including the shrew, were less than 0.3.
- The HIs were greater than or equal to 1 for the shrew at all sites except SWMU 61-007.
- The HIs were adjusted by the PAUF, which is the ratio of the site area to the shrew population area. The adjusted HIs were less than 1 for all sites.
- The HI analyses using the LOAEL-based ESLs resulted in HIs less than or equal to 1 for all sites.

These lines of evidence support the conclusion that no potential ecological risk to the montane shrew exists at the Upper Los Alamos Canyon Aggregate Area.

Deer Mouse (Omnivore)

- Initial screening using the minimum ESLs eliminated a number of COPECs because the HQs for all of the receptors, including the deer mouse, were less than 0.3.
- The HIs were greater than or equal to 1 for the deer mouse at all sites, except at SWMU 01-001(g), AOC 01-006(e), and SWMU 61-007.
- The HIs were adjusted by the PAUF, which is the ratio of the site area to the deer mouse population area. The adjusted HIs were less than 1 for all sites, except AOC C-00-044, SWMU 01-001(d3), SWMU 01-003(a), and SWMU 01-003(d).
- The HI analyses using the LOAEL-based ESLs resulted in HIs less than or equal to 1 for all sites, except for SWMU 01-001(d3) and SWMU 01-003(d). The HI analyses using the PAUF-adjusted LOAEL-based ESLs resulted in HIs less than or equal to 1.

- Field observations made during the site visits found no indication of adverse effects on the ecological community from COPECs. The sites currently have minimal active operations and are becoming naturalized, with abundant habitat for ecological receptors, including plants and other biota.

These lines of evidence support the conclusion that no potential ecological risk to the deer mouse exists at the Upper Los Alamos Canyon Aggregate Area.

Cottontail (Herbivore)

- Initial screening using the minimum ESLs eliminated a number of COPECs because the HQs for all of the receptors, including the cottontail, were less than 0.3.
- The HIs were less than 1 for the cottontail at all sites except at SWMU 01-001(a), SWMU 01-001(g), SWMU 01-001(s2), SWMU 01-002(a2)-00, SWMU 01-006(a), AOC 01-006(e), SWMU 01-007(c), SWMUs 03-038(a,b), SWMU 01-001(d3), SMWU 01-001(f), SMWU 01-001(o), SMWU 01-003(a), SWMU 01-003(d), and SWMU 32-002(b2).
- The HIs were adjusted by the PAUF, which is the ratio of the site area to the cottontail population area. The adjusted HIs were less than or equivalent to 1 for all remaining sites.

These lines of evidence support the conclusion that no potential ecological risk to the cottontail exists at the Upper Los Alamos Canyon Aggregate Area.

Fox (Carnivore)

- Initial screening using the minimum ESLs eliminated a number of COPECs because the HQs for all of the receptors, including the fox, were less than 0.3.
- The HIs were less than 1 for the fox at all sites except SWMU 01-001(d3) and SWMU 01-001(f).
- The HIs were adjusted by the PAUF, which is the ratio of the site area to the fox population area. The adjusted HIs were less than 1 for all remaining sites.

These lines of evidence support the conclusion that no potential ecological risk to the fox exists at the Upper Los Alamos Canyon Aggregate Area.

Robin (All Feeding Guilds)

- Initial screening using the minimum ESLs eliminated a number of COPECs because the HQs for all of the receptors, including the robin, were less than 0.3.
- The HIs were greater than or equal to 1 for the robin (all feeding guilds) at all sites, except SWMU 61-007 (herbivore only).
- The HIs were adjusted by the PAUFs. The adjusted HIs were less than 1 at all sites, except AOC C-00-044 for omnivore and insectivore, SWMU 01-001(d3), SWMU 01-001(f) for omnivore and insectivore, SWMU 01-001(o) for insectivore, SWMU 01-003(a) for omnivore and insectivore and SWMU 32-002(b2) for omnivore and insectivore.
- The HI analyses using the LOAEL-based ESLs resulted in HIs less than 1 for AOC C-00-044, SWMU 01-001(d3), SWMU 01-001(f), SWMU 01-001(o), SWMU 01-003(a), and SWMU 32-002(b2).

- The HI analyses using the PAUF-adjusted LOAEL-based ESLs resulted in HIs less than or equal to 1 for all sites except SWMU 01-001(d3). The HQs greater than 1 were for mercury at SWMU 01-001(d3).
- Field observations made during the site visits found no indication of adverse effects on the ecological community from COPECs. The sites currently have minimal active operations and are becoming naturalized, with abundant habitat for ecological receptors, including plants and other biota.

These lines of evidence support the conclusion that no potential ecological risk to the robin (all feeding guilds) exists at the Upper Los Alamos Canyon Aggregate Area, except for SWMU 01-001(d3), which may require further evaluation.

Kestrel (Intermediate Carnivore)

- Initial screening using the minimum ESLs eliminated a number of COPECs because the HQs for all of the receptors, including the kestrel (intermediate carnivore), were less than 0.3.
- The HIs were greater than or equal to 1 for the kestrel (intermediate carnivore) at all sites.
- The HIs were adjusted by the PAUF, which is the ratio of the site area to the kestrel population area. The adjusted HIs were less than 1 for all sites.

These lines of evidence support the conclusion that no potential ecological risk to the kestrel (intermediate carnivore) exists at the Upper Los Alamos Canyon Aggregate Area.

Kestrel (Top Carnivore)

- Initial screening using the minimum ESLs eliminated a number of COPECs because the HQs for all of the receptors, including the kestrel (top carnivore), were less than 0.3.
- The HIs were less than or equivalent to 1 for the kestrel (top carnivore) at all sites, except SWMUs 01-001(d3), 01-001(f), 01-001(o), 01-001(s2), 01-003(a), 01-006(a), 32-002(b2), and 61-007and AOC C-43-001.
- The HIs were adjusted by the PAUF, which is the ratio of the site area to the kestrel population area. The adjusted HIs were less than 1 for all remaining sites.
- The kestrel (top carnivore) is a surrogate for the Mexican spotted owl. The HIs were adjusted by the Mexican spotted owl AUFs. The adjusted HIs were less than 1 at all sites.

These lines of evidence support the conclusion that no potential ecological risks to the kestrel (top carnivore) and the Mexican spotted owl exist at the Upper Los Alamos Canyon Aggregate Area.

G-5.5.2 COPECs with No ESLs

COPECs without ESLs were eliminated based on comparisons with surrogate ESLs or human health SSLs. The analysis of COPECs without ESLs supports the conclusion that no potential ecological risk to receptors exists at the Upper Los Alamos Canyon Aggregate Area.

G-5.5.3 Summary

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, the relationship of detected concentrations and screening levels to background concentrations, and COPECs without ESLs for the remaining sites, potential risk is noted for mercury for the robin at SWMU 01-001(d3). No other potential ecological risks to the earthworm, plant, robin, kestrel, deer mouse, montane shrew, cottontail, fox, and Mexican spotted owl exist for the Upper Los Alamos Canyon Aggregate Area.

G-6.0 CONCLUSIONS

G-6.1 Human Health Risk

The total excess cancer risks were less than the target risk level of 1 × 10^{-5} for the industrial, recreational, construction worker, and residential scenarios at all sites with the exception of the residential risks at SWMU 01-001(f), SWMU 01-003(a), SWMU 03-055(c), and SWMU 61-007.

The carcinogenic risks were related to Aroclor-1254 at SWMU 01-001(f); Aroclor-1254, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenz(a,h)anthracene at SWMU 01-003(a); arsenic, benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene at SWMU 03-055(c); and Aroclor-1260 at SWMU 61-007.

The HIs were less than the target HI of 1 for the industrial, recreational, construction worker, and residential scenarios at all sites with the exception of residential HIs at SWMU 01-003(d) and construction worker and residential HIs at SWMU 00-017, SWMU 01-001(d3), SWMU 01-001(f), and SWMU 01-003(a).

The noncarcinogenic risks were related to thallium (construction worker and residential) at SWMU 00-017; manganese (construction worker) and antimony and mercury (residential) at SWMU 01-001(d3); Aroclor-1254 (construction worker and residential) at SWMU 01-001(f); manganese and Aroclor-1254 (construction worker) and Aroclor-1254 (residential) at SWMU 01-003(a); and antimony (residential) at SWMU 01-003(d).

The total doses were below the target dose limit of 25 mrem/yr as authorized by DOE Order 458.1 for the industrial, recreational, construction worker, and residential scenarios at all sites, except for dose to the construction worker and resident at SWMU 01-001(d3). SWMU 01-001(d3), SWMU 01-001(g), and SWMU 01-006(a) all had a dose of 3 or more mrem/year. The total doses were equivalent to total risks ranging from 5 × 10^{-11} to 3 × 10^{-5} for the industrial scenario, 1 × 10^{-6} for the recreational scenario, from 2 × 10^{-10} to 3 × 10^{-6} for the construction worker scenario, and from 4 × 10^{-8} to 9 × 10^{-5} for the residential scenario, based on conversion from dose using RESRAD Version 7.0 (LANL 2015, 600929).

Some sites in the Upper Los Alamos Canyon Aggregate Area are not accessible by the public and are not planned for release by DOE in the foreseeable future. SWMU 01-006(a), SWMU 01-001(f), and SWMU 01-001(g) all have publicly owned land as part of the SWMU. An as low as reasonably achievable (ALARA) evaluation for radiological exposure to the public is not currently required for the sites on DOE property. Should DOE’s plans for releasing these areas change, an ALARA evaluation will be conducted at that time.

G-6.2 Ecological Risk

Based on evaluations of the minimum ESLs, HI analyses, potential effects to populations (individuals for T&E species), LOAEL analyses, the relationship of detected concentrations and screening levels to background concentrations, and COPECs without ESLs for the other sites, potential risk is noted for mercury for the robin at SWMU 01-001(d3). No other potential ecological risks to the earthworm, plant, robin, kestrel, deer mouse, montane shrew, cottontail, fox, and Mexican spotted owl exist in the Upper Los Alamos Canyon Aggregate Area.

G-7.0 REFERENCES

The following reference list includes documents cited in this report. Parenthetical information following each reference provides the author(s), publication date, and ERID, ESHID, or EMID. This information is also included in text citations. ERIDs were assigned by the Laboratory's Associate Directorate for Environmental Management (IDs through 599999); ESHIDs were assigned by the Laboratory's Associate Directorate for Environment, Safety, and Health (IDs 600000 through 699999); and EMIDs are assigned by N3B (IDs 700000 and above). IDs are used to locate documents in N3B's Records Management System and in the Master Reference Set. The NMED Hazardous Waste Bureau and N3B maintain copies of the Master Reference Set. The set ensures that NMED has the references to review documents. The set is updated when new references are cited in documents.

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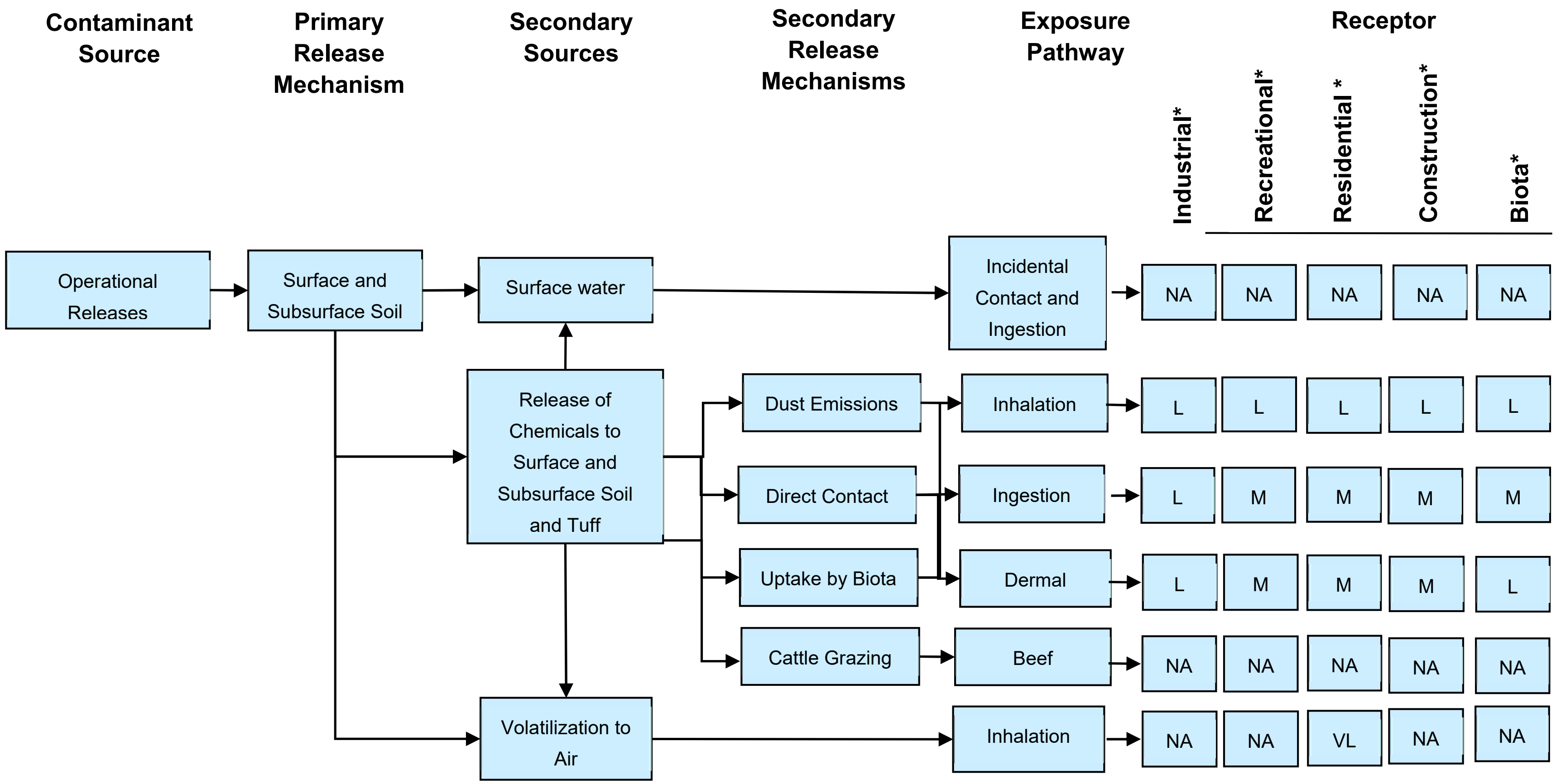


* Very Low (VL), Low (L), and Moderate (M) designations indicate the pathway is a potentially complete pathway and is evaluated in the risk assessments.
Not Applicable (NA) indicates the pathway is incomplete and is not evaluated in the risk assessments.

Figure G-3.1-1 Conceptual site model for Upper Los Alamos Canyon Aggregate Area

Table G-2.3-1
EPCs at SWMU 00-017 for the Industrial Scenario

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	4	0	0.21(U)	12(UJ)	n/a*	12(UJ)	Maximum detection limit
Cadmium	4	1	0.088	0.6(U)	n/a	0.088	Maximum detected concentration
Lead	10	10	15	390	Gamma	182	95% Adjusted Gamma
Mercury	4	0	0.0393(U)	0.12(U)	n/a	0.12(U)	Maximum detection limit
Selenium	4	0	0.59(U)	1.2(U)	n/a	1.2(U)	Maximum detection limit
Silver	4	1	0.1	2.4(U)	n/a	0.1	Maximum detected concentration
Thallium	4	0	0.23(U)	2.4(U)	n/a	2.4(U)	Maximum detection limit
Radionuclides (pCi/g)							
Plutonium-239/240	4	2	0.0037(U)	0.212	n/a	0.21	Maximum detected concentration
Tritium	4	2	0.04(U)	0.17	n/a	0.17	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-2
EPCs at SWMU 00-017 for the Construction Worker and Residential Scenarios

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	19	0	0.069(U)	12(UJ)	n/a*	12(UJ)	Maximum detection limit
Barium	21	21	16.1	122	Gamma	65.5	95% Adjusted Gamma
Cadmium	21	15	0.025	0.6(U)	Nonparametric	0.219	95% KM (Chebyshev)
Calcium	21	21	650	2700	Lognormal	1470	95% Student's-t
Chromium (Total)	21	21	2.4	23.6	Normal	10.8	95% Student's-t
Cyanide (Total)	21	2	0.15(U)	0.62(U)	n/a	0.22	Maximum detected concentration
Lead	33	33	4.42	450	Lognormal	104	95% Chebyshev (MVUE)
Mercury	21	1	0.0146(U)	0.12(U)	n/a	0.036	Maximum detected concentration
Nickel	21	20	1.8	11.7	Normal	6.45	95% KM (t)
Perchlorate	15	1	0.0052(U)	0.0079	n/a	0.0079	Maximum detected concentration
Selenium	21	12	0.18	1.2(U)	Lognormal	0.268	95% KM (t)
Silver	21	15	0.034	2.4(U)	nonparametric	0.295	95% KM (BCA)
Thallium	21	0	0.11(U)	2.4(U)	n/a	2.4(U)	Maximum detection limit
Radionuclides (pCi/g)							
Americium-241	15	2	-0.0083(U)	0.59	n/a	0.59	Maximum detected concentration
Cesium-137	20	3	-0.017(U)	0.54	n/a	0.54	Maximum detected concentration
Plutonium-239/240	21	9	-0.008(U)	2.39	nonparametric	0.775	95% KM (Chebyshev)
Tritium	21	4	-0.07(U)	0.19(U)	n/a	0.17	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-3
EPCs at SWMU 00-017 for Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	15	0	0.069(U)	12(UJ)	n/a*	12(UJ)	Maximum detection limit
Barium	15	15	16.1	122	Gamma	81.2	95% Adjusted Gamma
Cadmium	15	11	0.025	0.6(U)	Lognormal	0.151	95% Percentile Bootstrap
Calcium	15	15	650	2700	Normal	1670	95% Student's-t
Chromium (Total)	15	15	2.4	15.9	Normal	9.26	95% Student's-t
Cyanide (Total)	15	2	0.15(U)	0.62(U)	n/a	0.22	Maximum detected concentration
Lead	24	24	4.42	450	Lognormal	175	95% Chebyshev (Mean, Sd)
Mercury	15	1	0.0159(U)	0.12(U)	n/a	0.036	Maximum detected concentration
Nickel	15	14	1.8	8.1	Normal	5.96	95% KM (t)
Selenium	15	8	0.18	1.2(U)	Normal	0.296	95% KM (t)
Silver	15	11	0.034	2.4(U)	Lognormal	0.637	95% KM Chebyshev
Thallium	15	0	0.11(U)	2.4(U)	n/a	2.4(U)	Maximum detection limit
Radionuclides (pCi/g)							
Americium-241	11	1	-0.0083(U)	0.206	n/a	0.21	Maximum detected concentration
Cesium-137	14	3	-0.017(U)	0.54	n/a	0.54	Maximum detected concentration
Plutonium-239/240	15	6	-0.008(U)	1.12	Gamma	0.281	95% KM (t)
Tritium	15	2	-0.07(U)	0.19(U)	n/a	0.17	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-4
EPCs at AOC C-00-044 for the Industrial Scenario

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	22	0	0.478(U)	1.92(U)	n/a*	1.92(U)	Maximum detection limit
Lead	22	22	9.91	195	Gamma	82.2	95% Adjusted Gamma
Selenium	22	0	0.946(U)	1.37(U)	n/a	1.37(U)	Maximum detection limit
Zinc	22	22	28.6	85.4	Gamma	51.1	95% Adjusted Gamma
Organic Chemicals (mg/kg)							
Bis(2-ethylhexyl)phthalate	22	1	0.341(U)	2(U)	n/a	0.95	Maximum detected concentration
Butylbenzylphthalate	22	8	0.138	6.38	Gamma	1.23	95% KM (t)

Note: Data qualifiers are defined in Appendix A.
* n/a = Not applicable.

Table G-2.3-5
EPCs at AOC C-00-044 for the Construction Worker and Residential Scenarios

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	44	0	0.478(U)	1.92(U)	n/a*	1.92(U)	Maximum detection limit
Lead	46	46	3.27	334	Lognormal	73.1	95% Chebyshev (MVUE)
Selenium	44	2	0.351	1.37(U)	n/a	0.47	Maximum detected concentration
Zinc	44	44	24.8	85.4	Normal	45.7	95% Student's-t
Organic Chemicals (mg/kg)							
Bis(2-ethylhexyl)phthalate	44	1	0.336(U)	2(U)	n/a	0.95	Maximum detected concentration
Butylbenzylphthalate	44	11	0.117	6.38	Gamma	0.685	95% KM (t)

Note: Data qualifiers are defined in Appendix A.
* n/a = Not applicable.

Table G-2.3-6
EPCs at AOC C-00-044 for Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	44	0	0.478(U)	1.92(U)	n/a*	1.92(U)	Maximum detection limit
Lead	45	45	3.27	334	Lognormal	75.2	95% Chebyshev (MVUE)
Selenium	44	2	0.351	1.37(U)	n/a	0.47	Maximum detected concentration
Zinc	44	44	24.8	85.4	Normal	45.7	95% Student's-t
Organic Chemicals (mg/kg)							
Bis(2-ethylhexyl)phthalate	44	1	0.336(U)	2(U)	n/a	0.95	Maximum detected concentration
Butylbenzylphthalate	44	11	0.117	6.38	Gamma	0.685	95% KM (t)

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-7
EPCs at SWMU 01-001(a) for the Industrial Scenario

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Barium	12	12	14.1	181	Gamma	110	95% Adjusted Gamma
Copper	12	12	2.66	54.3	Lognormal	19.1	95% Percentile Bootstrap
Nitrate	4	3	0.23(U)	0.28	n/a*	0.28	Maximum detected concentration
Selenium	4	1	0.21	0.59(U)	n/a	0.21	Maximum detected concentration
Vanadium	12	12	2.38	22	Normal	14.4	95% Student's-t
Organic Chemicals (mg/kg)							
Aroclor-1254	4	2	0.0063	0.039(U)	n/a	0.0082	Maximum detected concentration
Aroclor-1260	4	2	0.0063	0.039(U)	n/a	0.0082	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	12	2	0.17	0.39(U)	n/a	0.29	Maximum detected concentration
Methylene Chloride	4	1	0.0021	0.0059(UJ)	n/a	0.0021	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-8
EPCs at SWMU 01-001(a) for the Construction Worker and Residential Scenarios

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Barium	44	44	5.55	181	Gamma	50.6	95% Adjusted Gamma
Chromium (Total)	44	44	0.475	52.6	Gamma	12.8	95% Adjusted Gamma
Copper	44	44	1.08	54.3	Gamma	9.01	95% Adjusted Gamma
Cyanide (Total)	16	6	0.092(U)	0.59(U)	Normal	0.302	95% KM (t)
Lead	16	16	3.9	18.5	Normal	13.2	95% Student's-t
Nickel	44	44	0.389	25.9	Gamma	7.02	95% Adjusted Gamma
Nitrate	16	10	0.09	0.88	Normal	0.354	95% KM (t)
Perchlorate	16	2	0.0022	0.0064(UJ)	n/a*	0.0045	Maximum detected concentration
Selenium	16	7	0.19	0.64(U)	Normal	0.257	95% KM (t)
Silver	46	17	0.049	10.9	nonparametric	1.59	95% KM (Chebyshev)
Vanadium	44	43	1.53	22	Gamma	8.44	95% KM (BCA)
Organic Chemicals (mg/kg)							
Acenaphthene	16	1	0.082	0.42(U)	n/a	0.082	Maximum detected concentration
Acetone	16	3	0.002	0.024(U)	n/a	0.0034	Maximum detected concentration
Anthracene	16	1	0.14	0.42(U)	n/a	0.14	Maximum detected concentration
Aroclor-1254	16	5	0.0063	0.13	Gamma	0.035	95% KM (t)
Aroclor-1260	16	3	0.0063	0.042(U)	n/a	0.011	Maximum detected concentration
Benzo(a)anthracene	16	1	0.16	0.42(U)	n/a	0.16	Maximum detected concentration
Benzo(a)pyrene	16	1	0.14	0.42(U)	n/a	0.14	Maximum detected concentration
Benzo(b)fluoranthene	16	1	0.1	0.42(U)	n/a	0.1	Maximum detected concentration
Benzo(g,h,i)perylene	16	1	0.049	0.42(U)	n/a	0.049	Maximum detected concentration
Benzo(k)fluoranthene	16	1	0.13	0.42(U)	n/a	0.13	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	44	7	0.061	2	Gamma	0.263	95% KM (t)
Chrysene	16	2	0.071	0.42(U)	n/a	0.16	Maximum detected concentration

Table G-2.3-8 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Fluoranthene	16	1	0.34(U)	0.42(U)	n/a	0.36	Maximum detected concentration
Fluorene	16	1	0.071	0.42(U)	n/a	0.071	Maximum detected concentration
Indeno(1,2,3-cd)pyrene	16	1	0.047	0.42(U)	n/a	0.047	Maximum detected concentration
Methylene Chloride	16	8	0.002	0.0059(UJ)	Normal	0.00471	95% KM (t)
Phenanthrene	16	1	0.34(U)	0.44	n/a	0.44	Maximum detected concentration
Pyrene	16	1	0.34	0.42(U)	n/a	0.34	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-9
EPCs at SWMU 01-001(a) for Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Barium	38	38	5.55	181	Gamma	54.7	95% Adjusted Gamma
Chromium (Total)	38	38	0.475	38.8	Gamma	10.3	95% Adjusted Gamma
Copper	38	38	1.08	54.3	Gamma	10	95% Adjusted Gamma
Cyanide (Total)	14	5	0.092(U)	0.59(U)	Normal	0.31	95% KM (t)
Lead	14	14	3.9	18.5	Normal	14.2	95% Student's-t
Nickel	38	38	0.389	21.6	Gamma	6.16	95% Adjusted Gamma
Nitrate	14	9	0.12	0.88	Normal	0.391	95% KM (t)
Perchlorate	14	2	0.0022	0.0064(UJ)	n/a*	0.0045	Maximum detected concentration
Selenium	14	5	0.19	0.64(U)	Lognormal	0.252	95% KM (t)
Silver	39	15	0.049	10.9	nonparametric	1.86	95% KM Chebyshev
Vanadium	38	37	1.53	22	Gamma	9.09	95% KM (BCA)

Table G-2.3-9 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Organic Chemicals (mg/kg)							
Acenaphthene	14	1	0.082	0.42(U)	n/a	0.082	Maximum detected concentration
Acetone	14	2	0.002	0.024(U)	n/a	0.0025	Maximum detected concentration
Anthracene	14	1	0.14	0.42(U)	n/a	0.14	Maximum detected concentration
Aroclor-1254	14	4	0.0063	0.13	n/a	0.13	Maximum detected concentration
Aroclor-1260	14	3	0.0063	0.042(U)	n/a	0.011	Maximum detected concentration
Benzo(a)anthracene	14	1	0.16	0.42(U)	n/a	0.16	Maximum detected concentration
Benzo(a)pyrene	14	1	0.14	0.42(U)	n/a	0.14	Maximum detected concentration
Benzo(b)fluoranthene	14	1	0.1	0.42(U)	n/a	0.1	Maximum detected concentration
Benzo(g,h,i)perylene	14	1	0.049	0.42(U)	n/a	0.049	Maximum detected concentration
Benzo(k)fluoranthene	14	1	0.13	0.42(U)	n/a	0.13	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	38	7	0.061	2	Gamma	0.28	95% KM (t)
Chrysene	14	2	0.071	0.42(U)	n/a	0.16	Maximum detected concentration
Fluoranthene	14	1	0.34(U)	0.42(U)	n/a	0.36	Maximum detected concentration
Fluorene	14	1	0.071	0.42(U)	n/a	0.071	Maximum detected concentration
Indeno(1,2,3-cd)pyrene	14	1	0.047	0.42(U)	n/a	0.047	Maximum detected concentration
Methylene Chloride	14	6	0.0021	0.0059(UJ)	nonparametric	0.00502	95% KM (t)
Phenanthrene	14	1	0.34(U)	0.44	n/a	0.44	Maximum detected concentration
Pyrene	14	1	0.34	0.42(U)	n/a	0.34	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-10
EPCs at SWMU 01-001(d3) for the Industrial Scenario

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	29	2	0.072(U)	27.4	n/a*	27.4	Maximum detected concentration
Arsenic	28	24	0.309	2.9	Gamma	1.57	95% KM Adjusted Gamma
Barium	28	28	8.7	167	Nonparametric	47.8	95% Standard Bootstrap
Beryllium	28	28	0.34	1.6	Gamma	0.798	95% Adjusted Gamma
Cadmium	28	9	0.052(U)	0.7	Normal	0.199	95% KM (t)
Chromium (Total)	28	26	0.651	36.1	Nonparametric	8.05	95% Standard Bootstrap
Chromium hexavalent ion	28	19	0.177	6.45	Gamma	2.2	95% Gamma Adjusted KM
Copper	28	28	1.38	42.1	nonparametric	14.7	95% Chebyshev (Mean, Sd)
Iron	28	28	2690	9820	Normal	6630	95% Student's-t
Lead	28	28	3.34	65.3	Gamma	21.1	95% Adjusted Gamma
Manganese	28	28	98	507	Normal	262	95% Student's-t
Mercury	45	37	0.0127(U)	56.2	Gamma	9.88	95% Gamma Adjusted KM
Nickel	28	28	0.37	10.3	Gamma	3.55	95% Adjusted Gamma
Nitrate	25	21	0.17	6.8	Lognormal	1.44	95% Standard Bootstrap
Perchlorate	19	4	0.0029	0.022	n/a	0.022	Maximum detected concentration
Selenium	28	21	0.18	1.2(U)	nonparametric	0.692	95% KM (Chebyshev)
Silver	28	23	0.047	8	nonparametric	1.89	95% KM (Chebyshev)
Zinc	21	21	23.4	89	Lognormal	51.7	95% Student's-t

Table G-2.3-10 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Organic Chemicals (mg/kg)							
Aroclor-1254	25	8	0.00336	0.59	Gamma	0.153	95% Gamma Adjusted KM
Aroclor-1260	25	10	0.00206	0.24	Normal	0.0465	95% KM (t)
Bis(2-ethylhexyl)phthalate	25	2	0.1	0.88	n/a	0.88	Maximum detected concentration
Di-n-butylphthalate	25	3	0.038	0.36(U)	n/a	0.21	Maximum detected concentration
Methylene Chloride	25	1	0.0012	0.017(U)	n/a	0.0012	Maximum detected concentration
Pentachlorophenol	25	1	0.342(U)	1.7(U)	n/a	0.8	Maximum detected concentration
Radionuclides (pCi/g)							
Americium-241	25	2	-0.031(U)	0.116	n/a	0.12	Maximum detected concentration
Cesium-137	28	13	-0.005(U)	1.01	Gamma	0.302	95% KM Adjusted Gamma
Plutonium-238	71	13	-0.0482(U)	0.54	Normal	0.0172	95% KM (t)
Plutonium-239/240	71	64	-0.006(U)	2960	Gamma	264	95% KM Approximate Gamma

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-11
EPCs at SWMU 01-001(d3) for the Construction Worker and Residential Scenarios

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Aluminum	67	67	242	12000	Gamma	3050	95% Approximate Gamma
Antimony	69	4	0.071(U)	27.4	n/a*	27.4	Maximum detected concentration
Arsenic	67	57	0.247	3.3	Gamma	1.19	95% KM Approximate Gamma
Barium	67	67	5.1	167	Lognormal	38.9	95% Chebyshev (MVUE)
Beryllium	67	67	0.27	2.24	Lognormal	0.819	95% Student's-t

Table G-2.3-11 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Cadmium	67	15	0.045(U)	0.7	Lognormal	0.12	95% Percentile Bootstrap
Chromium (Total)	67	64	0.651	43.1	Gamma	9.22	95% KM Approximate Gamma
Chromium hexavalent ion	64	45	0.177	6.45	Lognormal	1.2	95% Percentile Bootstrap
Copper	67	67	0.671	42.1	nonparametric	9.37	95% Chebyshev (Mean, Sd)
Iron	67	67	2250	21600	nonparametric	6700	95% Student's-t
Lead	67	67	2.13	65.3	Lognormal	17.8	95% Chebyshev (MVUE)
Magnesium	67	67	89.5	2840	Gamma	594	95% Approximate Gamma
Manganese	67	67	92.1	765	Gamma	257	95% Approximate Gamma
Mercury	144	119	0.00662	159	Lognormal	7.26	95% Percentile Bootstrap
Nickel	67	67	0.272	19.5	Gamma	4.28	95% Approximate Gamma
Nitrate	46	31	0.16	43.7	nonparametric	6.19	95% KM (Chebyshev)
Perchlorate	40	8	0.002	0.035	Normal	0.00644	95% KM (t)
Selenium	67	46	0.18	1.2(U)	nonparametric	0.428	95% KM (t)
Silver	67	48	0.041	8	nonparametric	0.938	95% KM (Chebyshev)
Vanadium	67	61	0.82	18.4	Gamma	5.84	95% KM Approximate Gamma
Zinc	54	54	21.6	168	nonparametric	49.5	95% Student's-t
Organic Chemicals (mg/kg)							
Acetone	44	1	0.0027(U)	0.022(UJ)	n/a	0.0073	Maximum detected concentration
Aroclor-1254	46	10	0.00336	0.59	Gamma	0.0733	95% Gamma Adjusted KM
Aroclor-1260	46	15	0.00206	0.35	Gamma	0.0569	95% Gamma Adjusted KM
Bis(2-ethylhexyl)phthalate	46	4	0.055	0.88	n/a	0.88	Maximum detected concentration
Di-n-butylphthalate	46	4	0.038	0.36(U)	n/a	0.21	Maximum detected concentration
Methylene Chloride	46	1	0.0012	0.017(U)	n/a	0.0012	Maximum detected concentration
Pentachlorophenol	46	1	0.342(U)	1.7(U)	n/a	0.8	Maximum detected concentration
Toluene	46	1	0.00083	0.0054(U)	n/a	0.00083	Maximum detected concentration

Table G-2.3-11 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Radionuclides (pCi/g)							
Americium-241	46	2	-0.031(U)	0.116	n/a	0.12	Maximum detected concentration
Cesium-137	67	20	-0.11(U)	1.01	Normal	0.0723	95% KM (t)
Plutonium-238	220	23	-0.54(U)	0.847(U)	Gamma	0.54	Maximum detected concentration
Plutonium-239/240	220	194	-0.006(U)	2960	nonparametric	135	95% KM Chebyshev
Strontium-90	40	3	-0.057(U)	0.341	n/a	0.34	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-12
EPCs at SWMU 01-001(d3) for Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Aluminum	63	63	242	12000	Gamma	3042	95% Approximate Gamma UCL
Antimony	65	4	0.071(U)	27.4	n/a*	27.4	Maximum detected concentration
Arsenic	63	53	0.247	3.3	Gamma	1.2	95% KM Approximate Gamma UCL
Barium	63	63	5.1	167	Lognormal	38.7	95% Chebyshev (MVUE)
Beryllium	63	63	0.27	2.24	Lognormal	0.828	95% Student's-t UCL
Cadmium	63	13	0.045(U)	0.7	Gamma	0.131	95% KM Approximate Gamma UCL
Chromium (Total)	63	63	141	10200	Gamma	8.85	95% KM Approximate Gamma UCL
Chromium hexavalent ion	63	45	0.177	6.45	Lognormal	1.323	95% Bootstrap t
Copper	63	63	0.671	42.1	nonparametric	8.87	95% Chebyshev (Mean, Sd) UCL
Iron	63	63	2250	21600	nonparametric	6620	95% Student's-t UCL
Lead	63	63	2.13	65.3	Lognormal	17.6	95% Chebyshev (MVUE)
Magnesium	63	63	89.5	2840	Gamma	585	95% Approximate Gamma UCL
Manganese	63	63	92.1	765	Lognormal	261	95% Student's-t UCL

Table G-2.3-12 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Mercury	122	97	0.00662	159	Lognormal	7.77	95% Percentile Bootstrap
Nickel	63	63	0.272	19.5	Gamma	4.3	95% Approximate Gamma UCL
Nitrate	46	31	0.16	43.7	nonparametric	0.497	95% KM (Chebyshev) UCL
Perchlorate	40	8	0.002	0.035	nonparametric	0.00636	95% KM (t)
Selenium	63	42	0.18	1.2(U)	Lognormal	0.411	95% KM (BCA)
Silver	63	46	0.041	8	nonparametric	0.94	95% Student's-t UCL
Vanadium	63	57	0.82	18.4	nonparametric	8.87	95% Chebyshev (Mean, Sd) UCL
Zinc	50	50	21.6	168	nonparametric	48.4	95% Student's-t
Organic Chemicals (mg/kg)							
Acetone	44	1	0.0027(U)	0.022(UJ)	n/a	0.0073	Maximum detected concentration
Aroclor-1254	46	10	0.00336	0.59	Gamma	0.0733	95% Gamma Adjusted KM-UCL (use when n<50)
Aroclor-1260	46	15	0.00206	0.35	Gamam	0.0569	95% Gamma Adjusted KM-UCL (use when n<50)
Bis(2-ethylhexyl)phthalate	46	4	0.055	0.88	n/a	0.88	Maximum detected concentration
Di-n-butylphthalate	46	4	0.038	0.36(U)	n/a	0.21	Maximum detected concentration
Methylene Chloride	46	1	0.0012	0.017(U)	n/a	0.0012	Maximum detected concentration
Pentachlorophenol	46	1	0.342(U)	1.7(U)	n/a	0.8	Maximum detected concentration
Toluene	46	1	0.00083	0.0054(U)	n/a	0.00083	Maximum detected concentration
Radionuclides (pCi/g)							
Americium-241	46	2	-0.031(U)	0.116	n/a	0.116	Maximum detected concentration
Cesium-137	63	18	-0.11(U)	1.01	Gamma	0.242	95% KM Approximate Gamma UCL
Plutonium-238	193	20	-0.54(U)	0.847(U)	Gamma	0.54	Maximum detected concentration
Plutonium-239/240	193	167	-0.006(U)	2960	nonparametric	152	95% KM Chebyshev UCL
Strontium-90	40	3	-0.057(U)	0.341	n/a	0.341	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-13
EPCs at SWMU 01-001(f) for Industrial and Recreational Scenarios

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	22	7	0.13(U)	1.3	Normal	0.647	95% KM (t)
Cadmium	22	15	0.082(U)	0.622(U)	Gamma	0.183	95% KM Adjusted Gamma
Calcium	22	22	656	15,600	Lognormal	3500	95% Chebyshev (MVUE)
Chromium	22	21	1.4	10.9	Gamma	5.83	95% KM Adjusted Gamma
Cobalt	22	22	0.51	7.49	Gamma	2.41	95% Adjusted Gamma
Copper	22	22	2.37	14.3	Gamma	7.51	95% Adjusted Gamma
Cyanide (Total)	22	3	0.176(U)	0.72	n/a*	0.72	Maximum detected concentration
Lead	22	22	8.6	25.2	Gamma	17.5	95% Adjusted Gamma
Magnesium	22	22	228	2410	Lognormal	1080	95% Chebyshev (MVUE)
Manganese	22	22	143	1000	Lognormal	326	95% Student's-t
Nickel	22	22	1.1	12.6	Gamma	4.73	95% Adjusted Gamma
Nitrate	22	11	0.21(U)	3.24	Normal	1.04	95% KM (t)
Selenium	22	3	0.25	1.37(U)	n/a	0.27	Maximum detected concentration
Vanadium	22	22	2.2	24.4	Gamma	10.8	95% Adjusted Gamma
Zinc	22	22	20.9	131	Normal	61.2	95% Student's-t
Organic Chemicals (mg/kg)							
Acenaphthene	22	7	0.0115	0.36(U)	Normal	0.0388	95% KM (t)
Acetone	22	5	0.0024	0.023(U)	Normal	0.00469	95% KM (t)
Anthracene	22	11	0.015	0.36(U)	Normal	0.104	95% KM (t)
Aroclor-1254	105	97	0.0028	22	Gamma	2.66	95% KM Approximate Gamma
Aroclor-1260	105	59	0.0025	6.61	Gamma	0.703	95% KM Approximate Gamma
Benzo(a)anthracene	22	16	0.0263	1.24	Gamma	0.424	95% Gamma Adjusted KM-UCL
Benzo(a)pyrene	22	15	0.0249	1.17	Gamma	0.424	95% Gamma Adjusted KM-UCL
Benzo(b)fluoranthene	22	15	0.0361	1.88	Normal	0.486	95% KM (t)
Benzo(g,h,i)perylene	22	11	0.0296	0.559	Normal	0.199	95% KM (t)
Benzo(k)fluoranthene	22	15	0.0134	1	Gamma	0.344	95% Gamma Adjusted KM-UCL

Table G-2.3-13 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Benzoic Acid	22	6	0.42	3.98(U)	Normal	0.568	95% KM (t)
Benzyl Alcohol	22	4	0.153	1.99(U)	n/a	0.202	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	9	3	0.091	0.466(U)	n/a	0.18	Maximum detected concentration
Butylbenzylphthalate	22	5	0.091	1.99(U)	Lognormal	0.498	95% KM (Chebyshev)
Chloroform	22	1	0.192	1.99(U)	n/a	0.192	Maximum detected concentration
Chrysene	22	1	0.000411	0.0059(U)	n/a	0.000411	Maximum detected concentration
Dibenz(a,h)anthracene	22	1	0.000425	0.0059(U)	n/a	0.000425	Maximum detected concentration
Dichlorobenzene[1,2-]	22	15	0.0238	1.55	Gamma	0.516	95% Gamma Adjusted KM-UCL
Dichlorobenzene[1,4-]	22	3	0.0142	0.36(U)	n/a	0.171	Maximum detected concentration
Fluoranthene	44	1	0.00033	1.99(U)	n/a	0.00033	Maximum detected concentration
Fluorene	44	1	0.000703	1.99(U)	n/a	0.000703	Maximum detected concentration
Indeno(1,2,3-cd)pyrene	22	16	0.038(U)	2.64	Gamma	0.825	95% Gamma Adjusted KM-UCL
Isopropyltoluene[4-]	22	2	0.000385	0.0059(U)	n/a	0.000754	Maximum detected concentration
Phenanthrene	22	15	0.026	1.55	Gamma	0.503	95% Gamma Adjusted KM-UCL
Pyrene	22	16	0.038(U)	2.55	Gamma	0.885	95% Gamma Adjusted KM-UCL
Styrene	22	1	0.00107(U)	0.0059(U)	n/a	0.00109	Maximum detected concentration
Toluene	22	1	0.00107(U)	0.0059(U)	n/a	0.00165	Maximum detected concentration
Trimethylbenzene[1,2,4-]	22	1	0.00019(U)	0.0059(U)	n/a	0.00041	Maximum detected concentration
Xylene[1,3-]+Xylene[1,4-]	16	1	0.000843	0.00295(U)	n/a	0.000843	Maximum detected concentration
Radionuclides (pCi/g)							
Americium-241	22	1	-0.0041(U)	0.0456	n/a	0.0456	Maximum detected concentration
Plutonium-239/240	22	17	0.00555(U)	0.222	Normal	0.11	95% KM (t)
Uranium-234	22	22	1.33	32	Normal	12.2	95% Student's-t
Uranium-235/236	22	19	0.054(U)	1.69	Normal	0.613	95% KM (t)
Uranium-238	22	22	1.34	38.7	Gamma	14.6	95% Adjusted Gamma

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-14
EPCs at SWMU 01-001(f) for the Construction Worker and Residential Scenarios

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	34	10	0.095(U)	1.36(U)	Normal	0.513	95% KM (t)
Cadmium	34	18	0.048(U)	0.622(U)	Lognormal	0.152	95% BCA Bootstrap
Calcium	34	34	217	15600	Lognormal	2410	95% Standard Bootstrap
Chromium	35	33	1.3	10.9	Gamma	5.28	95% KM Adjusted Gamma
Cobalt	34	34	0.412	7.49	Gamma	1.88	95% Adjusted Gamma
Copper	35	35	1.4	14.3	Gamma	5.91	95% Adjusted Gamma
Cyanide (Total)	34	3	0.139(U)	0.72	n/a*	0.72	Maximum detected concentration
Lead	34	34	4.3	25.2	Gamma	14.8	95% Adjusted Gamma
Magnesium	34	34	149	2410	Gamma	716	95% Adjusted Gamma
Manganese	34	34	84.9	1000	Lognormal	266	95% Student's-t
Nickel	34	34	1.1	12.6	Gamma	4.09	95% Adjusted Gamma
Nitrate	34	13	0.2(U)	3.24	Gamma	0.825	95% KM Adjusted Gamma
Selenium	34	9	0.18	1.37(U)	Normal	0.262	95% KM (t)
Vanadium	34	34	1.9	24.4	Gamma	9.44	95% Adjusted Gamma
Zinc	34	34	19	131	Lognormal	50.3	95% Student's-t
Organic Chemicals (mg/kg)							
Acenaphthene	34	7	0.0115	0.4(U)	Normal	0.0355	95% KM (t)
Acetone	34	8	0.0024	0.024(U)	Lognormal	0.00605	95% KM (BCA)
Anthracene	34	11	0.015	0.4(U)	Normal	0.082	95% KM (t)
Aroclor-1254	158	144	0.00219	58.8	Lognormal	5.39	95% KM Chebyshev

Table G-2.3-14 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Aroclor-1260	158	99	0.00153	19.4	Lognormal	1.7	95% KM Chebyshev
Benzo(a)anthracene	34	19	0.0263	1.24	Gamma	0.295	95% Gamma Adjusted KM-UCL
Benzo(a)pyrene	34	18	0.0249	1.17	Gamma	0.294	95% Gamma Adjusted KM-UCL
Benzo(b)fluoranthene	34	18	0.0361	1.88	Gamma	0.397	95% Gamma Adjusted KM-UCL
Benzo(g,h,i)perylene	34	14	0.0247	0.559	Gamma	0.159	95% Gamma Adjusted KM-UCL
Benzo(k)fluoranthene	34	18	0.0134	1	Gamma	0.235	95% Gamma Adjusted KM-UCL
Benzoic Acid	34	6	0.42	3.98(U)	Normal	0.567	95% KM (t)
Benzyl Alcohol	34	8	0.13	1.99(U)	Normal	0.175	95% KM (t)
Bis(2-ethylhexyl)phthalate	34	5	0.091	1.99(U)	Lognormal	0.266	95% KM (BCA)
Butylbenzylphthalate	34	1	0.192	1.99(U)	n/a*	0.192	Maximum detected concentration
Chloroform	34	1	0.000411	0.006(U)	n/a	0.000411	Maximum detected concentration
Chlorotoluene[4-]	34	1	0.000425	0.006(U)	n/a	0.000425	Maximum detected concentration
Chrysene	34	18	0.0238	1.55	Gamma	0.353	95% Gamma Adjusted KM-UCL
Dibenz(a,h)anthracene	34	3	0.0142	0.4(U)	n/a	0.171	Maximum detected concentration
Dichlorobenzene[1,2-]	68	1	0.00033	1.99(U)	n/a	0.00033	Maximum detected concentration
Dichlorobenzene[1,4-]	68	1	0.000703	1.99(U)	n/a	0.000703	Maximum detected concentration
Fluoranthene	34	19	0.038(U)	2.64	Gamma	0.559	95% Gamma Adjusted KM-UCL
Fluorene	34	8	0.0127	0.4(U)	Normal	0.0377	95% KM (t)
Indeno(1,2,3-cd)pyrene	34	12	0.013	0.662	Gamma	0.143	95% Gamma Adjusted KM-UCL
Isopropyltoluene[4-]	34	2	0.000385	0.006(U)	n/a	0.000754	Maximum detected concentration
Phenanthrene	34	18	0.026	1.55	Gamma	0.344	95% Gamma Adjusted KM-UCL
Pyrene	34	19	0.038(U)	2.55	Gamma	0.606	95% Gamma Adjusted KM-UCL
Styrene	34	1	0.00107(U)	0.006(U)	n/a	0.00109	Maximum detected concentration
Toluene	34	1	0.00107(U)	0.006(U)	n/a	0.00165	Maximum detected concentration
Trimethylbenzene[1,2,4-]	34	1	0.00019(U)	0.006(U)	n/a	0.00041	Maximum detected concentration
Xylene[1,3-]+Xylene[1,4-]	22	1	0.000843	0.00295(U)	n/a	0.000843	Maximum detected concentration

Table G-2.3-14 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Radionuclides (pCi/g)							
Americium-241	34	1	-0.00552(U)	0.0456	n/a	0.0456	Maximum detected concentration
Plutonium-239/240	34	21	0.00284(U)	0.222	Normal	0.0902	95% KM (t)
Uranium-234	36	36	0.66	32	Gamma	9.31	95% Adjusted Gamma
Uranium-235/236	36	29	0.024(U)	1.69	Gamma	0.484	95% KM Adjusted Gamma
Uranium-238	36	36	0.725	38.7	Gamma	10.1	95% Adjusted Gamma

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-15
EPCs at SWMU 01-001(f) for the Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	34	10	0.095(U)	1.36(U)	Normal	0.513	95% KM (t)
Cadmium	34	18	0.048(U)	0.622(U)	Lognormal	0.152	95% BCA Bootstrap
Calcium	34	34	217	15,600	Lognormal	2410	95% Standard Bootstrap
Chromium	34	33	1.3	10.9	Gamma	5.37	95% KM Adjusted Gamma
Cobalt	34	34	0.412	7.49	Gamma	1.88	95% Adjusted Gamma
Copper	34	34	1.4	14.3	Gamma	6.02	95% Adjusted Gamma
Cyanide (Total)	34	3	0.139(U)	0.72	n/a*	0.72	Maximum detected concentration
Lead	34	34	4.3	25.2	Gamma	14.8	95% Adjusted Gamma
Magnesium	34	34	149	2410	Gamma	716	95% Adjusted Gamma
Manganese	34	34	84.9	1000	Lognormal	266	95% Student's-t

Table G-2.3-15 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Nickel	34	34	1.1	12.6	Gamma	4.09	95% Adjusted Gamma
Nitrate	34	13	0.2(U)	3.24	Gamma	0.825	95% KM Adjusted Gamma
Selenium	34	9	0.18	1.37(U)	Normal	0.262	95% KM (t)
Vanadium	34	34	1.9	24.4	Gamma	9.44	95% Adjusted Gamma
Zinc	34	34	19	131	Lognormal	50.3	95% Student's-t
Organic Chemicals (mg/kg)							
Acenaphthene	34	7	0.0115	0.4(U)	Normal	0.0355	95% KM (t)
Acetone	34	8	0.0024	0.024(U)	Lognormal	0.00605	95% KM (BCA)
Anthracene	34	11	0.015	0.4(U)	Normal	0.082	95% KM (t)
Aroclor-1254	135	123	0.00219	58.8	Lognormal	6.06	95% KM Chebyshev
Aroclor-1260	135	80	0.0025	19.4	Lognormal	1.9	95% KM Chebyshev
Benzo(a)anthracene	34	19	0.0263	1.24	Gamma	0.295	95% Gamma Adjusted KM-UCL
Benzo(a)pyrene	34	18	0.0249	1.17	Gamma	0.294	95% Gamma Adjusted KM-UCL
Benzo(b)fluoranthene	34	18	0.0361	1.88	Gamma	0.397	95% Gamma Adjusted KM-UCL
Benzo(g,h,i)perylene	34	14	0.0247	0.559	Gamma	0.159	95% Gamma Adjusted KM-UCL
Benzo(k)fluoranthene	34	18	0.0134	1	Gamma	0.235	95% Gamma Adjusted KM-UCL
Benzoic Acid	34	6	0.42	3.98(U)	Normal	0.567	95% KM (t)
Benzyl Alcohol	34	8	0.13	1.99(U)	Normal	0.175	95% KM (t)
Bis(2-ethylhexyl)phthalate	34	5	0.091	1.99(U)	Lognormal	0.266	95% KM (BCA)
Butylbenzylphthalate	34	1	0.192	1.99(U)	n/a	0.192	Maximum detected concentration
Chloroform	34	1	0.000411	0.006(U)	n/a	0.000411	Maximum detected concentration
Chlorotoluene[4-]	34	1	0.000425	0.006(U)	n/a	0.000425	Maximum detected concentration
Chrysene	34	18	0.0238	1.55	Gamma	0.353	95% Gamma Adjusted KM-UCL
Dibenz(a,h)anthracene	34	3	0.0142	0.4(U)	n/a	0.171	Maximum detected concentration
Dichlorobenzene[1,2-]	68	1	0.00033	1.99(U)	n/a	0.00033	Maximum detected concentration
Dichlorobenzene[1,4-]	68	1	0.000703	1.99(U)	n/a	0.000703	Maximum detected concentration

Table G-2.3-15 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Fluoranthene	34	19	0.038(U)	2.64	Gamma	0.559	95% Gamma Adjusted KM-UCL
Fluorene	34	8	0.0127	0.4(U)	Normal	0.0377	95% KM (t)
Indeno(1,2,3-cd)pyrene	34	12	0.013	0.662	Gamma	0.143	95% Gamma Adjusted KM-UCL
Isopropyltoluene[4-]	34	2	0.000385	0.006(U)	n/a	0.000754	Maximum detected concentration
Phenanthrene	34	18	0.026	1.55	Gamma	0.344	95% Gamma Adjusted KM-UCL
Pyrene	34	19	0.038(U)	2.55	Gamma	0.606	95% Gamma Adjusted KM-UCL
Styrene	34	1	0.00107(U)	0.006(U)	n/a	0.00109	Maximum detected concentration
Toluene	34	1	0.00107(U)	0.006(U)	n/a	0.00165	Maximum detected concentration
Trimethylbenzene[1,2,4-]	34	1	0.00019(U)	0.006(U)	n/a	0.00041	Maximum detected concentration
Xylene[1,3-]+Xylene[1,4-]	22	1	0.000843	0.00295(U)	n/a	0.000843	Maximum detected concentration
Radionuclides (pCi/g)							
Americium-241	34	1	-0.00552(U)	0.0456	n/a	0.0456	Maximum detected concentration
Plutonium-239/240	34	21	0.00284(U)	0.222	Normal	0.0902	95% KM (t)
Uranium-234	35	35	0.66	32	Gamma	9.49	95% Adjusted Gamma
Uranium-235/236	35	28	0.024(U)	1.69	Gamma	0.492	95% Gamma Adjusted KM-UCL
Uranium-238	35	35	0.725	38.7	Gamma	10.3	95% Adjusted Gamma

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-16
EPCs at SWMU 01-001(g) for the Industrial Scenario

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Nitrate	2	2	0.36	1.5	n/a*	1.5	Maximum detected concentration
Organic Chemicals (mg/kg)							
Aroclor-1260	2	2	0.0081	0.021	n/a	0.021	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	2	1	0.074	0.36(U)	n/a	0.074	Maximum detected concentration
Methylene Chloride	2	2	0.0024	0.0065	n/a	0.0065	Maximum detected concentration
Radionuclides (pCi/g)							
Plutonium-238	8	1	-0.006(U)	0.0843	n/a	0.084	Maximum detected concentration
Plutonium-239/240	8	8	0.137	26.7	Normal	17.8	95% Student's-t

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-17
EPCs at SWMU 01-001(g) for the Construction Worker and Residential Scenarios

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Chromium (Total)	13	13	1.66	27.9	Gamma	16.7	95% Adjusted Gamma
Nickel	13	13	0.754	13.4	Normal	7.21	95% Student's-t
Nitrate	9	5	0.098(U)	1.5	Normal	0.646	95% KM (t)
Perchlorate	9	2	0.0029	0.0055(U)	n/a*	0.0044	Maximum detected concentration
Selenium	9	8	0.21	0.52(UJ)	Normal	0.257	95% KM (t)

Table G-2.3-17 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Organic Chemicals (mg/kg)							
Aroclor-1260	9	4	0.0081	0.034(U)	n/a	0.021	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	9	1	0.074	0.36(U)	n/a	0.074	Maximum detected concentration
Methylene Chloride	9	6	0.0018	0.014(U)	Normal	0.00502	95% KM (t)
Radionuclides (pCi/g)							
Plutonium-238	44	11	-0.014(U)	0.582	Gamma	0.0772	95% KM (t)
Plutonium-239/240	44	43	0.00917(U)	115	Lognormal	22.8	95% KM (Chebyshev)
Uranium-235/236	9	4	0.014(U)	0.224	n/a	0.22	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-18
EPCs at SWMU 01-001(g) for Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Chromium (Total)	10	10	1.66	25.3	Normal	13.9	95% Student's-t
Nickel	10	10	0.754	11.7	Normal	7	95% Student's-t
Nitrate	8	5	0.098(U)	1.5	Normal	0.712	95% KM (t)
Perchlorate	8	2	0.0029	0.0055(U)	n/a*	0.0044	Maximum detected concentration
Selenium	8	7	0.21	0.52(UJ)	Normal	0.258	95% KM (t)
Organic Chemicals (mg/kg)							
Aroclor-1260	8	4	0.0081	0.034(U)	n/a	0.021	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	8	1	0.074	0.36(U)	n/a	0.074	Maximum detected concentration
Methylene Chloride	8	6	0.0018	0.011(U)	Normal	0.00504	95% KM (t)

Table G-2.3-18 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Radionuclides (pCi/g)							
Plutonium-238	42	11	-0.014(U)	0.582	Gamma	0.0815	95% KM (t)
Plutonium-239/240	42	41	0.00917(U)	115	Gamma	23.8	95% KM (Chebyshev)
Uranium-235/236	8	4	0.014(U)	0.224	n/a	0.22	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-19
EPCs at SWMU 01-001(o) for the Industrial Scenario

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Chromium (Total)	9	9	2	24.2	Gamma	12.5	95% Adjusted Gamma
Copper	9	9	2.5	30.2	nonparametric	20.5	95% Chebyshev (Mean, Sd)
Cyanide (Total)	5	0	0.093(U)	0.58(UJ)	n/a[a]	0.58(UJ)	Maximum detection limit
Lead	9	9	5.43	49.6	Normal	26.2	95% Student's-t
Mercury	9	5	0.0277	0.279	Normal	0.151	95% KM (t)
Nitrate	5	4	0.098	0.21(U)	n/a	0.18	Maximum detected concentration
Perchlorate	5	1	0.0023	0.0052(U)	n/a	0.0023	Maximum detected concentration
Selenium	5	3	0.17	0.52(U)	n/a	0.22	Maximum detected concentration
Zinc	9	9	20.1	73.2	Gamma	51.1	95% Adjusted Gamma

Table G-2.3-19 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Organic Chemicals (mg/kg)							
Acetone	5	2	0.0023	0.03(U)	n/a	0.0049	Maximum detected concentration
Aroclor-1254	23	17	0.00349(U)	4.51	Gamma	1.32	95% Gamma Adjusted KM
Aroclor-1260	23	20	0.00351	0.811	Normal	0.287	95% KM (t)
Benzoic Acid	5	1	0.35	1.9(U)	n/a	0.35	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	5	2	0.087	0.34(U)	n/a	0.095	Maximum detected concentration
Di-n-butylphthalate	9	1	0.34(U)	0.403	n/a	0.4	Maximum detected concentration
Radionuclides (pCi/g)							
Americium-241	9	2	0.00852(U)	0.155	n/a	0.16	Maximum detected concentration
Cesium-137	9	5	0(U)	0.482	Normal	0.276	95% KM (t)
Plutonium-238	9	1	-0.004(U)	0.048(U)	n/a	0.015	Maximum detected concentration
Plutonium-239/240	9	6	0.00945(U)	6.51	Gamma	6.51[b]	Maximum detected concentration
Strontium-90	9	1	-0.133(U)	0.41	n/a	0.41	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

[a] n/a = Not applicable.

[b] = UCL value is higher than the maximum detected concentration.

Table G-2.3-20
EPCs at SWMU 01-001(o) for the Construction Worker and Residential Scenarios

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	16	0	0.083(U)	1.4(U)	n/a*	1.4(U)	Maximum detection limit
Cadmium	16	16	0.017	4	nonparametric	1.51	95% Chebyshev(Mean, Sd)
Chromium (Total)	33	33	2	35.9	Gamma	11.6	95% Adjusted Gamma
Copper	33	33	0.958	448	nonparametric	91.6	95% Chebyshev (Mean, Sd)

Table G-2.3-20 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Cyanide (Total)	16	1	0.093(U)	0.62(U)	n/a	0.15	Maximum detected concentration
Lead	33	33	2.8	62.7	Gamma	22	95% Adjusted Gamma
Mercury	33	20	0.00963	0.44	nonparametric	0.183	95% KM (Chebyshev)
Nickel	33	33	0.693	15.8	Gamma	6.28	95% Adjusted Gamma
Nitrate	16	12	0.086	0.45	Gamma	0.227	95% KM Adjusted Gamma
Perchlorate	16	2	0.0023	0.0062(UJ)	n/a	0.0025	Maximum detected concentration
Selenium	16	12	0.17	0.56(U)	Normal	0.24	95% KM (t)
Silver	33	16	0.037	3.07(UJ)	Lognormal	0.215	95% Percentile Bootstrap
Zinc	33	33	16	405	nonparametric	108	95% Chebyshev (Mean, Sd)
Organic Chemicals (mg/kg)							
Acetone	16	2	0.0023	0.03(U)	n/a	0.0049	Maximum detected concentration
Aroclor-1254	74	52	0.00261	4.51	Gamma	0.587	95% KM Approximate Gamma
Aroclor-1260	74	59	0.00164	0.811	Gamma	0.202	95% KM Approximate Gamma
Benzoic Acid	19	1	0.35	2(U)	n/a	0.35	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	19	3	0.087	0.41(U)	n/a	0.12	Maximum detected concentration
Di-n-butylphthalate	33	4	0.33(U)	2.68	n/a	2.68	Maximum detected concentration
Methylene Chloride	16	1	0.00073	0.0062(U)	n/a	0.00073	Maximum detected concentration
Trimethylbenzene[1,2,4-]	16	2	0.00032(U)	0.0055(UJ)	n/a	0.00048	Maximum detected concentration
Radionuclides (pCi/g)							
Americium-241	33	5	-0.0041(U)	0.228	Normal	0.0305	95% KM (t)
Cesium-137	33	5	-0.0394(U)	0.482	Normal	0.052	95% KM (t)
Plutonium-238	33	1	-0.004(U)	0.048(U)	n/a	0.015	Maximum detected concentration
Plutonium-239/240	33	22	-9e-04(U)	6.51	nonparametric	1.94	95% KM Chebyshev
Strontium-90	33	2	-0.294(U)	0.416(U)	n/a	0.41	Maximum detected concentration
Tritium	16	1	-0.28(U)	1.33	n/a	1.33	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-21
EPCs at SWMU 01-001(o) for Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	13	0	0.083(U)	1.4(U)	n/a*	1.4(U)	Maximum detection limit
Cadmium	13	13	0.017	4	nonparametric	3.6	95% Chebyshev(Mean, Sd)
Chromium (Total)	21	21	2	27.1	Gamma	11.4	95% Adjusted Gamma
Copper	21	21	1.2	236	nonparametric	67.1	95% Chebyshev (Mean, Sd)
Cyanide (Total)	13	1	0.093(U)	0.58(UJ)	n/a	0.15	Maximum detected concentration
Lead	21	21	2.8	62.7	Gamma	25.1	95% Adjusted Gamma
Mercury	21	11	0.0121(U)	0.44	Gamma	0.161	95% Gamma Adjusted KM
Nickel	21	21	1.44	15.8	Normal	6.45	95% Student's-t
Nitrate	13	12	0.086	0.45	Gamma	0.25	95% KM Adjusted Gamma
Perchlorate	13	2	0.0023	0.0058(U)	n/a	0.0025	Maximum detected concentration
Selenium	13	10	0.17	0.56(U)	Normal	0.225	95% KM (t)
Silver	21	13	0.037	1.5	Lognormal	0.364	95% BCA Bootstrap
Zinc	21	21	16	218	nonparametric	89.5	95% Chebyshev (Mean, Sd)
Organic Chemicals (mg/kg)							
Acetone	13	2	0.0023	0.03(U)	n/a	0.0049	Maximum detected concentration
Aroclor-1254	51	38	0.00261	4.51	Gamma	0.756	95% KM Approximate Gamma
Aroclor-1260	51	41	0.00183	0.811	Gamma	0.247	95% KM Approximate Gamma
Benzoic Acid	14	1	0.35	1.9(U)	n/a	0.35	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	14	3	0.087	0.38(U)	n/a	0.12	Maximum detected concentration
Di-n-butylphthalate	21	3	0.33(U)	1.1	n/a	1.1	Maximum detected concentration
Methylene Chloride	13	1	0.00073	0.00589(U)	n/a	0.00073	Maximum detected concentration

Table G-2.3-21 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Radionuclides (pCi/g)							
Americium-241	21	4	-0.0041(U)	0.155	n/a	0.16	Maximum detected concentration
Cesium-137	21	5	-0.03(U)	0.482	Normal	0.108	95% KM (t)
Plutonium-238	21	1	-0.004(U)	0.048(U)	n/a	0.015	Maximum detected concentration
Plutonium-239/240	21	13	-9e-04(U)	6.51	Gamma	2.55	95% Gamma Adjusted KM
Strontium-90	21	2	-0.133(U)	0.41	n/a	0.41	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-22
EPCs at SWMU 01-001(s2) for the Construction Worker and Residential Scenarios

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	19	2	0.07(U)	0.59(U)	n/a*	0.21	Maximum detected concentration
Arsenic	19	17	0.2	2.8	Normal	1.47	95% KM (t)
Barium	24	24	4.1	272	Normal	96.2	95% Student's-t
Calcium	19	19	186	3560	Normal	1570	95% Student's-t
Chromium (Total)	19	19	0.36	27.4	Gamma	11.7	95% Adjusted Gamma
Copper	26	26	0.726	35.1	Lognormal	10.5	95% Chebyshev (MVUE)
Cyanide (Total)	19	2	0.13(U)	0.86(U)	n/a	0.19	Maximum detected concentration
Lead	26	26	1.6	43.2	Gamma	13.2	95% Adjusted Gamma
Magnesium	19	19	93.7	2060	Gamma	1120	95% Adjusted Gamma
Nickel	26	26	0.438	13.7	Normal	6.9	95% Student's-t
Nitrate	19	13	0.077	4.5	Gamma	1.09	95% KM (BCA)
Selenium	19	11	0.19(UJ)	0.67(UJ)	Normal	0.339	95% KM (t)
Silver	19	18	0.023	5.4	Lognormal	1.7	95% KM (Chebyshev)

Table G-2.3-22 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Organic Chemicals (mg/kg)							
Acetone	18	7	0.0027(U)	0.037	Lognormal	0.0128	95% KM (t)
Aroclor-1254	19	3	0.015	0.21	n/a	0.21	Maximum detected concentration
Aroclor-1260	19	4	0.0062	0.044(U)	n/a	0.033	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	18	1	0.082	0.42(U)	n/a	0.082	Maximum detected concentration
Methylene Chloride	19	2	0.0052(U)	0.032	n/a	0.032	Maximum detected concentration
Propylbenzene[1-]	19	1	0.0013	0.0067(U)	n/a	0.0013	Maximum detected concentration
Radionuclides (pCi/g)							
Plutonium-239/240	26	4	-0.025(U)	0.564	n/a	0.56	Maximum detected concentration
Tritium	27	1	-0.17(U)	0.71	n/a	0.71	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-23
EPCs at SWMU 01-001(s2) for Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	12	1	0.1(U)	0.59(U)	n/a*	0.11	Maximum detected concentration
Arsenic	12	11	0.5	2.8	Normal	1.66	95% KM (t)
Barium	14	14	7.3	272	Normal	108	95% Student's-t
Calcium	12	12	208	3560	Normal	1800	95% Student's-t
Chromium (Total)	12	12	0.36	27.4	Normal	10.3	95% Student's-t
Cobalt	12	12	0.28	4.8	Normal	2.31	95% Student's-t
Copper	14	14	2.1	35.1	Gamma	11.1	95% Adjusted Gamma
Cyanide (Total)	12	0	0.13(U)	0.86(U)	n/a	0.86(U)	Maximum detection limit

Table G-2.3-23 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Lead	14	14	1.6	16.8	Normal	11.4	95% Student's-t
Nickel	14	14	1	13.7	Normal	7.84	95% Student's-t
Nitrate	12	9	0.11	4.5	Normal	1.57	95% KM (t)
Selenium	12	7	0.19(UJ)	0.63(U)	Normal	0.352	95% KM (t)
Organic Chemicals (mg/kg)							
Acetone	11	4	0.0039	0.025(U)	n/a	0.006	Maximum detected concentration
Aroclor-1254	12	2	0.015	0.21	n/a	0.21	Maximum detected concentration
Aroclor-1260	12	2	0.0062	0.042(U)	n/a	0.012	Maximum detected concentration
Methylene Chloride	12	1	0.0053(U)	0.028	n/a	0.028	Maximum detected concentration
Propylbenzene[1-]	12	1	0.0013	0.0063(U)	n/a	0.0013	Maximum detected concentration
Radionuclides (pCi/g)							
Plutonium-239/240	14	3	-0.022(U)	0.564	n/a	0.56	Maximum detected concentration
Tritium	14	1	-0.17(U)	0.71	n/a	0.71	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-24
EPCs at SWMU 01-002(a2)-00 for the Industrial Scenario

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Chromium (Total)	3	3	7.4	59.4	n/a*	59.4	Maximum detected concentration
Cyanide (Total)	3	1	0.1	0.59(U)	n/a	0.1	Maximum detected concentration
Nickel	3	3	3.5	27.4	n/a	27.4	Maximum detected concentration
Selenium	3	2	0.29	0.59(U)	n/a	0.33	Maximum detected concentration

Table G-2.3-24 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Organic Chemicals (mg/kg)							
Acetone	3	1	0.0053	0.024(U)	n/a	0.0053	Maximum detected concentration
Methylene Chloride	3	1	0.0031(U)	0.027(U)	n/a	0.0058	Maximum detected concentration
Radionuclides (pCi/g)							
Uranium-235/236	3	1	0.041(U)	0.231	n/a	0.23	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-25
EPCs at SWMU 01-002(a2)-00 for the Construction Worker and Residential Scenarios

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	26	0	0.065(U)	0.63(U)	n/a*	0.63(U)	Maximum detection limit
Arsenic	26	24	0.26	3.7	Normal	1.62	95% KM (t)
Chromium (Total)	26	26	1.2	59.4	Gamma	18	95% Adjusted Gamma
Copper	26	26	0.6	6.4	Gamma	3.02	95% Adjusted Gamma
Cyanide (Total)	26	5	0.1	0.62(U)	Lognormal	0.182	95% KM (t)
Lead	26	26	1.5	74.2	Gamma	14.6	95% Adjusted Gamma
Nickel	26	26	1.2	27.4	Normal	9.15	95% Student's-t
Nitrate	26	12	0.2(U)	44.3	Gamma	7.65	95% KM (t)
Selenium	26	20	0.19	0.61(U)	Normal	0.296	95% KM (t)

Table G-2.3-25 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Organic Chemicals (mg/kg)							
Acetone	26	4	0.0033	0.025(U)	n/a*	0.0053	Maximum detected concentration
Aroclor-1254	26	3	0.028	0.21	n/a	0.21	Maximum detected concentration
Aroclor-1260	26	5	0.0035	0.042(U)	Normal	0.00829	95% KM (t)
Bis(2-ethylhexyl)phthalate	26	2	0.07	0.42(U)	n/a	0.12	Maximum detected concentration
Methylene Chloride	26	7	0.00082(U)	0.027(U)	Normal	0.00284	95% KM (t)
Toluene	26	3	0.00038	0.0064(U)	n/a	0.001	Maximum detected concentration
Trichlorofluoromethane	26	1	0.00055	0.013(U)	n/a	0.00055	Maximum detected concentration
Radionuclides (pCi/g)							
Plutonium-239/240	26	4	-0.038(U)	0.233	n/a	0.23	Maximum detected concentration
Tritium	26	2	-0.33(U)	0.92	n/a	0.92	Maximum detected concentration
Uranium-235/236	26	1	-0.003(U)	0.231	n/a	0.23	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-26
EPCs at SWMU 01-002(a2)-00 for Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	20	0	0.065(U)	0.63(U)	n/a*	0.63(U)	Maximum detection limit
Arsenic	20	18	0.26	3.7	Normal	1.67	95% KM (t)
Chromium (Total)	20	20	1.2	59.4	Normal	18.5	95% Student's-t
Copper	20	20	0.6	5.1	Gamma	2.38	95% Adjusted Gamma
Cyanide (Total)	20	5	0.1	0.62(U)	Lognormal	0.196	95% KM (t)
Lead	20	20	1.5	74.2	Lognormal	18.4	95% Chebyshev (MVUE)

Table G-2.3-26 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Nickel	20	20	1.2	27.4	Normal	9.56	95% Student's-t
Nitrate	20	6	0.2(U)	7.7	Normal	2.01	95% KM (t)
Selenium	20	18	0.2	0.6(U)	Normal	0.306	95% KM (t)
Organic Chemicals (mg/kg)							
Acetone	20	4	0.0033	0.025(U)	n/a	0.0053	Maximum detected concentration
Aroclor-1254	20	2	0.034(U)	0.21	n/a	0.21	Maximum detected concentration
Aroclor-1260	20	3	0.0035	0.042(U)	n/a	0.0073	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	20	1	0.12	0.42(U)	n/a	0.12	Maximum detected concentration
Methylene Chloride	20	6	0.00082(U)	0.027(U)	Normal	0.00324	95% KM (t)
Toluene	20	2	0.00038	0.0064(U)	n/a	0.00055	Maximum detected concentration
Trichlorofluoromethane	20	1	0.00055	0.013(U)	n/a	0.00055	Maximum detected concentration
Radionuclides (pCi/g)							
Plutonium-239/240	20	2	-0.038(U)	0.161	n/a	0.16	Maximum detected concentration
Tritium	20	2	-0.31(U)	0.92	n/a	0.92	Maximum detected concentration
Uranium-235/236	20	1	-0.003(U)	0.231	n/a	0.23	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-27
EPCs at SWMU 01-003(a) for the Industrial Scenario

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Barium	18	18	17.3	134	Gamma	53.2	95% Adjusted Gamma
Chromium (Total)	18	18	1.67	27.1	Gamma	9.84	95% Adjusted Gamma
Cyanide (Total)	14	2	0.13(U)	1	n/a*	1	Maximum detected concentration
Lead	21	21	7.9	44	Gamma	24.2	95% Adjusted Gamma
Mercury	18	10	0.0129	0.31	Normal	0.102	95% KM (t)
Nickel	18	18	1.25	12.8	Normal	5.49	95% Student's-t
Perchlorate	14	1	0.0023	0.0059(U)	n/a	0.0023	Maximum detected concentration
Selenium	14	3	0.17	0.57(U)	n/a	0.3	Maximum detected concentration
Zinc	18	18	25.4	91.9	Gamma	54.9	95% Adjusted Gamma
Organic Chemicals (mg/kg)							
Acenaphthene	14	7	0.035	0.38(U)	Normal	0.218	95% KM (t)
Acetone	14	1	0.0023(U)	0.023(U)	n/a	0.015	Maximum detected concentration
Anthracene	14	7	0.2	1.3	Normal	0.698	95% KM (t)
Aroclor-1254	33	32	0.00864	4.05	Gamma	1.71	95% KM (Chebyshev)
Aroclor-1260	33	20	0.0061	1.27	Normal	0.369	95% KM (t)
Benzo(a)anthracene	14	10	0.085	7.3	Normal	3.17	95% KM (t)
Benzo(a)pyrene	13	9	0.1	6.8	Normal	2.73	95% KM (t)
Benzo(b)fluoranthene	14	11	0.042	8.9	Normal	3.84	95% KM (t)
Benzo(g,h,i)perylene	14	10	0.077	5.5	Normal	2.2	95% KM (t)
Benzo(k)fluoranthene	14	12	0.041	8.6	Normal	3.41	95% KM (t)
Benzoic Acid	14	1	1.6	1.8(U)	n/a	1.6	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	14	3	0.077(U)	0.38	n/a	0.38	Maximum detected concentration
Butylbenzylphthalate	14	1	0.036	0.38(U)	n/a	0.036	Maximum detected concentration
Chrysene	14	12	0.041	9.7	Normal	4.24	95% KM (t)

Table G-2.3-27 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Dibenz(a,h)anthracene	14	7	0.22	1.7	Normal	0.779	95% KM (t)
Dibenzofuran	14	6	0.037	0.38(U)	Normal	0.147	95% KM (t)
Fluoranthene	14	13	0.047	17	Normal	7.64	95% KM (t)
Fluorene	14	7	0.063	0.43	Normal	0.272	95% KM (t)
Indeno(1,2,3-cd)pyrene	14	10	0.065	4.8	Normal	1.94	95% KM (t)
Naphthalene	14	1	0.044	0.38(U)	n/a	0.044	Maximum detected concentration
Phenanthrene	14	10	0.095	8.9	Normal	4.02	95% KM (t)
Pyrene	14	13	0.056	16	Normal	6.68	95% KM (t)
Radionuclides (pCi/g)							
Cesium-134	14	1	-0.053(U)	0.043	n/a	0.043	Maximum detected concentration
Plutonium-239/240	18	18	0.0836	2.26	Gamma	1.05	95% Adjusted Gamma

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-28
EPCs at SWMU 01-003(a) for the Construction Worker and Residential Scenarios

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Arsenic	68	64	0.204	2.8	Normal	1.24	95% KM (t)
Barium	68	68	3.06	134	Nonparametric	49.6	95% Chebyshev (Mean, Sd)
Calcium	31	31	398	15100	Lognormal	3500	95% Chebyshev (MVUE)
Chromium (Total)	68	68	1.67	32.2	Gamma	10.5	95% Approximate Gamma
Copper	68	68	0.414	22.3	Gamma	5.27	95% Approximate Gamma
Cyanide (Total)	31	3	0.12(U)	1	n/a*	1	Maximum detected concentration

Table G-2.3-28 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Iron	68	68	3420	11,300	Normal	6590	95% Student's-t
Lead	75	75	3.99	44	Lognormal	19.3	95% Chebyshev (Mean, Sd)
Manganese	63	63	67.7	672	Normal	258	95% Student's-t
Mercury	68	46	0.00425	1.06	Lognormal	0.155	95% KM (Chebyshev)
Nickel	68	68	0.77	12.8	Lognormal	5.98	95% Chebyshev (MVUE)
Perchlorate	30	1	0.0023	0.0059(U)	n/a	0.0023	Maximum detected concentration
Selenium	31	13	0.17	0.58(U)	nonparametric	0.239	95% KM (t)
Vanadium	31	31	2.8	14.6	Normal	7.55	95% Student's-t
Zinc	68	68	19.4	91.9	Lognormal	44.1	95% Student's-t
Organic Chemicals (mg/kg)							
Acenaphthene	31	9	0.035	0.38(U)	Normal	0.184	95% KM (t)
Acetone	31	4	0.0023(U)	0.078	n/a	0.078	Maximum detected concentration
Anthracene	31	12	0.039	1.3	Gamma	0.403	95% KM (t)
Aroclor-1254	83	81	0.00275	16.3	Lognormal	2.44	95% KM (Chebyshev)
Aroclor-1260	83	52	0.00342(U)	4.66	Gamma	0.544	95% KM (BCA)
Benzo(a)anthracene	31	17	0.085	7.3	Gamma	1.7	95% KM (BCA)
Benzo(a)pyrene	30	17	0.038	6.8	Gamma	1.42	95% KM (BCA)
Benzo(b)fluoranthene	31	19	0.042	8.9	Gamma	1.99	95% KM (BCA)
Benzo(g,h,i)perylene	31	18	0.058	5.5	Gamma	1.16	95% KM (BCA)
Benzo(k)fluoranthene	31	19	0.041	8.6	Gamma	1.89	95% KM (BCA)
Benzoic Acid	31	1	1.6(U)	1.9(U)	n/a	1.6	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	31	4	0.052(U)	0.45(U)	n/a	0.38	Maximum detected concentration
Butylbenzylphthalate	31	1	0.036	0.38(U)	n/a	0.036	Maximum detected concentration
Chrysene	31	20	0.041	9.7	Gamma	2.22	95% KM (BCA)
Di-n-butylphthalate	31	1	0.053	0.38(U)	n/a	0.053	Maximum detected concentration
Dibenz(a,h)anthracene	31	12	0.057	1.7	Normal	0.448	95% KM (t)

Table G-2.3-28 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Dibenzofuran	31	6	0.037	0.38(U)	Normal	0.145	95% KM (t)
Fluoranthene	31	22	0.046	17	Gamma	6.17	95% KM (Chebyshev)
Fluorene	31	9	0.063	0.43	Normal	0.198	95% KM (t)
Indeno(1,2,3-cd)pyrene	31	17	0.065	4.8	Gamma	1.06	95% KM (BCA)
Isopropyltoluene[4-]	31	1	0.00119(U)	0.015	n/a	0.015	Maximum detected concentration
Naphthalene	31	1	0.044	0.38(U)	n/a	0.044	Maximum detected concentration
Phenanthrene	31	18	0.043	8.9	Gamma	2.09	95% KM (BCA)
Pyrene	31	22	0.043	16	Gamma	5.42	95% KM (Chebyshev)
Radionuclides (pCi/g)							
Cesium-134	31	1	-0.053(U)	0.043	n/a	0.043	Maximum detected concentration
Plutonium-238	68	3	-0.027(U)	0.075(U)	n/a	0.044	Maximum detected concentration
Plutonium-239/240	68	58	-0.0038(U)	19.2	nonparametric	2.35	95% KM (Chebyshev)
Tritium	31	1	-0.0006(U)	0.52(U)	n/a	0.4	Maximum detected concentration
Uranium-234	31	31	0.84	4.89	nonparametric	1.78	95% Student's-t
Uranium-235/236	31	3	0.014(U)	0.163	n/a	0.16	Maximum detected concentration
Uranium-238	31	31	0.722	2.96	nonparametric	1.48	95% Student's-t

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-29
EPCs at SWMU 01-003(a) for Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Arsenic	45	42	0.223	2.8	Normal	1.28	95% KM (t)
Barium	45	45	5.68	134	Lognormal	44.3	95% Percentile Bootstrap
Calcium	30	30	398	15100	Lognormal	3590	95% Chebyshev (MVUE)
Chromium (Total)	45	45	1.67	32.2	Gamma	11.8	95% Adjusted Gamma
Copper	45	45	0.414	22.3	Gamma	6	95% Adjusted Gamma
Cyanide (Total)	30	3	0.12(U)	1	n/a*	1	Maximum detected concentration
Iron	45	45	3650	11300	Normal	6180	95% Student's-t
Lead	52	52	4.6	44	Gamma	18	95% Approximate Gamma
Manganese	40	40	127	672	Normal	268	95% Student's-t
Mercury	45	27	0.00438	0.6	Gamma	0.102	95% KM (BCA)
Nickel	45	45	1.25	12.8	Normal	5.91	95% Student's-t
Perchlorate	29	1	0.0023	0.0059(U)	n/a*	0.0023	Maximum detected concentration
Selenium	30	12	0.17	0.58(U)	nonparametric	0.243	95% KM (t)
Vanadium	30	30	2.8	14.6	Normal	7.36	95% Student's-t
Zinc	45	45	20.9	91.9	Gamma	45.9	95% Adjusted Gamma
Organic Chemicals (mg/kg)							
Acenaphthene	30	9	0.035	0.38(U)	Normal	0.184	95% KM (t)
Acetone	30	3	0.0023(U)	0.078	n/a	0.078	Maximum detected concentration
Anthracene	30	12	0.039	1.3	Gamma	0.41	95% KM (t)
Aroclor-1254	75	73	0.00275	16.3	Lognormal	2.65	95% KM Chebyshev
Aroclor-1260	75	45	0.00342(U)	4.66	Gamma	0.59	95% KM (BCA)
Benzo(a)anthracene	30	17	0.085	7.3	Gamma	1.66	95% KM (BCA)
Benzo(a)pyrene	29	17	0.038	6.8	Gamma	1.53	95% KM (BCA)
Benzo(b)fluoranthene	30	19	0.042	8.9	Gamma	2.06	95% KM (BCA)

Table G-2.3-29 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Benzo(g,h,i)perylene	30	18	0.058	5.5	Gamma	1.21	95% KM (BCA)
Benzo(k)fluoranthene	30	19	0.041	8.6	Gamma	1.85	95% KM (BCA)
Benzoic Acid	30	1	1.6(U)	1.9(U)	n/a	1.6	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	30	4	0.052(U)	0.45(U)	n/a	0.38	Maximum detected concentration
Butylbenzylphthalate	30	1	0.036	0.38(U)	n/a	0.036	Maximum detected concentration
Chrysene	30	20	0.041	9.7	Gamma	2.27	95% KM (BCA)
Di-n-butylphthalate	30	1	0.053	0.38(U)	n/a	0.053	Maximum detected concentration
Dibenz(a,h)anthracene	30	12	0.057	1.7	Normal	0.456	95% KM (t)
Dibenzofuran	30	6	0.037	0.38(U)	Normal	0.145	95% KM (t)
Fluoranthene	30	22	0.046	17	Gamma	6.36	95% KM (Chebyshev)
Fluorene	30	9	0.063	0.43	Normal	0.199	95% KM (t)
Indeno(1,2,3-cd)pyrene	30	17	0.065	4.8	Gamma	1.09	95% KM (BCA)
Isopropyltoluene[4-]	30	1	0.00119(U)	0.015	n/a	0.015	Maximum detected concentration
Naphthalene	30	1	0.044	0.38(U)	n/a	0.044	Maximum detected concentration
Phenanthrene	30	18	0.043	8.9	Gamma	2.23	95% KM (BCA)
Pyrene	30	22	0.043	16	Gamma	5.58	95% KM (Chebyshev)
Radionuclides (pCi/g)							
Cesium-134	30	1	-0.053(U)	0.043	n/a	0.043	Maximum detected concentration
Plutonium-238	45	1	-0.027(U)	0.075(U)	n/a	0.015	Maximum detected concentration
Plutonium-239/240	45	41	-0.0038(U)	4.32	Gamma	1.3	95% KM (Chebyshev)
Tritium	30	1	-0.006(U)	0.52(U)	n/a	0.4	Maximum detected concentration
Uranium-234	30	30	0.84	3.36	nonparametric	1.59	95% Student's-t
Uranium-235/236	30	2	0.014(U)	0.163	n/a	0.16	Maximum detected concentration
Uranium-238	30	30	0.722	2.67	Lognormal	1.4	95% Student's-t

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-30
EPCs at SWMU 01-003(b2) for the Industrial Scenario

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	5	0	0.34(U)	2.1(U)	n/a*	2.1(U)	Maximum detection limit
Beryllium	5	5	0.39	1.5	n/a	1.5	Maximum detected concentration
Lead	5	5	13.4	28.6	n/a	28.6	Maximum detected concentration
Perchlorate	5	1	0.0022	0.0056(U)	n/a	0.0022	Maximum detected concentration
Selenium	5	5	0.19	0.5	n/a	0.5	Maximum detected concentration
Radionuclides (pCi/g)							
Plutonium-239/240	5	5	0.361	2.11	n/a	2.11	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-31
EPCs at SWMU 01-003(b2) for the Construction Worker and Residential Scenarios

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Aluminum	12	12	412	10,900	Normal	5620	95% Student's-t
Antimony	10	0	0.14(U)	2.1(U)	n/a*	2.1(U)	Maximum detection limit
Barium	12	12	10.4	228	Gamma	138	95% Adjusted Gamma
Beryllium	12	12	0.39	2.11	Lognormal	1.56	95% Chebyshev (MVUE)
Calcium	10	10	502	2630	Normal	1620	95% Student's-t
Chromium (Total)	12	12	0.76	14.5	Normal	6.95	95% Student's-t
Copper	12	12	1.9	13.4	Normal	7.71	95% Student's-t
Lead	12	12	5.6	73.1	Gamma	39.9	95% Adjusted Gamma
Magnesium	10	10	187	2090	Normal	1010	95% Student's-t
Nickel	12	12	0.88	9.7	Normal	4.83	95% Student's-t
Perchlorate	12	4	0.000999	0.0432	n/a	0.043	Maximum detected concentration

Table G-2.3-31 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Selenium	12	11	0.19	1.5	Lognormal	1.07	95% KM (Chebyshev)
Radionuclides (pCi/g)							
Plutonium-238	10	1	-0.015(U)	0.178	n/a	0.18	Maximum detected concentration
Plutonium-239/240	10	6	0.022(U)	2.11	Normal	1.07	95% KM (t)

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-32
EPCs at SWMU 01-003(b2) for Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Aluminum	11	11	412	10,700	Normal	4710	95% Student's-t
Antimony	10	0	0.14(U)	2.1(U)	n/a*	2.1(U)	Maximum detection limit
Barium	11	11	10.4	228	Gamma	117	95% Adjusted Gamma
Beryllium	11	11	0.39	1.9	Gamma	1.16	95% Adjusted Gamma
Calcium	10	10	502	2630	Normal	1620	95% Student's-t
Chromium (Total)	11	11	0.76	14.5	Gamma	7.72	95% Adjusted Gamma
Copper	11	11	1.9	11.5	Normal	6.71	95% Student's-t
Lead	11	11	5.6	73.1	Gamma	34.2	95% Adjusted Gamma
Magnesium	10	10	187	2090	Normal	1010	95% Student's-t
Nickel	11	11	0.88	9.7	Normal	4.66	95% Student's-t
Perchlorate	11	3	0.000999	0.039	n/a	0.039	Maximum detected concentration
Selenium	11	10	0.19	1.4	Gamma	0.853	95% KM (Chebyshev)
Radionuclides (pCi/g)							
Plutonium-238	10	1	-0.015(U)	0.178	n/a	0.18	Maximum detected concentration
Plutonium-239/240	10	6	0.022(U)	2.11	Normal	1.07	95% KM (t)

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-33
EPCs at SWMU 01-003(d) for the Industrial Scenario

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	14	7	0.11(U)	31.2	Normal	10.5	95% KM (t)
Lead	8	8	3.1	62.1	Gamma	47.4	95% Adjusted Gamma
Nitrate	5	5	0.15	39	n/a*	39	Maximum detected concentration
Perchlorate	5	2	0.0031	0.0051(U)	n/a	0.0031	Maximum detected concentration
Zinc	8	8	27.2	100	Normal	73.5	95% Student's-t
Organic Chemicals (mg/kg)							
Aroclor-1260	5	1	0.033(U)	0.043	n/a	0.043	Maximum detected concentration
Toluene	5	1	0.0017	0.0053(U)	n/a	0.0017	Maximum detected concentration
Radionuclides (pCi/g)							
Plutonium-239/240	5	5	0.068	0.59	n/a	0.59	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-34
EPCs at SWMU 01-003(d) for the Construction Worker and Residential Scenarios and Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	42	21	0.11(U)	497	Lognormal	78.5	95% KM (Chebyshev)
Barium	22	22	5.9	82.4	Normal	55.2	95% KM (Chebyshev)
Cadmium	11	2	0.023(U)	0.27	n/a*	0.27	Maximum detected concentration
Chromium (Total)	11	11	1.2	11	Normal	6.33	95% Student's-t UCL
Calcium	11	11	304	2880	Normal	1470	95% Student's-t
Lead	22	22	2.37	62.1	Lognormal	15.7	95% Chebyshev (MVUE)

Table G-2.3-34 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Nitrate	11	8	0.15	39	Gamma	29.1	95% KM Bootstrap t
Perchlorate	11	3	0.0031	0.0051(U)	n/a	0.0043	Maximum detected concentration
Selenium	24	14	0.21	1.16(UJ)	Normal	0.39	95% KM (t)
Zinc	22	22	24.9	100	Gamma	53.3	95% Adjusted Gamma
Organic Chemicals (mg/kg)							
Aroclor-1260	11	1	0.033(U)	0.043	n/a	0.043	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	11	1	0.054	0.35(U)	n/a	0.054	Maximum detected concentration
Toluene	11	1	0.0017	0.0053(U)	n/a	0.0017	Maximum detected concentration
Radionuclides (pCi/g)							
Plutonium-239/240	11	5	-0.0054(U)	0.59	Normal	0.234	95% KM (t)

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-35
EPCs at SWMU 01-006(a) for the Industrial Scenario

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Arsenic	9	7	1(U)	3.8	Normal	2.88	95% KM (t)
Calcium	9	9	554	7640	Gamma	4170	95% Adjusted Gamma
Chromium (Total)	9	7	1.9(U)	11.5	Normal	6.81	95% KM (t)
Copper	9	9	2	10.4	Normal	7.44	95% Student's-t
Cyanide (Total)	9	0	0.29(U)	0.55(UJ)	n/a*	0.55(UJ)	Maximum detection limit
Lead	9	9	6.6	42.8	Gamma	25.3	95% Adjusted Gamma
Mercury	9	4	0.0154(U)	0.203	n/a	0.2	Maximum detected concentration
Perchlorate	9	1	0.0026	0.006(U)	n/a	0.0026	Maximum detected concentration
Selenium	9	6	0.18	0.6(UJ)	Normal	0.231	95% KM (t)

Table G-2.3-35 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Organic Chemicals (mg/kg)							
Aroclor-1260	9	9	0.0081	0.052	Normal	0.0337	95% Student's-t
Bis(2-ethylhexyl)phthalate	9	1	0.097	0.4(U)	n/a	0.097	Maximum detected concentration
Di-n-butylphthalate	9	2	0.054	0.4(U)	n/a	0.15	Maximum detected concentration
Methylene Chloride	9	4	0.0013(U)	0.021	n/a	0.021	Maximum detected concentration
Radionuclides (pCi/g)							
Americium-241	9	2	-0.018(U)	0.466	n/a	0.47	Maximum detected concentration
Plutonium-239/240	9	9	0.59	25.8	Gamma	14.6	95% Adjusted Gamma
Uranium-234	9	9	0.647	4.15	Normal	2.35	95% Student's-t
Uranium-235/236	9	4	0.031(U)	0.357	n/a	0.36	Maximum detected concentration
Uranium-238	9	9	0.772	3.12	Normal	1.89	95% Student's-t

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-36
EPCs at SWMU 01-006(a) for the Construction Worker and Residential Scenarios

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	19	0	0.099(U)	0.61(U)	n/a*	0.61(U)	Maximum detection limit
Arsenic	19	15	0.38(U)	5.5	Normal	2.6	95% KM (t)
Calcium	19	19	155	7640	Gamma	2840	95% Adjusted Gamma
Chromium (Total)	19	15	1.9(U)	18.5	Normal	9.22	95% KM (t)
Copper	19	19	0.57	11.6	Normal	5.98	95% Student's-t
Cyanide (Total)	19	0	0.099(U)	0.6(U)	n/a	0.6(U)	Maximum detection limit

Table G-2.3-36 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Lead	19	19	2.5	42.8	Gamma	16.8	95% Adjusted Gamma
Mercury	19	9	0.0125	0.203	Normal	0.0567	95% KM (t)
Nickel	19	19	1	9	Normal	5.29	95% Student's-t
Perchlorate	19	5	0.0026	0.017	Lognormal	0.00582	95% KM (t)
Selenium	19	16	0.17	0.6(UJ)	Normal	0.247	95% KM (t)
Organic Chemicals (mg/kg)							
Acetone	19	1	0.0019(U)	0.024(U)	n/a	0.0049	Maximum detected concentration
Aroclor-1260	19	13	0.0081	0.052	Gamma	0.0249	95% KM (Percentile Bootstrap)
Bis(2-ethylhexyl)phthalate	19	3	0.057	2.7	n/a	2.7	Maximum detected concentration
Di-n-butylphthalate	19	2	0.054	0.4(U)	n/a	0.15	Maximum detected concentration
Methylene Chloride	19	8	0.00094(U)	0.025	Normal	0.00753	95% KM (t)
Radionuclides (pCi/g)							
Americium-241	19	2	-0.018(U)	0.466	n/a	0.47	Maximum detected concentration
Plutonium-238	23	1	-0.017(U)	0.052(U)	n/a	0.031	Maximum detected concentration
Plutonium-239/240	23	22	0.0249	25.8	Gamma	8.73	95% KM (Chebyshev)
Uranium-234	23	23	0.556	4.15	Gamma	1.66	95% Adjusted Gamma
Uranium-235/236	23	11	0.0097(U)	0.357	Normal	0.143	95% KM (t)
Uranium-238	23	23	0.695	3.12	nonparametric	1.33	95% Student's-t

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-37
EPCs at SWMU 01-006(a) for the Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	19	0	0.099(U)	0.61(U)	n/a*	0.61(U)	Maximum detection limit
Arsenic	19	15	0.38(U)	5.5	Normal	2.6	95% KM (t)
Calcium	19	19	155	7640	Gamma	2840	95% Adjusted Gamma
Chromium (Total)	19	15	1.9(U)	18.5	Normal	9.22	95% KM (t)
Copper	19	19	0.57	11.6	Normal	5.98	95% Student's-t
Cyanide (Total)	19	0	0.099(U)	0.6(U)	n/a	0.6(U)	Maximum detection limit
Lead	19	19	2.5	42.8	Gamma	16.8	95% Adjusted Gamma
Mercury	19	9	0.0125	0.203	Normal	0.0567	95% KM (t)
Nickel	19	19	1	9	Normal	5.29	95% Student's-t
Perchlorate	19	5	0.0026	0.017	Lognormal	0.00582	95% KM (t)
Selenium	19	16	0.17	0.6(UJ)	Normal	0.247	95% KM (t)
Organic Chemicals (mg/kg)							
Acetone	19	1	0.0019(U)	0.024(U)	n/a	0.0049	Maximum detected concentration
Aroclor-1260	19	13	0.0081	0.052	Gamma	0.0249	95% KM (Percentile Bootstrap)
Bis(2-ethylhexyl)phthalate	19	3	0.057	2.7	n/a	2.7	Maximum detected concentration
Di-n-butylphthalate	19	2	0.054	0.4(U)	n/a	0.15	Maximum detected concentration
Methylene Chloride	19	8	0.00094(U)	0.025	Normal	0.00753	95% KM (t)
Radionuclides (pCi/g)							
Americium-241	19	2	-0.018(U)	0.466	n/a	0.47	Maximum detected concentration
Plutonium-239/240	20	19	0.0399	25.8	Gamma	9.15	95% KM (Chebyshev) UCL
Uranium-234	20	20	0.556	4.15	Gamma	1.74	95% Adjusted Gamma UCL
Uranium-235/236	20	8	0.0097(U)	0.357	Normal	0.148	95% KM (t) UCL
Uranium-238	20	20	0.695	3.12	Lognormal	1.37	95% Student's-t UCL

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-38
EPCs at SWMU 01-006(e) for the Construction Worker and Residential Scenarios

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Barium	7	7	13.5	106	n/a*	106	Maximum detected concentration
Chromium (Total)	7	7	2.3	26.7	n/a	26.7	Maximum detected concentration
Cyanide (Total)	5	0	0.14(U)	0.61(UJ)	n/a	0.61(UJ)	Maximum detection limit
Selenium	5	1	0.3	0.61(U)	n/a	0.3	Maximum detected concentration
Organic Chemicals (mg/kg)							
Acetone	5	1	0.0033	0.024(U)	n/a	0.0033	Maximum detected concentration
Benzyl Alcohol	5	1	0.38(U)	1.8	n/a	1.8	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.
* n/a = Not applicable.

Table G-2.3-39
EPCs at SWMU 01-006(e) for Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Chromium (Total)	1	1	9.4	9.4	n/a*	9.4	Maximum detected concentration
Cyanide (Total)	1	0	0.57(UJ)	0.57(UJ)	n/a	0.57(UJ)	Maximum detection limit
Selenium	1	0	0.57(U)	0.57(U)	n/a	0.57(U)	Maximum detection limit

Note: Data qualifiers are defined in Appendix A.
* n/a = Not applicable.

Table G-2.3-40
EPCs at SWMU 01-007(c) for the Construction Worker and Residential Scenarios

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	8	3	0.063	0.54(U)	n/a*	0.1	Maximum detected concentration
Chromium (Total)	24	24	0.582	28.8	Normal	12.2	95% Student's-t
Cyanide (Total)	8	1	0.17	0.6(U)	n/a	0.17	Maximum detected concentration
Lead	8	8	2.7	38.3	Normal	19.9	95% Student's-t
Nickel	24	24	0.428	13.1	Gamma	6.12	95% Adjusted Gamma
Selenium	8	8	0.28	0.41	Normal	0.378	95% Student's-t
Organic Chemicals (mg/kg)							
Aroclor-1260	8	2	0.0077	0.039(U)	n/a	0.038	Maximum detected concentration
Benzene	8	1	0.0002	0.006(U)	n/a	0.0002	Maximum detected concentration
Butylbenzene[n-]	8	1	0.00041	0.006(U)	n/a	0.00041	Maximum detected concentration
Butylbenzene[sec-]	8	1	0.00019	0.006(U)	n/a	0.00019	Maximum detected concentration
Chloroform	8	1	0.00012	0.006(U)	n/a	0.00012	Maximum detected concentration
Isopropyltoluene[4-]	8	1	0.00023	0.006(U)	n/a	0.00023	Maximum detected concentration
Styrene	8	1	0.00041	0.006(U)	n/a	0.00041	Maximum detected concentration
Toluene	8	1	0.00038	0.006(U)	n/a	0.00038	Maximum detected concentration
Vinyl Chloride	8	1	0.0017	0.006(UJ)	n/a	0.0017	Maximum detected concentration
Xylene (Total)	8	1	0.0051	0.006(U)	n/a	0.0051	Maximum detected concentration
Radionuclides (pCi/g)							
Plutonium-238	8	1	-0.031(U)	0.112	n/a	0.11	Maximum detected concentration
Plutonium-239/240	8	3	0.004(U)	0.459	n/a	0.46	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-41
EPCs at SWMU 01-007(c) for Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	5	3	0.063	0.54(U)	n/a*	0.1	Maximum detected concentration
Chromium (Total)	11	11	2.96	25.8	Normal	12.7	95% Student's-t
Cyanide (Total)	5	1	0.17	0.55(U)	n/a	0.17	Maximum detected concentration
Lead	5	5	2.7	38.3	n/a	38.3	Maximum detected concentration
Nickel	11	11	2.02	12.3	Normal	7.04	95% Student's-t
Selenium	5	5	0.28	0.4	n/a	0.4	Maximum detected concentration
Organic Chemicals (mg/kg)							
Aroclor-1260	5	1	0.035(U)	0.038	n/a	0.038	Maximum detected concentration
Styrene	5	1	0.00041	0.0055(U)	n/a	0.00041	Maximum detected concentration
Radionuclides (pCi/g)							
Plutonium-238	5	1	-0.031(U)	0.112	n/a	0.11	Maximum detected concentration
Plutonium-239/240	5	2	0.004(U)	0.459	n/a	0.46	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-42
EPCs at SWMUs 03-038(a,b) for the Construction Worker and Residential Scenarios

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	18	0	0.073(U)	0.6(U)	n/a*	0.6(U)	Maximum detection limit
Barium	27	27	7.6	102	nonparametric	81.9	95% Chebyshev (Mean, Sd)
Calcium	18	18	187	4740	Normal	1970	95% Student's-t
Chromium (Total)	27	27	1.1	151	Lognormal	27.5	95% Chebyshev (MVUE)
Copper	27	27	1.3	10.3	Normal	4.92	95% Student's-t

Table G-2.3-42 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Cyanide (Total)	18	2	0.1(U)	0.96	n/a	0.96	Maximum detected concentration
Lead	27	27	3.6	22	Normal	12.4	95% Student's-t
Nickel	27	27	1.1	71.6	Gamma	11.3	95% Adjusted Gamma
Perchlorate	18	3	0.0053(U)	0.039	n/a	0.039	Maximum detected concentration
Selenium	18	14	0.18	0.56(U)	Normal	0.235	95% KM (t)
Organic Chemicals (mg/kg)							
Aroclor-1254	18	5	0.0074	0.04(U)	Normal	0.0204	95% KM (t)
Aroclor-1260	18	11	0.0077	0.04(U)	Normal	0.0204	95% KM (t)
Bis(2-ethylhexyl)phthalate	18	2	0.066	0.4(U)	n/a	0.083	Maximum detected concentration
Hexanone[2-]	18	1	0.0056	0.024(U)	n/a	0.0056	Maximum detected concentration
Toluene	18	2	0.00057	0.006(U)	n/a	0.0006	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-43
EPCs at SWMUs 03-038(a,b) for Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	12	0	0.073(U)	0.6(U)	n/a*	0.6(U)	Maximum detection limit
Barium	12	12	7.6	90.3	Gamma	58.6	95% Adjusted Gamma
Calcium	12	12	187	2420	Lognormal	1750	95% Chebyshev (MVUE)
Chromium (Total)	12	12	1.1	25.4	Gamma	14.1	95% Adjusted Gamma
Copper	12	12	1.3	7.6	nonparametric	5.3	95% Chebyshev (Mean, Sd)
Cyanide (Total)	12	1	0.1(U)	0.6(U)	n/a	0.54	Maximum detected concentration
Lead	12	12	3.6	16.3	Lognormal	13.5	95% Chebyshev (Mean, Sd)
Nickel	12	12	1.1	14.1	Gamma	8.03	95% Adjusted Gamma

Table G-2.3-43 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Perchlorate	12	2	0.0053(U)	0.036	n/a	0.036	Maximum detected concentration
Selenium	12	10	0.18	0.56(U)	Normal	0.248	95% KM (t)
Organic Chemicals (mg/kg)							
Aroclor-1254	12	4	0.0074	0.04(U)	n/a	0.039	Maximum detected concentration
Aroclor-1260	12	5	0.0084	0.04(U)	Normal	0.0251	95% KM (t)
Bis(2-ethylhexyl)phthalate	12	1	0.066	0.4(U)	n/a	0.066	Maximum detected concentration
Hexanone[2-]	12	1	0.0056	0.024(U)	n/a	0.0056	Maximum detected concentration
Toluene	12	1	6e-04	0.006(U)	n/a	0.0006	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-44
EPCs at SWMU 03-055(c) for the Industrial Scenario

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Arsenic	13	10	1.84(U)	6.02	nonparametric	3.68	95% KM (BCA)
Copper	13	13	1.37	15.1	Normal	9.39	95% Student's-t
Lead	13	13	6.14	25.6	Normal	16.4	95% Student's-t
Selenium	13	2	0.642	8.76(U)	n/a*	1.13	Maximum detected concentration
Zinc	13	13	27.1	276	Normal	134	95% Student's-t

Table G-2.3-44 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Organic Chemicals (mg/kg)							
Acenaphthene	13	2	0.0354(U)	0.151	n/a	0.15	Maximum detected concentration
Anthracene	13	9	0.00858	0.252	nonparametric	0.117	95% KM Chebyshev
Aroclor-1254	13	12	0.0016	0.0064	Normal	0.00436	95% KM (t)
Aroclor-1260	13	11	0.0016	0.0063	Normal	0.00425	95% KM (t)
Benzo(a)anthracene	13	10	0.0186	0.278	Lognormal	0.0921	95% KM (BCA)
Benzo(a)pyrene	13	2	0.0354(UJ)	0.29	n/a	0.29	Maximum detected concentration
Benzo(b)fluoranthene	13	3	0.0354(UJ)	0.497	n/a	0.5	Maximum detected concentration
Benzo(k)fluoranthene	13	2	0.0354(UJ)	0.0648	n/a	0.065	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	13	12	0.128	0.481	Normal	0.3	95% KM (t)
Butanone[2-]	13	2	0.00368	0.0065(UJ)	n/a	0.004	Maximum detected concentration
Chrysene	13	6	0.036	0.277	Normal	0.0952	95% KM (t)
Dibenzofuran	13	1	0.0879	0.488(U)	n/a	0.088	Maximum detected concentration
Fluoranthene	13	11	0.0296	0.701	Lognormal	0.338	95% KM (Chebyshev)
Fluorene	13	2	0.0354(U)	0.147	n/a	0.15	Maximum detected concentration
Indeno(1,2,3-cd)pyrene	13	1	0.0354(UJ)	0.15	n/a	0.15	Maximum detected concentration
Methylnaphthalene[2-]	13	2	0.0197	0.0488(U)	n/a	0.049	Maximum detected concentration
Naphthalene	13	2	0.0354(U)	0.158	n/a	0.16	Maximum detected concentration
Phenanthrene	13	11	0.021	0.835	nonparametric	0.383	95% KM Chebyshev
Pyrene	13	12	0.0274	0.976	Lognormal	0.465	95% KM (Chebyshev)
Toluene	13	2	0.000469	0.0013(U)	n/a	0.00055	Maximum detected concentration
Trichlorofluoromethane	13	1	0.00106(UJ)	0.0133	n/a	0.013	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-45
EPCs at SWMU 03-055(c) the Construction Worker and Residential Scenarios for Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Arsenic	20	11	1.64(U)	6.02	Lognormal	3.09	95% KM (t)
Copper	20	20	1.37	15.1	Normal	8.94	95% Student's-t
Lead	20	20	6.14	174	Lognormal	64.1	95% Chebyshev (Mean, Sd)
Selenium	20	2	0.642	8.91(U)	n/a*	1.13	Maximum detected concentration
Zinc	32	32	18.6	279	Gamma	108	95% Adjusted Gamma
Organic Chemicals (mg/kg)							
Acenaphthene	20	6	0.0354(U)	0.478	Normal	0.135	95% KM (t)
Acetone	20	1	0.00448(U)	0.0721(U)	n/a	0.0065	Maximum detected concentration
Anthracene	20	14	0.00858	0.664	nonparametric	0.277	95% KM (Chebyshev)
Aroclor-1254	20	18	0.0016	0.0347	nonparametric	0.0176	95% KM (Chebyshev)
Aroclor-1260	20	18	0.0016	0.036	Lognormal	0.0186	95% KM (Chebyshev)
Benzo(a)anthracene	20	15	0.0186	1.31	nonparametric	0.507	95% KM (Chebyshev)
Benzo(a)pyrene	20	6	0.0354(UJ)	1.3	Normal	0.321	95% KM (t)
Benzo(b)fluoranthene	20	7	0.0354(UJ)	2.29	Normal	0.552	95% KM (t)
Benzo(g,h,i)perylene	20	2	0.0354(UJ)	0.594	n/a	0.59	Maximum detected concentration
Benzo(k)fluoranthene	20	2	0.0354(UJ)	0.0648	n/a	0.065	Maximum detected concentration
Benzoic Acid	20	1	0.36	1.03(U)	n/a	0.36	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	20	18	0.128	2.39	Lognormal	0.814	95% KM (Chebyshev)
Butanone[2-]	20	6	0.00368	0.23	Lognormal	0.0687	95% KM (Chebyshev)
Chrysene	20	12	0.0217	1.41	Gamma	0.345	95% KM (BCA)
Dibenzofuran	20	3	0.0879	0.514(U)	n/a	0.26	Maximum detected concentration
Ethylbenzene	20	4	0.000358	0.00161	n/a	0.0016	Maximum detected concentration
Fluoranthene	20	18	0.0296	2.63	nonparametric	1.03	95% KM (Chebyshev)
Fluorene	20	6	0.0354(U)	0.437	Normal	0.127	95% KM (t)

Table G-2.3-45 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Indeno(1,2,3-cd)pyrene	20	4	0.0354(UJ)	0.606	n/a	0.61	Maximum detected concentration
Methylnaphthalene[2-]	20	6	0.0123	0.175	Normal	0.0504	95% KM (t)
Naphthalene	20	6	0.0339	0.515	Normal	0.138	95% KM (t)
Phenanthrene	20	18	0.0185	2.78	nonparametric	1.1	95% KM (Chebyshev)
Pyrene	20	19	0.0274	4.08	nonparametric	1.65	95% KM (Chebyshev)
Toluene	20	4	0.000469	0.00156(U)	n/a	0.00062	Maximum detected concentration
Trichlorofluoromethane	20	1	0.00106(UJ)	0.0133	n/a	0.013	Maximum detected concentration
Xylene[1,2-]	20	1	0.00106(U)	0.00156(U)	n/a	0.0015	Maximum detected concentration
Xylene[1,3-]+Xylene[1,4-]	20	3	0.000865	0.00312(U)	n/a	0.0031	Maximum detected concentration
Radionuclides (pCi/g)							
Tritium	20	3	-0.00853(U)	0.12	n/a	0.12	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-46
EPCs at SWMU 32-002(b2) for the Industrial Scenario

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	2	0	0.54(U)	0.57(U)	n/a*	0.57(U)	Maximum detection limit
Arsenic	2	1	1.7(U)	2.8	n/a	2.8	Maximum detected concentration
Barium	2	2	28.1	53.2	n/a	53.2	Maximum detected concentration
Chromium (Total)	2	2	3.3	15.2	n/a	15.2	Maximum detected concentration
Copper	2	2	4.7	6.5	n/a	6.5	Maximum detected concentration
Cyanide (Total)	2	0	0.47(U)	0.52(U)	n/a	0.52(U)	Maximum detection limit
Lead	2	2	15.4	45.9	n/a	45.9	Maximum detected concentration

Table G-2.3-46 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Mercury	36	34	0.0085	32.6	Gamma	7.86	95% Gamma Adjusted KM-UCL
Nickel	2	2	2.7	7.8	n/a	7.8	Maximum detected concentration
Nitrate	2	1	0.9(U)	3	n/a	3	Maximum detected concentration
Perchlorate	2	1	0.0056(UJ)	0.006	n/a	0.006	Maximum detected concentration
Silver	2	2	0.097	4.8	n/a	4.8	Maximum detected concentration
Organic Chemicals (mg/kg)							
Aroclor-1260	2	1	0.031	0.037(U)	n/a	0.031	Maximum detected concentration
Radionuclides (pCi/g)							
Plutonium-239/240	2	1	0.018(U)	0.171	n/a	0.171	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-47
EPCs at SWMU 32-002(b2) for the Construction Worker and Residential Scenarios

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	27	2	0.1(U)	3.72	n/a*	3.72	Maximum detected concentration
Arsenic	27	19	0.353	7.91	Gamma	2.57	95% KM Adjusted Gamma
Barium	27	27	6.85	220	Gamma	59.4	95% Adjusted Gamma
Chromium (Total)	27	27	3.3	167	Lognormal	46	95% Bootstrap-t
Copper	27	27	0.796	8.41	Normal	4.43	95% Student's-t
Cyanide (Total)	20	0	0.1(U)	0.59(U)	n/a	0.59	Maximum detection limit
Lead	27	27	0.407	67.3	Gamma	21.9	95% Adjusted Gamma
Mercury	134	112	0.0042	32.6	Lognormal	3.35	95% KM Chebyshev
Nickel	27	27	1.46	28.5	Gamma	14	95% Adjusted Gamma
Nitrate	20	12	0.13	8.5	Gamma	2.7	95% Gamma Adjusted KM-UCL

Table G-2.3-47 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Perchlorate	20	3	0.0021	0.006(U)	n/a	0.006	Maximum detected concentration
Selenium	27	20	0.18	1.18(UJ)	nonparametric	0.389	95% KM (t)
Silver	27	22	0.026	5.1	Lognormal	1.77	95% KM (Chebyshev)
Organic Chemicals (mg/kg)							
Aroclor-1260	10	3	0.031	0.088	n/a	0.088	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	20	7	0.098	0.7	n/a	0.35	Maximum detected concentration
Butylbenzylphthalate	20	2	0.051(U)	0.4(U)	n/a	0.085	Maximum detected concentration
Methylene Chloride	20	2	0.0015(U)	0.011(U)	n/a	0.0084	Maximum detected concentration
Radionuclides (pCi/g)							
Plutonium-239/240	20	2	-0.015(U)	0.171	n/a	0.171	Maximum detected concentration
Strontium-90	20	1	-0.142(U)	0.45	n/a	0.45	Maximum detected concentration
Uranuim-235/236	20	2	0.016(U)	0.104	n/a	0.104	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-48
EPCs at SWMU 32-002(b2) for Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Antimony	13	0	0.1(U)	0.79(U)	n/a*	0.79(U)	Maximum detection limit
Arsenic	13	7	0.46(U)	7.5	Gamma	3.65	95% KM Adjusted Gamma
Barium	13	13	12.3	220	Gamma	79.8	95% Adjusted Gamma
Chromium (Total)	13	13	3.3	44	Gamma	23.7	95% Adjusted Gamma
Copper	13	13	1.3	6.5	Normal	4.87	95% Student's-t
Cyanide (Total)	13	0	0.1(U)	0.59(U)	n/a	0.59(U)	Maximum detection limit

Table G-2.3-48 (continued)

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Lead	13	13	2	45.9	Normal	20.4	95% Student's-t
Mercury	100	87	0.0042	32.6	Lognormal	4.21	95% KM Chebyshev
Nickel	13	13	2.7	22.6	Gamma	12.9	95% Adjusted Gamma
Nitrate	13	7	0.13	8.5	Gamma	5	95% KM Bootstrap t
Perchlorate	13	3	0.0021	0.006	n/a	0.006	Maximum detected concentration
Selenium	13	11	0.18	0.57(U)	Normal	0.321	95% KM (t)
Silver	13	12	0.037	5.1	Lognormal	3.17	95% KM Chebyshev
Organic Chemicals (mg/kg)							
Aroclor-1260	13	4	0.031	0.4	n/a	0.4	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	13	4	0.12	0.44	n/a	0.44	Maximum detected concentration
Methylene Chloride	9	1	0.0015(U)	0.0056(U)	n/a	0.004	Maximum detected concentration
Radionuclides (pCi/g)							
Plutonium-239/240	13	2	-0.015(U)	0.171	n/a	0.171	Maximum detected concentration
Strontium-90	13	1	-0.142(U)	0.45	n/a	0.45	Maximum detected concentration
Uranium-235/236	13	2	0.016(U)	0.104	n/a	0.104	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-49
EPCs at AOC C-43-001 for the Industrial Scenario

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Cadmium	7	7	0.067	0.46	n/a*	0.46	Maximum detected concentration
Calcium	7	7	1470	4670	n/a	4670	Maximum detected concentration
Chromium (Total)	7	7	4.2	43.5	n/a	43.5	Maximum detected concentration
Copper	7	7	3.1	17.2	n/a	17.2	Maximum detected concentration
Lead	41	41	4.63	202	Nonparametric	46.8	95% Standard Bootstrap
Mercury	7	6	0.0223	0.291	n/a	0.291	Maximum detected concentration
Selenium	7	1	0.23	0.61(U)	n/a	0.23	Maximum detected concentration
Zinc	7	7	26.6	127	n/a	127	Maximum detected concentration
Organic Chemicals (mg/kg)							
Aroclor-1254	7	6	0.022	0.2	n/a	0.2	Maximum detected concentration
Aroclor-1260	7	3	0.017	0.04(U)	n/a	0.027	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	7	5	0.064	0.4(U)	n/a	0.34	Maximum detected concentration
Bromomethane	7	1	0.00047(U)	0.012(U)	n/a	0.00064	Maximum detected concentration
Butylbenzylphthalate	7	2	0.06	0.4(U)	n/a	0.17	Maximum detected concentration
Dibenzofuran	7	7	0.047	0.4	n/a	0.4	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-50
EPCs at AOC C-43-001 for the Construction Worker and Residential Scenarios and Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Inorganic Chemicals (mg/kg)							
Cadmium	15	15	0.058	0.46	Normal	0.221	95% Student's-t
Calcium	15	15	416	4670	Normal	2160	95% Student's-t
Chromium (Total)	15	15	3.2	43.5	Gamma	18.7	95% Adjusted Gamma
Copper	15	15	2.4	52	Gamma	16.9	95% Adjusted Gamma
Cyanide (Total)	15	1	0.11(U)	1.3	n/a*	1.3	Maximum detected concentration
Lead	156	156	1.19	202	nonparametric	24.4	95% Chebyshev (Mean, Sd)
Mercury	15	11	0.0156	0.308	Normal	0.153	95% KM (t)
Nickel	15	15	2.8	11.3	Lognormal	6.21	95% Student's-t
Selenium	15	7	0.22	0.63(U)	Normal	0.333	95% KM (t)
Zinc	15	15	24.3	144	Gamma	85.1	95% Adjusted Gamma
Organic Chemicals (mg/kg)							
Acetone	15	1	0.021(U)	0.049	n/a	0.049	Maximum detected concentration
Aroclor-1254	15	10	0.0056	0.2	Gamma	0.0951	95% Gamma Adjusted KM
Aroclor-1260	15	7	0.0042	0.045(U)	Normal	0.023	95% KM (t)
Bis(2-ethylhexyl)phthalate	15	7	0.064	0.54(U)	nonparametric	0.284	95% KM (Chebyshev)
Bromomethane	15	3	0.00047(U)	0.016(U)	n/a	0.00072	Maximum detected concentration
Butylbenzylphthalate	15	2	0.06	0.54(U)	n/a	0.17	Maximum detected concentration
Dibenzofuran	15	11	0.047	0.41(U)	Gamma	0.207	95% KM Adjusted Gamma
Isopropyltoluene[4-]	15	3	0.0053(UJ)	0.22	n/a	0.22	Maximum detected concentration
Toluene	15	1	0.00063	0.0069(U)	n/a	0.00063	Maximum detected concentration
Radionuclides (pCi/g)							
Tritium	15	1	-0.008(U)	1.71	n/a	1.71	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.
* n/a = Not applicable.

Table G-2.3-51
EPCs at SWMU 61-007 for the Industrial Scenario

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Organic Chemicals (mg/kg)							
Acetone	3	1	0.00479	0.024(U)	n/a*	0.00479	Maximum detected concentration
Aroclor-1260	3	3	0.26	1.9	n/a	1.9	Maximum detected concentration
Benzyl Alcohol	3	1	0.047	0.39(U)	n/a	0.047	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	3	1	0.079	0.39(U)	n/a	0.079	Maximum detected concentration
Dibenzofuran	3	1	0.093	0.39(U)	n/a	0.093	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-52
EPCs at SWMU 61-007 for the Construction Worker and Residential Scenarios

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Organic Chemicals (mg/kg)							
Acetone	11	1	0.00479	0.027(U)	n/a*	0.00479	Maximum detected concentration
Aroclor-1260	55	55	0.00671	42.6	nonparametric	10	95% Chebyshev (Mean, Sd)
Benzyl Alcohol	11	4	0.043	0.45(U)	n/a	0.064	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	11	1	0.079	0.45(U)	n/a	0.079	Maximum detected concentration
Dibenzofuran	11	1	0.093	0.45(U)	n/a	0.093	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.

* n/a = Not applicable.

Table G-2.3-53
EPCs at SWMU 61-007 for Ecological Receptors

COPC	Number of Analyses	Number of Detects	Minimum Concentration	Maximum Concentration	Distribution	EPC	EPC Method
Organic Chemicals (mg/kg)							
Acetone	6	1	0.00479	0.027(U)	n/a*	0.00479	Maximum detected concentration
Aroclor-1260	25	25	0.00957	30.2	Gamma	4.83	95% Adjusted Gamma
Benzyl Alcohol	6	2	0.047	0.45(U)	n/a	0.064	Maximum detected concentration
Bis(2-ethylhexyl)phthalate	6	1	0.079	0.45(U)	n/a	0.079	Maximum detected concentration
Dibenzofuran	6	1	0.093	0.45(U)	n/a	0.093	Maximum detected concentration

Note: Data qualifiers are defined in Appendix A.
* n/a = Not applicable.

Table G-3.2-1
Physical and Chemical Properties of
Inorganic COPCs for Upper Los Alamos Canyon Aggregate Area Sites

COPC	K_d[a] (cm^3/g)	Water Solubility[a,b] (g/L)
Aluminum	1500	Insoluble
Antimony	45	Insoluble
Arsenic	29	Insoluble
Barium	41	Insoluble
Beryllium	790	Insoluble
Cadmium	75	Insoluble
Chromium (Total)	850	Insoluble
Cobalt	45	Insoluble
Copper	35	Insoluble
Cyanide (Total)	9.9	na[c]
Hexavalent chromium	19	1690
Iron	25	Insoluble
Lead	900	Insoluble
Manganese	65	Insoluble
Mercury	52	Insoluble
Nickel	65	Insoluble
Nitrate	na[c]	Soluble
Perchlorate	na[c]	245
Selenium	5	Insoluble
Silver	8.3	Insoluble
Thallium	71	Insoluble
Uranium	450	na[c]
Vanadium	1000	Insoluble
Zinc	62	Insoluble

[a] Information from http://rais.ornl.gov/cgi-bin/tools/TOX_search .

[b] Denotes reference information from http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm.

[c] na = Not available.

Table G-3.2-2
Physical and Chemical Properties of Organic COPCs for Upper Los Alamos Canyon Aggregate Area Sites

COPC	Water Solubility[a] (mg/L)	Organic Carbon Coefficient K_{oc}[a] (L/kg)	Log Octanol-Water Partition Coefficient K_{ow}[a]	Vapor Pressure[a] (mm Hg at 25°C)
Acenaphthene	3.90E+00	5.03E+03	3.92E+00	2.15E-03
Acetone	1.00E+06	2.36E+00	-2.40E-01	2.32E+02
Anthracene	4.34E-02	1.64E+04	4.45E+00	6.53E-06
Aroclor-1242	2.77E-01	7.81E+04	6.34E+00	8.63E-05
Aroclor-1254	4.30E-02	1.30E+05	6.50E+00	7.71E-05
Aroclor-1260	1.44E-02	3.50E+05	7.55E+00	4.05E-05
Benzene	1.79E+03	1.46E+02	2.13E+00	9.48E+01
Benzo(a)anthracene	9.40E-03[b]	2.31E+05[b]	5.76+00[b]	1.90E-06[b]
Benzo(a)pyrene	1.62E-03	5.87E+05	6.13E+00	5.49E-09
Benzo(b)fluoranthene	1.50E-03	5.99E+05	5.78E+00	5.00E-07
Benzo(g,h,i)perylene	2.60E-04	1.95E+06	6.63E+00	1.00E-10
Benzo(k)fluoranthene	8.00E-04	5.87E+05	6.11E+00	9.65E-10
Benzoic acid	3.40E-03	6.00E-01	1.87E+00	7.00E-04
Benzyl alcohol	4.29E+04	2.15E+01	1.10E+00	9.40E-02
Bis(2-ethylhexyl)phthalate	2.70E-01	1.20E+05	7.60E+00	1.42E-07
Bromobenzene	4.46E+02	2.34E+02	2.99E+00	4.18E+00
Bromomethane	1.52E+04	1.32E+01	1.19E+00	1.62E+03
Butanone[2-]	2.23E+05	4.51E+00	2.90E-01	9.06E+01
Butylbenzene[n-]	1.18E+01	1.48E+03	4.38E+00	1.06E+00
Butylbenzene[sec-]	1.76E+01	1.33E+03	4.57E+00	1.75E+00
Butylbenzylphthalate	2.69E+00	7.16E+03	4.73E+00	8.25E-06
Chloroform	7.95E+03	3.18E+01	1.97E+00	1.97E+02
Chlorotoluene[4-]	1.06E+02	3.75E+02	3.33E+00	2.69E+00
Chrysene	2.00E-03	1.80E+05	5.81E+00	6.23E-09
Di-n-butylphthalate	1.12E+01	1.16E+03	4.50E+00	2.01E-05
Di-n-octylphthalate	1.96E+05	8.10E+00	2.00E-02	1.00E-07
Dibenz(a,h)anthracene	2.49E-03	1.91E+06	6.75E+00	9.55E-10
Dibenzofuran	3.10E+00	9.16E+04	4.12E+00	2.48E-03
Dichlorobenzene[1,2]	1.56E+02	3.83E+02	3.43E+00	1.36E+00
Dichlorobenzene[1,4]	8.13E+01	3.75E+02	3.44E+00	1.74E+00
Ethylbenzene	1.69E+02	4.46E+02	3.15E+00	9.60E+00
Fluoranthene	2.60E-01	5.54E+04	5.16E+00	9.22E-06
Fluorene	1.69E+00	9.16E+03	4.18E+00	6.00E-04
Hexachlorobenzene	6.20E-03	6.20E+03	5.73E+00	1.80E-05
Hexanone[2-]	1.72E+04	1.50E+01	1.38E+00	1.16E+01

Table G-3.2-2 (continued)

COPC	Water Solubility[a] (mg/L)	Organic Carbon Coefficient K_{oc}[a] (L/kg)	Log Octanol-Water Partition Coefficient K_{ow}[a]	Vapor Pressure[a] (mm Hg at 25°C)
Indeno(1,2,3-cd)pyrene	1.90E-04	1.95E+06	6.70E+00	1.25E-12
Isopropyltoluene[4-]	2.34E+01	1.12E+03	4.10E+00	1.46E+00
Methylene Chloride	1.30E+04	2.17E+01	1.25E+00	4.30E+02
Methylnaphthalene[2-]	2.46E+01	2.48E+03	3.86E+00	4.35E-02
Naphthalene	3.10E+01	1.54E+03	3.30E+00	8.50E-02
Pentachlorophenol	1.40E+01	5.92E+02	5.12E+00	1.10E-04
Phenanthrene	1.15E+00	1.67E+04	4.46E+00	1.21E-04
Propylbenzene[1-]	5.22E+01	8.13E+02	3.69E+00	3.42E+00
Pyrene	1.35E-01	5.43E+04	4.88E+00	4.50E-06
Styrene	3.10E+02	4.46E+02	2.95E+00	6.40E+00
Tetrachloroethene	2.06E+02	9.49E+01	3.40E+00	1.85E+01
Toluene	5.26E+02	2.34E+02	2.73E+00	2.84E+01
Trichlorotrifluoromethane	1.70E+02	1.97E+02	3.16E+00	3.62E+02
Trimethylbenzene[1,2,4-]	5.70E+01	6.14E+02	3.63E+00	2.10E+00
Vinyl chloride	8.80E+03	2.17E+01	1.38E+00	2.98E+03
Xylene (Total)	1.61E+02	4.34E+02	3.20E+00	8.29E+00
Xylene[1,2-]	1.61E+02	4.34E+02	3.20E+00	8.29E+00
Xylene[1,3-]+1,4-Xylene[c]	1.78E+02	3.83E+02	3.12E+00	7.99E+00

[a] Information from http://rais.ornl.gov/cgi-bin/tools/TOX_search, unless noted otherwise.

[b] Information from http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm.

[c] Xylenes used as a surrogate.

Table G-3.2-3
Physical and Chemical Properties of
Radionuclide COPCs for Upper Los Alamos Canyon Aggregate Area Sites

COPC	Soil-Water Partition Coefficient, K_d[a] (cm^3/g)	Water Solubility[b] (g/L)
Americium-241	680	Insoluble
Cesium-134	1000	Insoluble
Cesium-137	1000	Insoluble
Plutonium-238	4500	Insoluble
Plutonium-239/240	4500	Insoluble
Strontium-90	35	Soluble
Tritium	9.9	Soluble
Uranium-234	0.4	Insoluble
Uranium-235/236	0.4	Insoluble
Uranium-238	0.4	Insoluble

[a] Superfund Chemical Data Matrix (EPA 1996, 064708).

[b] Information from http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm.

Table G-4.1-1
Exposure Parameters Used to Calculate Chemical SSLs
for the Industrial, Recreational, Construction Worker, and Residential Scenarios

Parameters	Industrial Values	Recreational Values	Construction Worker Values	Residential Values
Target HQ	1	1	1	1
Target cancer risk	10^{-5}	10^{-5}	10^{-5}	10^{-5}
Averaging time (carcinogen/mutagen)	70 yr × 365 d	70 yr × 365 d	70 yr × 365 d	70 yr × 365 d
Averaging time (noncarcinogen)	ED × 365 d	Exposure duration × 365 d	ED × 365 d	ED × 365 d
Skin absorption factor	Semivolatile organic compound (SVOC) = 0.1	SVOC = 0.1	SVOC = 0.1	SVOC = 0.1
	Chemical-specific	Chemical-specific	Chemical-specific	Chemical-specific
Adherence factor–child	n/a[a]	0.2 mg/cm^2	n/a	0.2 mg/cm^2
Body weight–child	n/a	31 kg	(mg/kg-d)$^{-1}$	15 kg (0–6 yr of age)
Cancer slope factor–oral (chemical-specific)	(mg/kg-d)$^{-1}$	(mg/kg-d)$^{-1}$	(mg/kg-d)$^{-1}$	(mg/kg-d)$^{-1}$
Inhalation unit risk (chemical-specific)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/m^3)
Exposure frequency	225 d/yr	200 d/yr	250 d/yr	350 d/yr
Exposure time	8 h/day	1 h/d	n/a	24 h/d
Exposure duration–child	n/a	6 yr (6 to <12 yr of age)	n/a	6 yr[b]
Age-adjusted ingestion factor for carcinogens	n/a	n/a	n/a	36,750 mg/kg
Age-adjusted ingestion factor for mutagens	n/a	n/a	n/a	25,550 mg/kg
Soil ingestion rate–child	n/a	91 mg/d	n/a	200 mg/d
Particulate emission factor	6.61 × 10^9 m^3/kg	6.61 × 10^9 m^3/kg	2.1 × 10^6 m^3/kg	6.61 × 10^9 m^3/kg
Reference dose–oral (chemical-specific)	(mg/kg-d)	(mg/kg-d)	(mg/kg-d)	(mg/kg-d)
Reference dose–inhalation (chemical-specific)	(mg/kg-d)	(mg/kg-d)	(mg/kg-d)	(mg/kg-d)
Exposed surface area–child	n/a	4030 cm^2	n/a	2690 cm^2/d
Age-adjusted skin contact factor for carcinogens	n/a	n/a	n/a	112,266 mg/kg
Age-adjusted skin contact factor for mutagens	n/a	n/a	n/a	166,833 mg/kg
Volatilization factor for soil (chemical-specific)	(m^3/kg)	(m^3/kg)	(m^3/kg)	(m^3/kg)
Body weight–adult	80 kg	80 kg[b]	80 kg	80 kg
Adherence factor–adult	0.12 mg/cm^2	0.07 mg/cm^2	0.3 mg/cm^2	0.07 mg/cm^2
Soil ingestion rate–adult	100 mg/d	30 mg/d	330 mg/d	100 mg/d
Exposed surface area–adult	3470 cm^2/d	6032 cm^2	3470 cm^2/d	6032 cm^2/d

Note: Parameter values from NMED (2017, 602273) and LANL (2017, 602581).

[a] n/a = Not applicable.

[b] The child exposure duration for mutagens is subdivided into 0–2 yr and 2–6 yr.

Table G-4.1-2
Parameter Values Used to Calculate Radionuclide SALs for the Residential Scenario

Parameters	Residential, Child	Residential, Adult
Inhalation rate (m3/yr)	4712[a]	7780[b]
Mass loading (g/m3)	1.5 × 10−7[c]	1.5 × 10−7[c]
Outdoor time fraction	0.0926[d]	0.0934[e]
Indoor-time fraction	0.8656[f]	0.8648[g]
Soil ingestion (g/yr)	73[h]	36.5[i]

[a] Calculated as 12.9 m^3/d × 365.25 d/yr, where 12.9 m^3/d is the mean upper percentile daily inhalation rate of a child (EPA 2011, 208374, Table 6-1).

[b] Calculated as 21.3 m^3/d × 365.25 d/yr, where 21.3 m^3/d is the mean upper percentile daily inhalation rate of an adult from 21 to less than 61 yr old (EPA 2011, 208374, Table 6-1).

[c] Calculated as (1/6.6 × 10^9 m^3/kg) × 1000 g/kg, where 6.6 × 10^9 m^3/kg is the particulate emission factor (NMED 2017, 602273).

[d] Calculated as (2.32 h/d × 350 d/yr)/8766 h/yr, where 2.32 h/d (139 min) is the largest amount of time spent outdoors for child age groups between 1 to less than 3 mo and 3 to less than 6 yr (EPA 2011, 208374, Table 16-1) and is comparable with the adult time spent outdoors at a residence.

[e] Calculated as (2.34 h/d × 350 d/yr)/8766 h/yr, where 4.68 h/d is the average total time spent outdoors for adults age 18 to less than 65 yr in all environments (EPA 2011, 208374, Table 16-1); 50% of this value (2.34 h/d) was applied to time spent outdoors at a residence and is similar to mean time outdoors at a residence for this age group (EPA 2011, 208374, Table 16-22).

[f] Calculated as [(24 h/d–2.32 h/d) × 350 d/yr]/8766 h/yr.

[g] Calculated as [(24 h/d–2.34 h/d) × 350 d/yr]/8766 h/yr.

[h] The soil ingestion rate compensates for the time-based occupancy factor applied by RESRAD in calculating exposure from the soil ingestion pathway. Calculated as [0.2 g/d × 350 d/yr]/[indoor + outdoor time fractions], where 0.2 g/d is the upper percentile site-related daily child soil ingestion rate (NMED 2015, 600915; EPA 2011, 208374, Table 5-1).

[i] The soil ingestion rate compensates for the time-based occupancy factor applied by RESRAD in calculating exposure from the soil ingestion pathway. Calculated as [0.1 g/d × 350 d/yr]/[indoor + outdoor time fractions], where 0.1 g/d is the site-related daily adult soil ingestion rate (NMED 2015, 600915).

Table G-4.1-3
Parameter Values Used to Calculate
Radionuclide SALs for the Industrial and Construction Worker Scenarios

Parameters	Industrial, Adult	Construction Worker, Adult
Inhalation rate (m3/yr)	7780[a]	7780[a]
Mass loading (g/m3)	1.51 × 10^{-7}[b]	4.76 × 10^{-7}[c]
Outdoor time fraction	0.2053[d]	0.2282[e]
Indoor time fraction	0[f]	0
Soil ingestion (g/yr)	109.6[g]	362[h]

[a] Calculated as [21.3 m^3/d × 365.25 d/yr], where 21.3 m^3/d is the upper percentile daily inhalation rate of an adult from 21 to less than 61 yr old (EPA 2011, 208374, Table 6-1).

[b] Calculated as (1/6.6 × 10^9 m^3/kg) x 1000 g/kg, where 6.6 × 10^9 m^3/kg is the particulate emission factor (NMED 2015, 600915).

[c] Calculated as (1/2.1 × 10^6 m^3/kg) x 1000 g/kg, where 6.6 × 10^9 m^3/kg is the particulate emission factor (NMED 2015, 600915).

[d] Calculated as (8 h/d × 225 d/yr)/8766 h/yr, where 8 h/d is an estimate of the average length of the work day and 225 d/yr is the exposure frequency (NMED 2015, 600915).

[e] Calculated as (8 h/d × 250 d/yr) /8766 h/yr, where 8 h/d is an estimate of the average length of the work day and 250 d/yr is the exposure frequency (NMED 2015, 600915).

[f] The commercial/industrial worker is defined as someone who "spends most of the work day conducting maintenance or manual labor activities outdoors" (NMED 2015, 600915).

[g] The soil-ingestion rate compensates for the time-based occupancy factor applied by RESRAD in calculating exposure from the soil-ingestion pathway. Calculated as [0.1 g/d × 225 d/yr]/[indoor + outdoor time fractions], where 0.1 g/d is the site-related daily adult soil-ingestion rate (NMED 2015, 600915).

[h] The soil-ingestion rate compensates for the time-based occupancy factor applied by RESRAD in calculating exposure from the soil-ingestion pathway. Calculated as [0.33 g/d × 250 d/yr]/[indoor + outdoor time fractions], where 0.33 g/d is the site-related daily adult soil-ingestion rate (NMED 2015, 600915).

Table G-4.1-4
Parameters Used in the SAL
Calculations for Radionuclide SALs for the Recreational Scenario

Parameters	Recreational, Child	Recreational, Adult
Inhalation rate (m^3/yr)	15,250[a]	19,460[b]
Mass loading (g/m^3)	1.5×10^{-7}[c]	1.5×10^{-7}[c]
Outdoor time fraction	0.0228[d]	0.0228[d]
Indoor time fraction	0	0
Soil ingestion (g/yr)	797[e]	244[f]

[a] Calculated as (0.029 m^3/min × 60 min/h × 24 h/d × 365.25 d/yr), where 0.029 m^3/min is the upper percentile child inhalation rate for moderate activity for 6 to <11 yr old (EPA 2011, 208374, Table 6-2).

[b] Calculated as (0.037 m^3/min × 60 min/h × 24 h/d × 365.25 d/yr), where 0.037 m^3/min is the age-weighted upper percentile adult inhalation rate for moderate activity (12 to 35 yr) (EPA 2011, 208374, Table 6-2).

[c] Calculated as (1/6.6 × 10^{+9} m^3/kg) × 1000 g/kg, where 6.6 × 10^{+9} m^3/kg is the particulate emission factor used for residential and industrial scenarios (NMED 2015, 600915).

[d] Calculated as (1 h/d × 200 d/yr)/8766 hr/yr, where 1 h/d is the exposure time for a recreational adult or child and 200 d/yr is the exposure frequency (LANL 2015, 600929).

[e] The soil ingestion rate is defined to compensate for the time-based occupancy factor applied by RESRAD in calculating exposure from the soil ingestion pathway. 100% of daily soil ingestion is protectively assumed to occur during outdoor activity. Calculated as [(0.2 g/d/2.2 h/d) × 1 h/d × 200 d/yr)]/[indoor + outdoor time fractions], where 2.2 h/d is the mean time spent outdoors per d for a 6 to <11 yr old child (EPA 2011, 208374, Table 16-1), and where 0.2 g/d is the upper bound child soil ingestion rate (EPA 2011, 208374, Table 5-1; NMED 2015, 600915).

[f] Calculated as [(0.1 g/d/3.6 h/d) × 1 h/d × 200 d/yr)]/[indoor + outdoor time fractions], where 3.6 h/d is the mean time spent outdoors per d for an adult (12 to 35 yr) (EPA 2011, 208374, Table 16-1) and where 0.1 g/d is the adult soil ingestion rate (NMED 2015, 600915).

Table G-4.2-1
Industrial Carcinogenic Screening Evaluation for SWMU 00-017

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	Cancer Risk (mrem/yr)
Cadmium	0.088	417,000	2.11E-07
		Total Excess Cancer Risk	**2E-07**

* SSLs from NMED (2017, 602273).

Table G-4.2-2
Industrial Noncarcinogenic Screening Evaluation for SWMU 00-017

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	HQ
Antimony	12(UJ)	519	2.31E-02
Cadmium	0.088	1110	7.93E-05
Lead	182	800	2.28E-01
Mercury	0.12(U)	389	3.08E-04
Selenium	1.2(U)	6490	1.85E-04
Silver	0.1	6490	1.54E-05
Thallium	2.4(U)	13	1.85E-01
		HI	**4E-01**

* SSLs from NMED (2017, 602273).

Table G-4.2-3
Industrial Radionuclide Screening Evaluation for SWMU 00-017

COPC	EPC (pCi/g)	Industrial SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-239/240	0.21	1200	4.38E-03
Tritium	0.17	2,400,000	1.77E-06
		Total Dose	**4E-03**

* SALs from LANL (2015, 600929).

Table G-4.2-4
Construction Worker Carcinogenic Screening Evaluation for SWMU 00-017

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	Cancer Risk
Cadmium	0.219	3610	6.07E-10
Chromium (Total)	10.8	468	2.31E-07
Nickel	6.45	25,000	2.58E-09
		Total Excess Cancer Risk	**2E-07**

* SSLs from NMED (2017, 602273).

Table G-4.2-5
Construction Worker Noncarcinogenic Screening Evaluation for SWMU 00-017

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	HQ
Antimony	12(UJ)	142	8.45E-02
Barium	65.5	4390	1.49E-02
Cadmium	0.219	72.1	3.04E-08
Chromium (Total)	10.8	134	8.06E-02
Cyanide (Total)	0.22	12	1.83E-02
Lead	104	800	1.3E-01
Mercury	0.036	77.1	4.67E-04
Nickel	6.45	753	8.57E-03
Perchlorate	0.0079	248	3.19E-05
Selenium	0.268	1750	1.53E-04
Silver	0.295	1770	1.67E-04
Thallium	2.4(U)	3.54	6.78E-01
		HI	**1**

* SSLs from NMED (2017, 602273).

Table G-4.2-6
Construction Worker Radionuclide Screening Evaluation for SWMU 00-017

COPC	EPC (pCi/g)	Construction Worker SAL* (pCi/g)	Dose (mrem/yr)
Americium-241	0.59	230	6.41E-02
Cesium-137	0.54	37	3.65E-01
Plutonium-239/240	0.775	200	9.69E-02
Tritium	0.17	1,600,000	2.66E-06
		Total Dose	**5E-01**

* SALs from LANL (2015, 600929).

Table G-4.2-7
Residential Carcinogenic Screening Evaluation for SWMU 00-017

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
Cadmium	0.219	85,900	2.55E-11
Chromium (Total)	10.8	96.6	1.12E-06
Nickel	6.45	595,000	1.08E-10
		Total Excess Cancer Risk	**1E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-8
Residential Noncarcinogenic Screening Evaluation for SWMU 00-017

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	HQ
Antimony	12(UJ)	31.3	3.83E-01
Barium	65.5	15,600	4.20E-03
Cadmium	0.219	70.5	3.11E-08
Chromium (Total)	10.8	45,200	2.39E-04
Cyanide (Total)	0.22	11.1	1.98E-02
Lead	104	400	2.6E-01
Mercury	0.036	23.5	1.53E-03
Nickel	6.45	1560	4.13E-03
Perchlorate	0.0079	54.8	1.44E-04
Selenium	0.268	391	6.85E-04
Silver	0.295	391	7.54E-04
Thallium	2.4(U)	0.78	3.08E+00
		HI	**4**

* SSLs from NMED (2017, 602273).

Table G-4.2-9
Residential Radionuclide Screening Evaluation for SWMU 00-017

COPC	EPC (pCi/g)	Residential SAL* (pCi/g)	Dose (mrem/yr)
Americium-241	0.59	83	1.78E-01
Cesium-137	0.54	12	1.13E+00
Plutonium-239/240	0.775	79	2.45E-01
Tritium	0.17	1700	2.50E-03
		Total Dose	**2E+00**

* SALs from LANL (2015, 600929).

Table G-4.2-10
Industrial Carcinogenic Screening Evaluation for AOC C-00-044

COPC	EPC (mg/kg)	Industrial SSL[a] (mg/kg)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.95	1830	5.19E-09
Butylbenzylphthalate	1.23	12000[b]	1.03E-09
		Total Excess Cancer Risk	**6E-09**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] SSL are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

Table G-4.2-11
Industrial Noncarcinogenic Screening Evaluation for AOC C-00-044

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	HQ
Antimony	1.92(U)	519	3.70E-03
Lead	82.2	800	1.03E-01
Selenium	1.37(U)	6490	2.11E-04
Zinc	51.1	389,000	1.31E-04
Bis(2-ethylhexyl)phthalate	0.95	18,300	5.19E-05
		HI	**1E-01**

* SSLs from NMED (2017, 602273).

Table G-4.2-12
Construction Worker Carcinogenic Screening Evaluation for AOC C-00-044

COPC	EPC (mg/kg)	Construction Worker SSL[a] (mg/kg)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.95	13,400	7.09E-10
Butylbenzylphthalate	0.685	5380[b]	1.27E-09
		Total Excess Cancer Risk	**2E-09**

[a] SSLs from NMED (2017, 602273).

[b] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

Table G-4.2-13
Construction Worker Noncarcinogenic Screening Evaluation for AOC C-00-044

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	HQ
Antimony	1.92(U)	142	1.35E-02
Lead	73.1	800	9.14E-02
Selenium	0.47	1750	2.69E-04
Zinc	45.7	106,000	4.31E-04
Bis(2-ethylhexyl)phthalate	0.95	5380	1.77E-04
		HI	**1E-01**

* SSLs from NMED (2017, 602273).

Table G-4.2-14
Residential Carcinogenic Screening Evaluation for AOC C-00-044

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.95	380	2.50E-08
Butylbenzylphthalate	0.685	2900[b]	2.36E-09
		Total Excess Cancer Risk	**3E-08**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] SSL are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

Table G-4.2-15
Residential Noncarcinogenic Screening Evaluation for AOC C-00-044

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	HQ
Antimony	1.92(U)	31.3	6.13E-02
Lead	73.1	400	1.83E-01
Selenium	0.47	391	1.20E-03
Zinc	45.7	23,500	1.94E-03
Bis(2-ethylhexyl)phthalate	0.95	1230	7.72E-04
		HI	**2E-01**

* SSLs from NMED (2017, 602273).

Table G-4.2-16
Industrial Carcinogenic Screening Evaluation for SWMU 01-001(a)

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	Cancer Risk
Aroclor-1254	0.0082	11	7.45E-09
Aroclor-1260	0.0082	11.1	7.39E-09
Bis(2-ethylhexyl)phthalate	0.29	1830	1.58E-09
Methylene Chloride	0.0021	14,400	1.46E-12
		Total Excess Cancer Risk	**2E-08**

* SSLs from NMED (2017, 602273).

Table G-4.2-17
Industrial Noncarcinogenic Screening Evaluation for SWMU 01-001(a)

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	HQ
Barium	110	255,000	4.31E-04
Copper	19.1	51900	3.68E-04
Nitrate	0.28	2,080,000	1.35E-07
Selenium	0.21	6490	3.24E-05
Vanadium	14.4	6530	2.21E-03
Aroclor-1254	0.0082	16.4	5.00E-04
Bis(2-ethylhexyl)phthalate	0.29	18,300	1.58E-05
Methylene Chloride	0.0021	5110	4.11E-07
		HI	**4E-03**

* SSLs from NMED (2017, 602273).

Table G-4.2-18
Construction Worker Carcinogenic Screening Evaluation for SWMU 01-001(a)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	Cancer Risk
Chromium (Total)	12.8	468	2.74E-07
Nickel	7.02	25,000	2.81E-09
Aroclor-1254	0.035	85.3	4.10E-09
Aroclor-1260	0.011	85.3	1.29E-09
Benzo(a)anthracene	0.16	240	6.67E-09
Benzo(a)pyrene	0.14	173	8.09E-09
Benzo(b)fluoranthene	0.1	240	4.17E-09
Benzo(k)fluoranthene	0.13	2310	5.63E-10
Bis(2-ethylhexyl)phthalate	0.263	13,400	1.96E-10
Chrysene	0.16	23,100	6.93E-11
Indeno(1,2,3-cd)pyrene	0.047	240	1.96E-09
Methylene Chloride	0.00471	89,300	5.27E-13
		Total Excess Cancer Risk	**3E-07**

* SSLs from NMED (2017, 602273).

Table G-4.2-19
Construction Worker Noncarcinogenic Screening Evaluation for SWMU 01-001(a)

COPC	EPC (mg/kg)	Construction Worker SSL[a] (mg/kg)	HQ
Barium	50.6	4390	1.15E-02
Chromium (Total)	12.8	134	9.55E-02
Copper	9.01	14,200	6.35E-04
Cyanide (Total)	0.302	12	2.52E-02
Lead	13.2	800	1.65E-02
Nickel	7.02	753	9.32E-03
Nitrate	0.354	566,000	6.25E-12
Perchlorate	0.0045	248	1.81E-05
Selenium	0.257	1750	1.47E-04
Silver	1.59	1770	8.98E-04
Vanadium	8.44	614	1.37E-02
Acenaphthene	0.082	15,100	5.43E-06
Acetone	0.0034	241,000	1.41E-08
Anthracene	0.14	75,300	1.86E-06
Aroclor-1254	0.035	4.91	7.13E-03
Benzo(a)pyrene	0.14	106	1.32E-03
Benzo(g,h,i)perylene	0.049	7530[b]	6.51E-06
Bis(2-ethylhexyl)phthalate	0.263	5380	4.89E-05
Fluoranthene	0.36	10,000	3.60E-05
Fluorene	0.071	10,000	7.10E-06
Methylene Chloride	0.00471	1200	3.93E-06
Phenanthrene	0.44	7530	5.84E-05
Pyrene	0.34	7530	4.52E-05
		HI	**2E-01**

[a] SSLs from NMED (2017, 602273).

[b] Pyrene used as a surrogate based on structural similarity.

Table G-4.2-20
Residential Carcinogenic Screening Evaluation for SWMU 01-001(a)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
Chromium (Total)	12.8	96.6	1.33E-06
Nickel	7.02	595,000	1.18E-10
Aroclor-1254	0.035	2.43	1.44E-07
Aroclor-1260	0.011	2.43	4.53E-08
Benzo(a)anthracene	0.16	1.53	1.05E-06
Benzo(a)pyrene	0.14	1.12	1.25E-06

Table G-4.2-20 (continued)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
Benzo(b)fluoranthene	0.1	1.53	6.54E-07
Benzo(k)fluoranthene	0.13	15.3	8.50E-08
Bis(2-ethylhexyl)phthalate	0.263	380	6.92E-09
Chrysene	0.16	153	1.05E-08
Indeno(1,2,3-cd)pyrene	0.047	1.53	3.07E-07
Methylene Chloride	0.00471	766	6.15E-11
		Total Excess Cancer Risk	**5E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-21
Residential Noncarcinogenic Screening Evaluation for SWMU 01-001(a)

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Barium	50.6	15,600	3.24E-03
Chromium (Total)	12.8	45,200	2.83E-04
Copper	9.01	3130	2.88E-03
Cyanide (Total)	0.302	11.1	2.72E-02
Lead	13.2	400	3.30E-02
Nickel	7.02	1560	4.50E-03
Nitrate	0.354	125,000	2.83E-11
Perchlorate	0.0045	54.8	8.21E-05
Selenium	0.257	391	6.57E-04
Silver	1.59	391	4.07E-03
Vanadium	8.44	394	2.14E-02
Acenaphthene	0.082	3480	2.36E-05
Acetone	0.0034	66,300	5.13E-08
Anthracene	0.14	17,400	8.05E-06
Aroclor-1254	0.035	1.14	3.07E-02
Benzo(g,h,i)perylene	0.049	1740[b]	2.82E-05
Bis(2-ethylhexyl)phthalate	0.263	1230	2.14E-04
Fluoranthene	0.36	2320	1.55E-04
Fluorene	0.071	2320	3.06E-05
Methylene Chloride	0.00471	409	1.15E-05
Phenanthrene	0.44	1740	2.53E-04
Pyrene	0.34	1740	1.95E-04
		HI	**1E-01**

[a] SSLs from NMED (2017, 602273).

[b] Pyrene used as a surrogate based on structural similarity.

Table G-4.2-22
Industrial Carcinogenic Screening Evaluation for SWMU 01-001(d3)

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	Cancer Risk
Arsenic	1.57	35.9	4.37E-07
Beryllium	0.798	313,000	2.55E-11
Cadmium	0.199	417,000	4.77E-12
Chromium (Total)	8.05	505	1.59E-07
Chromium hexavalent ion	2.2	72.1	3.05E-07
Nickel	3.55	2,890,000	1.23E-11
Aroclor-1254	0.153	11	1.39E-07
Aroclor-1260	0.0465	11.1	4.19E-08
Bis(2-ethylhexyl)phthalate	0.88	1830	4.81E-09
Methylene Chloride	0.0012	14,400	8.33E-13
Pentachlorophenol	0.8	44.5	1.80E-07
		Total Excess Cancer Risk	**1E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-23
Industrial Noncarcinogenic Screening Evaluation for SWMU 01-001(d3)

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	HQ
Antimony	27.4	519	5.28E-02
Arsenic	1.57	208	7.55E-03
Barium	47.8	255,000	1.87E-09
Beryllium	0.798	2580	3.09E-04
Cadmium	0.199	1110	1.79E-04
Chromium (Total)	8.05	314,000	2.56E-05
Chromium hexavalent ion	2.2	3890	5.66E-04
Copper	14.7	51,900	2.83E-04
Iron	6630	908,000	7.30E-03
Lead	21.1	800	2.64E-02
Manganese	262	160,000	1.64E-03
Mercury	9.88	389	2.54E-02
Nickel	3.55	25,700	1.38E-04
Nitrate	1.44	2,080,000	6.92E-12
Perchlorate	0.022	908	2.42E-05
Selenium	0.692	6490	1.07E-04
Silver	1.89	6490	2.91E-04
Zinc	51.7	389,000	1.33E-04

Table G-4.2-23 (continued)

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	HQ
Aroclor-1254	0.153	16.4	9.33E-03
Bis(2-ethylhexyl)phthalate	0.88	18,300	4.81E-05
Di-n-butylphthalate	0.21	91,600	2.29E-06
Methylene Chloride	0.0012	5110	2.35E-07
Pentachlorophenol	0.8	3180	2.52E-04
		HI	**1E-01**

* SSLs from NMED (2017, 602273).

Table G-4.2-24
Industrial Radionuclide Screening Evaluation for SWMU 01-001(d3)

COPC	EPC (pCi/g)	Industrial SAL* (pCi/g)	Dose (mrem/yr)
Americium-241	0.12	1000	3.00E-03
Cesium-137	0.302	41	1.84E-01
Plutonium-238	0.0172	1300	3.31E-04
Plutonium-239/240	264	1200	5.50E+00
		Total Dose	**6E+00**

* SALs from LANL (2015, 600929).

Table G-4.2-25
Construction Worker Carcinogenic Screening Evaluation for SWMU 01-001(d3)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	Cancer Risk
Arsenic	1.19	216	5.51E-08
Beryllium	0.819	2710	3.02E-09
Cadmium	0.12	3610	3.32E-10
Chromium (Total)	9.22	468	1.97E-07
Chromium hexavalent ion	1.2	66.9	1.79E-07
Nickel	4.28	25,000	1.71E-09
Aroclor-1254	0.0733	85.3	8.59E-09
Aroclor-1260	0.0569	85.3	6.67E-09
Bis(2-ethylhexyl)phthalate	0.88	13,400	6.57E-10
Methylene Chloride	0.0012	89,300	1.34E-13
Pentachlorophenol	0.8	346	2.31E-08
		Total Excess Cancer Risk	**5E-07**

* SSLs from NMED (2017, 602273).

Table G-4.2-26
Construction Worker Noncarcinogenic Screening Evaluation for SWMU 01-001(d3)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	HQ
Aluminum	3050	41,400	7.37E-02
Antimony	27.4	142	1.93E-01
Arsenic	1.19	41.2	2.89E-02
Barium	38.9	4390	8.86E-03
Beryllium	0.819	148	5.53E-03
Cadmium	0.12	72.1	1.66E-03
Chromium (Total)	9.22	134	6.88E-02
Chromium hexavalent ion	1.2	498	2.41E-03
Copper	9.37	14,200	6.60E-04
Fluoride	2.78	18,100	1.54E-04
Iron	6700	248,000	2.70E-02
Lead	17.8	800	2.23E-02
Manganese	257	464	5.54E-01
Mercury	7.26	77.1	9.42E-02
Nickel	4.28	753	5.68E-03
Nitrate	6.19	566,000	1.09E-05
Perchlorate	0.00644	248	2.60E-05
Selenium	0.428	1750	2.45E-04
Silver	0.938	1770	5.30E-04
Vanadium	5.84	614	9.51E-03
Zinc	49.5	106,000	4.67E-04
Acetone	0.0073	241,000	3.03E-08
Aroclor-1254	0.0733	4.91	1.49E-02
Bis(2-ethylhexyl)phthalate	0.88	5380	1.64E-04
Di-n-butylphthalate	0.21	26,900	7.81E-06
Methylene Chloride	0.0012	1200	1.00E-06
Pentachlorophenol	0.8	989	8.09E-04
Toluene	0.00083	14,000	5.93E-08
		HI	**1**

* SSLs from NMED (2017, 602273).

Table G-4.2-27
Construction Worker Radionuclide Screening Evaluation for SWMU 01-001(d3)

COPC	EPC (pCi/g)	Construction Worker SAL* (pCi/g)	Dose (mrem/yr)
Americium-241	0.12	230	1.30E-02
Cesium-137	0.0723	37	4.89E-02
Plutonium-238	0.54	230	5.87E-02
Plutonium-239/240	135	200	1.69E+01
Strontium-90	0.34	1400	6.07E-03
		Total Dose	**17**

* SALs from LANL (2015, 600929).

Table G-4.2-28
Residential Carcinogenic Screening Evaluation for SWMU 01-001(d3)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
Arsenic	1.19	7.07	1.68E-06
Beryllium	0.819	64,400	1.27E-10
Cadmium	0.12	85,900	1.40E-11
Chromium (Total)	9.22	96.6	9.54E-07
Chromium hexavalent ion	1.2	3.05	3.93E-06
Nickel	4.28	595,000	7.19E-11
Aroclor-1254	0.0733	2.43	3.02E-07
Aroclor-1260	0.0569	2.43	2.34E-07
Bis(2-ethylhexyl)phthalate	0.88	380	2.32E-08
Methylene Chloride	0.0012	766	1.57E-11
Pentachlorophenol	0.8	9.85	8.12E-07
		Total Excess Cancer Risk	**8E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-29
Residential Noncarcinogenic Screening Evaluation for SWMU 01-001(d3)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	HQ
Aluminum	3050	78,000	3.91E-02
Antimony	27.4	31.3	8.75E-01
Arsenic	1.19	13	9.15E-02
Barium	38.9	15,600	2.49E-03
Beryllium	0.819	156	5.25E-03
Cadmium	0.12	70.5	1.70E-03
Chromium (Total)	9.22	45,200	2.04E-04
Chromium hexavalent ion	1.2	235	5.11E-03
Copper	9.37	3130	2.99E-03
Fluoride	2.78	4690	5.93E-04
Iron	6700	54,800	1.22E-01
Lead	17.8	400	4.45E-02
Manganese	257	10,500	2.45E-02
Mercury	7.26	23.5	3.09E-01
Nickel	4.28	1560	2.74E-03
Nitrate	6.19	125,000	4.95E-05
Perchlorate	0.00644	54.8	1.18E-04
Selenium	0.428	391	1.09E-03
Silver	0.938	391	2.40E-03
Vanadium	5.84	394	1.48E-02
Zinc	49.5	23,500	2.11E-03
Acetone	0.0073	66,300	1.10E-07
Aroclor-1254	0.0733	1.14	6.43E-02
Bis(2-ethylhexyl)phthalate	0.88	1230	7.15E-04
Di-n-butylphthalate	0.21	6160	3.41E-05
Methylene Chloride	0.0012	409	2.93E-06
Pentachlorophenol	0.8	234	3.42E-03
Toluene	0.00083	5220	1.59E-07
		HI	**2**

* SSLs from NMED (2017, 602273).

Table G-4.2-30
Residential Radionuclide Screening Evaluation for SWMU 01-001(d3)

COPC	EPC (pCi/g)	Residential SAL* (pCi/g)	Dose (mrem/yr)
Americium-241	0.12	83	3.61E-02
Cesium-137	0.0723	12	1.51E-01
Plutonium-238	0.54	84	1.61E-01
Plutonium-239/240	135	79	4.27E+01
Strontium-90	0.34	15	5.67E-01
		Total Dose	**40**

* SALs from LANL (2015, 600929).

Table G-4.2-31
Industrial Carcinogenic Screening Evaluation for SWMU 01-001(f)

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	Cancer Risk
Cadmium	0.183	417,000	4.39E-12
Chromium	5.83	505	1.15E-07
Cobalt	2.41	83,400	2.89E-10
Nickel	4.73	2,890,000	1.64E-11
Aroclor-1254	2.66	11	2.41E-06
Aroclor-1260	0.703	11.1	6.33E-07
Benzo(a)anthracene	0.424	32.3	1.31E-07
Benzo(a)pyrene	0.424	23.6	1.80E-07
Benzo(b)fluoranthene	0.486	32.3	1.50E-07
Benzo(k)fluoranthene	0.344	323	1.07E-08
Bis(2-ethylhexyl)phthalate	0.498	1830	2.72E-09
Butylbenzylphthalate	0.192	12,000	1.6E-10
Chloroform	0.000411	28.4	1.45E-10
Chrysene	0.516	3230	1.60E-09
Dibenz(a,h)anthracene	0.171	3.23	5.29E-07
Dichlorobenzene[1,4-]	0.000703	6730	1.04E-12
Indeno(1,2,3-cd)pyrene	0.17	32.3	5.26E-08
		Total Excess Cancer Risk	**4E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-32
Industrial Noncarcinogenic Screening Evaluation for SWMU 01-001(f)

COPC	EPC (mg/kg)	Industrial SSL[a] (mg/kg)	HQ
Antimony	0.647	519	1.25E-03
Cadmium	0.183	1110	1.65E-04
Chromium	5.83	505	1.15E-02
Cobalt	2.41	388	6.21E-03
Copper	7.51	51,900	1.45E-04
Cyanide (Total)	0.72	62.8	1.15E-02
Lead	17.5	800	2.19E-02
Manganese	326	160,000	2.04E-03
Nickel	4.73	25,700	1.84E-04
Nitrate	1.04	2,080,000	5.00E-07
Selenium	0.27	6490	4.16E-05
Vanadium	10.8	6530	1.65E-03
Zinc	61.2	389,000	157E-04
Acenaphthene	0.0388	50,500	7.68E-07
Acetone	0.00469	959,000	4.89E-09
Anthracene	0.104	253,000	4.11E-07
Aroclor-1254	2.66	16.4	162E-01
Benzo(g,h,i)perylene	0.199	25,300[b]	7.87E-06
Benzoic Acid	0.568	3,300,000[c]	1.72E-07
Benzyl Alcohol	0.202	82,000	2.46E-06
Bis(2-ethylhexyl)phthalate	0.498	18,300	2.72E-05
Chloroform	0.000411	1990	2.07E-07
Dichlorobenzene[1,2-]	0.00033	12,900	2.56E-08
Fluoranthene	0.825	33,700	2.45E-05
Fluorene	0.000703	33,700	209E-08
Isopropyltoluene[4-]	0.000754	14,200[d]	5.31E-08
Phenanthrene	0.503	25,300	1.99E-05
Pyrene	0.885	25,300	3.450E-05
Styrene	0.00109	50,900	2.14E-08
Toluene	0.00165	61,100	2.70E-08
Trimethylbenzene[1,2,4-]	0.00041	1800[c]	2.28E-07
Xylene[1,3-]+Xylene[1,4-]	0.000843	4240[e]	1.99E-07
		HI	**2E-01**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] Pyrene used as a surrogate based on structural similarity.

[c] SSL are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

[d] Isopropyl benzene used as a surrogate based on structural similarity.

[e] Xylenes used as a surrogate based on structural similarity.

Table G-4.2-33
Industrial Radionuclide Screening Evaluation for SWMU 01-001(f)

COPC	EPC (pCi/g)	Industrial SAL* (pCi/g)	Dose (mrem/yr)
Americium-241	0.0456	1000	1.14E-03
Plutonium-239/240	0.11	1200	2.29E-03
Uranium-234	12.2	3100	9.84E-02
Uranium-235/236	0.613	160	9.58E-02
Uranium-238	14.6	710	5.14E-01
		Total Dose	**7E-01**

* SALs from LANL (2015, 600929).

Table G-4.2-34
Recreational Carcinogenic Screening Evaluation for SWMU 01-001(f)

COPC	EPC (mg/kg)	Recreational SSL[a] (mg/kg)	Cancer Risk
Cadmium	0.183	4,300,000	4.26E-13
Chromium	5.83	280	2.08E-07
Cobalt	2.41	870,000	2.77E-11
Nickel	4.73	30,000,000	1.58E-12
Aroclor-1254	2.66	10	2.66E-06
Aroclor-1260	0.703	10	7.03E-07
Benzo(a)anthracene	0.424	89	4.76E-08
Benzo(a)pyrene	0.424	8.9	4.76E-07
Benzo(b)fluoranthene	0.486	89	5.46E-08
Benzo(k)fluoranthene	0.344	890	3.87E-09
Bis(2-ethylhexyl)phthalate	0.498	1800	2.77E-09
Butylbenzylphthalate	0.192	13,000[b]	1.48E-10
Chloroform	0.000411	200	2.06E-11
Chrysene	0.516	8900	5.80E-10
Dibenz(a,h)anthracene	0.171	8.9	1.92E-07
Dichlorobenzene[1,4-]	0.000703	1100	6.39E-12
Indeno(1,2,3-cd)pyrene	0.17	89	1.91E-08
		Total Excess Cancer Risk	**4E-06**

[a] SSLs from LANL (2017, 602581).

[b]. SSL are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

Table G-4.2-35
Recreational Noncarcinogenic Screening Evaluation for SWMU 01-001(f)

COPC	EPC (mg/kg)	Recreational SSL[a] (mg/kg)	HQ
Antimony	0.647	250	2.59E-03
Cadmium	0.183	460	3.98E-04
Chromium	5.83	670,000	8.70E-06
Cobalt	2.41	190	1.27E-02
Copper	7.51	25,000	3.00E-04
Cyanide (Total)	0.72	220	3.27E-03
Lead	17.5	1110	1.58E-02
Manganese	326	15,000	2.17E-02
Nickel	4.73	12,000	3.94E-04
Nitrate	1.04	990,000	1.05E-06
Selenium	0.27	3100	8.71E-05
Vanadium	10.8	3100	3.48E-03
Zinc	61.2	190,000	3.22E-04
Acenaphthene	0.0388	17,000	2.28E-06
Acetone	0.00469	550,000	8.53E-09
Anthracene	0.104	86,000	1.21E-06
Aroclor-1254	2.66	5.5	4.84E-01
Benzo(a)pyrene	0.424	86	4.93E-03
Benzo(g,h,i)perylene	0.199	8600[b]	2.31E-05
Benzoic Acid	0.568	1,300,000	4.37E-07
Benzyl Alcohol	0.202	33,000	6.12E-06
Bis(2-ethylhexyl)phthalate	0.498	6600	7.55E-05
Butylbenzylphthalate	0.192	66,000[c]	2.91E-06
Chloroform	0.000411	4700	8.74E-08
Dichlorobenzene[1,2-]	0.00033	38,000	8.68E-09
Dichlorobenzene[1,4-]	0.000703	39,000	1.80E-08
Fluoranthene	0.825	12,000	6.88E-05
Fluorene	0.0441	12,000	3.68E-06
Isopropyltoluene[4-]	0.000754	42,000[d]	1.80E-08
Phenanthrene	0.503	8600	5.85E-05
Pyrene	0.885	8600	1.03E-04
Styrene	0.00109	100,000	1.09E-08
Toluene	0.00165	48,000	3.44E-08
Trimethylbenzene[1,2,4-]	0.00041	5000	8.20E-08
Xylene[1,3-]+Xylene[1,4-]	0.000843	2800[e]	3.01E-07
		HI	**5E-01**

[a] SSLs from LANL (2017, 602581).
[b] Pyrene used as a surrogate based on structural similarity.
[c] SSL are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).
[d] Isopropyl benzene used as a surrogate based on structural similarity.
[e] Xylenes used as a surrogate based on structural similarity.

Table G-4.2-36
Recreational Radionuclide Screening Evaluation for SWMU 01-001(f)

COPC	EPC (pCi/g)	Recreational SAL* (pCi/g)	Dose (mrem/yr)
Americium-241	0.0456	1500	7.60E-04
Plutonium-239/240	0.11	1300	2.12E-03
Uranium-234	12.2	3900	7.82E-02
Uranium-235/236	0.613	1000	1.53E-02
Uranium-238	14.6	2800	1.30E-01
		Total Dose	**2E-01**

* SALs from LANL (2015, 600929).

Table G-4.2-37
Construction Worker Carcinogenic Screening Evaluation for SWMU 01-001(f)

COPC	EPC (mg/kg)	Construction Worker SSL[a] (mg/kg)	Cancer Risk
Cadmium	0.152	3610	4.21E-10
Chromium	5.28	468	1.13E-07
Cobalt	1.88	722	2.60E-08
Nickel	4.09	25,000	1.64E-09
Aroclor-1254	5.39	85.3	6.32E-07
Aroclor-1260	1.7	85.3	1.99E-07
Benzo(a)anthracene	0.295	240	1.23E-08
Benzo(a)pyrene	0.294	173	1.70E-08
Benzo(b)fluoranthene	0.397	240	1.65E-08
Benzo(k)fluoranthene	0.235	2310	1.02E-09
Bis(2-ethylhexyl)phthalate	0.266	13,400	1.99E-10
Butylbenzylphthalate	0.192	5380[b]	3.57E-10
Chloroform	0.000411	133	3.09E-11
Chrysene	0.353	23,100	1.53E-10
Dibenz(a,h)anthracene	0.171	24	7.13E-08
Dichlorobenzene[1,4-]	0.000703	45,900	1.53E-13
Indeno(1,2,3-cd)pyrene	0.143	240	5.96E-09
		Total Excess Cancer Risk	**1E-06**

[a] SSLs from NMED (2017, 602273).

[b] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

Table G-4.2-38
Construction Worker Noncarcinogenic Screening Evaluation for SWMU 01-001(f)

COPC	EPC (mg/kg)	Construction Worker SSL[a] (mg/kg)	HQ
Antimony	0.513	142	3.61E-03
Cadmium	0.152	72.1	2.11E-03
Chromium	5.28	134	3.94E-02
Cobalt	1.88	36.7	5.12E-02
Copper	5.91	14,200	4.16E-04
Cyanide (Total)	0.72	12	6.00E-02
Lead	14.8	800	1.85E-02
Manganese	266	464	5.73E-01
Nickel	4.09	753	5.43E-03
Nitrate	0.825	566,000	1.46E-06
Selenium	0.262	1750	1.50E-04
Vanadium	9.44	614	1.54E-02
Zinc	50.3	106,000	4.75E-04
Acenaphthene	0.0355	15,100	2.35E-06
Acetone	0.00605	241,000	2.51E-08
Anthracene	0.082	75,300	1.09E-06
Aroclor-1254	5.39	4.91	1.10E+00
Benzo(a)pyrene	0.294	106	2.77E-03
Benzo(g,h,i)perylene	0.159	7530[b]	2.11E-05
Benzoic Acid	0.567	1,080,000[c]	5.25E-07
Benzyl Alcohol	0.175	26,900[c]	6.51E-06
Bis(2-ethylhexyl)phthalate	0.266	5380	4.94E-05
Chloroform	0.000411	388	1.06E-06
Chlorotoluene[4-]	0.000425	7080c	6.00E-08
Dichlorobenzene[1,2-]	0.00033	2470	1.34E-07
Dichlorobenzene[1,4-]	0.000703	24,800	2.83E-08
Fluoranthene	0.559	10,000	5.59E-05
Fluorene	0.0377	10,000	3.77E-06
Isopropyltoluene[4-]	0.000754	2740[d]	2.75E-07
Phenanthrene	0.344	7530	4.57E-05
Pyrene	0.606	7530	8.05E-05
Styrene	0.00109	10,100	1.08E-07
Toluene	0.00165	14,000	1.18E-07
Trimethylbenzene[1,2,4-]	0.00041	329[c]	1.25E-06
Xylene[1,3-]+Xylene[1,4-]	0.000843	791[e]	1.07E-06
		HI	**2**

[a] SSLs from NMED (2017, 602273).

[b] Pyrene used as a surrogate based on structural similarity.

[c] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

[d] Isopropyl benzene used as a surrogate based on structural similarity.

[e] Xylenes used as a surrogate based on structural similarity.

Table G-4.2-39
Construction Worker Radionuclide Screening Evaluation for SWMU 01-001(f)

COPC	EPC (pCi/g)	Construction Worker SAL* (pCi/g)	Dose (mrem/yr)
Americium-241	0.0456	230	4.96E-03
Plutonium-239/240	0.0902	200	1.13E-02
Uranium-234	9.31	1000	2.33E-01
Uranium-235/236	0.484	130	9.31E-02
Uranium-238	10.1	470	5.37E-01
		Total Dose	**9E-01**

* SALs from LANL (2015, 600929).

Table G-4.2-40
Residential Carcinogenic Screening Evaluation for SWMU 01-001(f)

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	Cancer Risk
Cadmium	0.152	85,900	1.77E-11
Chromium	5.28	96.6	5.47E-07
Cobalt	1.88	17,200	1.09E-09
Nickel	4.09	595,000	6.87E-11
Aroclor-1254	5.39	2.43	2.22E-05
Aroclor-1260	1.7	2.43	7.00E-06
Benzo(a)anthracene	0.295	1.53	1.93E-06
Benzo(a)pyrene	0.294	1.12	2.63E-06
Benzo(b)fluoranthene	0.397	1.53	2.59E-06
Benzo(k)fluoranthene	0.235	15.3	1.54E-07
Bis(2-ethylhexyl)phthalate	0.266	380	7.00E-09
Butylbenzylphthalate	0.192	2900[b]	6.62E-10
Chloroform	0.000411	5.85	7.03E-10
Chrysene	0.353	153	2.31E-08
Dibenz(a,h)anthracene	0.171	0.15	1.14E-05
Dichlorobenzene[1,4-]	0.000703	1290	5.45E-12
Indeno(1,2,3-cd)pyrene	0.143	1.53	9.35E-07
		Total Excess Cancer Risk	**5E-05**

[a] SSLs from NMED (2017, 602273).

[b] SSL are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

Table G-4.2-41
Residential Noncarcinogenic Screening Evaluation for SWMU 01-001(f)

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Antimony	0.513	31.3	1.64E-02
Cadmium	0.152	70.5	2.16E-03
Chromium	5.28	45,200	1.17E-04
Cobalt	1.88	23.4	8.03E-02
Copper	5.91	3130	1.89E-03
Cyanide (Total)	0.72	11.1	6.49E-02
Lead	14.8	400	3.70E-02
Manganese	266	10,500	2.53E-02
Nickel	4.09	1560	2.62E-03
Nitrate	0.825	125,000	6.60E-06
Selenium	0.262	391	6.70E-04
Vanadium	9.44	394	2.40E-02
Zinc	50.3	23,500	2.14E-03
Acenaphthene	0.0355	3480	1.02E-05
Acetone	0.00605	66,300	9.13E-08
Anthracene	0.082	17,400	4.71E-06
Aroclor-1254	5.39	1.14	4.73E+00
Benzo(g,h,i)perylene	0.159	1740[b]	9.14E-05
Benzoic Acid	0.567	250,000[c]	2.27E-06
Benzyl Alcohol	0.175	6300[c]	2.78E-05
Bis(2-ethylhexyl)phthalate	0.266	1230	2.16E-04
Chloroform	0.000411	304	1.35E-06
Chlorotoluene[4-]	0.000425	1600	2.66E-07
Dichlorobenzene[1,2-]	0.00033	2140	1.54E-07
Dichlorobenzene[1,4-]	0.000703	5480	1.28E-07
Fluoranthene	0.559	2320	2.41E-04
Fluorene	0.0377	2320	1.63E-05
Isopropyltoluene[4-]	0.000754	2360[d]	3.19E-07
Phenanthrene	0.344	1740	1.98E-04
Pyrene	0.606	1740	3.48E-04
Styrene	0.00109	7230	1.51E-07
Toluene	0.00165	5220	3.16E-07
Trimethylbenzene[1,2,4-]	0.00041	300[c]	1.37E-06
Xylene[1,3-]+Xylene[1,4-]	0.000843	863[e]	9.77E-07
		HI	**5**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.
[b] Pyrene used as a surrogate based on structural similarity.
[c] SSL are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).
[d] Isopropyl benzene used as a surrogate based on structural similarity.
[e] Xylenes used as a surrogate based on structural similarity.

Table G-4.2-42
Residential Radionuclide Screening Evaluation for SWMU 01-001(f)

COPC	EPC (pCi/g)	Residential SAL* (pCi/g)	Dose (mrem/yr)
Americium-241	0.0456	83	1.37E-02
Plutonium-239/240	0.0902	79	2.85E-02
Uranium-234	9.31	290	8.03E-01
Uranium-235/236	0.484	42	2.88E-01
Uranium-238	10.1	150	1.68E+00
		Total Dose	**3**

* SALs from LANL (2015, 600929).

Table G-4.2-43
Industrial Carcinogenic Screening Evaluation for SWMU 01-001(g)

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	Cancer Risk
Aroclor-1260	0.021	11.1	1.89E-08
Bis(2-ethylhexyl)phthalate	0.074	1830	4.04E-10
Methylene Chloride	0.0065	14,400	4.51E-12
		Total Excess Cancer Risk	**2E-08**

* SSLs from NMED (2017, 602273).

Table G-4.2-44
Industrial Noncarcinogenic Screening Evaluation for SWMU 01-001(g)

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	HQ
Nitrate	1.5	2,080,000	7.21E-07
Bis(2-ethylhexyl)phthalate	0.074	18,300	4.04E-06
Methylene Chloride	0.0065	5110	1.27E-06
		HI	**6E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-45
Industrial Radionuclide Screening Evaluation for SWMU 01-001(g)

COPC	EPC (pCi/g)	Industrial SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-238	0.084	1300	1.62E-03
Plutonium-239/240	17.8	1200	3.71E-01
		Total Dose	**4E-01**

* SALs from LANL (2015, 600929).

Table G-4.2-46
Construction Worker Carcinogenic Screening Evaluation for SWMU 01-001(g)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	Cancer Risk
Chromium (Total)	16.7	468	3.57E-07
Nickel	7.21	25,000	2.88E-09
Aroclor-1260	0.021	85.3	2.46E-09
Bis(2-ethylhexyl)phthalate	0.074	13,400	5.52E-11
Methylene Chloride	0.00502	89,300	5.62E-13
		Total Excess Cancer Risk	**4E-07**

* SSLs from NMED (2017, 602273).

Table G-4.2-47
Construction Worker Noncarcinogenic Screening Evaluation for SWMU 01-001(g)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	HQ
Chromium (Total)	16.7	134	1.25E-01
Nickel	7.21	753	9.58E-03
Nitrate	0.646	566,000	1.14E-06
Perchlorate	0.0044	248	1.77E-05
Selenium	0.257	1750	1.47E-04
Bis(2-ethylhexyl)phthalate	0.074	5380	1.38E-05
Methylene Chloride	0.00502	1200	4.18E-06
		HI	**1E-01**

* SSLs from NMED (2017, 602273).

Table G-4.2-48
Construction Worker Radionuclide Screening Evaluation for SWMU 01-001(g)

COPC	EPC (pCi/g)	Construction Worker SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-238	0.0772	230	8.39E-03
Plutonium-239/240	22.8	200	2.85E+00
Uranium-235/236	0.22	130	4.23E-02
		Total Dose	**3**

* SALs from LANL (2015, 600929).

Table G-4.2-49
Residential Carcinogenic Screening Evaluation for SWMU 01-001(g)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
Chromium (Total)	16.7	96.6	1.73E-06
Nickel	7.21	595,000	1.21E-10
Aroclor-1260	0.021	2.43	8.64E-08
Bis(2-ethylhexyl)phthalate	0.074	380	1.95E-09
Methylene Chloride	0.00502	766	6.55E-11
		Total Excess Cancer Risk	**2E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-50
Residential Noncarcinogenic Screening Evaluation for SWMU 01-001(g)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	HQ
Chromium (Total)	16.7	45,200	3.69E-04
Nickel	7.21	1560	4.62E-03
Nitrate	0.646	125,000	5.17E-06
Perchlorate	0.0044	54.8	8.03E-05
Selenium	0.257	391	6.57E-04
Bis(2-ethylhexyl)phthalate	0.074	1230	6.02E-05
Methylene Chloride	0.00502	409	1.23E-05
		HI	**6E-03**

* SSLs from NMED (2017, 602273).

Table G-4.2-51
Residential Radionuclide Screening Evaluation for SWMU 01-001(g)

COPC	EPC (pCi/g)	Residential SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-238	0.0772	84	2.30E-02
Plutonium-239/240	22.8	79	7.22E+00
Uranium-235/236	0.22	42	1.31E-01
		Total Dose	**7**

* SALs from LANL (2015, 600929).

Table G-4.2-52
Industrial Carcinogenic Screening Evaluation for SWMU 01-001(o)

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	Cancer Risk
Chromium (Total)	12.5	505	2.48E-07
Aroclor-1254	1.32	11	1.20E-06
Aroclor-1260	0.287	11.1	2.59E-07
Bis(2-ethylhexyl)phthalate	0.095	1830	5.19E-10
		Total Excess Cancer Risk	**2E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-53
Industrial Noncarcinogenic Screening Evaluation for SWMU 01-001(o)

COPC	EPC (mg/kg)	Industrial SSL[a] (mg/kg)	HQ
Chromium (Total)	12.5	314,000	3.98E-05
Copper	20.5	51,900	3.95E-04
Cyanide (Total)	0.58(UJ)	62.8	9.24E-03
Lead	26.2	800	3.28E-02
Mercury	0.151	389	3.88E-04
Nitrate	0.18	2,080,000	8.65E-08
Perchlorate	0.0023	908	2.53E-06
Selenium	0.22	6490	3.39E-05
Zinc	51.1	389,000	1.31E-04
Acetone	0.0049	959,000	5.11E-09
Aroclor-1254	1.32	16.4	8.05E-02
Benzoic Acid	0.35	3,300,000[b]	1.06E-07
Bis(2-ethylhexyl)phthalate	0.095	18,300	5.19E-06
Di-n-butylphthalate	0.4	91,600	4.37E-06
		HI	**1E-01**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.
[b] SSL are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

Table G-4.2-54
Industrial Radionuclide Screening Evaluation for SWMU 01-001(o)

COPC	EPC (pCi/g)	Industrial SAL* (pCi/g)	Dose (mrem/yr)
Americium-241	0.16	1000	4.00E-03
Cesium-137	0.276	41	1.68E-01
Plutonium-238	0.015	1300	2.88E-04
Plutonium-239/240	6.51	1200	1.36E-01
Strontium-90	0.41	2400	4.27E-03
		Total Dose	**3E-01**

* SALs from LANL (2015, 600929).

Table G-4.2-55
Construction Worker Carcinogenic Screening Evaluation for SWMU 01-001(o)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	Cancer Risk
Cadmium	1.51	3610	4.18E-09
Chromium (Total)	11.6	468	2.48E-07
Nickel	6.28	25,000	2.51E-09
Aroclor-1254	0.587	85.3	6.88E-08
Aroclor-1260	0.202	85.3	2.37E-08
Bis(2-ethylhexyl)phthalate	0.12	13,400	8.96E-11
Methylene Chloride	0.00073	89,300	8.17E-14
		Total Excess Cancer Risk	**4E-07**

* SSLs from NMED (2017, 602273).

Table G-4.2-56
Construction Worker Noncarcinogenic Screening Evaluation for SWMU 01-001(o)

COPC	EPC (mg/kg)	Construction Worker SSL[a] (mg/kg)	HQ
Antimony	1.4(U)	142	9.86E-03
Cadmium	1.51	72.1	2.09E-02
Chromium (Total)	11.6	134	8.66E-02
Copper	91.6	14,200	6.45E-03
Cyanide (Total)	0.15	12	1.25E-02
Lead	22	800	2.75E-02
Mercury	0.183	77.1	2.37E-03
Nickel	6.28	753	8.34E-03
Nitrate	0.227	566,000	4.01E-07
Perchlorate	0.0025	248	1.01E-05
Selenium	0.24	1750	1.37E-04
Silver	0.215	1770	1.21E-04
Zinc	108	106,000	1.02E-03
Acetone	0.0049	241,000	2.03E-08
Aroclor-1254	0.587	4.91	1.20E-01
Benzoic Acid	0.35	1,080,000[b]	3.24E-07
Bis(2-ethylhexyl)phthalate	0.12	5380	2.23E-05
Di-n-butylphthalate	2.68	26,900	9.96E-05
Methylene Chloride	0.00073	1200	6.08E-07
Trimethylbenzene[1,2,4-]	0.00048	329[b]	1.46E-06
HI			**3E-01**

[a] SSLs from NMED (2017, 602273).

[b] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

Table G-4.2-57
Construction Worker Radionuclide Screening Evaluation for SWMU 01-001(o)

COPC	EPC (pCi/g)	Construction Worker SAL* (pCi/g)	Dose (mrem/yr)
Americium-241	0.0305	230	3.32E-03
Cesium-137	0.052	37	3.51E-02
Plutonium-238	0.015	230	1.63E-03
Plutonium-239/240	1.94	200	2.43E-01
Strontium-90	0.41	1400	7.32E-03
Tritium	1.33	1,600,000	2.08E-05
		Total Dose	**3E-01**

* SALs from LANL (2015, 600929).

Table G-4.2-58
Residential Carcinogenic Screening Evaluation for SWMU 01-001(o)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
Cadmium	1.51	85,900	1.76E-10
Chromium (Total)	11.6	96.6	1.20E-06
Nickel	6.28	595,000	1.06E-10
Aroclor-1254	0.587	2.43	2.42E-06
Aroclor-1260	0.202	2.43	8.31E-07
Bis(2-ethylhexyl)phthalate	0.12	380	3.16E-09
Methylene Chloride	0.00073	766	9.53E-12
		Total Excess Cancer Risk	**4E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-59
Residential Noncarcinogenic Screening Evaluation for SWMU 01-001(o)

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Antimony	1.4(U)	31.3	4.47E-02
Cadmium	1.51	70.5	2.14E-02
Chromium (Total)	11.6	45,200	2.57E-04
Copper	91.6	3130	2.93E-02
Cyanide (Total)	0.15	11.1	1.35E-02
Lead	22	400	5.50E-02
Mercury	0.183	23.5	7.79E-03
Nickel	6.28	1560	4.03E-03
Nitrate	0.227	125,000	1.82E-06
Perchlorate	0.0025	54.8	4.56E-05
Selenium	0.24	391	6.14E-04
Silver	0.215	391	5.50E-04
Zinc	108	23,500	4.60E-03
Acetone	0.0049	66,300	7.39E-08
Aroclor-1254	0.587	1.14	5.15E-01
Benzoic Acid	0.35	250,000	1.40E-06
Bis(2-ethylhexyl)phthalate	0.12	1230	9.76E-05
Di-n-butylphthalate	2.68	6160	4.35E-04
Methylene Chloride	0.00073	409	1.78E-06
Trimethylbenzene[1,2,4-]	0.00048	300[b]	1.60E-06
		HI	**7E-01**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] SSL are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

Table G-4.2-60
Residential Radionuclide Screening Evaluation for SWMU 01-001(o)

COPC	EPC (pCi/g)	Residential SAL* (pCi/g)	Dose (mrem/yr)
Americium-241	0.0305	83	9.19E-03
Cesium-137	0.052	12	1.08E-01
Plutonium-238	0.015	84	4.46E-03
Plutonium-239/240	1.94	79	6.14E-01
Strontium-90	0.41	15	6.83E-01
Tritium	1.33	1700	1.96E-02
		Total Dose	**1E-00**

* SALs from LANL (2015, 600929).

Table G-4.2-61
Construction Worker Carcinogenic Screening Evaluation for SWMU 01-001(s2)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	Cancer Risk
Arsenic	1.47	216	6.81E-08
Chromium (Total)	11.7	468	2.50E-07
Nickel	6.9	25,000	2.76E-09
Aroclor-1254	0.21	85.3	2.46E-08
Aroclor-1260	0.033	85.3	3.87E-09
Bis(2-ethylhexyl)phthalate	0.082	13,400	6.12E-11
Methylene Chloride	0.032	89,300	3.58E-12
		Total Excess Cancer Risk	**3E-07**

* SSLs from NMED (2017, 602273).

Table G-4.2-62
Construction Worker Noncarcinogenic Screening Evaluation for SWMU 01-001(s2)

COPC	EPC (mg/kg)	Construction Worker SSL[a] (mg/kg)	HQ
Antimony	0.21	142	1.48E-03
Arsenic	1.47	41.2	3.57E-02
Barium	96.2	4390	2.19E-02
Chromium (Total)	11.7	134	8.73E-02
Cobalt	2.15	36.7	5.86E-02
Copper	10.5	14,200	7.39E-04
Cyanide (Total)	0.19	12	1.58E-02
Lead	13.2	800	1.65E-02
Nickel	6.9	753	9.16E-03
Nitrate	1.09	566,000	1.93E-06
Selenium	0.339	1750	1.94E-04
Silver	1.7	1770	9.60E-04
Acetone	0.0128	241,000	5.31E-08
Aroclor-1254	0.21	4.91	4.28E-02
Bis(2-ethylhexyl)phthalate	0.082	5380	1.52E-05
Methylene Chloride	0.032	1200	2.67E-05
Propylbenzene[1-]	0.0013	15,100[b]	8.61E-08
		HI	**3E-01**

[a] SSLs from NMED (2017, 602273).

[b] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

Table G-4.2-63
Construction Worker Radionuclide Screening Evaluation for SWMU 01-001(s2)

COPC	EPC (pCi/g)	Construction Worker SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-239/240	0.56	200	7.00E-02
Tritium	0.71	1,600,000	1.11E-05
		Total Dose	**7E-02**

* SALs from LANL (2015, 600929).

Table G-4.2-64
Residential Carcinogenic Screening Evaluation for SWMU 01-001(s2)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
Arsenic	1.47	7.07	2.08E-06
Chromium (Total)	11.7	96.6	1.21E-06
Nickel	6.9	595,000	1.16E-10
Aroclor-1254	0.21	2.43	8.64E-07
Aroclor-1260	0.033	2.43	1.36E-07
Bis(2-ethylhexyl)phthalate	0.082	380	2.16E-09
Methylene Chloride	0.032	766	4.18E-10
		Total Excess Cancer Risk	**4E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-65
Residential Noncarcinogenic Screening Evaluation for SWMU 01-001(s2)

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Antimony	0.21	31.3	6.71E-03
Arsenic	1.47	13	1.13E-01
Barium	96.2	15,600	6.17E-03
Chromium (Total)	11.7	45,200	2.59E-04
Copper	10.5	3130	3.35E-03
Cyanide (Total)	0.19	11.1	1.71E-02
Lead	13.2	400	3.30E-02
Nickel	6.9	1560	4.42E-03
Nitrate	1.09	125,000	8.72E-06
Selenium	0.339	391	8.67E-04
Silver	1.7	391	4.35E-03

Table G-4.2-65 (continued)

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Acetone	0.0128	66,300	1.93E-07
Aroclor-1254	0.21	1.14	1.84E-01
Bis(2-ethylhexyl)phthalate	0.082	1230	6.67E-05
Methylene Chloride	0.032	409	7.82E-05
Propylbenzene[1-]	0.0013	3800[b]	3.42E-07
		HI	**4E-01**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] SSL are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

Table G-4.2-66
Residential Radionuclide Screening Evaluation for SWMU 01-001(s2)

COPC	EPC (pCi/g)	Residential SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-239/240	0.56	79	1.77E-01
Tritium	0.71	1700	1.04E-02
		Total Dose	**2E-01**

* SALs from LANL (2015, 600929).

Table G-4.2-67
Industrial Carcinogenic Screening Evaluation for SWMU 01-002(a2)-00

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	Cancer Risk
Chromium (Total)	59.4	505	1.18E-06
Nickel	27.4	2,890,000	9.48E-11
Methylene Chloride	0.0058	14,400	4.03E-12
		Total Excess Cancer Risk	**1E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-68
Industrial Noncarcinogenic Screening Evaluation for SWMU 01-002(a2)-00

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	HQ
Chromium (Total)	59.4	314,000	1.89E-04
Cyanide (Total)	0.1	62.8	1.59E-03
Nickel	27.4	25,700	1.07E-03
Selenium	0.33	6490	5.08E-05
Acetone	0.0053	959,000	5.53E-09
Methylene Chloride	0.0058	5110	1.14E-06
		HI	**3E-03**

* SSLs from NMED (2017, 602273).

Table G-4.2-69
Industrial Radionuclide Screening Evaluation for SWMU 01-002(a2)-00

COPC	EPC (pCi/g)	Industrial SAL* (pCi/g)	Dose (mrem/yr)
Uranium-235/236	0.23	160	3.59E-02
		Total Dose	**4E-02**

* SALs from LANL (2015, 600929).

Table G-4.2-70
Construction Worker Carcinogenic Screening Evaluation for SWMU 01-002(a2)-00

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	Cancer Risk
Arsenic	1.62	216	7.50E-08
Chromium (Total)	18	468	3.85E-07
Nickel	9.15	25,000	3.66E-09
Aroclor-1254	0.21	85.3	2.46E-08
Aroclor-1260	0.00829	85.3	9.72E-10
Bis(2-ethylhexyl)phthalate	0.12	13,400	8.96E-11
Methylene Chloride	0.00284	89,300	3.18E-13
		Total Excess Cancer Risk	**5E-07**

* SSLs from NMED (2017, 602273).

Table G-4.2-71
Construction Worker Noncarcinogenic Screening Evaluation for SWMU 01-002(a2)-00

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	HQ
Antimony	0.63(U)	142	4.44E-03
Arsenic	1.62	41.2	3.93E-02
Chromium (Total)	18	134	1.34E-01
Copper	3.02	14,200	2.13E-04
Cyanide (Total)	0.182	12	1.52E-02
Lead	14.6	800	1.83E-02
Nickel	9.15	753	1.22E-02
Nitrate	7.65	566,000	1.35E-05
Selenium	0.296	1750	1.69E-04
Acetone	0.0053	241,000	2.20E-08
Aroclor-1254	0.21	4.91	4.28E-02
Bis(2-ethylhexyl)phthalate	0.12	5380	2.23E-05
Methylene Chloride	0.00284	1200	2.37E-06
Toluene	0.001	14,000	7.14E-08
Trichlorofluoromethane	0.00055	1120	4.91E-07
		HI	**3E-01**

* SSLs from NMED (2017, 602273).

Table G-4.2-72
Construction Worker Radionuclide Screening Evaluation for SWMU 01-002(a2)-00

COPC	EPC (pCi/g)	Construction Worker SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-239/240	0.23	200	2.88E-02
Tritium	0.92	1,600,000	1.44E-05
Uranium-235/236	0.23	130	4.42E-02
		Total Dose	**7E-02**

* SALs from LANL (2015, 600929).

Table G-4.2-73
Residential Carcinogenic Screening Evaluation for SWMU 01-002(a2)-00

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
Arsenic	1.62	7.07	2.29E-06
Chromium (Total)	18	96.6	1.86E-06
Nickel	9.15	595,000	1.54E-10
Aroclor-1254	0.21	2.43	8.64E-07
Aroclor-1260	0.00829	2.43	3.41E-08
Bis(2-ethylhexyl)phthalate	0.12	380	3.16E-09
Methylene Chloride	0.00284	766	3.71E-11
		Total Excess Cancer Risk	**5E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-74
Residential Noncarcinogenic Screening Evaluation for SWMU 01-002(a2)-00

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	HQ
Antimony	0.63(U)	31.3	2.01E-02
Arsenic	1.62	13	1.25E-01
Chromium (Total)	18	45,200	3.98E-04
Copper	3.02	3130	9.65E-04
Cyanide (Total)	0.182	11.1	1.64E-02
Lead	14.6	400	3.65E-02
Nickel	9.15	1560	5.87E-03
Nitrate	7.65	125,000	6.12E-05
Selenium	0.296	391	7.57E-04
Acetone	0.0053	66,300	7.99E-08
Aroclor-1254	0.21	1.14	1.84E-01
Bis(2-ethylhexyl)phthalate	0.12	1230	9.76E-05
Methylene Chloride	0.00284	409	6.94E-06
Toluene	0.001	5220	1.92E-07
Trichlorofluoromethane	0.00055	1220	4.51E-07
		HI	**4E-01**

* SSLs from NMED (2017, 602273).

Table G-4.2-75
Residential Radionuclide Screening Evaluation for SWMU 01-002(a2)-00

COPC	EPC (pCi/g)	Residential SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-239/240	0.23	79	7.28E-02
Tritium	0.92	1700	1.35E-02
Uranium-235/236	0.23	42	1.37E-01
		Total Dose	**2E-01**

* SALs from LANL (2015, 600929).

Table G-4.2-76
Industrial Carcinogenic Screening Evaluation for SWMU 01-003(a)

COPC	EPC (mg/kg)	Industrial SSL[a] (mg/kg)	Cancer Risk
Chromium (Total)	9.84	505	1.95E-07
Nickel	5.49	2,890,000	1.90E-11
Aroclor-1254	1.71	11	1.55E-06
Aroclor-1260	0.369	11.1	3.32E-07
Benzo(a)anthracene	3.17	32.3	9.81E-07
Benzo(a)pyrene	2.73	23.6	1.16E-06
Benzo(b)fluoranthene	3.84	32.3	1.19E-06
Benzo(k)fluoranthene	3.41	323	1.06E-07
Bis(2-ethylhexyl)phthalate	0.38	1830	2.08E-09
Butylbenzylphthalate	0.036	12,000[b]	3.00E-11
Chrysene	4.24	3230	1.31E-08
Dibenz(a,h)anthracene	0.779	3.23	2.41E-06
Indeno(1,2,3-cd)pyrene	1.94	32.3	6.01E-07
		Total Excess Cancer Risk	**9E-06**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

Table G-4.2-77
Industrial Noncarcinogenic Screening Evaluation for SWMU 01-003(a)

COPC	EPC (mg/kg)	Industrial SSL[a] (mg/kg)	HQ
Barium	53.2	255,000	2.09E-04
Chromium (Total)	9.84	314,000	3.13E-05
Cyanide (Total)	1	62.8	1.59E-02
Lead	24.2	800	3.03E-02
Mercury	0.102	389	2.62E-04
Nickel	5.49	25,700	2.14E-04
Perchlorate	0.0023	908	2.53E-06
Selenium	0.3	6490	4.62E-05
Zinc	54.9	389,000	1.41E-04
Acenaphthene	0.218	50,500	4.32E-06
Acetone	0.015	959,000	1.56E-08
Anthracene	0.698	253,000	2.76E-06
Aroclor-1254	1.71	16.4	1.04E-01
Benzo(g,h,i)perylene	2.2	25,300[b]	8.70E-05
Benzoic Acid	1.6	3,300,000[c]	4.85E-07
Bis(2-ethylhexyl)phthalate	0.38	18,300	2.08E-05
Dibenzofuran	0.147	1000[c]	1.47E-04
Fluoranthene	7.64	33,700	2.27E-04
Fluorene	0.272	33,700	8.07E-06
Naphthalene	0.044	16,800	2.62E-06
Phenanthrene	4.02	25,300	1.59E-04
Pyrene	6.68	25,300	2.64E-04
		HI	**2E-01**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] Pyrene used as a surrogate based on structural similarity.

[c] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

Table G-4.2-78
Industrial Radionuclide Screening Evaluation for SWMU 01-003(a)

COPC	EPC (pCi/g)	Industrial SAL* (pCi/g)	Dose (mrem/yr)
Cesium-134	0.043	17	6.32E-02
Plutonium-239/240	1.05	1200	2.19E-02
		Total Dose	**9E-02**

* SALs from LANL (2015, 600929).

Table G-4.2-79
Construction Worker Carcinogenic Screening Evaluation for SWMU 01-003(a)

COPC	EPC (mg/kg)	Construction Worker SSL[a] (mg/kg)	Cancer Risk
Arsenic	1.24	216	5.74E-08
Chromium (Total)	10.5	468	2.24E-07
Nickel	5.98	25,000	2.39E-09
Aroclor-1254	2.44	85.3	2.86E-07
Aroclor-1260	0.544	85.3	6.38E-08
Benzo(a)anthracene	1.7	240	7.08E-08
Benzo(a)pyrene	1.42	173	8.21E-08
Benzo(b)fluoranthene	1.99	240	8.29E-08
Benzo(k)fluoranthene	1.89	2310	8.18E-09
Bis(2-ethylhexyl)phthalate	0.38	13,400	2.84E-10
Butylbenzylphthalate	0.036	5380[b]	6.69E-11
Chrysene	2.22	23,100	9.61E-10
Dibenz(a,h)anthracene	0.448	24	1.87E-07
Indeno(1,2,3-cd)pyrene	1.06	240	4.42E-08
		Total Excess Cancer Risk	**1E-06**

[a] SSLs from NMED (2017, 602273).

[b] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

Table G-4.2-80
Construction Worker Noncarcinogenic Screening Evaluation for SWMU 01-003(a)

COPC	EPC (mg/kg)	Construction Worker SSL[a] (mg/kg)	HQ
Arsenic	1.24	41.2	3.01E-02
Barium	49.6	4390	1.13E-02
Chromium (Total)	10.5	134	7.84E-02
Copper	5.27	14,200	3.71E-04
Cyanide (Total)	1	12	8.33E-02
Iron	6590	248,000	2.66E-02
Lead	19.3	800	2.41E-02
Manganese	258	464	5.56E-01
Mercury	0.155	77.1	2.01E-03
Nickel	5.98	753	7.94E-03
Perchlorate	0.0023	248	9.27E-06
Selenium	0.239	1750	1.37E-04
Vanadium	7.55	614	1.23E-02
Zinc	44.1	106,000	4.16E-04

Table G-4.2-80 (continued)

COPC	EPC (mg/kg)	Construction Worker SSL[a] (mg/kg)	HQ
Acenaphthene	0.184	15,100	1.22E-05
Acetone	0.078	241,000	3.24E-07
Anthracene	0.403	75,300	5.35E-06
Aroclor-1254	2.44	4.91	4.97E-01
Benzo(a)pyrene	1.42	106	1.34E-02
Benzo(g,h,i)perylene	1.16	7530[b]	1.54E-04
Benzoic Acid	1.6	1,080,000[c]	1.48E-06
Bis(2-ethylhexyl)phthalate	0.38	5380	7.06E-05
Di-n-butylphthalate	0.053	26,900	1.97E-06
Dibenzofuran	0.145	354[c]	4.10E-04
Fluoranthene	6.17	10,000	6.17E-04
Fluorene	0.198	10,000	1.98E-05
Isopropyltoluene[4-]	0.015	2710[d]	5.47E-06
Naphthalene	0.044	5020	8.76E-06
Phenanthrene	2.09	7530	2.78E-04
Pyrene	5.42	7530	7.20E-04
		HI	**1**

[a] SSLs from NMED (2017, 602273).

[b] Pyrene used as a surrogate based on structural similarity.

[c] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

[d] Isopropyl benzene used as a surrogate based on structural similarity.

Table G-4.2-81
Construction Worker Radionuclide Screening Evaluation for SWMU 01-003(a)

COPC	EPC (pCi/g)	Construction Worker SAL* (pCi/g)	Dose (mrem/yr)
Cesium-134	0.043	15	7.17E-02
Plutonium-238	0.044	230	4.78E-03
Plutonium-239/240	2.35	200	2.94E-01
Tritium	0.4	1,600,000	6.25E-06
Uranium-234	1.78	1000	4.45E-02
Uranium-235/236	0.16	130	3.08E-02
Uranium-238	1.48	470	7.87E-02
		Total Dose	**5E-01**

* SALs from LANL (2015, 600929).

Table G-4.2-82
Residential Carcinogenic Screening Evaluation for SWMU 01-003(a)

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	Cancer Risk
Arsenic	1.24	7.07	1.75E-06
Chromium (Total)	10.5	96.6	1.09E-06
Nickel	5.98	595,000	1.01E-10
Aroclor-1254	2.44	2.43	1.00E-05
Aroclor-1260	0.544	2.43	2.24E-06
Benzo(a)anthracene	1.7	1.53	1.11E-05
Benzo(a)pyrene	1.42	1.12	1.27E-05
Benzo(b)fluoranthene	1.99	1.53	1.30E-05
Benzo(k)fluoranthene	1.89	15.3	1.24E-06
Bis(2-ethylhexyl)phthalate	0.38	380	1.00E-08
Butylbenzylphthalate	0.036	2900[b]	1.24E-10
Chrysene	2.22	153	1.45E-07
Dibenz(a,h)anthracene	0.448	0.15	2.99E-05
Indeno(1,2,3-cd)pyrene	1.06	1.53	6.93E-06
		Total Excess Cancer Risk	**9E-05**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

Table G-4.2-83
Residential Noncarcinogenic Screening Evaluation for SWMU 01-003(a)

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Arsenic	1.24	13	9.54E-02
Barium	49.6	15,600	3.18E-03
Chromium (Total)	10.5	45,200	2.32E-04
Copper	5.27	3130	1.68E-03
Cyanide (Total)	1	11.1	9.01E-02
Iron	6590	54,800	1.20E-01
Lead	19.3	400	4.83E-02
Manganese	258	10,500	2.46E-02
Mercury	0.155	23.5	6.60E-03
Nickel	5.98	1560	3.83E-03
Perchlorate	0.0023	54.8	4.20E-05
Selenium	0.239	391	6.11E-04
Vanadium	7.55	394	1.92E-02
Zinc	44.1	23,500	1.88E-03

Table G-4.2-83 (continued)

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Acenaphthene	0.184	3480	5.29E-05
Acetone	0.078	66,300	1.18E-06
Anthracene	0.403	17,400	2.32E-05
Aroclor-1254	2.44	1.14	2.14E+00
Benzo(g,h,i)perylene	1.16	1740[b]	6.67E-04
Benzoic Acid	1.6	250,000[c]	6.40E-06
Bis(2-ethylhexyl)phthalate	0.38	1230	3.09E-04
Di-n-butylphthalate	0.053	6160	8.60E-06
Dibenzofuran	0.145	73	1.99E-03
Fluoranthene	6.17	2320	2.66E-03
Fluorene	0.198	2320	8.53E-05
Isopropyltoluene[4-]	0.015	2350[d]	6.36E-06
Naphthalene	0.044	1160	3.79E-05
Phenanthrene	2.09	1740	1.20E-03
Pyrene	5.42	1740	3.11E-03
		HI	**3**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] Pyrene used as a surrogate based on structural similarity.

[c] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

[d] Isopropyl benzene used as a surrogate based on structural similarity.

Table G-4.2-84
Residential Radionuclide Screening Evaluation for SWMU 01-003(a)

COPC	EPC (pCi/g)	Residential SAL* (pCi/g)	Dose (mrem/yr)
Cesium-134	0.043	5	2.15E-01
Plutonium-238	0.044	84	1.31E-02
Plutonium-239/240	2.35	79	7.44E-01
Tritium	0.4	1700	5.88E-03
Uranium-234	1.78	290	1.53E-01
Uranium-235/236	0.16	42	9.52E-02
Uranium-238	1.48	150	2.47E-01
		Total Dose	**1**

* SALs from LANL (2015, 600929).

Table G-4.2-85
Industrial Carcinogenic Screening Evaluation for AOC 01-003(b2)

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	Cancer Risk
Beryllium	1.5	313,000	4.79E-11
		Total Excess Cancer Risk	**5E-11**

* SSLs from NMED (2017, 602273).

Table G-4.2-86
Industrial Noncarcinogenic Screening Evaluation for AOC 01-003(b2)

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	HQ
Antimony	2.1(U)	519	4.05E-03
Beryllium	1.5	2580	5.81E-04
Lead	28.6	800	3.58E-02
Perchlorate	0.0022	908	2.42E-06
Selenium	0.5	6490	7.70E-05
		HI	**4E-02**

* SSLs from NMED (2017, 602273).

Table G-4.2-87
Industrial Radionuclide Screening Evaluation for AOC 01-003(b2)

COPC	EPC (pCi/g)	Industrial SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-239/240	2.11	1200	4.40E-02
		Total Dose	**4E-02**

* SALs from LANL (2015, 600929).

Table G-4.2-88
Construction Worker Carcinogenic Screening Evaluation for AOC 01-003(b2)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	Cancer Risk
Beryllium	1.56	2710	5.76E-09
Chromium (Total)	6.95	468	1.49E-07
Nickel	4.83	25,000	1.93E-09
		Total Excess Cancer Risk	**2E-07**

* SSLs from NMED (2017, 602273).

Table G-4.2-89
Construction Worker Noncarcinogenic Screening Evaluation for AOC 01-003(b2)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	HQ
Aluminum	5620	41,400	1.36E-01
Antimony	2.1(U)	142	1.48E-02
Barium	138	4390	3.14E-02
Beryllium	1.56	148	1.05E-02
Chromium (Total)	6.95	134	5.19E-02
Copper	7.71	14,200	5.43E-04
Lead	39.9	800	4.99E-02
Nickel	4.83	753	6.41E-03
Perchlorate	0.043	248	1.73E-04
Selenium	1.07	1750	6.11E-04
		HI	**3E-01**

* SSLs from NMED (2017, 602273).

Table G-4.2-90
Construction Worker Radionuclide Screening Evaluation for AOC 01-003(b2)

COPC	EPC (pCi/g)	Construction Worker SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-238	0.18	230	1.96E-02
Plutonium-239/240	1.07	200	1.34E-01
		Total Dose	**2E-01**

* SALs from LANL (2015, 600929).

Table G-4.2-91
Residential Carcinogenic Screening Evaluation for AOC 01-003(b2)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
Beryllium	1.56	64,400	2.42E-10
Chromium (Total)	6.95	96.6	7.19E-07
Nickel	4.83	595,000	8.12E-11
		Total Excess Cancer Risk	**7E-07**

* SSLs from NMED (2017, 602273).

Table G-4.2-92
Residential Noncarcinogenic Screening Evaluation for AOC 01-003(b2)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	HQ
Aluminum	5620	78,000	7.21E-02
Antimony	2.1(U)	31.3	6.71E-02
Barium	138	15,600	8.85E-03
Beryllium	1.56	156	1.00E-02
Chromium (Total)	6.95	45,200	1.54E-04
Copper	7.71	3130	2.46E-03
Lead	39.9	400	9.98E-02
Nickel	4.83	1560	3.10E-03
Perchlorate	0.043	54.8	7.85E-04
Selenium	1.07	391	2.74E-03
		HI	**3E-01**

* SSLs from NMED (2017, 602273).

Table G-4.2-93
Residential Radionuclide Screening Evaluation for AOC 01-003(b2)

COPC	EPC (pCi/g)	Residential SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-238	0.18	84	5.36E-02
Plutonium-239/240	1.07	79	3.39E-01
		Total Dose	**4E-01**

* SALs from LANL (2015, 600929).

Table G-4.2-94
Industrial Carcinogenic Screening Evaluation for SWMU 01-003(d)

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	Cancer Risk
Aroclor-1260	0.043	11.1	3.87E-08
		Total Excess Cancer Risk	**4E-08**

* SSLs from NMED (2017, 602273).

Table G-4.2-95
Industrial Noncarcinogenic Screening Evaluation for SWMU 01-003(d)

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	HQ
Antimony	10.5	519	2.02E-02
Lead	47.4	800	5.93E-02
Nitrate	39	2,080,000	1.88E-05
Perchlorate	0.0031	908	3.41E-06
Zinc	73.5	389,000	1.89E-04
Toluene	0.0017	61,100	2.78E-08
		HI	**8E-02**

* SSLs from NMED (2017, 602273).

Table G-4.2-96
Industrial Radionuclide Screening Evaluation for SWMU 01-003(d)

COPC	EPC (pCi/g)	Industrial SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-239/240	0.59	1200	1.23E-02
		Total Dose	**1E-02**

* SALs from LANL (2015, 600929).

Table G-4.2-97
Construction Worker Carcinogenic Screening Evaluation for SWMU 01-003(d)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	Cancer Risk
Cadmium	0.27	417,000	6.47E-12
Chromium (Total)	6.33	468	1.35E-07
Aroclor-1260	0.043	85.3	5.04E-09
Bis(2-ethylhexyl)phthalate	0.054	13400	4.03E-11
		Total Excess Cancer Risk	**1E-07**

* SSLs from NMED (2017, 602273).

Table G-4.2-98
Construction Worker Noncarcinogenic Screening Evaluation for SWMU 01-003(d)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	HQ
Antimony	78.5	142	5.53E-01
Barium	55.2	4390	1.26E-02
Cadmium	0.27	72.1	3.74E-03
Chromium (Total)	6.33	134	4.72E-02
Lead	15.7	800	1.96E-02
Nitrate	29.1	566,000	5.14E-05
Perchlorate	0.0043	248	1.73E-05
Selenium	0.39	1750	2.23E-04
Zinc	53.3	106,000	5.03E-04
Bis(2-ethylhexyl)phthalate	0.054	5380	1.00E-05
Toluene	0.0017	14,000	1.21E-07
		HI	**6E-01**

* SSLs from NMED (2017, 602273).

Table G-4.2-99
Construction Worker Radionuclide Screening Evaluation for SWMU 01-003(d)

COPC	EPC (pCi/g)	Construction Worker SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-239/240	0.234	200	2.93E-02
		Total Dose	**3E-02**

* SALs from LANL (2015, 600929).

Table G-4.2-100
Residential Carcinogenic Screening Evaluation for SWMU 01-003(d)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
Cadmium	0.27	859,000	3.14E-11
Chromium (Total)	6.33	96.6	6.55E-07
Aroclor-1260	0.043	2.43	1.77E-07
Bis(2-ethylhexyl)phthalate	0.054	380	1.42E-09
		Total Excess Cancer Risk	**8E-07**

* SSLs from NMED (2017, 602273).

Table G-4.2-101
Residential Noncarcinogenic Screening Evaluation for SWMU 01-003(d)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	HQ
Antimony	78.5	31.3	2.51E+00
Barium	55.2	15,600	3.54E-03
Cadmium	0.27	70.5	3.83E-03
Chromium (Total)	6.33	45,200	1.40E-04
Lead	15.7	400	3.93E-02
Nitrate	29.1	125,000	2.33E-04
Perchlorate	0.0043	54.8	7.85E-05
Selenium	0.39	391	9.97E-04
Zinc	53.3	23,500	2.27E-03
Bis(2-ethylhexyl)phthalate	0.054	1230	4.39E-05
Toluene	0.0017	5220	3.26E-07
		HI	**3**

* SSLs from NMED (2017, 602273).

Table G-4.2-102
Residential Radionuclide Screening Evaluation for SWMU 01-003(d)

COPC	EPC (pCi/g)	Residential SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-239/240	0.234	79	7.41E-02
		Total Dose	**7E-02**

* SALs from LANL (2015, 600929).

Table G-4.2-103
Industrial Carcinogenic Screening Evaluation for SWMU 01-006(a)

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	Cancer Risk
Arsenic	2.88	35.9	8.02E-07
Chromium (Total)	6.81	505	1.35E-07
Aroclor-1260	0.0337	11.1	3.04E-08
Bis(2-ethylhexyl)phthalate	0.097	1830	5.30E-10
Methylene Chloride	0.021	14,400	1.46E-11
		Total Excess Cancer Risk	**1E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-104
Industrial Noncarcinogenic Screening Evaluation for SWMU 01-006(a)

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	HQ
Arsenic	2.88	208	1.38E-02
Chromium (Total)	6.81	314,000	2.17E-05
Copper	7.44	51,900	1.43E-04
Cyanide (Total)	0.55(UJ)	62.8	8.76E-03
Lead	25.3	800	3.16E-02
Mercury	0.2	389	5.14E-04
Perchlorate	0.0026	908	2.86E-06
Selenium	0.231	6490	3.56E-05
Bis(2-ethylhexyl)phthalate	0.097	18,300	5.30E-06
Di-n-butylphthalate	0.15	91,600	1.64E-06
Methylene Chloride	0.021	5110	4.11E-06
		HI	**5E-02**

* SSLs from NMED (2017, 602273).

Table G-4.2-105
Industrial Radionuclide Screening Evaluation for SWMU 01-006(a)

COPC	EPC (pCi/g)	Industrial SAL* (pCi/g)	Dose (mrem/yr)
Americium-241	0.47	1000	1.18E-02
Plutonium-239/240	14.6	1200	3.04E-01
Uranium-234	2.35	3100	1.90E-02
Uranium-235/236	0.36	160	5.63E-02
Uranium-238	1.89	710	6.65E-02
		Total Dose	**5E-01**

* SALs from LANL (2015, 600929).

Table G-4.2-106
Construction Worker Carcinogenic Screening Evaluation for SWMU 01-006(a)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	Cancer Risk
Arsenic	2.6	216	1.20E-07
Chromium (Total)	9.22	468	1.97E-07
Nickel	5.29	25,000	2.12E-09
Aroclor-1260	0.0249	85.3	2.92E-09
Bis(2-ethylhexyl)phthalate	2.7	13,400	2.01E-09
Methylene Chloride	0.00753	89,300	8.43E-13
		Total Excess Cancer Risk	**3E-07**

* SSLs from NMED (2017, 602273).

Table G-4.2-107
Construction Worker Noncarcinogenic Screening Evaluation for SWMU 01-006(a)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	HQ
Antimony	0.61(U)	142	4.30E-03
Arsenic	2.6	41.2	6.31E-02
Chromium (Total)	9.22	134	6.88E-02
Copper	5.98	14,200	4.21E-04
Cyanide (Total)	0.6(U)	12	5.00E-02
Lead	16.8	800	2.10E-02
Mercury	0.0567	77.1	7.35E-04
Nickel	5.29	753	7.03E-03
Perchlorate	0.00582	248	2.35E-05
Selenium	0.247	1750	1.41E-04
Acetone	0.0049	241,000	2.03E-08
Bis(2-ethylhexyl)phthalate	2.7	5380	5.02E-04
Di-n-butylphthalate	0.15	26,900	5.58E-06
Methylene Chloride	0.00753	1200	6.28E-06
		HI	**2E-01**

* SSLs from NMED (2017, 602273).

Table G-4.2-108
Construction Worker Radionuclide Screening Evaluation for SWMU 01-006(a)

COPC	EPC (pCi/g)	Construction Worker SAL* (pCi/g)	Dose (mrem/yr)
Americium-241	0.47	230	5.11E-02
Plutonium-238	0.031	230	3.37E-03
Plutonium-239/240	8.73	200	1.09E+00
Uranium-234	1.66	1000	4.15E-02
Uranium-235/236	0.143	130	2.75E-02
Uranium-238	1.33	470	7.07E-02
		Total Dose	**1E+00**

* SALs from LANL (2015, 600929).

Table G-4.2-109
Residential Carcinogenic Screening Evaluation for SWMU 01-006(a)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
Arsenic	2.6	7.07	3.68E-06
Chromium (Total)	9.22	96.6	9.54E-07
Nickel	5.29	595,000	8.89E-11
Aroclor-1260	0.0249	2.43	1.02E-07
Bis(2-ethylhexyl)phthalate	2.7	380	7.11E-08
Methylene Chloride	0.00753	766	9.83E-11
		Total Excess Cancer Risk	**5E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-110
Residential Noncarcinogenic Screening Evaluation for SWMU 01-006(a)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	HQ
Antimony	0.61(U)	31.3	1.95E-02
Arsenic	2.6	13	2.00E-01
Chromium (Total)	9.22	45,200	2.04E-04
Copper	5.98	3130	1.91E-03
Cyanide (Total)	0.6(U)	11.1	5.41E-02
Lead	16.8	400	4.20E-02
Mercury	0.0567	23.5	2.41E-03
Nickel	5.29	1560	3.39E-03
Perchlorate	0.00582	54.8	1.06E-04
Selenium	0.247	391	6.32E-04
Acetone	0.0049	66,300	7.39E-08
Bis(2-ethylhexyl)phthalate	2.7	1230	2.20E-03
Di-n-butylphthalate	0.15	6160	2.44E-05
Methylene Chloride	0.00753	409	1.84E-05
		HI	**3E-01**

* SSLs from NMED (2017, 602273).

Table G-4.2-111
Residential Radionuclide Screening Evaluation for SWMU 01-006(a)

COPC	EPC (pCi/g)	Residential SAL* (pCi/g)	Dose (mrem/yr)
Americium-241	0.47	83	1.42E-01
Plutonium-238	0.031	84	9.23E-03
Plutonium-239/240	8.73	79	2.76E+00
Uranium-234	1.66	290	1.43E-01
Uranium-235/236	0.143	42	8.51E-02
Uranium-238	1.33	150	2.22E-01
		Total Dose	**3**

* SALs from LANL (2015, 600929).

Table G-4.2-112
Construction Worker Carcinogenic Screening Evaluation for AOC 01-006(e)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	Cancer Risk
Chromium (Total)	26.7	468	5.71E-07
		Total Excess Cancer Risk	**6E-07**

* SSLs from NMED (2017, 602273).

Table G-4.2-113
Construction Worker Noncarcinogenic Screening Evaluation for AOC 01-006(e)

COPC	EPC (mg/kg)	Construction Worker SSL[a] (mg/kg)	HQ
Barium	106	4390	2.41E-02
Chromium (Total)	26.7	134	1.99E-01
Cyanide (Total)	0.61(UJ)	12	5.08E-02
Selenium	0.3	1750	1.71E-04
Acetone	0.0033	241,000	1.37E-08
Benzyl Alcohol	1.8	26,900[b]	6.69E-05
		HI	**3E-01**

[a] SSLs from NMED (2017, 602273).

[b] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

Table G-4.2-114
Residential Carcinogenic Screening Evaluation for AOC 01-006(e)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
Chromium (Total)	26.7	96.6	2.76E-06
		Total Excess Cancer Risk	**3E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-115
Residential Noncarcinogenic Screening Evaluation for AOC 01-006(e)

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Barium	106	15,600	6.79E-03
Chromium (Total)	26.7	45,200	5.91E-04
Cyanide (Total)	0.61(UJ)	11.1	5.50E-02
Selenium	0.3	391	7.67E-04
Acetone	0.0033	66,300	4.98E-08
Benzyl Alcohol	1.8	6300[b]	2.86E-04
		HI	**6E-02**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

Table G-4.2-116
Construction Worker Carcinogenic Screening Evaluation for SWMU 01-007(c)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	Cancer Risk
Chromium (Total)	12.2	468	2.61E-07
Nickel	6.12	25,000	2.45E-09
Aroclor-1260	0.038	85.3	4.45E-09
Benzene	0.0002	420	4.76E-12
Chloroform	0.00012	133	9.02E-12
Vinyl Chloride	0.0017	160	1.06E-10
		Total Excess Cancer Risk	**3E-07**

* SSLs from NMED (2017, 602273).

Table G-4.2-117
Construction Worker Noncarcinogenic Screening Evaluation for SWMU 01-007(c)

COPC	EPC (mg/kg)	Construction Worker SSL[a] (mg/kg)	HQ
Antimony	0.1	142	7.04E-04
Chromium (Total)	12.2	134	9.10E-02
Cyanide (Total)	0.17	12	1.42E-02
Lead	19.9	800	2.49E-02
Nickel	6.12	753	8.13E-03
Selenium	0.378	1750	2.16E-04
Benzene	0.0002	141	1.42E-06
Butylbenzene[n-]	0.00041	15,500[b]	2.65E-08
Butylbenzene[sec-]	0.00019	15,500[b]	1.23E-08
Chloroform	0.00012	388	3.09E-07
Isopropyltoluene[4-]	0.00023	2710[c]	8.39E-08
Styrene	0.00041	10,100	4.06E-08
Toluene	0.00038	14,000	2.71E-08
Vinyl Chloride	0.0017	161	1.06E-05
Xylene (Total)	0.0051	791	6.45E-06
		HI	**1E-01**

[a] SSLs from NMED (2017, 602273).

[b] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

[c] Isopropyl benzene used as a surrogate based on structural similarity.

Table G-4.2-118
Construction Worker Radionuclide Screening Evaluation for SWMU 01-007(c)

COPC	EPC (pCi/g)	Construction Worker SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-238	0.11	230	1.20E-02
Plutonium-239/240	0.46	200	5.75E-02
		Total Dose	**7E-02**

* SALs from LANL (2015, 600929).

Table G-4.2-119
Residential Carcinogenic Screening Evaluation for SWMU 01-007(c)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
Chromium (Total)	12.2	96.6	1.26E-06
Nickel	6.12	595,000	1.03E-10
Aroclor-1260	0.038	2.43	1.56E-07
Benzene	0.0002	17.7	1.13E-10
Chloroform	0.00012	5.85	2.05E-10
Vinyl Chloride	0.0017	0.74	2.30E-08
		Total Excess Cancer Risk	**1E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-120
Residential Noncarcinogenic Screening Evaluation for SWMU 01-007(c)

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Antimony	0.1	31.3	3.19E-03
Chromium (Total)	12.2	45,200	2.70E-04
Cyanide (Total)	0.17	11.1	1.53E-02
Lead	19.9	400	4.98E-02
Nickel	6.12	1560	3.92E-03
Selenium	0.378	391	9.67E-04
Benzene	0.0002	114	1.75E-06
Butylbenzene[n-]	0.00041	3900[b]	1.05E-07
Butylbenzene[sec-]	0.00019	7800[b]	2.44E-08
Chloroform	0.00012	304	3.95E-07
Isopropyltoluene[4-]	0.00023	2350[c]	9.75E-08
Styrene	0.00041	7230	5.67E-08
Toluene	0.00038	5220	7.28E-08
Vinyl Chloride	0.0017	113	1.50E-05
Xylene (Total)	0.0051	863	5.91E-06
		HI	**7E-02**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] SSL are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

[c] Isopropyl benzene used as a surrogate based on structural similarity.

Table G-4.2-121
Residential Radionuclide Screening Evaluation for SWMU 01-007(c)

COPC	EPC (pCi/g)	Residential SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-238	0.11	84	3.27E-02
Plutonium-239/240	0.46	79	1.46E-01
		Total Dose	**2E-01**

* SALs from LANL (2015, 600929).

Table G-4.2-122
Construction Worker Carcinogenic
Screening Evaluation for SWMUs 03-038(a) and 03-038(b)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	Cancer Risk
Chromium (Total)	27.5	468	5.88E-07
Nickel	11.3	25,000	4.52E-09
Aroclor-1254	0.0204	85.3	2.39E-09
Aroclor-1260	0.0204	85.3	2.39E-09
Bis(2-ethylhexyl)phthalate	0.083	13400	6.19E-11
		Total Excess Cancer Risk	**6E-07**

* SSLs from NMED (2017, 602273).

Table G-4.2-123
Construction Worker Noncarcinogenic
Screening Evaluation for SWMUs 03-038(a) and 03-038(b)

COPC	EPC (mg/kg)	Construction Worker SSL[a] (mg/kg)	HQ
Antimony	0.6(U)	142	4.23E-03
Barium	81.9	4390	1.87E-02
Chromium (Total)	27.5	134	2.05E-01
Copper	4.92	14,200	3.46E-04
Cyanide (Total)	0.96	12	8.00E-02
Lead	12.4	800	1.55E-02
Nickel	11.3	753	1.50E-02
Perchlorate	0.039	248	1.57E-04
Selenium	0.235	1750	1.34E-04
Aroclor-1254	0.0204	4.91	4.15E-03
Bis(2-ethylhexyl)phthalate	0.083	5380	1.54E-05
Hexanone[2-]	0.0056	1760[b]	3.18E-06
Toluene	0.0006	14,000	4.29E-08
		HI	**3E-01**

[a] SSLs from NMED (2017, 602273).

[b] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

Table G-4.2-124
Residential Carcinogenic Screening Evaluation for SWMUs 03-038(a) and 03-038(b)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
Chromium (Total)	27.5	96.6	2.85E-06
Nickel	11.3	595,000	1.90E-10
Aroclor-1254	0.0204	2.43	8.40E-08
Aroclor-1260	0.0204	2.43	8.40E-08
Bis(2-ethylhexyl)phthalate	0.083	380	2.18E-09
		Total Excess Cancer Risk	**3E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-125
Residential Noncarcinogenic Screening Evaluation for SWMUs 03-038(a) and 03-038(b)

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Antimony	0.6(U)	31.3	1.92E-02
Barium	81.9	15,600	5.25E-03
Chromium (Total)	27.5	45,200	6.08E-04
Copper	4.92	3130	1.57E-03
Cyanide (Total)	0.96	11.1	8.65E-02
Lead	12.4	400	3.10E-02
Nickel	11.3	1560	7.24E-03
Perchlorate	0.039	54.8	7.12E-04
Selenium	0.235	391	6.01E-04
Aroclor-1254	0.0204	1.14	1.79E-02
Bis(2-ethylhexyl)phthalate	0.083	1230	6.75E-05
Hexanone[2-]	0.0056	200[b]	2.80E-05
Toluene	0.0006	5220	1.15E-07
		HI	**2E-01**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] SSL are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

Table G-4.2-126
Industrial Carcinogenic Screening Evaluation for SWMU 03-055(c)

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	Cancer Risk
Arsenic	3.68	35.9	1.03E-06
Aroclor-1254	0.00436	11	3.96E-09
Aroclor-1260	0.00425	11.1	3.83E-09
Benzo(a)anthracene	0.0921	32.3	2.85E-08
Benzo(a)pyrene	0.29	23.6	1.23E-07
Benzo(b)fluoranthene	0.5	32.3	1.55E-07
Benzo(k)fluoranthene	0.065	323	2.01E-09
Bis(2-ethylhexyl)phthalate	0.3	1830	1.64E-09
Chrysene	0.0952	3230	2.95E-10
Indeno(1,2,3-cd)pyrene	0.15	32.3	4.64E-08
		Total Excess Cancer Risk	**1E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-127
Industrial Noncarcinogenic Screening Evaluation for SWMU 03-055(c)

COPC	EPC (mg/kg)	Industrial SSL[a] (mg/kg)	HQ
Arsenic	3.68	208	1.77E-02
Copper	9.39	51,900	1.81E-04
Lead	16.4	800	2.05E-02
Selenium	1.13	6490	1.74E-04
Zinc	134	389,000	3.44E-04
Acenaphthene	0.15	50,500	2.97E-06
Anthracene	0.117	253,000	4.62E-07
Aroclor-1254	0.00436	16.4	2.66E-04
Bis(2-ethylhexyl)phthalate	0.3	18,300	1.64E-05
Butanone[2-]	0.004	409,000	9.78E-09
Dibenzofuran	0.088	1000[b]	8.80E-05
Fluoranthene	0.338	33,700	1.00E-05
Fluorene	0.15	33,700	4.45E-06
Methylnaphthalene[2-]	0.049	3370	1.45E-05
Naphthalene	0.16	16,800	9.52E-06
Phenanthrene	0.383	25,300	1.51E-05
Pyrene	0.465	25,300	1.84E-05
Toluene	0.00055	61,100	9.00E-09
Trichlorofluoromethane	0.013	5980	2.17E-06
HI			**4E-02**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

Table G-4.2-128
Construction Worker Carcinogenic Screening Evaluation for SWMU 03-055(c)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	Cancer Risk
Arsenic	3.09	216	1.43E-07
Aroclor-1254	0.0176	85.3	2.06E-09
Aroclor-1260	0.0186	85.3	2.18E-09
Benzo(a)anthracene	0.507	240	2.11E-08
Benzo(a)pyrene	0.321	173	1.86E-08
Benzo(b)fluoranthene	0.552	240	2.30E-08
Benzo(k)fluoranthene	0.065	2310	2.81E-10
Bis(2-ethylhexyl)phthalate	0.814	13,400	6.07E-10
Chrysene	0.345	23,100	1.49E-10
Ethylbenzene	0.0016	1760	9.09E-12
Indeno(1,2,3-cd)pyrene	0.61	240	2.54E-08
		Total Excess Cancer Risk	**2E-07**

* SSLs from NMED (2017, 602273).

Table G-4.2-129
Construction Worker Noncarcinogenic Screening Evaluation for SWMU 03-055(c)

COPC	EPC (mg/kg)	Construction Worker SSL[a] (mg/kg)	HQ
Arsenic	3.09	41.2	7.50E-02
Copper	8.94	14,200	6.30E-04
Lead	64.1	800	8.01E-02
Selenium	1.13	1750	6.46E-04
Zinc	108	106,000	1.02E-03
Acenaphthene	0.135	15,100	8.94E-06
Acetone	0.0065	241,000	2.70E-08
Anthracene	0.277	75,300	3.68E-06
Aroclor-1254	0.0176	4.91	3.58E-03
Benzo(a)pyrene	0.321	106	3.03E-03
Benzo(g,h,i)perylene	0.59	7530[b]	7.84E-05
Benzoic Acid	0.36	1,080,000[c]	3.33E-07
Bis(2-ethylhexyl)phthalate	0.814	5380	1.51E-04
Butanone[2-]	0.0687	91,200	7.53E-07
Dibenzofuran	0.26	354[c]	7.34E-04
Ethylbenzene	0.0016	5750	2.78E-07
Fluoranthene	1.03	10,000	1.03E-04
Fluorene	0.127	10,000	1.27E-05

Table G-4.2-129 (continued)

COPC	EPC (mg/kg)	Construction Worker SSL[a] (mg/kg)	HQ
Methylnaphthalene[2-]	0.0504	1000	5.04E-05
Naphthalene	0.138	5020	2.75E-05
Phenanthrene	1.1	7530	1.46E-04
Pyrene	1.65	7530	2.19E-04
Toluene	0.00062	14,000	4.43E-08
Trichlorofluoromethane	0.013	1120	1.16E-05
Xylene[1,2-]	0.0015	729	2.06E-06
Xylene[1,3-]+Xylene[1,4-]	0.0031	791[d]	3.92E-06
		HI	**2E-01**

[a] SSLs from NMED (2017, 602273).

[b] Pyrene used as a surrogate based on structural similarity.

[c] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

[d] Xylenes used as a surrogate based on structural similarity.

Table G-4.2-130
Construction Worker Radionuclide Screening Evaluation for SWMU 03-055(c)

COPC	EPC (pCi/g)	Construction Worker SAL* (pCi/g)	Dose (mrem/yr)
Tritium	0.12	1,600,000	1.88E-06
		Total Dose	**2E-06**

* SALs from LANL (2015, 600929).

Table G-4.2-131
Residential Carcinogenic Screening Evaluation for SWMU 03-055(c)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
Arsenic	3.09	7.07	4.37E-06
Aroclor-1254	0.0176	2.43	7.24E-08
Aroclor-1260	0.0186	2.43	7.65E-08
Benzo(a)anthracene	0.507	1.53	3.31E-06
Benzo(a)pyrene	0.321	1.12	2.87E-06
Benzo(b)fluoranthene	0.552	1.53	3.61E-06
Benzo(k)fluoranthene	0.065	15.3	4.25E-08
Bis(2-ethylhexyl)phthalate	0.814	380	2.14E-08
Chrysene	0.345	153	2.25E-08
Ethylbenzene	0.0016	74.5	2.15E-10
Indeno(1,2,3-cd)pyrene	0.61	1.53	3.99E-06
		Total Excess Cancer Risk	**2E-05**

* SSLs from NMED (2017, 602273).

Table G-4.2-132
Residential Noncarcinogenic Screening Evaluation for SWMU 03-055(c)

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Arsenic	3.09	13	2.38E-01
Copper	8.94	3130	2.86E-03
Lead	64.1	400	1.60E-01
Selenium	1.13	391	2.89E-03
Zinc	108	23,500	4.60E-03
Acenaphthene	0.135	3480	3.88E-05
Acetone	0.0065	66,300	9.80E-08
Anthracene	0.277	17,400	1.59E-05
Aroclor-1254	0.0176	1.14	1.54E-02
Benzo(g,h,i)perylene	0.59	1740[b]	3.39E-04
Benzoic Acid	0.36	250,000[c]	1.44E-06
Bis(2-ethylhexyl)phthalate	0.814	1230	6.62E-04
Butanone[2-]	0.0687	37,300[c]	1.84E-06
Dibenzofuran	0.26	73	3.56E-03
Ethylbenzene	0.0016	3920	4.08E-07
Fluoranthene	1.03	2320	4.44E-04
Fluorene	0.127	2320	5.47E-05
Methylnaphthalene[2-]	0.0504	232	2.17E-04
Naphthalene	0.138	1160	1.19E-04
Phenanthrene	1.1	1740	6.32E-04
Pyrene	1.65	1740	9.48E-04
Toluene	0.00062	5220	1.19E-07
Trichlorofluoromethane	0.013	1220	1.07E-05
Xylene[1,2-]	0.0015	798	1.88E-06
Xylene[1,3-]+Xylene[1,4-]	0.0031	863[d]	3.59E-06
		HI	**4E-01**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.
[b] Pyrene used as a surrogate based on structural similarity.
[c] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).
[d] Xylenes used as a surrogate based on structural similarity.

Table G-4.2-133
Residential Radionuclide Screening Evaluation for SWMU 03-055(c)

COPC	EPC (pCi/g)	Residential SAL* (pCi/g)	Dose (mrem/yr)
Tritium	0.12	1700	1.76E-03
		Total Dose	**2E-03**

* SALs from LANL (2015, 600929).

Table G-4.2-134
Industrial Carcinogenic Screening Evaluation for SWMU 32-002(b2)

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	Cancer Risk
Arsenic	2.8	35.9	7.80E-07
Chromium (Total)	15.2	505	3.01E-07
Nickel	7.8	2,890,000	2.70E-11
Aroclor-1260	0.031	11.1	2.79E-08
		Total Excess Cancer Risk	**1E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-135
Industrial Noncarcinogenic Screening Evaluation for SWMU 32-002(b2)

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	HQ
Antimony	0.57(U)	519	1.10E-03
Arsenic	2.8	208	1.35E-02
Barium	53.2	255,000	2.09E-04
Chromium (Total)	15.2	31,4000	4.84E-05
Copper	6.5	51,900	1.25E-04
Cyanide (Total)	0.52(U)	62.8	8.28E-03
Lead	45.9	800	5.74E-02
Mercury	7.86	389	2.02E-02
Nickel	7.8	25,700	3.04E-04
Nitrate	3	2,080,000	1.44E-06
Perchlorate	0.006	908	6.61E-06
Silver	4.8	6490	7E-04
		HI	**1E-01**

* SSLs from NMED (2017, 602273).

Table G-4.2-136
Industrial Radionuclide Screening Evaluation for SWMU 32-002(b2)

COPC	EPC (pCi/g)	Industrial SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-239/240	0.171	1200	3.56E-03
		Total Dose	**4E-03**

* SALs from LANL (2015, 600929).

Table G-4.2-137
Construction Worker Carcinogenic Screening Evaluation for SWMU 32-002(b2)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	Cancer Risk
Arsenic	2.57	216	1.19E-07
Chromium (Total)	46	468	9.83E-07
Nickel	14	25,000	5.60E-09
Aroclor-1260	0.08	85.3	1.03E-08
Bis(2-ethylhexyl)phthalate	0.351	13,400	2.62E-10
Butylbenzylphthalate	0.085	5380	1.580E-10
Methylene Chloride	0.0084	89,300	9.41E-13
		Total Excess Cancer Risk	**1E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-138
Construction Worker Noncarcinogenic Screening Evaluation for SWMU 32-002(b2)

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	HQ
Antimony	3.72	142	2.62E-02
Arsenic	2.57	41.2	6.24E-02
Barium	59.4	4390	1.35E-02
Chromium (Total)	46	134	3.43E-01
Copper	4.43	14,200	3.12E-04
Cyanide (Total)	0.59(U)	12	4.92E-02
Lead	21.9	800	2.74E-02
Mercury	3.35	77.1	4.35E-02
Nickel	14	753	1.86E-02
Nitrate	2.7	566,000	4.77E-06
Perchlorate	0.006	248	2.42E-05
Selenium	0.389	1750	2.22E-04
Silver	1.77	1770	1.00E-03
Bis(2-ethylhexyl)phthalate	0.389	1750	2.22E-04
Methylene Chloride	0.0084	1200	7.00E-06
		HI	**6E-01**

* SSLs from NMED (2017, 602273) unless otherwise noted.

Table G-4.2-139
Construction Worker Radionuclide Screening Evaluation for SWMU 32-002(b2)

COPC	EPC (pCi/g)	Construction Worker SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-239/240	0.171	200	2.14E-02
Strontium-90	0.45	1400	8.04E-03
Uranium-235/236	0.104	130	2.00E-02
		Total Dose	**5E-02**

* SALs from LANL (2015, 600929).

Table G-4.2-140
Residential Carcinogenic Screening Evaluation for SWMU 32-002(b2)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
Arsenic	2.57	7.07	3.64E-06
Chromium (Total)	46	96.6	4.76E-06
Nickel	14	595,000	2.35E-10
Aroclor-1260	0.088	2.43	3.62E-07
Bis(2-ethylhexyl)phthalate	0.32	380	8.42E-09
Butylbenzylphthalate	0.085	2900	2.93E-10
Methylene Chloride	0.0084	766	1.10E-10
Total Excess Cancer Risk			**9E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-141
Residential Noncarcinogenic Screening Evaluation for SWMU 32-002(b2)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	HQ
Antimony	3.72	31.3	1.19E-01
Arsenic	2.57	13	1.98E-01
Barium	59.4	15,600	3.81E-03
Chromium (Total)	46	45,200	1.02E-03
Copper	4.43	3130	1.42E-03
Cyanide (Total)	0.59(U)	11.1	5.32E-02
Lead	21.9	400	5.48E-02
Mercury	3.35	23.5	1.43E-01
Nickel	14	1560	8.97E-03
Nitrate	2.7	125,000	2.16E-05
Perchlorate	0.006	54.8	1.09E-04

Table G-4.2-141 (continued)

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	HQ
Selenium	0.389	391	9.95E-04
Silver	1.77	391	4.53E-03
Bis(2-ethylhexyl)phthalate	0.351	1230	2.85E-04
Methylene Chloride	0.0084	409	2.05E-05
HI			**6E-01**

* SSLs from NMED (2017, 602273) unless otherwise noted.

Table G-4.2-142
Residential Radionuclide Screening Evaluation for SWMU 32-002(b2)

COPC	EPC (pCi/g)	Residential SAL* (pCi/g)	Dose (mrem/yr)
Plutonium-239/240	0.171	79	5.41E-02
Strontium-90	0.45	15	7.50E-01
		Total Dose	**8E-01**

* SALs from LANL (2015, 600929).

Table G-4.2-143
Industrial Carcinogenic Screening Evaluation for AOC C-43-001

COPC	EPC (mg/kg)	Industrial SSL[a] (mg/kg)	Cancer Risk
Cadmium	0.46	417,000	1.10E-11
Chromium (Total)	43.5	505	8.61E-07
Nickel	5.5	2,890,000	1.90E-11
Aroclor-1254	0.2	11	1.82E-07
Aroclor-1260	0.027	11.1	2.43E-08
Bis(2-ethylhexyl)phthalate	0.34	1830	1.86E-09
Butylbenzylphthalate	0.17	12,000[b]	1.42E-10
		Total Excess Cancer Risk	**1E-06**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

Table G-4.2-144
Industrial Noncarcinogenic Screening Evaluation for AOC C-43-001

COPC	EPC (mg/kg)	Industrial SSL[a] (mg/kg)	HQ
Cadmium	0.46	1110	4.14E-04
Chromium (Total)	43.5	314,000	1.39E-04
Copper	17.2	51,900	3.31E-04
Lead	46.8	800	5.85E-02
Mercury	0.291	389	7.48E-04
Selenium	0.23	6490	3.54E-05
Zinc	127	389,000	3.26E-04
Aroclor-1254	0.2	16.4	1.22E-02
Bis(2-ethylhexyl)phthalate	0.34	18,300	1.86E-05
Bromomethane	0.00064	93.7	6.83E-06
Dibenzofuran	0.4	1000[b]	4.00E-04
		HI	**7E-02**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

Table G-4.2-145
Construction Worker Carcinogenic Screening Evaluation for AOC C-43-001

COPC	EPC (mg/kg)	Construction Worker SSL[a] (mg/kg)	Cancer Risk
Cadmium	0.221	3610	6.12E-10
Chromium (Total)	18.7	468	4.00E-07
Nickel	6.21	25,000	2.48E-09
Aroclor-1254	0.0951	85.3	1.11E-08
Aroclor-1260	0.023	85.3	2.70E-09
Bis(2-ethylhexyl)phthalate	0.284	13,400	2.12E-10
Butylbenzylphthalate	0.17	5380[b]	3.16E-10
		Total Excess Cancer Risk	**4E-07**

[a] SSLs from NMED (2017, 602273).

[b] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

Table G-4.2-146
Construction Worker Noncarcinogenic Screening Evaluation for AOC C-43-001

COPC	EPC (mg/kg)	Construction Worker SSL[a] (mg/kg)	HQ
Cadmium	0.221	72.1	3.07E-03
Chromium (Total)	18.7	134	1.40E-01
Copper	16.9	14,200	1.19E-03
Cyanide (Total)	1.3	12	1.08E-01
Lead	24.4	800	3.05E-02
Mercury	0.153	77.1	1.98E-03
Nickel	6.21	753	8.25E-03
Selenium	0.333	1750	1.90E-04
Zinc	85.1	106,000	8.03E-04
Acetone	0.049	241,000	2.03E-07
Aroclor-1254	0.0951	4.91	1.94E-02
Bis(2-ethylhexyl)phthalate	0.284	5380	5.28E-05
Bromomethane	0.00072	17.7	4.07E-05
Dibenzofuran	0.207	354[b]	5.85E-04
Isopropyltoluene[4-]	0.22	2710[c]	8.03E-05
Toluene	0.00063	14,000	4.50E-08
		HI	**3E-01**

[a] SSLs from NMED (2017, 602273).

[b] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

[c] Isopropyl benzene used as a surrogate based on structural similarity.

Table G-4.2-147
Construction Worker Radionuclide Screening Evaluation for AOC C-43-001

COPC	EPC (pCi/g)	Construction Worker SAL* (pCi/g)	Dose (mrem/yr)
Tritium	1.71	1,600,000	2.67E-05
		Total Dose	**3E-05**

* SALs from LANL (2015, 600929).

Table G-4.2-148
Residential Carcinogenic Screening Evaluation for AOC C-43-001

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	Cancer Risk
Cadmium	0.221	85,900	2.57E-11
Chromium (Total)	18.7	96.6	1.94E-06
Nickel	6.21	595,000	1.04E-10
Aroclor-1254	0.0951	2.43	3.91E-07
Aroclor-1260	0.023	2.43	9.47E-08
Bis(2-ethylhexyl)phthalate	0.284	380	7.47E-09
Butylbenzylphthalate	0.17	2900[b]	5.86E-10
		Total Excess Cancer Risk	**2E-06**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

Table G-4.2-149
Residential Noncarcinogenic Screening Evaluation for AOC C-43-001

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Cadmium	0.221	70.5	3.13E-03
Chromium (Total)	18.7	45,200	4.14E-04
Copper	16.9	3130	5.40E-03
Cyanide (Total)	1.3	11.1	1.17E-01
Lead	24.4	400	6.10E-02
Mercury	0.153	23.5	6.51E-03
Nickel	6.21	1560	3.98E-03
Selenium	0.333	391	8.52E-04
Zinc	85.1	23,500	3.62E-03
Acetone	0.049	66,300	7.39E-07
Aroclor-1254	0.0951	1.14	8.34E-02
Bis(2-ethylhexyl)phthalate	0.284	1230	2.31E-04
Bromomethane	0.00072	17.6	4.09E-05
Dibenzofuran	0.207	73[b]	2.84E-03
Isopropyltoluene[4-]	0.22	2350[c]	9.32E-05
Toluene	0.00063	5220	1.21E-07
		HI	**3E-01**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

[c] Isopropyl benzene used as a surrogate based on structural similarity.

Table G-4.2-150
Residential Radionuclide Screening Evaluation for AOC C-43-001

COPC	EPC (pCi/g)	Residential SAL* (pCi/g)	Dose (mrem/yr)
Tritium	1.71	1700	2.51E-02
		Total Dose	**3E-02**

* SALs from LANL (2015, 600929).

Table G-4.2-151
Industrial Carcinogenic Screening Evaluation for SWMU 61-007

COPC	EPC (mg/kg)	Industrial SSL* (mg/kg)	Cancer Risk
Aroclor-1260	1.9	11.1	1.71E-06
Bis(2-ethylhexyl)phthalate	0.079	1830	4.32E-10
		Total Excess Cancer Risk	**2E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-152
Industrial Noncarcinogenic Screening Evaluation for SWMU 61-007

COPC	EPC (mg/kg)	Industrial SSL[a] (mg/kg)	HQ
Acetone	0.00479	959,000	4.99E-09
Benzyl Alcohol	0.047	82,000[b]	5.73E-07
Bis(2-ethylhexyl)phthalate	0.079	18,300	4.32E-06
Dibenzofuran	0.093	1000[b]	9.30E-05
		HI	**1E-04**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

Table G-4.2-153
Construction Worker Carcinogenic Screening Evaluation for SWMU 61-007

COPC	EPC (mg/kg)	Construction Worker SSL* (mg/kg)	Cancer Risk
Aroclor-1260	10	85.3	1.17E-06
Bis(2-ethylhexyl)phthalate	0.079	13,400	5.90E-11
		Total Excess Cancer Risk	**1E-06**

* SSLs from NMED (2017, 602273).

Table G-4.2-154
Construction Worker Noncarcinogenic Screening Evaluation for SWMU 61-007

COPC	EPC (mg/kg)	Construction Worker SSL[a] (mg/kg)	HQ
Acetone	0.00479	241,000	1.99E-08
Benzyl Alcohol	0.064	26,900[b]	2.38E-06
Bis(2-ethylhexyl)phthalate	0.079	5380	1.47E-05
Dibenzofuran	0.093	354[b]	2.63E-04
		HI	**3E-04**

[a] SSLs from NMED (2017, 602273).

[b] Construction worker SSL calculated using toxicity value from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables) and equation and parameters from NMED (2017, 602273).

Table G-4.2-155
Residential Carcinogenic Screening Evaluation for SWMU 61-007

COPC	EPC (mg/kg)	Residential SSL* (mg/kg)	Cancer Risk
Aroclor-1260	10	2.43	4.12E-05
Bis(2-ethylhexyl)phthalate	0.079	380	2.08E-09
		Total Excess Cancer Risk	**4E-05**

* SSLs from NMED (2017, 602273).

Table G-4.2-156
Residential Noncarcinogenic Screening Evaluation for SWMU 61-007

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Acetone	0.00479	66,300	7.22E-08
Benzyl Alcohol	0.064	6300[b]	1.02E-05
Bis(2-ethylhexyl)phthalate	0.079	1230	6.42E-05
Dibenzofuran	0.093	73[b]	1.27E-03
		HI	**1E-03**

[a] SSLs from NMED (2017, 602273) unless otherwise noted.

[b] SSLs are from EPA regional screening tables (https://www.epa.gov/regional-screening-levels-rsls-generic-tables).

Table G-4.4-1
Essential Nutrient Screening Assessment

SWMU / AOC	Scenario	COPC	Maximum Concentration (mg/kg)	SSL (mg/kg)*	Ratio
00-017	Construction worker	Calcium	2700	11,100,000	2.43E-04
00-017	Residential	Calcium	2700	13,000,000	2.08E-04
01-001(d3)	Construction worker	Magnesium	2840	1,550,000	1.83E-03
01-001(d3)	Residential	Magnesium	2840	20,900,000	1.36E-04
01-001(s2)	Construction worker	Calcium	3560	11,100,000	3.21E-04
01-001(s2)	Construction worker	Magnesium	2060	1,550,000	1.33E-03
01-001(s2)	Residential	Calcium	3560	13,000,000	2.74E-04
01-001(s2)	Residential	Magnesium	2060	20,900,000	9.86E-05
01-002(a2)-00	Construction worker	Calcium	6290	11,100,000	5.67E-04
01-002(a2)-00	Residential	Calcium	6290	13,000,000	4.84E-04
01-003(a)	Construction worker	Calcium	15,100	11,100,000	1.36E-03
01-003(a)	Residential	Calcium	15,100	13,000,000	1.16E-03
01-003(b2)	Construction worker	Calcium	2630	11,100,000	2.37E-04
01-003(b2)	Construction worker	Magnesium	2090	1,550,000	1.35E-03
01-003(b2)	Residential	Calcium	2630	13,000,000	2.02E-04
01-003(b2)	Residential	Magnesium	2090	20,900,000	1.00E-04
01-006(a)	Industrial worker	Calcium	7640	40,600,000	1.88E-04
01-006(a)	Construction worker	Calcium	7640	11,100,000	6.88E-04
01-006(a)	Residential	Calcium	7640	13,000,000	5.88E-04
03-038(a)	Construction worker	Calcium	4740	11,100,000	4.27E-04
03-038(a)	Residential	Calcium	4740	13,000,000	3.65E-04
C-43-001	Industrial worker	Calcium	4670	40,600,000	1.15E-04
C-43-001	Construction worker	Calcium	4670	11,100,000	4.21E-04
C-43-001	Residential	Calcium	4670	13,000,000	3.59E-04

* SSLs from NMED (2017, 602273).

Table G-5.3-1
Ecological Screening Levels for Terrestrial Receptors

COPEC	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Generic Plant (terrestrial autotroph-producer)
Inorganic Chemicals (mg/kg)											
Aluminum	na*	na	na	na	na	na	na	na	na	na	na
Antimony	46	na	na	na	na	na	2.7	7.9	2.3	78	11
Arsenic	820	740	100	34	21	15	110	19	32	6.8	18
Barium	41000	24000	7500	720	770	820	2900	2100	1800	330	110
Beryllium	420	na	na	na	na	na	89	35	56	40	2.5
Cadmium	550	430	1.3	4.3	0.54	0.29	10	0.27	0.5	140	32
Calcium	na	na	na	na	na	na	na	na	na	na	na
Chromium (Total)	1800	860	170	51	32	23	410	63	110	na	na
Chromium hexavalent ion	7200	3600	1400	210	160	140	1600	510	850	0.34	0.35
Cobalt	5400	2300	620	130	97	76	1000	240	400	na	13
Copper	4000	1100	80	34	20	14	260	42	63	80	70
Cyanide (Total)	3300	0.59	0.36	0.1	0.099	0.098	790	330	330	na	na
Fluoride	13000	2200	910	170	140	120	2600	870	1100	na	na
Iron	na	na	na	na	na	na	na	na	na	na	na
Lead	3700	540	83	18	14	11	310	93	120	1700	120
Magnesium	na	na	na	na	na	na	na	na	na	na	na
Manganese	40000	60000	24000	1300	1600	2200	2000	2800	1400	450	220
Mercury	76	0.32	0.058	0.067	0.022	0.013	23	1.7	3	0.05	34

Table G-5.3-1 (cont.)

COPEC	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Generic Plant (terrestrial autotroph-producer)
Nickel	1200	2000	110	120	35	20	270	10	20	280	38
Nitrate	na	na	na	na	na	na	na	na	na	na	na
Perchlorate	3.3	2	3.9	0.12	0.24	31	0.26	31	0.21	3.5	40
Selenium	92	74	3.7	0.98	0.83	0.71	2.2	0.7	0.82	4.1	0.52
Silver	4400	600	13	10	4.1	2.6	150	14	24	na	560
Thallium	5	100	48	6.9	5.5	4.5	1.2	0.42	0.72	na	0.05
Vanadium	3200	110	56	6.8	5.5	4.7	740	290	470	na	60
Zinc	9600	2600	220	330	83	47	1800	99	170	120	160
Organic Chemicals (mg/kg)											
Acenaphthene	29000	na	na	na	na	na	530	130	160	na	0.25
Acetone	7800	66000	840	7.5	14	170	1.6	15	1.2	na	na
Anthracene	38000	na	na	na	na	na	1200	210	300	na	6.8
Aroclor-1254	7.2	7.6	0.19	1.1	0.079	0.041	44	0.45	0.87	na	160
Aroclor-1260	15	400	4.2	37	1.7	0.88	1800	10	20	na	na
Benzo(a)anthracene	110	28	6.4	0.73	0.8	0.88	6.1	4	3.4	na	18
Benzo(a)pyrene	3400	na	na	na	na	na	260	62	84	na	na
Benzo(b)fluoranthene	2400	na	na	na	na	na	130	44	51	na	18
Benzo(g,h,i)perylene	3600	na	na	na	na	na	470	25	46	na	na
Benzo(k)fluoranthene	4300	na	na	na	na	na	330	71	99	na	na
Benzoic Acid	2000	na	na	na	na	na	4.6	1	1.3	na	na
Benzyl Alcohol	110000	na	na	na	na	na	190	270	120	na	na

Table G-5.3-1 (cont.)

COPEC	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Generic Plant (terrestrial autotroph-producer)
Bis(2-ethylhexyl)phthalate	500	9.3	0.096	16	0.04	0.02	1900	0.6	1.1	na	na
Bromobenzene	na	na	na	na	na	na	na	na	na	na	na
Bromomethane	na	na	na	na	na	na	na	na	na	na	na
Butanone[2-]	1300000	na	na	na	na	na	470	2700	350	na	na
Butylbenzylphthalate	23000	na	na	na	na	na	2400	90	160	na	na
Chlorotoluene[4-]	na	na	na	na	na	na	na	na	na	na	na
Chrysene	110	na	na	na	na	na	6.3	3.1	3.1	na	na
Di-n-butylphthalate	62000	2	0.052	0.38	0.021	0.011	17000	180	360	na	160
Dibenz(a,h)anthracene	850	na	na	na	na	na	84	14	22	na	na
Dibenzofuran	na	na	na	na	na	na	na	na	na	na	6.1
Dichlorobenzene[1,2-]	480	na	na	na	na	na	12	0.92	1.5	na	na
Ethylbenzene	na	na	na	na	na	na	na	na	na	na	na
Fluoranthene	3900	na	na	na	na	na	270	22	38	10	na
Fluorene	50000	na	na	na	na	na	1100	250	340	3.7	na
Hexanone[2-]	5900	290	1.7	0.47	0.41	0.36	17	5.4	6.1	na	na
Indeno(1,2,3-cd)pyrene	4600	na	na	na	na	na	510	71	110	na	na
Isopropyltoluene[4-]	na	na	na	na	na	na	na	na	na	na	na
Methylene Chloride	4300	na	na	na	na	na	3.8	9.2	2.6	na	1600
Methylnaphthalene[2-]	4900	na	na	na	na	na	110	16	24	na	na
Naphthalene	5800	2100	78	3.4	5.7	15	14	28	9.6	na	1
Pentachlorophenol	230	57	1.7	29	0.72	0.36	180	0.81	1.5	31	5
Phenanthrene	1900	na	na	na	na	na	62	11	15	5.5	na

Table G-5.3-1 (cont.)

COPEC	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Generic Plant (terrestrial autotroph-producer)
Propylbenzene[1-]	na	na	na	na	na	na	na	na	na	na	na
Pyrene	3100	3000	160	68	44	33	110	23	31	10	na
Styrene	na	na	na	na	na	na	na	na	na	1.2	3.2
Toluene	12000	na	na	na	na	na	66	23	25	na	200
Trichlorofluoromethane	62000	na	na	na	na	na	1800	52	97	na	na
Trimethylbenzene[1,2,4-]	na	na	na	na	na	na	na	na	na	na	na
Xylene[1,2-]	na	na	na	na	na	na	na	na	na	na	na
Xylene[1,3-]+Xylene[1,4-]	na	na	na	na	na	na	na	na	na	na	na
Radionuclides (pCi/g)											
Americium-241	26000	57000	43000	4600	6100	10000	26000	34000	33000	190	500
Cesium-134	730	980	1000	680	1200	2100	790	1100	1100	1000	700
Cesium-137	1500	3700	4200	1400	2600	4500	1700	2400	2300	2300	1500
Plutonium-238	45000	110000	100000	4300	5900	10000	75000	190000	170000	820	1800
Plutonium-239/240	51000	130000	120000	4400	6100	10000	94000	320000	280000	870	1900
Strontium-90	800	1700	2400	340	790	2800	1300	1700	1600	1700	1100
Tritium	240000	550000	610000	300000	440000	600000	270000	340000	330000	48000	36000
Uranium-234	110000	260000	260000	14000	27000	69000	36000	140000	120000	2200	440
Uranium-235/236	5200	10000	10000	6300	7900	9500	4700	5200	5200	1600	440
Uranium-238	2100	4200	4200	3300	3700	4000	2000	2100	2100	1100	400

*na = Not available.

Table G-5.3-2
Minimum ESL Comparison for SWMU 00-017

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Antimony	12(UJ)	2.3	Deer mouse	**5.22**
Barium	81.2	110	Plant	**0.74**
Cadmium	0.151	0.27	Shrew	**0.56**
Chromium (Total)	9.26	23	Robin (insectivore)	**0.4**
Cyanide (Total)	0.22	0.098	Robin (insectivore)	**2.24**
Lead	175	11	Robin (insectivore)	**15.9**
Mercury	0.036	0.013	Robin (insectivore)	**2.77**
Nickel	5.96	10	Shrew	**0.6**
Selenium	0.296	0.52	Plant	**0.57**
Silver	0.637	2.6	Robin (insectivore)	0.25
Thallium	2.4(U)	0.05	Plant	**48**
Radionuclides (pCi/g)				
Americium-241	0.21	190	Earthworm	0.0011
Cesium-137	0.54	1400	Robin (herbivore)	0.00039
Plutonium-239/240	0.281	870	Earthworm	0.00032
Tritium	0.17	36000	Plant	0.0000047

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-3
HI Analysis for SWMU 00-017

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Antimony	12(UJ)	0.26	na*	na	na	na	na	**4.44**	**1.52**	**5.22**	0.15	**1.09**
Barium	81.2	0.002	0.0034	0.011	0.11	0.11	0.099	0.028	0.039	0.045	0.25	**0.74**
Cadmium	0.151	2.70E-04	3.50E-04	0.12	0.035	0.28	**0.52**	0.015	**0.56**	**0.3**	0.0011	0.0047
Chromium (Total)	9.26	0.0051	0.011	0.054	0.18	0.29	**0.4**	0.023	0.15	0.084	na	na
Cyanide (Total)	0.22	6.7E-05	**0.37**	**0.61**	**2.2**	**2.22**	**2.24**	2.8E-04	6.7E-04	6.7E-04	na	na
Lead	175	0.047	**0.32**	**2.11**	**9.72**	**12.5**	**15.9**	**0.56**	**1.88**	**1.46**	0.1	**1.46**
Mercury	0.036	4.7E-04	0.11	**0.62**	**0.54**	**1.64**	**2.77**	0.0016	0.021	0.012	**0.72**	0.0011
Nickel	5.96	0.005	0.003	0.054	0.05	0.17	0.3	0.022	**0.6**	0.3	0.021	0.16
Selenium	0.296	0.0032	0.004	0.08	0.3	**0.36**	**0.42**	0.13	**0.42**	**0.36**	0.072	**0.57**
Thallium	2.4(U)	**0.48**	0.024	0.05	**0.35**	**0.44**	**0.53**	**2**	**5.71**	**3.33**	na	**48**
	HI	0.8	0.8	**4**	**13**	**18**	**23**	**7**	**11**	**11**	1	**52**

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.
*na = Not available.

Table G-5.3-4
Minimum ESL Comparison for AOC C-00-044

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Antimony	1.92(U)	2.3	Deer mouse	**0.83**
Lead	75.2	11	Robin (insectivore)	**6.84**
Selenium	0.47	0.52	Plant	**0.9**
Zinc	45.7	47	Robin (insectivore)	**0.97**
Organic Chemicals (mg/kg)				
Bis(2-ethylhexyl)phthalate	0.95	0.02	Robin (insectivore)	**47.5**
Butylbenzylphthalate	0.685	90	Shrew	0.0076

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-5
HI Analysis for AOC C-00-044

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Antimony	1.92(U)	0.042	na*	na	na	na	na	**0.71**	0.24	**0.83**	0.025	0.17
Lead	75.2	0.02	0.14	**0.91**	**4.18**	**5.37**	**6.84**	0.24	**0.81**	**0.63**	0.044	**0.63**
Selenium	0.47	0.0051	0.0064	0.13	**0.48**	**0.57**	**0.66**	0.21	**0.67**	**0.57**	0.11	**0.9**
Zinc	45.7	0.0048	0.018	0.21	0.14	**0.55**	**0.97**	0.025	**0.46**	0.27	**0.38**	0.29
Bis(2-ethylhexyl)phthalate	0.95	0.0019	0.1	**9.9**	0.059	**23.8**	**47.5**	5.0E-04	**1.58**	**0.86**	na	na
	HI	0.07	0.3	**11**	**5**	**30**	**56**	1	**4**	**3**	0.6	**2**

Notes: Bolded values indicate HQs greater than 0.3 or HI greater than 1. Data qualifiers are defined in Appendix A.
*na = Not available.

Table G-5.3-6
Minimum ESL Comparison for SWMU 01-001(a)

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Barium	54.7	110	Plant	**0.5**
Chromium (Total)	10.3	23	Robin (insectivore)	**0.45**
Copper	10	14	Robin (insectivore)	**0.71**
Cyanide (Total)	0.31	0.098	Robin (insectivore)	**3.16**
Lead	14.2	11	Robin (insectivore)	**1.29**
Nickel	6.16	10	Shrew	**0.62**
Perchlorate	0.0045	0.12	Robin (herbivore)	0.038
Selenium	0.252	0.52	Plant	**0.48**
Silver	1.86	2.6	Robin (insectivore)	**0.72**
Vanadium	9.09	4.7	Robin (insectivore)	**1.93**
Organic Chemicals (mg/kg)				
Acenaphthene	0.082	0.25	Plant	**0.33**
Acetone	0.0025	1.2	Deer mouse	0.0021
Anthracene	0.14	6.8	Plant	0.021
Aroclor-1254	0.13	0.041	Robin (insectivore)	**3.17**
Aroclor-1260	0.011	0.88	Robin (insectivore)	0.013
Benzo(a)anthracene	0.16	0.73	Robin (herbivore)	0.22
Benzo(a)pyrene	0.14	62	Shrew	0.0023
Benzo(b)fluoranthene	0.1	18	Plant	0.0056
Benzo(g,h,i)perylene	0.049	25	Shrew	0.002
Benzo(k)fluoranthene	0.13	71	Shrew	0.0018
Bis(2-ethylhexyl)phthalate	0.28	0.02	Robin (insectivore)	**14**
Chrysene	0.16	3.1	Shrew	0.052
Fluoranthene	0.36	10	Earthworm	0.036
Fluorene	0.071	3.7	Earthworm	0.019
Indeno(1,2,3-cd)pyrene	0.047	71	Shrew	0.00066
Methylene Chloride	0.00502	2.6	Deer mouse	0.0019
Phenanthrene	0.44	5.5	Earthworm	0.08
Pyrene	0.34	10	Earthworm	0.034

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-7
HI Analysis for SWMU 01-001(a)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Barium	54.7	0.0013	0.0023	0.0073	0.076	0.071	0.067	0.019	0.026	0.03	0.17	**0.5**
Chromium (Total)	10.3	0.0057	0.012	0.061	0.2	**0.32**	**0.45**	0.025	0.16	0.094	na*	na
Copper	10	0.0025	0.0091	0.13	0.29	**0.5**	**0.71**	0.038	0.24	0.16	0.13	0.14
Cyanide (Total)	0.31	9.4E-05	**0.53**	**0.86**	**3.1**	**3.13**	**3.16**	3.9E-04	9.4E-04	9.4E-04	na	na
Lead	14.2	0.0038	0.026	0.17	**0.79**	**1.01**	**1.29**	0.046	0.15	0.12	0.0084	0.12
Nickel	6.16	0.0051	0.0031	0.056	0.051	0.18	**0.31**	0.023	**0.62**	**0.31**	0.022	0.16
Selenium	0.252	0.0027	0.0034	0.068	0.26	0.3	**0.35**	0.11	**0.36**	**0.31**	0.061	**0.48**
Silver	1.86	4.2E-04	0.0031	0.14	0.19	**0.45**	**0.72**	0.012	0.13	0.078	na	0.0033
Vanadium	9.09	0.0028	0.083	0.16	**1.34**	**1.65**	**1.93**	0.012	0.031	0.019	na	0.15
Acenaphthene	0.082	2.8E-06	na	na	na	na	na	1.5E-04	6.3E-04	5.1E-04	na	**0.33**
Aroclor-1254	0.13	0.018	0.017	**0.68**	0.12	**1.65**	**3.17**	0.003	0.29	0.15	na	8.1E-04
Bis(2-ethylhexyl)phthalate	0.28	5.6E-04	0.03	**2.92**	0.018	**7**	**14**	1.5E-04	**0.47**	0.25	na	na
HI		0.04	0.7	**5**	**6**	**16**	**26**	0.3	**2**	**2**	0.4	**2**

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.
* na = Not available.

Table G-5.3-8
Minimum ESL Comparison for SWMU 01-001(d3)

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Antimony	27.4	2.3	Deer mouse	**11.9**
Arsenic	1.2	6.8	Earthworm	0.18
Barium	38.7	110	Plant	**0.35**
Beryllium	0.828	2.5	Plant	**0.33**
Cadmium	0.131	0.27	Shrew	**0.49**
Chromium (Total)	8.85	23	Robin (insectivore)	**0.38**
Chromium hexavalent ion	1.32	0.34	Earthworm	**3.88**
Copper	8.87	14	Robin (insectivore)	**0.63**
Lead	17.6	11	Robin (insectivore)	**1.6**
Manganese	261	220	Plant	**1.19**
Mercury	7.77	0.013	Robin (insectivore)	**598**
Nickel	4.3	10	Shrew	**0.43**
Perchlorate	0.00644	0.12	Robin (herbivore)	0.05
Selenium	0.497	0.52	Plant	**0.96**
Silver	0.94	2.6	Robin (insectivore)	**0.36**
Vanadium	8.87	4.7	Robin (insectivore)	**1.89**
Zinc	48.4	47	Robin (insectivore)	**1.03**
Organic Chemicals (mg/kg)				
Acetone	0.0073	1.2	Deer mouse	0.0061
Aroclor-1254	0.0733	0.041	Robin (insectivore)	**1.79**
Aroclor-1260	0.0569	0.88	Robin (insectivore)	0.065
Bis(2-ethylhexyl)phthalate	0.88	0.02	Robin (insectivore)	**44**
Di-n-butylphthalate	0.21	0.011	Robin (insectivore)	**19.1**
Methylene Chloride	0.0012	2.6	Deer mouse	0.00046
Pentachlorophenol	0.8	0.36	Robin (insectivore)	**2.22**
Toluene	0.00083	23	Shrew	0.000036
Radionuclides (pCi/g)				
Americium-241	0.12	190	Earthworm	0.00063
Cesium-137	0.242	1400	Robin (herbivore)	0.00017
Plutonium-238	0.54	820	Earthworm	0.00066
Plutonium-239/240	152	870	Earthworm	0.17
Strontium-90	0.341	340	Robin (herbivore)	0.001

Table G-5.3-9
HI Analysis for SWMU 01-001(d3)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Antimony	27.4	**0.6**	na*	na	na	na	na	**10.1**	**3.47**	**11.9**	**0.35**	**2.49**
Barium	38.7	9.4E-04	1.6E-03	5.2E-03	5.4E-02	5.0E-02	4.7E-02	1.3E-02	1.8E-02	2.2E-02	1.2E-01	3.5E-01
Beryllium	0.828	0.002	na	na	na	na	na	0.0093	0.024	0.015	0.021	**0.33**
Cadmium	0.131	2.4E-04	3.0E-04	0.1	0.03	0.24	**0.45**	0.013	**0.49**	0.26	9.4E-04	0.0041
Chromium (Total)	8.85	0.0049	0.01	0.052	0.17	0.28	**0.38**	0.022	0.14	0.08	na	na
Chromium hexavalent ion	1.32	1.8E-04	3.67E-04	9.43E-04	0.0063	0.0082	0.0094	8.8E-04	0.0026	0.0016	**3.88**	**3.77**
Copper	8.87	0.0022	0.0081	0.11	0.26	**0.44**	**0.63**	0.034	0.21	0.14	0.11	0.13
Lead	17.6	4.8E-03	3.3E-02	2.1E-01	9.8E-01	1.3E+00	1.6E+00	5.7E-02	1.9E-01	1.5E-01	1.0E-02	1.5E-01
Manganese	261	0.0065	0.0044	0.011	0.2	0.16	0.12	0.13	0.093	0.19	**0.58**	**1.19**
Mercury	7.77	1.0E-01	2.4E+01	1.3E+02	1.2E+02	3.5E+02	6.0E+02	3.4E-01	4.6E+00	2.6E+00	1.6E+02	2.3E-01
Nickel	4.3	0.0036	0.0022	0.039	0.036	0.12	0.22	0.016	**0.43**	0.22	0.015	0.11
Selenium	0.497	0.0054	0.0067	0.13	**0.51**	**0.6**	**0.7**	0.23	**0.71**	**0.61**	0.12	**0.96**
Silver	0.94	2.1E-04	0.0016	0.072	0.094	0.23	**0.36**	0.0063	0.067	0.04	na	0.0017
Vanadium	8.87	0.0028	0.081	0.16	**1.3**	**1.61**	**1.89**	0.012	0.03	0.019	na	0.15
Zinc	48.4	0.005	0.019	0.22	0.15	**0.58**	**1.03**	0.027	**0.49**	0.28	**0.4**	0.3
Aroclor-1254	0.0733	0.01	0.0096	**0.39**	0.067	**0.93**	**1.79**	0.0017	0.16	0.084	na	4.6E-04
Bis(2-ethylhexyl)phthalate	0.88	0.0018	0.095	**9.17**	0.055	**22**	**44**	4.6E-04	**1.47**	**0.8**	na	na
Di-n-butylphthalate	0.21	3.4E-06	0.11	**4.04**	**0.55**	**10**	**19.1**	1.2E-05	0.0012	5.8E-04	na	0.0013
Pentachlorophenol	0.8	0.0035	0.014	**0.47**	0.028	**1.11**	**2.22**	0.0044	**0.99**	**0.53**	0.026	0.16
HI		0.7	**25**	**149**	**120**	**392**	**671**	**11**	**13**	**18**	**160**	**10**

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.
* na = Not available.

Table G-5.3-10
Minimum ESL Comparison for SWMU 01-001(f)

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Antimony	0.513	2.3	Deer mouse	0.22
Cadmium	0.152	0.27	Shrew	**0.56**
Chromium	5.37	23	Robin (insectivore)	0.23
Cobalt	1.88	13	Plant	0.15
Copper	6.02	14	Robin (insectivore)	**0.43**
Cyanide (Total)	0.72	0.098	Robin (insectivore)	**7.35**
Lead	14.8	11	Robin (insectivore)	**1.4**
Manganese	266	220	Plant	**1.2**
Nickel	4.09	10	Shrew	**0.41**
Selenium	0.262	0.52	Plant	**0.5**
Vanadium	9.44	4.7	Robin (insectivore)	**2**
Zinc	50.3	47	Robin (insectivore)	**1.1**
Organic Chemicals (mg/kg)				
Acenaphthene	0.0355	0.25	Plant	0.14
Acetone	0.00605	1.2	Deer mouse	0.005
Anthracene	0.082	6.8	Plant	0.01
Aroclor-1254	6.06	0.041	Robin (insectivore)	**148**
Aroclor-1260	1.9	0.88	Robin (insectivore)	**2.2**
Benzo(a)anthracene	0.295	0.73	Robin (herbivore)	**0.4**
Benzo(a)pyrene	0.294	62	Shrew	0.005
Benzo(b)fluoranthene	0.397	18	Plant	0.02
Benzo(g,h,i)perylene	0.159	25	Shrew	0.006
Benzo(k)fluoranthene	0.235	71	Shrew	0.003
Benzoic Acid	0.567	1	Shrew	**0.57**
Benzyl Alcohol	0.175	120	Deer mouse	0.002
Bis(2-ethylhexyl)phthalate	0.266	0.02	Robin (insectivore)	**13.3**
Butylbenzylphthalate	0.192	90	Shrew	0.002
Chloroform	0.000411	8	Deer mouse	0.00005
Chrysene	0.353	3.1	Shrew	0.11
Dibenz(a,h)anthracene	0.171	14	Shrew	0.01
Dichlorobenzene[1,2-]	0.00033	0.92	Shrew	0.0004
Dichlorobenzene[1,4-]	0.000703	0.89	Shrew	0.0008
Fluoranthene	0.559	10	Earthworm	0.06
Fluorene	0.0377	3.7	Earthworm	0.01
Indeno(1,2,3-cd)pyrene	0.143	71	Shrew	0.002
Phenanthrene	0.344	5.5	Earthworm	0.06

Table G-5.3-10 (continued)

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Pyrene	0.606	10	Earthworm	0.06
Styrene	0.00109	1.2	Earthworm	0.0009
Toluene	0.00165	23	Shrew	7.2E-05
Xylene[1,3-]+Xylene[1,4-]	0.000843	1.4	Shrew	0.0006
Radionuclides (pCi/g)				
Americium-241	0.0456	190	Earthworm	0.0002
Plutonium-239/240	0.0902	870	Earthworm	0.0001
Uranium-234	9.49	440	Plant	0.02
Uranium-235/236	0.492	440	Plant	0.001
Uranium-238	10.3	400	Plant	0.03

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-11
HI Analysis for SWMU 01-001(f)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Cadmium	0.152	2.8E-04	3.5E-04	0.12	0.035	0.28	**0.52**	0.015	**0.56**	0.3	0.0011	0.0048
Copper	6.02	0.0015	0.0055	0.075	0.18	0.3	**0.43**	0.023	0.14	0.096	0.075	0.086
Cyanide (Total)	0.72	2.2E-04	**1.22**	**2**	**7.2**	**7.27**	**7.35**	9.1E-04	0.0022	0.0022	na*	na
Lead	14.8	0.004	0.027	0.18	**0.82**	**1.06**	**1.35**	0.048	0.16	0.12	0.0087	0.12
Manganese	266	0.0067	0.0044	0.011	0.2	0.17	0.12	0.13	0.095	0.19	**0.59**	**1.21**
Nickel	4.09	0.0034	0.002	0.037	0.034	0.12	0.2	0.015	**0.41**	0.2	0.015	0.11
Selenium	0.262	0.0028	0.0035	0.071	0.27	**0.32**	**0.37**	0.12	**0.37**	**0.32**	0.064	**0.5**
Vanadium	9.44	0.003	0.086	0.17	**1.39**	**1.72**	**2.01**	0.013	0.033	0.02	na	0.16
Zinc	50.3	0.0052	0.019	0.23	0.15	**0.61**	**1.07**	0.028	**0.51**	0.3	**0.42**	**0.31**
Aroclor-1254	6.06	**0.84**	**0.8**	**31.9**	**5.51**	**76.7**	**148**	0.14	**13.5**	**6.97**	na	0.038
Aroclor-1260	1.9	0.13	0.0048	**0.45**	0.051	**1.12**	**2.16**	0.0011	0.19	0.095	na	na
Benzo(a)anthracene	0.295	0.0027	0.011	0.046	**0.4**	**0.37**	**0.34**	0.048	0.074	0.087	na	0.016
Benzoic Acid	0.567	2.8E-04	na	na	na	na	na	0.12	**0.57**	**0.44**	na	na
Bis(2-ethylhexyl)phthalate	0.266	5.3E-04	0.029	**2.77**	0.017	**6.65**	**13.3**	1.4E-04	**0.44**	0.24	na	na
	HI	1	**2**	**38**	**16**	**97**	**177**	1	**17**	**9**	1	**3**

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.
* na = Not available.

Table G-5.3-12
Minimum ESL Comparison for SWMU 01-001(g)

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Chromium (Total)	13.9	23	Robin (insectivore)	**0.6**
Nickel	7	10	Shrew	**0.7**
Perchlorate	0.0044	0.12	Robin (herbivore)	0.037
Selenium	0.258	0.52	Plant	**0.5**
Organic Chemicals (mg/kg)				
Aroclor-1260	0.021	0.88	Robin (insectivore)	0.024
Bis(2-ethylhexyl)phthalate	0.074	0.02	Robin (insectivore)	**3.7**
Methylene Chloride	0.00504	2.6	Deer mouse	0.0019
Radionuclides (pCi/g)				
Plutonium-238	0.0815	820	Earthworm	0.000099
Plutonium-239/240	23.8	870	Earthworm	0.027
Uranium-235/236	0.22	440	Plant	0.0005

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-13
HI Analysis for SWMU 01-001(g)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Chromium (Total)	13.9	0.0077	0.016	0.082	0.27	**0.43**	**0.6**	0.034	0.22	0.13	na*	na
Nickel	7	0.0058	0.0035	0.064	0.058	0.2	**0.35**	0.026	**0.7**	**0.35**	0.025	0.18
Selenium	0.258	0.0028	0.0035	0.07	0.26	**0.31**	**0.36**	0.12	**0.37**	**0.31**	0.063	**0.5**
Bis(2-ethylhexyl)phthalate	0.074	1.5E-04	0.008	**0.77**	0.0046	**1.85**	**3.7**	3.9E-05	0.12	0.067	na	na
	HI	0.02	0.03	**1**	0.6	**3**	**5**	0.2	1	0.9	0.09	0.7

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.

*na = Not available.

Table G-5.3-14
Minimum ESL Comparison for SWMU 01-001(o)

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Antimony	1.4(U)	2.3	Deer mouse	**0.61**
Cadmium	3.6	0.27	Shrew	**13.3**
Chromium (Total)	11.4	23	Robin (insectivore)	**0.5**
Copper	67.1	14	Robin (insectivore)	**4.79**
Cyanide (Total)	0.15	0.098	Robin (insectivore)	**1.53**
Lead	25.1	11	Robin (insectivore)	**2.28**
Mercury	0.161	0.013	Robin (insectivore)	**12.4**
Nickel	6.45	10	Shrew	**0.65**
Perchlorate	0.0025	0.12	Robin (herbivore)	0.021
Selenium	0.225	0.52	Plant	**0.43**
Silver	0.364	2.6	Robin (insectivore)	0.14
Zinc	89.5	47	Robin (insectivore)	**1.9**
Organic Chemicals (mg/kg)				
Acetone	0.0049	1.2	Deer mouse	0.0041
Aroclor-1254	0.756	0.041	Robin (insectivore)	**18.4**
Aroclor-1260	0.247	0.88	Robin (insectivore)	0.28
Benzoic Acid	0.35	1	Shrew	**0.35**
Bis(2-ethylhexyl)phthalate	0.12	0.02	Robin (insectivore)	**6**
Di-n-butylphthalate	1.1	0.011	Robin (insectivore)	**100**
Methylene Chloride	0.00073	2.6	Deer mouse	0.00028
Radionuclides (pCi/g)				
Americium-241	0.16	190	Earthworm	0.00084
Cesium-137	0.108	1400	Robin (herbivore)	0.000077
Plutonium-238	0.015	820	Earthworm	0.000018
Plutonium-239/240	2.55	870	Earthworm	0.0029
Strontium-90	0.41	340	Robin (herbivore)	0.0012

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-15
HI Analysis for SWMU 01-001(o)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Antimony	1.4(U)	0.03	na*	na	na	na	na	**0.52**	0.18	**0.61**	0.018	0.13
Cadmium	3.6	0.0065	0.0084	**2.77**	**0.84**	**6.67**	**12.4**	**0.36**	**13.3**	**7.2**	0.026	0.11
Chromium (Total)	11.4	0.0063	0.013	0.067	0.22	**0.36**	**0.5**	0.028	0.18	0.1	na	na
Copper	67.1	0.017	0.061	**0.84**	**1.97**	**3.36**	**4.79**	0.26	**1.6**	**1.07**	**0.84**	**0.96**
Cyanide (Total)	0.15	4.5E-05	0.25	**0.42**	**1.5**	**1.52**	**1.53**	1.9E-04	4.5E-04	4.5E-04	na	na
Lead	25.1	0.0068	0.046	0.3	**1.39**	**1.79**	**2.28**	0.081	0.27	0.21	0.015	0.21
Mercury	0.161	0.0021	**0.5**	**2.78**	**2.4**	**7.32**	**12.4**	0.007	0.095	0.054	**3.22**	0.0047
Nickel	6.45	0.0054	0.0032	0.059	0.054	0.18	**0.32**	0.024	**0.65**	**0.32**	0.023	0.17
Selenium	0.225	0.0024	0.003	0.061	0.23	0.27	**0.32**	0.1	**0.32**	0.27	0.055	**0.43**
Zinc	89.5	0.0093	0.034	**0.41**	0.27	**1.08**	**1.9**	0.05	**0.9**	**0.53**	**0.75**	**0.56**
Aroclor-1254	0.756	0.11	0.099	**3.98**	**0.69**	**9.57**	**18.4**	0.017	**1.68**	**0.87**	na	0.0047
Benzoic Acid	0.35	1.8E-04	na	na	na	na	na	0.076	**0.35**	0.27	na	na
Bis(2-ethylhexyl)phthalate	0.12	2.4E-04	0.013	**1.25**	0.0075	**3**	**6**	6.3E-05	0.2	0.11	na	na
Di-n-butylphthalate	1.1	1.8E-05	**0.55**	**21.2**	**2.89**	**52.4**	**100**	6.5E-05	0.0061	0.0031	na	0.0069
	HI	0.2	**2**	**34**	**12**	**88**	**161**	**2**	**20**	**12**	**5**	**3**

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.

* na = Not available.

Table G-5.3-16
Minimum ESL Comparison for SWMU 01-001(s2)

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Antimony	0.11	2.3	Deer mouse	0.048
Arsenic	1.66	6.8	Earthworm	0.24
Barium	108	110	Plant	**0.98**
Chromium (Total)	10.3	23	Robin (insectivore)	**0.45**
Copper	10.5	14	Robin (insectivore)	**0.75**
Cyanide (Total)	0.86(U)	0.098	Robin (insectivore)	**8.78**
Lead	11.4	11	Robin (insectivore)	**1.04**
Nickel	7.84	10	Shrew	**0.78**
Selenium	0.352	0.52	Plant	**0.68**
Organic Chemicals (mg/kg)				
Acetone	0.006	1.2	Deer mouse	0.005
Aroclor-1254	0.21	0.041	Robin (insectivore)	**5.12**
Aroclor-1260	0.012	0.88	Robin (insectivore)	0.014
Methylene Chloride	0.028	2.6	Deer mouse	0.011
Radionuclides (pCi/g)				
Plutonium-239/240	0.56	870	Earthworm	0.00064
Tritium	0.71	36000	Plant	0.00002

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-17
HI Analysis for SWMU 01-001(s2)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Barium	108	0.0026	0.0045	0.014	0.15	0.14	0.13	0.037	0.051	0.06	**0.33**	**0.98**
Chromium (Total)	10.3	0.0057	0.012	0.061	0.2	**0.32**	**0.45**	0.025	0.16	0.094	na*	na
Copper	10.5	0.0026	0.0096	0.13	**0.31**	**0.53**	**0.75**	0.04	0.25	0.17	0.13	0.15
Cyanide (Total)	0.86(U)	2.6E-04	**1.46**	**2.39**	**8.6**	**8.69**	**8.78**	0.0011	0.0026	0.0026	na	na
Lead	11.4	0.0031	0.021	0.14	**0.63**	**0.81**	**1.04**	0.037	0.12	0.095	0.0067	0.095
Nickel	7.84	0.0065	0.0039	0.071	0.065	0.22	**0.39**	0.029	**0.78**	**0.39**	0.028	0.21
Selenium	0.352	0.0038	0.0048	0.095	**0.36**	**0.42**	**0.5**	0.16	**0.5**	**0.43**	0.086	**0.68**
Aroclor-1254	0.21	0.029	0.028	**1.11**	0.19	**2.66**	**5.12**	0.0048	**0.47**	0.24	na	0.0013
	HI	0.05	**2**	**4**	**11**	**14**	**17**	0.3	**2**	1	0.6	**2**

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.

* na = Not available.

Table G-5.3-18
Minimum ESL Comparison for SWMU 01-002(a2)-00

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Antimony	0.63(U)	2.3	Deer Mouse	0.27
Arsenic	1.67	6.8	Earthworm	0.25
Chromium (Total)	18.5	23	Robin (insectivore)	**0.8**
Copper	2.38	14	Robin (insectivore)	0.17
Cyanide (Total)	0.196	0.098	Robin (insectivore)	**2**
Lead	18.4	11	Robin (insectivore)	**1.67**
Nickel	9.56	10	Shrew	**0.96**
Selenium	0.306	0.52	Plant	**0.59**
Organic Chemicals (mg/kg)				
Acetone	0.0053	1.2	Deer mouse	0.0044
Aroclor-1254	0.21	0.041	Robin (insectivore)	**5.12**
Aroclor-1260	0.0073	0.88	Robin (insectivore)	0.0083
Bis(2-ethylhexyl)phthalate	0.12	0.02	Robin (insectivore)	**6**
Methylene Chloride	0.00324	2.6	Deer mouse	0.0012
Toluene	0.00055	23	Shrew	0.000024
Trichlorofluoromethane	0.00055	52	Shrew	0.000011
Radionuclides (pCi/g)				
Plutonium-239/240	0.16	870	Earthworm	0.00018
Tritium	0.92	36000	Plant	0.000026
Uranium-235/236	0.23	440	Plant	0.00052

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-19
HI Analysis for SWMU 01-002(a2)-00

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Chromium (Total)	18.5	0.01	0.022	0.11	**0.36**	**0.58**	**0.8**	0.045	0.29	0.17	na*	na
Cyanide (Total)	0.196	5.9E-05	**0.33**	**0.54**	**1.96**	**1.98**	**2**	2.5E-04	5.9E-04	5.9E-04	na	na
Lead	18.4	0.005	0.034	0.22	**1.02**	**1.31**	**1.67**	0.059	0.2	0.15	0.011	0.15
Nickel	9.56	0.008	0.0048	0.087	0.08	0.27	**0.48**	0.035	**0.96**	**0.48**	0.034	0.25
Selenium	0.306	0.0033	0.0041	0.083	**0.31**	**0.37**	**0.43**	0.14	**0.44**	**0.37**	0.075	**0.59**
Aroclor-1254	0.21	0.029	0.028	**1.11**	0.19	**2.66**	**5.12**	0.0048	**0.47**	0.24	na	0.0013
Bis(2-ethylhexyl)phthalate	0.12	2.4E-04	0.013	**1.25**	0.0075	**3**	**6**	6.3E-05	0.2	0.11	na	na
	HI	0.06	0.4	**3**	**4**	**10**	**17**	0.3	**3**	**2**	0.1	1

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.
* na = Not available.

Table G-5.3-20
Minimum ESL Comparison for SWMU 01-003(a)

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Arsenic	1.28	6.8	Earthworm	0.19
Barium	44.3	110	Plant	**0.4**
Chromium (Total)	11.8	23	Robin (insectivore)	**0.51**
Copper	6	14	Robin (insectivore)	**0.43**
Cyanide (Total)	1	0.098	Robin (insectivore)	**10.2**
Lead	18	11	Robin (insectivore)	**1.64**
Manganese	268	220	Plant	**1.22**
Mercury	0.102	0.013	Robin (insectivore)	**7.85**
Nickel	5.91	10	Shrew	**0.59**
Perchlorate	0.0023	0.12	Robin (herbivore)	0.019
Selenium	0.243	0.52	Plant	**0.47**
Vanadium	7.36	4.7	Robin (insectivore)	**1.57**
Zinc	45.9	47	Robin (insectivore)	**0.98**
Organic Chemicals (mg/kg)				
Acenaphthene	0.184	0.25	Plant	**0.74**
Acetone	0.078	1.2	Deer mouse	0.065
Anthracene	0.41	6.8	Plant	0.06
Aroclor-1254	2.65	0.041	Robin (insectivore)	**64.6**
Aroclor-1260	0.59	0.88	Robin (insectivore)	**0.67**
Benzo(a)anthracene	1.66	0.73	Robin (herbivore)	**2.27**
Benzo(a)pyrene	1.53	62	Shrew	0.025
Benzo(b)fluoranthene	2.06	18	Plant	0.11
Benzo(g,h,i)perylene	1.21	25	Shrew	0.048
Benzo(k)fluoranthene	1.85	71	Shrew	0.026
Benzoic Acid	1.6	1	Shrew	**1.6**
Bis(2-ethylhexyl)phthalate	0.38	0.02	Robin (insectivore)	**19**
Butylbenzylphthalate	0.036	90	Shrew	0.0004
Chrysene	2.27	3.1	Shrew	**0.73**
Di-n-butylphthalate	0.053	0.011	Robin (insectivore)	**4.82**
Dibenz(a,h)anthracene	0.456	14	Shrew	0.033
Dibenzofuran	0.145	6.1	Plant	0.024
Fluoranthene	6.36	10	Earthworm	**0.64**
Fluorene	0.199	3.7	Earthworm	0.054
Indeno(1,2,3-cd)pyrene	1.09	71	Shrew	0.015
Naphthalene	0.044	1	Plant	0.044
Phenanthrene	2.23	5.5	Earthworm	**0.41**
Pyrene	5.58	10	Earthworm	**0.56**

Table G-5.3-20 (continued)

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Radionuclides (pCi/g)				
Cesium-134	0.043	680	Robin (herbivore)	0.000063
Plutonium-238	0.015	820	Earthworm	0.000018
Plutonium-239/240	1.3	870	Earthworm	0.0015
Tritium	0.4	36000	Plant	0.000011
Uranium-234	1.59	440	Plant	0.0036
Uranium-235/236	0.16	440	Plant	0.00036
Uranium-238	1.4	400	Plant	0.0035

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-21
HI Analysis for SWMU 01-003(a)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Barium	44.3	0.0011	0.0018	0.0059	0.062	0.058	0.054	0.015	0.021	0.025	0.13	**0.4**
Chromium (Total)	11.8	0.0066	0.014	0.069	0.23	**0.37**	**0.51**	0.029	0.19	0.11	na*	na
Copper	6	0.0015	0.0055	0.075	0.18	0.3	**0.43**	0.023	0.14	0.095	0.075	0.086
Cyanide (Total)	1	3.0E-04	**1.69**	**2.78**	**10**	**10.1**	**10.2**	0.0013	0.003	0.003	na	na
Lead	18	0.0049	0.033	0.22	**1**	**1.29**	**1.64**	0.058	0.19	0.15	0.011	0.15
Manganese	268	0.0067	0.0045	0.011	0.21	0.17	0.12	0.13	0.096	0.19	**0.6**	**1.22**
Mercury	0.102	0.0013	**0.32**	**1.76**	**1.52**	**4.64**	**7.85**	0.0044	0.06	0.034	**2.04**	0.003
Nickel	5.91	0.0049	0.003	0.054	0.049	0.17	0.3	0.022	**0.59**	0.3	0.021	0.16
Selenium	0.243	0.0026	0.0033	0.066	0.25	0.29	**0.34**	0.11	**0.35**	0.3	0.059	**0.47**
Vanadium	7.36	0.0023	0.067	0.13	**1.08**	**1.34**	**1.57**	0.0099	0.025	0.016	na	0.12
Zinc	45.9	0.0048	0.018	0.21	0.14	**0.55**	**0.98**	0.026	**0.46**	0.27	**0.38**	0.29
Acenaphthene	0.184	6.3E-06	na	na	na	na	na	3.5E-04	0.0014	0.0012	na	**0.74**
Aroclor-1254	2.65	**0.37**	**0.35**	**13.9**	**2.41**	**33.5**	**64.6**	0.06	**5.89**	**3.05**	na	0.017
Aroclor-1260	0.59	0.039	0.0015	0.14	0.016	**0.35**	**0.67**	3.3E-04	0.059	0.03	na	na
Benzo(a)anthracene	1.66	0.015	0.059	0.26	**2.27**	**2.08**	**1.89**	0.27	**0.42**	**0.49**	na	0.092
Benzoic Acid	1.6	8.0E-04	na	na	na	na	na	**0.35**	**1.6**	**1.23**	na	na
Bis(2-ethylhexyl)phthalate	0.38	7.6E-04	0.041	**3.96**	0.024	**9.5**	**19**	2.0E-04	**0.63**	**0.35**	na	na
Chrysene	2.27	0.021	na	na	na	na	na	**0.36**	**0.73**	**0.73**	na	na
Di-n-butylphthalate	0.053	8.5E-07	0.027	**1.02**	0.14	**2.52**	**4.82**	3.1E-06	2.9E-04	1.5E-04	na	3.3E-04
Fluoranthene	6.36	0.0016	na	na	na	na	na	0.024	0.29	0.17	**0.64**	na

Table G-5.3-21 (continued)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Phenanthrene	2.23	0.0012	na	na	na	na	na	0.036	0.2	0.15	**0.41**	na
Pyrene	5.58	0.0018	0.0019	0.035	0.082	0.13	0.17	0.051	0.24	0.18	**0.56**	na
HI		0.5	**3**	**25**	**20**	**67**	**115**	**2**	**12**	**8**	**5**	**3**

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.

* na = Not available.

Table G-5.3-22
Minimum ESL Comparison for AOC 01-003(b2)

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Antimony	2.1(U)	2.3	Deer mouse	**0.91**
Barium	117	110	Plant	**1.06**
Beryllium	1.16	2.5	Plant	**0.46**
Chromium (Total)	7.72	23	Robin (insectivore)	**0.34**
Copper	6.71	14	Robin (insectivore)	**0.48**
Lead	34.2	11	Robin (insectivore)	**3.11**
Nickel	4.66	10	Shrew	**0.47**
Perchlorate	0.039	0.12	Robin (herbivore)	**0.33**
Selenium	0.853	0.52	Plant	**1.64**
Radionuclides (pCi/g)				
Plutonium-238	0.18	820	Earthworm	0.00022
Plutonium-239/240	1.07	870	Earthworm	0.0012

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-23
HI Analysis for AOC 01-003(b2)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Antimony	2.1(U)	0.046	na*	na	na	na	na	**0.78**	0.27	**0.91**	0.027	0.19
Barium	117	0.0029	0.0049	0.016	0.16	0.15	0.14	0.04	0.056	0.065	**0.35**	**1.06**
Beryllium	1.16	0.0028	na	na	na	na	na	0.013	0.033	0.021	0.029	**0.46**
Chromium (Total)	7.72	0.0043	0.009	0.045	0.15	0.24	**0.34**	0.019	0.12	0.07	na	na
Copper	6.71	0.0017	0.0061	0.084	0.2	**0.34**	**0.48**	0.026	0.16	0.11	0.084	0.096
Lead	34.2	0.0092	0.063	**0.41**	**1.9**	**2.44**	**3.11**	0.11	**0.37**	0.29	0.02	0.29
Nickel	4.66	0.0039	0.0023	0.042	0.039	0.13	0.23	0.017	**0.47**	0.23	0.017	0.12
Perchlorate	0.039	0.012	0.02	0.01	**0.33**	0.16	0.0013	0.15	0.0013	0.19	0.011	9.7E-04
Selenium	0.853	0.0093	0.012	0.23	**0.87**	**1.03**	**1.2**	**0.39**	**1.22**	**1.04**	0.21	**1.64**
	HI	0.1	0.1	0.8	**4**	**4**	**5**	**2**	**2**	**3**	0.7	**4**

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.

* na = Not available.

Table G-5.3-24
Minimum ESL Comparison for SWMU 01-003(d)

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Antimony	78.5	2.3	Deer mouse	**34.1**
Barium	55.2	110	Plant	**.50**
Cadmium	0.27	.27	Shew	**1**
Lead	13.3	11	Robin (insectivore)	**1.21**
Perchlorate	0.0043	0.12	Robin (herbivore)	0.036
Selenium	0.39	0.52	Plant	**0.75**
Zinc	53.3	47	Robin (insectivore)	**1.13**
Organic Chemicals (mg/kg)				
Aroclor-1260	0.043	0.88	Robin (insectivore)	0.049
Bis(2-ethylhexyl)phthalate	0.054	0.02	Robin (insectivore)	**2.7**
Toluene	0.0017	23	Shrew	0.000074
Radionuclides (pCi/g)				
Plutonium-239/240	0.234	870	Earthworm	0.00027

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-25
HI Analysis for SWMU 01-003(d)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Antimony	78.5	**1.71**	na*	na	na	na	na	**29.1**	**9.94**	**34.1**	**1.01**	**7.14**
Barium	55.2	0.0013	0.0023	0.074	**0.077**	**0.071**	**0.067**	0.019	0.026	0.031	.17	**.5**
Cadmium	.27	0.00049	0.00063	.21	0.063	**.5**	**.93**	0.027	**1**	.54	0.0019	0.0084
Lead	13.3	0.0036	0.025	0.16	**0.74**	**0.95**	**1.21**	0.043	0.14	0.11	0.0078	0.11
Selenium	0.39	0.0042	0.0053	0.11	**0.4**	**0.47**	**0.55**	0.18	**0.56**	**0.48**	0.095	**0.75**
Zinc	53.3	0.0056	0.021	0.24	0.16	**0.64**	**1.13**	0.03	**0.54**	**0.31**	**0.44**	**0.33**
Bis(2-ethylhexyl)phthalate	0.054	1.1E-04	0.0058	**0.56**	0.0034	**1.35**	**2.7**	2.8E-05	0.09	0.049	na	na
	HI	**2**	0.06	**1**	**1**	**3**	**6**	**29**	**11**	**35**	**2**	**8**

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.
* na = Not available.

Table G-5.3-26
Minimum ESL Comparison for SWMU 01-006(a)

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Antimony	0.61(U)	2.3	Deer mouse	0.27
Arsenic	2.6	6.8	Earthworm	**0.38**
Chromium (Total)	9.22	23	Robin (insectivore)	**0.4**
Copper	5.98	14	Robin (insectivore)	**0.43**
Cyanide (Total)	0.6(U)	0.098	Robin (insectivore)	**6.12**
Lead	16.8	11	Robin (insectivore)	**1.53**
Mercury	0.0567	0.013	Robin (insectivore)	**4.36**
Nickel	5.29	10	Shrew	**0.53**
Perchlorate	0.00582	0.12	Robin (herbivore)	0.049
Selenium	0.247	0.52	Plant	**0.48**
Organic Chemicals (mg/kg)				
Acetone	0.0049	1.2	Deer mouse	0.0041
Aroclor-1260	0.0252	0.88	Robin (insectivore)	0.029
Bis(2-ethylhexyl)phthalate	2.7	0.02	Robin (insectivore)	**135**
Di-n-butylphthalate	0.15	0.011	Robin (insectivore)	**13.6**
Methylene Chloride	0.00753	2.6	Deer mouse	0.0029
Radionuclides (pCi/g)				
Americium-241	0.47	190	Earthworm	0.0025
Plutonium-239/240	9.15	870	Earthworm	0.011
Uranium-234	1.74	440	Plant	0.004
Uranium-235/236	0.148	440	Plant	0.00034
Uranium-238	1.37	400	Plant	0.0034

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-27
HI Analysis for SWMU 01-006(a)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Arsenic	2.6	0.0032	0.0035	0.026	0.076	0.12	0.17	0.024	0.14	0.081	**0.38**	0.14
Chromium (Total)	9.22	0.0051	0.011	0.054	0.18	0.29	**0.4**	0.022	0.15	0.084	na*	na
Copper	5.98	0.0015	0.0054	0.075	0.18	0.3	**0.43**	0.023	0.14	0.095	0.075	0.085
Cyanide (Total)	0.6(U)	1.8E-04	**1.02**	**1.67**	**6**	**6.06**	**6.12**	7.6E-04	0.0018	0.0018	na	na
Lead	16.8	0.0045	0.031	0.2	**0.93**	**1.2**	**1.53**	0.054	0.18	0.14	0.0099	0.14
Mercury	0.0567	7.5E-04	0.18	**0.98**	**0.85**	**2.58**	**4.36**	0.0025	0.033	0.019	**1.13**	0.0017
Nickel	5.29	0.0044	0.0026	0.048	0.044	0.15	0.26	0.02	**0.53**	0.26	0.019	0.14
Selenium	0.247	0.0027	0.0033	0.067	0.25	0.3	**0.35**	0.11	**0.35**	0.3	0.06	**0.48**
Bis(2-ethylhexyl)phthalate	2.7	0.0054	0.29	**28.1**	0.17	**67.5**	**135**	0.0014	**4.5**	**2.45**	na	na
Di-n-butylphthalate	0.15	2.4E-06	0.075	**2.88**	**0.39**	**7.14**	**13.6**	8.8E-06	8.3E-04	4.2E-04	na	9.4E-04
HI		0.03	**2**	**34**	**9**	**86**	**162**	0.3	**6**	**3**	**2**	1

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.

* na = Not available.

Table G-5.3-28
Minimum ESL Comparison for AOC 01-006(e)

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Chromium (Total)	9.4	23	Robin (insectivore)	**0.41**
Cyanide (Total)	0.57(UJ)	0.098	Robin (insectivore)	**5.82**
Selenium	0.57(U)	0.52	Plant	**1.1**

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-29
HI Analysis for AOC 01-006(e)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Chromium (Total)	9.4	0.0052	0.011	0.055	0.18	0.29	**0.41**	0.023	0.15	0.085	na*	na
Cyanide (Total)	0.57(UJ)	1.7E-04	**0.97**	**1.58**	**5.7**	**5.76**	**5.82**	7.2E-04	0.0017	0.0017	na	na
Selenium	0.57(U)	0.0062	0.0077	0.15	**0.58**	**0.69**	**0.8**	0.26	**0.81**	**0.7**	0.14	**1.1**
HI		0.01	1	**2**	**6**	**7**	**7**	0.3	1	0.8	0.1	1

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.
* na = Not available.

Table G-5.3-30
Minimum ESL Comparison for SWMU 01-007(c)

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Antimony	0.1	2.3	Deer mouse	0.043
Chromium (Total)	12.7	23	Robin (insectivore)	**0.55**
Cyanide (Total)	0.17	0.098	Robin (insectivore)	**1.73**
Lead	38.3	11	Robin (insectivore)	**3.48**
Nickel	7.04	10	Shrew	**0.7**
Selenium	0.4	0.52	Plant	**0.77**
Organic Chemicals (mg/kg)				
Aroclor-1260	0.038	0.88	Robin (insectivore)	0.043
Styrene	0.00041	1.2	Earthworm	0.00034
Radionuclides (pCi/g)				
Plutonium-238	0.11	820	Earthworm	0.00013
Plutonium-239/240	0.46	870	Earthworm	0.00053

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-31
HI Analysis for SWMU 01-007(c)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Chromium (Total)	12.7	0.0071	0.015	0.075	0.25	**0.4**	**0.55**	0.031	0.2	0.12	na*	na
Cyanide (Total)	0.17	5.2E-05	0.29	**0.47**	**1.7**	**1.72**	**1.73**	2.2E-04	5.2E-04	5.2E-04	na	na
Lead	38.3	0.01	0.071	**0.46**	**2.13**	**2.74**	**3.48**	0.12	**0.41**	**0.32**	0.023	**0.32**
Nickel	7.04	0.0059	0.0035	0.064	0.059	0.2	**0.35**	0.026	**0.7**	**0.35**	0.025	0.19
Selenium	0.4	0.0043	0.0054	0.11	**0.41**	**0.48**	**0.56**	0.18	**0.57**	**0.49**	0.098	**0.77**
	HI	0.03	0.4	1	**5**	**6**	**7**	0.4	**2**	1	0.1	1

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.
* na = Not available.

Table G-5.3-32
Minimum ESL Comparison for SWMUs 03-038(a) and 03-038(b)

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Antimony	0.6(U)	2.3	Deer mouse	0.26
Barium	58.6	110	Plant	**0.53**
Chromium (Total)	14.1	23	Robin (insectivore)	**0.61**
Copper	5.3	14	Robin (insectivore)	**0.38**
Cyanide (Total)	0.54	0.098	Robin (insectivore)	**5.51**
Lead	13.5	11	Robin (insectivore)	**1.23**
Nickel	8.03	10	Shrew	**0.8**
Perchlorate	0.036	0.12	Robin (herbivore)	0.3
Selenium	0.248	0.52	Plant	**0.48**
Organic Chemicals (mg/kg)				
Aroclor-1254	0.039	0.041	Robin (insectivore)	**0.95**
Aroclor-1260	0.0251	0.88	Robin (insectivore)	0.029
Bis(2-ethylhexyl)phthalate	0.066	0.02	Robin (insectivore)	**3.3**
Hexanone[2-]	0.0056	0.36	Robin (insectivore)	0.016
Toluene	0.0006	23	Shrew	0.000026

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-33
HI Analysis for SWMUs 03-038(a) and 03-038(b)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Barium	58.6	0.0014	0.0024	0.0078	0.081	0.076	0.071	0.02	0.028	0.033	0.18	**0.53**
Chromium (Total)	14.1	0.0078	0.016	0.083	0.28	**0.44**	**0.61**	0.034	0.22	0.13	na*	na
Copper	5.3	0.0013	0.0048	0.066	0.16	0.27	**0.38**	0.02	0.13	0.084	0.066	0.076
Cyanide (Total)	0.54	1.6E-04	**0.92**	**1.5**	**5.4**	**5.45**	**5.51**	6.8E-04	0.0016	0.0016	na	na
Lead	13.5	0.0036	0.025	0.16	**0.75**	**0.96**	**1.23**	0.044	0.15	0.11	0.0079	0.11
Nickel	8.03	0.0067	0.004	0.073	0.067	0.23	**0.4**	0.03	**0.8**	**0.4**	0.029	0.21
Selenium	0.248	0.0027	0.0034	0.067	0.25	0.3	**0.35**	0.11	**0.35**	0.3	0.06	**0.48**
Aroclor-1254	0.039	0.0054	0.0051	0.21	0.035	**0.49**	**0.95**	8.9E-04	0.087	0.045	na	2.4E-04
Bis(2-ethylhexyl)phthalate	0.066	1.3E-04	0.0071	**0.69**	0.0041	**1.65**	**3.3**	3.5E-05	0.11	0.06	na	na
	HI	0.03	1	**3**	**7**	**10**	**13**	0.3	**2**	1	0.3	1

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.

* na = Not available.

Table G-5.3-34
Minimum ESL Comparison for SWMU 03-055(c)

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Arsenic	3.09	6.8	Earthworm	**0.45**
Copper	8.94	14	Robin (insectivore)	**0.64**
Lead	64.1	11	Robin (insectivore)	**5.83**
Selenium	1.13	0.52	Plant	**2.17**
Zinc	108	47	Robin (insectivore)	**2.38**
Organic Chemicals (mg/kg)				
Acenaphthene	0.135	0.25	Plant	**0.54**
Acetone	0.0065	1.2	Deer mouse	0.0054
Anthracene	0.277	6.8	Plant	0.041
Aroclor-1254	0.0176	0.041	Robin (insectivore)	**0.43**
Aroclor-1260	0.0186	0.88	Robin (insectivore)	0.021
Benzo(a)anthracene	0.507	0.73	Robin (herbivore)	**0.69**
Benzo(a)pyrene	0.321	62	Shrew	0.0052
Benzo(b)fluoranthene	0.552	18	Plant	0.031
Benzo(g,h,i)perylene	0.59	25	Shrew	0.024
Benzo(k)fluoranthene	0.065	71	Shrew	0.00092
Benzoic Acid	0.36	1	Shrew	**0.36**
Bis(2-ethylhexyl)phthalate	0.814	0.02	Robin (insectivore)	**40.7**
Butanone[2-]	0.0687	350	Deer mouse	0.0002
Chrysene	0.345	3.1	Shrew	0.11
Dibenzofuran	0.26	6.1	Plant	0.043
Fluoranthene	1.03	10	Earthworm	0.1
Fluorene	0.127	3.7	Earthworm	0.034
Indeno(1,2,3-cd)pyrene	0.61	71	Shrew	0.0086
Methylnaphthalene[2-]	0.0504	16	Shrew	0.0032
Naphthalene	0.138	1	Plant	0.14
Phenanthrene	1.1	5.5	Earthworm	0.2
Pyrene	1.65	10	Earthworm	0.17
Toluene	0.00062	23	Shrew	0.000027
Trichlorofluoromethane	0.013	52	Shrew	0.00025
Xylene[1,3-]+Xylene[1,4-]	0.0031	1.4	Shrew	0.0022
Radionuclides (pCi/g)				
Tritium	0.12	36000	Plant	0.0000033

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-35
HI Analysis for SWMU 03-055(c)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Arsenic	3.09	0.0038	0.0042	0.031	0.091	0.15	0.21	0.028	0.16	0.097	**0.45**	0.17
Copper	8.94	0.0022	0.0081	0.11	0.26	**0.45**	**0.64**	0.034	0.21	0.14	0.11	0.13
Lead	64.1	0.017	0.12	**0.77**	**3.56**	**4.58**	**5.83**	0.21	**0.69**	**0.53**	0.038	**0.53**
Selenium	1.13	0.012	0.015	**0.31**	**1.15**	**1.36**	**1.59**	**0.51**	**1.61**	**1.38**	0.28	**2.17**
Zinc	108	0.012	0.043	**0.51**	**0.34**	**1.35**	**2.38**	0.062	**1.13**	**0.66**	**0.93**	**0.7**
Acenaphthene	0.135	4.7E-06	na*	na	na	na	na	2.5E-04	0.001	8.4E-04	na	**0.54**
Aroclor-1254	0.0176	0.0024	0.0023	0.093	0.016	0.22	**0.43**	4.0E-04	0.039	0.02	na	1.1E-04
Benzo(a)anthracene	0.507	0.0046	0.018	0.079	**0.69**	**0.63**	**0.58**	0.083	0.13	0.15	na	0.028
Benzoic Acid	0.36	1.8E-04	na	na	na	na	na	0.078	**0.36**	0.28	na	na
Bis(2-ethylhexyl)phthalate	0.814	0.0016	0.088	**8.48**	0.051	**20.4**	**40.7**	4.3E-04	**1.36**	**0.74**	na	na
	HI	0.06	0.3	**10**	**6**	**29**	**52**	1	**6**	**4**	**2**	**4**

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.

* na = Not available.

Table G-5.3-36
Minimum ESL Comparison for SWMU 32-002(b2)

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Antimony	0.79	2.3	Deer mouse	**0.34**
Arsenic	3.65	6.8	Earthworm	**0.54**
Barium	79.8	110	Plant	**0.73**
Chromium (Total)	23.7	23	Robin (insectivore)	**1.03**
Copper	4.87	14	Robin (insectivore)	**0.35**
Cyanide (Total)	0.59	0.098	Robin (insectivore)	**6.02**
Lead	20.4	11	Robin (insectivore)	**1.86**
Mercury	4.21	0.013	Robin (insectivore)	**324**
Nickel	12.9	10	Shrew	**1.3**
Perchlorate	0.006	0.12	Robin (herbivore)	0.05
Selenium	0.321	0.52	Plant	**0.62**
Silver	3.17	2.6	Robin (insectivore)	**1.22**
Organic Chemicals (mg/kg)				
Aroclor-1260	0.04	0.88	Robin (insectivore)	0.45
Bis(2-ethylhexyl)phthalate	0.44	0.02	Robin (insectivore)	**22**
Methylene Chloride	0.004	2.6	Deer mouse	0.0015
Radionuclides (pCi/g)				
Plutonium-239/240	0.171	870	Earthworm	0.0002
Strontium-90	0.45	340	Robin (herbivore)	0.0013
Uranium-235/236	0.104	440	Plant	0.00026

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-37
HI Analysis for SWMUs 32-002(b2)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Antimony	0.79	0.017	na*	na	na	na	na	0.29	0.1	**0.34**	0.01	0.072
Arsenic	3.65	0.0045	0.0049	0.037	0.11	0.17	0.24	0.033	0.19	0.11	**0.54**	0.2
Barium	79.8	0.0019	0.0033	0.011	0.11	0.1	0.097	0.028	0.038	0.044	0.24	**0.73**
Chromium (Total)	23.7	0.013	0.028	0.14	**0.46**	**0.74**	**1.03**	0.058	**0.38**	0.22	na	na
Copper	4.87	0.0012	0.0044	0.061	0.14	0.24	**0.35**	0.019	0.12	0.077	0.061	0.07
Cyanide (Total)	0.59	0.00018	**1**	**1.64**	**5.9**	**5.96**	**6.02**	0.00075	0.0018	0.0018	na	na
Lead	20.4	0.0055	0.038	0.25	**1.13**	**1.46**	**1.85**	0.066	0.22	0.17	0.012	0.17
Mercury	4.21	0.055	**13.2**	**72.6**	**62.8**	**191**	**324**	0.18	**2.48**	**1.4**	**84.2**	0.12
Nickel	12.9	0.011	0.0065	0.12	0.11	**0.37**	**0.65**	0.048	**1.29**	**0.65**	0.046	**0.34**
Selenium	0.321	0.0035	0.0043	0.087	**0.33**	**0.39**	**0.45**	0.15	**0.46**	**0.39**	0.078	**0.62**
Silver	3.17	0.00072	0.0053	0.24	**0.32**	**0.77**	**1.22**	0.021	0.23	0.13	na	0.0057
Bis(2-ethylhexyl)phthalate	0.44	0.00038	0.00049	0.16	0.049	**0.39**	**0.73**	0.021	**0.78**	**0.42**	0.0015	0.0066
	HI	0.2	**14**	**80**	**72**	**214**	**360**	**1**	**8**	**5**	**86**	**7**

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.

* na = Not available.

Table G-5.3-38
Minimum ESL Comparison for AOC C-43-001

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Inorganic Chemicals (mg/kg)				
Cadmium	0.221	0.27	Shrew	**0.82**
Chromium (Total)	18.7	23	Robin (insectivore)	**0.81**
Copper	16.9	14	Robin (insectivore)	**1.21**
Cyanide (Total)	1.3	0.098	Robin (insectivore)	**13.3**
Lead	24.4	11	Robin (insectivore)	**3.06**
Mercury	0.153	0.013	Robin (insectivore)	**11.8**
Nickel	6.21	10	Shrew	**0.62**
Selenium	0.333	0.52	Plant	**0.64**
Zinc	85.1	47	Robin (insectivore)	**1.81**
Organic Chemicals (mg/kg)				
Acetone	0.049	1.2	Deer mouse	0.041
Aroclor-1254	0.0951	0.041	Robin (insectivore)	**2.32**
Aroclor-1260	0.023	0.88	Robin (insectivore)	0.026
Bis(2-ethylhexyl)phthalate	0.284	0.02	Robin (insectivore)	**14.2**
Butylbenzylphthalate	0.17	90	Shrew	0.0019
Dibenzofuran	0.207	6.1	Plant	0.034
Toluene	0.00063	23	Shrew	0.000027
Radionuclides (pCi/g)				
Tritium	1.71	36000	Plant	0.000048

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-39
HI Analysis for AOC C-43-001

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Cadmium	0.221	4.0E-04	5.1E-04	0.17	0.051	**0.41**	**0.76**	0.022	**0.82**	**0.44**	0.0016	0.0069
Chromium (Total)	18.7	0.01	0.022	0.11	**0.37**	**0.58**	**0.81**	0.046	0.3	0.17	na*	na
Copper	16.9	0.0042	0.015	0.21	**0.5**	**0.85**	**1.21**	0.065	**0.4**	0.27	0.21	0.24
Cyanide (Total)	1.3	3.9E-04	**2.2**	**3.61**	**13**	**13.1**	**13.3**	0.0016	0.0039	0.0039	na	na
Lead	24.4	0.0091	0.062	**0.41**	**1.87**	**2.41**	**3.06**	0.11	**0.36**	0.28	0.02	0.28
Mercury	0.153	0.002	**0.48**	**2.64**	**2.28**	**6.95**	**11.8**	0.0067	0.09	0.051	**3.06**	0.0045
Nickel	6.21	0.0052	0.0031	0.056	0.052	0.18	**0.31**	0.023	**0.62**	**0.31**	0.022	0.16
Selenium	0.333	0.0036	0.0045	0.09	**0.34**	**0.4**	**0.47**	0.15	**0.48**	**0.41**	0.081	**0.64**
Zinc	85.1	0.0089	0.033	**0.39**	0.26	**1.03**	**1.81**	0.047	**0.86**	**0.5**	**0.71**	**0.53**
Aroclor-1254	0.0951	0.013	0.013	**0.5**	0.086	**1.2**	**2.32**	0.0022	0.21	0.11	na	5.9E-04
Bis(2-ethylhexyl)phthalate	0.284	5.7E-04	0.031	**2.96**	0.018	**7.1**	**14.2**	1.5E-04	**0.47**	0.26	na	na
	HI	0.06	**3**	**11**	**19**	**34**	**50**	0.5	**5**	**3**	**4**	**2**

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.

* na = Not available.

Table G-5.3-40
Minimum ESL Comparison for SWMU 61-007

COPC	EPC (mg/kg)	ESL (mg/kg)	Receptor	HQ
Organic Chemicals (mg/kg)				
Acetone	0.00479	1.2	Deer mouse	0.004
Aroclor-1260	4.83	0.88	Robin (insectivore)	**5.49**
Benzyl Alcohol	0.064	120	Deer mouse	0.00053
Bis(2-ethylhexyl)phthalate	0.079	0.02	Robin (insectivore)	**3.95**
Dibenzofuran	0.093	6.1	Plant	0.015

Notes: Bolded values indicate HQs greater than 0.3. Data qualifiers are defined in Appendix A.

Table G-5.3-41
HI Analysis for SWMU 61-007

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Aroclor-1260	4.83	**0.32**	0.012	**1.15**	0.13	**2.84**	**5.49**	0.0027	**0.48**	0.24	na*	na
Bis(2-ethylhexyl)phthalate	0.079	1.6E-04	0.0085	**0.82**	0.0049	**1.98**	**3.95**	4.2E-05	0.13	0.072	na	na
	HI	0.3	0.02	**2**	0.1	**5**	**9**	0.003	0.6	0.3	na	na

Note: Bolded values indicate HQs greater than 0.3 or HI greater than 1.

* na = Not available.

Table G-5.4-1
Mexican Spotted Owl AUFs for Upper Los Alamos Canyon Aggregate Area

Site	Site Area (ha)	AUF*
00-017	0.135	0.000369
C-00-044	2.18	0.00596
01-001(a)	0.108	0.000295
01-001(d3)	0.798	0.00218
01-001(f)	0.258	0.000706
01-001(g)	0.0126	0.0000344
01-001(o)	0.106	0.00029
01-001(s2)	0.222	0.000607
01-002(a2)-00	0.158	0.000431
01-003(a)	0.513	0.0014
01-003(b2)	0.0188	0.0000515
01-003(d)	0.123	0.000336
01-006(a)	0.0458	0.000125
01-006(e)	0.128	0.000349
01-007(c)	0.146	0.000398
03-038(a) and 03-038(b)	0.065	0.000178
03-055(c)	0.0354	0.0000968
32-002(b2)	0.0981	0.000268
C-43-001	0.215	0.000586
61-007	0.0105	0.0000288

*AUF is calculated as the area of the site divided by the owl HR of 366 ha.

Table G-5.4-2
PAUFs for Ecological Receptors for SWMU 00-017

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	3.19E-05
American Robin	0.42	16.8	8.05E-03
Deer Mouse	0.077	3	4.51E-02
Cottontail	3.1	124	1.09E-03
Montane Shrew	0.39	15.6	8.66E-03
Fox	1038	41,520	3.26E-06

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (0.135 ha) divided by the population area.

Table G-5.4-3
Adjusted HIs for SWMU 00-017

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Antimony	12(UJ)	8.5E-07	na*	na	na	na	na	0.0048	0.013	**0.24**	**0.15**	**1.09**
Barium	81.2	6.4E-09	1.1E-07	3.5E-07	9.1E-04	8.5E-04	8.0E-04	3.1E-05	3.4E-04	0.002	**0.25**	**0.74**
Cadmium	0.151	2.7E-04	3.5E-04	**0.12**	0.035	**0.28**	**0.52**	0.015	**0.3**	**0.56**	0.0011	0.0047
Chromium (Total)	9.26	1.7E-08	3.4E-07	1.7E-06	0.0015	0.0023	0.0032	2.5E-05	0.0013	0.0038	na	na
Cyanide (Total)	0.22	2.2E-10	1.2E-05	1.9E-05	0.018	0.018	0.018	3.0E-07	5.8E-06	3.0E-05	na	na
Lead	175	1.5E-07	1.0E-05	6.7E-05	0.078	0.1	**0.13**	6.2E-04	0.016	0.066	0.1	**1.46**
Mercury	0.036	1.5E-09	3.6E-06	2.0E-05	0.0043	0.013	0.022	1.7E-06	1.8E-04	5.4E-04	**0.72**	0.0011
Nickel	5.96	1.6E-08	9.5E-08	1.7E-06	4.0E-04	0.0014	0.0024	2.4E-05	0.0052	0.013	0.021	**0.16**
Selenium	0.296	1.0E-08	1.3E-07	2.6E-06	0.0024	0.0029	0.0034	1.5E-04	0.0037	0.016	0.072	**0.57**
Thallium	2.4(U)	1.6E-06	7.7E-07	1.6E-06	0.0028	0.0035	0.0043	0.0022	0.05	**0.15**	na	**48**
Adjusted HI		3E-04	4E-04	1E-01	0.1	0.4	0.7	2E-02	0.4	1	1	**52**

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.

* na = Not available.

Table G-5.4-4
PAUFs for Ecological Receptors for AOC C-00-044

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	5.15E-04
American Robin	0.42	16.8	1.30E-01
Deer Mouse	0.077	3	7.27E-01
Cottontail	3.1	124	1.76E-02
Montane Shrew	0.39	15.6	1.40E-01
Fox	1038	41,520	5.25E-05

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (2.18 ha) divided by the population area.

Table G-5.4-5
Adjusted HIs for AOC C-00-044

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Antimony	1.92(U)	2.2E-06	na*	na	na	na	na	0.013	0.034	**0.61**	0.025	**0.17**
Lead	75.2	1.1E-06	7.2E-05	4.7E-04	0.00047	**0.54**	0.034	0.0043	0.088	**0.59**	0.044	**0.63**
Selenium	0.47	2.7E-07	3.3E-06	6.5E-05	0.062	0.074	0.086	0.0038	0.094	**0.42**	**0.11**	**0.9**
Zinc	45.7	2.5E-07	9.0E-06	1.1E-04	0.018	0.071	**0.13**	4.5E-04	0.065	**0.2**	**0.38**	**0.29**
Bis(2-ethylhexyl)phthalate	0.95	1.0E-07	5.3E-05	0.0051	0.0077	**3.08**	**6.17**	8.8E-06	**0.22**	**0.63**	na	na
Adjusted HI		4E-06	1E-04	6E-03	0.6	**3**	**7**	0.02	0.5	**2**	0.6	**2**

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.

* na = Not available.

Table G-5.4-6
PAUFs for Ecological Receptors for SWMU 01-001(a)

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	2.54E-05
American Robin	0.42	16.8	6.42E-03
Deer Mouse	0.077	3	3.60E-02
Cottontail	3.1	124	8.70E-04
Montane Shrew	0.39	15.6	6.91E-03
Fox	1038	41,520	2.60E-06

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (0.108 ha) divided by the population area.

Table G-5.4-7
Adjusted HIs for SWMU 01-001(a)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Barium	54.7	3.5E-09	5.8E-08	1.9E-07	4.9E-04	4.6E-04	4.3E-04	1.6E-05	1.8E-04	0.0011	**0.17**	**0.5**
Chromium (Total)	10.3	1.5E-08	3.0E-07	1.5E-06	0.0013	0.0021	0.0029	2.2E-05	0.0011	0.0034	na*	na
Copper	10	6.5E-09	2.3E-07	3.2E-06	0.0019	0.0032	0.0046	3.3E-05	0.0016	0.0057	**0.13**	**0.14**
Cyanide (Total)	0.31	2.4E-10	1.3E-05	2.2E-05	0.02	0.02	0.02	3.4E-07	6.5E-06	3.4E-05	na	na
Lead	14.2	1.0E-08	6.7E-07	4.4E-06	0.0051	0.0065	0.0083	4.0E-05	0.0011	0.0043	0.0084	**0.12**
Nickel	6.16	1.3E-08	7.8E-08	1.4E-06	3.3E-04	0.0011	0.002	2.0E-05	0.0043	0.011	0.022	**0.16**
Selenium	0.252	7.1E-09	8.7E-08	1.7E-06	0.0017	0.0019	0.0023	1.0E-04	0.0025	0.011	0.061	**0.48**

Table G-5.4-7 (continued)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Silver	1.86	1.1E-09	7.9E-08	3.6E-06	0.0012	0.0029	0.0046	1.1E-05	9.2E-04	0.0028	na	0.0033
Vanadium	9.09	7.4E-09	2.1E-06	4.1E-06	0.0086	0.011	0.012	1.1E-05	2.2E-04	7.0E-04	na	**0.15**
Acenaphthene	0.082	7.3E-12	na	na	na	na	na	1.3E-07	4.4E-06	1.8E-05	na	**0.33**
Aroclor-1254	0.13	4.7E-08	4.4E-07	1.7E-05	7.6E-04	0.011	0.02	2.6E-06	0.002	0.0054	na	8.1E-04
Bis(2-ethylhexyl)phthalate	0.28	1.5E-09	7.7E-07	7.4E-05	1.1E-04	0.045	0.09	1.3E-07	0.0032	0.0092	na	na
Adjusted HI		1E-07	2E-05	1E-04	0.04	0.1	0.2	3E-04	0.02	0.05	0.4	**2**

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.

* na = Not available.

Table G-5.4-8
PAUFs for Ecological Receptors for SWMU 01-001(d3)

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	1.88E-04
American Robin	0.42	16.8	4.75E-02
Deer Mouse	0.077	3	2.66E-01
Cottontail	3.1	124	6.43E-03
Montane Shrew	0.39	15.6	5.11E-02
Fox	1038	41,520	1.92E-05

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (0.798 ha) divided by the population area.

Table G-5.4-9
Adjusted HIs for SWMU 01-001(d3)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Antimony	27.4	1.1E-05	na*	na	na	na	na	0.065	**0.18**	**3.17**	**0.35**	**2.49**
Barium	38.7	1.8E-08	3.0E-07	9.7E-07	2.6E-03	2.4E-03	2.2E-03	8.6E-05	9.4E-04	5.7E-03	1.2E-01	**3.5E-01**
Beryllium	0.828	3.8E-08	na	na	na	na	na	6.0E-05	0.0012	0.0039	0.021	**0.33**
Cadmium	0.131	4.6E-09	5.7E-08	1.9E-05	0.0014	0.012	0.021	8.4E-05	0.025	0.07	9.4E-04	0.0041
Chromium (Total)	8.85	9.4E-08	1.9E-06	9.8E-06	0.0082	0.013	0.018	1.4E-04	0.0072	0.021	na	na
Chromium hexavalent ion	1.32	3.0E-09	7.0E-08	1.8E-07	3.0E-04	4.0E-04	4.5E-04	5.3E-06	1.3E-04	4.0E-04	**3.89**	**3.77**
Copper	8.87	4.3E-08	1.5E-06	2.1E-05	0.012	0.021	0.03	2.2E-04	0.011	0.037	**0.11**	**0.13**
Lead	17.6	9.1E-08	6.1E-06	4.0E-05	4.6E-02	6.0E-02	7.6E-02	3.7E-04	9.7E-03	3.9E-02	1.0E-02	**0.12**
Manganese	261	1.3E-07	8.2E-07	2.0E-06	0.0095	0.0077	0.0056	8.4E-04	0.0048	0.05	**0.58**	**1.19**
Mercury	7.77	2.0E-06	4.6E-03	2.5E-02	5.5E+00	1.7E+01	2.8E+01	2.2E-03	2.3E-01	6.9E-01	1.6E+02	2.3E-01
Nickel	4.3	6.9E-08	4.0E-07	7.4E-06	0.0017	0.0058	0.01	1.0E-04	0.022	0.057	0.015	**0.11**
Selenium	0.497	1.0E-07	1.3E-06	2.5E-05	0.024	0.028	0.033	0.0015	0.036	**0.16**	**0.12**	**0.96**
Silver	0.94	4.1E-09	3.0E-07	1.4E-05	0.0045	0.011	0.017	4.10E-05	0.0034	0.01	na	0.0017
Vanadium	8.87	5.3E-08	1.5E-05	3.0E-05	0.063	0.077	0.091	7.7E-05	0.0016	0.0049	na	0.15
Zinc	48.4	9.7E-08	3.5E-06	4.1E-05	0.007	0.028	0.049	1.7E-04	0.025	0.076	**0.4**	**0.3**
Aroclor-1254	0.0733	2.0E-07	1.8E-06	7.3E-05	0.0032	0.044	0.085	1.1E-05	0.0083	0.022	na	4.6E-04

Table G-5.4-9 (continued)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Bis(2-ethylhexyl)phthalate	0.88	3.4E-08	1.8E-05	0.0017	0.0026	**1.04**	**2.09**	3.0E-06	0.075	**0.21**	na	na
Di-n-butylphthalate	0.21	6.5E-11	2.0E-05	7.6E-04	0.026	**0.47**	**0.91**	7.9E-08	6.0E-05	1.6E-04	na	0.0013
Pentachlorophenol	0.8	6.7E-08	2.6E-06	8.9E-05	0.0013	0.053	**0.11**	2.9E-05	0.05	**0.14**	0.026	**0.16**
Adjusted HI		1E-05	5E-03	3E-02	**6**	**20**	**30**	7E-02	0.7	**5**	**160**	**10**

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.

* na = Not available.

Table G-5.4-10
PAUFs for Ecological Receptors for SWMU 01-001(f)

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	6.09E-05
American Robin	0.42	16.8	1.54E-02
Deer Mouse	0.077	3	8.61E-02
Cottontail	3.1	124	2.08E-03
Montane Shrew	0.39	15.6	1.66E-02
Fox	1038	41,520	6.22E-06

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (0.258 ha) divided by the population area.

Table G-5.4-11
Adjusted HIs for SWMU 01-001(f)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Cadmium	0.152	1.70E-09	2.2E-08	7.1E-06	5.4E-04	0.0043	0.0081	3.2E-05	0.0093	0.026	0.0011	0.0048
Copper	6.02	9.40E-09	3.3E-07	4.6E-06	0.0027	0.0046	0.0066	4.8E-05	0.0024	0.0082	0.075	0.086
Cyanide (Total)	0.72	1.40E-09	7.4E-05	1.2E-04	**0.11**	**0.11**	**0.11**	1.9E-06	3.6E-05	1.9E-04	na*	na
Lead	14.8	2.50E-08	1.7E-06	1.1E-05	0.013	0.016	0.021	9.9E-05	0.0026	0.011	0.0087	**0.12**
Manganese	266	4.10E-08	2.7E-07	6.8E-07	0.0031	0.0026	0.0019	2.8E-04	0.0016	0.016	**0.59**	**1.21**
Nickel	4.09	2.10E-08	1.2E-07	2.3E-06	5.2E-04	0.0018	0.0031	3.2E-05	0.0068	0.018	0.015	**0.11**
Selenium	0.262	1.80E-08	2.2E-07	4.3E-06	0.0041	0.0049	0.0057	2.5E-04	0.0062	0.028	0.064	**0.5**
Vanadium	9.44	1.80E-08	5.2E-06	1.0E-05	0.021	0.026	0.031	2.7E-05	5.4E-04	0.0017	na	**0.16**
Zinc	50.3	3.30E-08	1.2E-06	1.4E-05	0.0023	0.0093	0.016	5.8E-05	0.0084	0.025	**0.42**	**0.31**
Aroclor-1254	6.06	5.20E-06	4.9E-05	0.0019	0.085	**1.18**	**2.27**	2.9E-04	**0.22**	**0.6**	na	0.038
Aroclor-1260	1.9	7.90E-07	2.9E-07	2.8E-05	7.9E-04	0.017	0.033	2.2E-06	0.0031	0.0082	na	na
Benzo(a)anthracene	0.295	1.70E-08	6.4E-07	2.8E-06	0.0062	0.0057	0.0052	1.0E-04	0.0012	0.0075	na	0.016
Benzoic Acid	0.567	1.80E-09	na	na	na	na	na	2.6E-04	0.0094	0.038	na	na
Bis(2-ethylhexyl)phthalate	0.266	3.30E-09	1.7E-06	1.7E-04	2.6E-04	0.1	**0.2**	2.9E-07	0.0073	0.021	na	na
Adjusted HI		6E-06	1E-04	2E-03	2E-01	**1E+00**	**3E+00**	1E-03	3E-01	8E-01	**1E+00**	**3E+00**

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.
* na = Not available.

Table G-5.4-12
PAUFs for Ecological Receptors for SWMU 01-001(g)

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	2.97E-06
American Robin	0.42	16.8	7.50E-04
Deer Mouse	0.077	3	4.20E-03
Cottontail	3.1	124	1.02E-04
Montane Shrew	0.39	15.6	8.08E-04
Fox	1038	41,520	3.04E-07

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (0.0126 ha) divided by the population area.

Table G-5.4-13
Adjusted HIs for SWMU 01-001(g)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Chromium (Total)	13.9	2.3E-09	4.8E-08	2.4E-07	2.0E-04	3.3E-04	4.5E-04	3.4E-06	1.8E-04	5.3E-04	na*	na
Nickel	7	1.8E-09	1.0E-08	1.9E-07	4.4E-05	1.5E-04	2.6E-04	2.6E-06	5.7E-04	0.0015	0.025	**0.18**
Selenium	0.258	8.5E-10	1.0E-08	2.1E-07	2.0E-04	2.3E-04	2.7E-04	1.2E-05	3.0E-04	0.0013	0.063	**0.5**
Bis(2-ethylhexyl)phthalate	0.074	4.5E-11	2.4E-08	2.3E-06	3.5E-06	0.0014	0.0028	4.0E-09	1.0E-04	2.8E-04	na	na
Adjusted HI		5E-09	9E-08	3E-06	4E-04	2E-03	4E-03	2E-05	1E-03	4E-03	0.09	0.7

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.

* na = Not available.

Table G-5.4-14
PAUFs for Ecological Receptors for SWMU 01-001(o)

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	2.50E-05
American Robin	0.42	16.8	6.31E-03
Deer Mouse	0.077	3	3.54E-02
Cottontail	3.1	124	8.55E-04
Montane Shrew	0.39	15.6	6.80E-03
Fox	1038	41,520	2.55E-06

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (0.106 ha) divided by the population area.

Table G-5.4-15
Adjusted HIs for SWMU 01-001(o)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Antimony	1.4(U)	7.8E-08	na*	na	na	na	na	4.4E-04	0.0012	0.022	0.018	**0.13**
Cadmium	3.6	1.7E-08	2.1E-07	6.9E-05	0.0053	0.042	0.078	3.1E-04	0.091	**0.25**	0.026	**0.11**
Chromium (Total)	11.4	1.6E-08	3.3E-07	1.7E-06	0.0014	0.0022	0.0031	2.4E-05	0.0012	0.0037	na	na
Copper	67.1	4.3E-08	1.5E-06	2.1E-05	0.012	0.021	0.03	2.2E-04	0.011	0.038	**0.84**	**0.96**
Cyanide (Total)	0.15	1.2E-10	6.4E-06	1.0E-05	0.0095	0.0096	0.0097	1.6E-07	3.1E-06	1.6E-05	na	na
Lead	25.1	1.7E-08	1.2E-06	7.6E-06	0.0088	0.011	0.014	6.9E-05	0.0018	0.0074	0.015	**0.21**
Mercury	0.161	5.4E-09	1.3E-05	6.9E-05	0.015	0.046	0.078	6.0E-06	6.4E-04	0.0019	**3.22**	0.0047

Table G-5.4-15 (continued)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Nickel	6.45	1.4E-08	8.1E-08	1.5E-06	3.4E-04	0.0012	0.002	2.0E-05	0.0044	0.011	0.023	**0.17**
Selenium	0.225	6.2E-09	7.6E-08	1.5E-06	0.0014	0.0017	0.002	8.7E-05	0.0022	0.0097	0.055	**0.43**
Zinc	89.5	2.4E-08	8.6E-07	1.0E-05	0.0017	0.0068	0.012	4.3E-05	0.0061	0.019	**0.75**	**0.56**
Aroclor-1254	0.756	2.7E-07	2.5E-06	1.0E-04	0.0043	0.06	**0.12**	1.5E-05	0.011	0.031	na	0.0047
Benzoic Acid	0.35	4.5E-10	na	na	na	na	na	6.5E-05	0.0024	0.0095	na	na
Bis(2-ethylhexyl)phthalate	0.12	6.1E-10	3.2E-07	3.1E-05	4.7E-05	0.019	0.038	5.4E-08	0.0014	0.0039	na	na
Di-n-butylphthalate	1.1	4.5E-11	1.4E-05	5.3E-04	0.018	**0.33**	**0.63**	5.5E-08	4.2E-05	1.1E-04	na	0.0069
Adjusted HI		5E-07	4E-05	9E-04	0.08	0.6	1	1E-03	0.1	0.4	**5**	**3**

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.

* na = Not available.

Table G-5.4-16
PAUFs for Ecological Receptors for SWMU 01-001(s2)

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	5.24E-05
American Robin	0.42	16.8	1.32E-02
Deer Mouse	0.077	3	7.41E-02
Cottontail	3.1	124	1.79E-03
Montane Shrew	0.39	15.6	1.42E-02
Fox	1038	41,520	5.35E-06

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (0.222 ha) divided by the population area.

Table G-5.4-17
Adjusted HIs for SMWU 01-001(s2)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Barium	108	1.4E-08	2.4E-07	7.5E-07	0.002	0.0019	0.0017	6.7E-05	7.3E-04	0.0044	**0.33**	**0.98**
Chromium (Total)	10.3	3.1E-08	6.3E-07	3.2E-06	0.0027	0.0043	0.0059	4.5E-05	0.0023	0.0069	na*	na
Copper	10.5	1.4E-08	5.0E-07	6.8E-06	0.0040	0.0068	0.0098	7.3E-05	0.0035	0.012	**0.13**	**0.15**
Cyanide (Total)	0.86(U)	1.4E-09	7.6E-05	1.3E-04	**0.11**	**0.11**	**0.12**	2.0E-06	3.7E-05	1.9E-04	na	na
Lead	11.4	1.6E-08	1.1E-06	7.2E-06	0.0084	0.011	0.014	6.6E-05	0.0017	0.007	0.0067	0.095
Nickel	7.84	3.5E-08	2.1E-07	3.7E-06	8.6E-04	0.003	0.0052	5.2E-05	0.011	0.029	0.028	**0.21**
Selenium	0.352	2.0E-08	2.5E-07	5.0E-06	0.0048	0.0056	0.0066	2.9E-04	0.0072	0.032	0.086	**0.68**
Aroclor-1254	0.21	1.6E-07	1.4E-06	5.8E-05	0.0025	0.035	0.068	8.6E-06	0.0066	0.018	na	0.0013
Adjusted HI		3E-07	8E-05	2E-04	0.1	0.2	0.2	6E-04	0.03	0.1	0.6	**2**

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.

* na = Not available.

Table G-5.4-18
PAUFs for Ecological Receptors for SWMU 01-002(a2)-00

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	3.72E-05
American Robin	0.42	16.8	9.38E-03
Deer Mouse	0.077	3	5.25E-02
Cottontail	3.1	124	1.27E-03
Montane Shrew	0.39	15.6	1.01E-02
Fox	1038	41,520	3.80E-06

[a] Values from EPA (1993, 059384).
[b] PAUF is calculated as the area of the site (0.158 ha) divided by the population area.

Table G-5.4-19
Adjusted HIs for SWMU 01-002(a2)-00

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Chromium (Total)	18.5	3.9E-08	8.0E-07	4.0E-06	0.0034	0.0054	0.0075	5.7E-05	0.003	0.0088	na*	na
Cyanide (Total)	0.196	2.3E-10	1.2E-05	2.0E-05	0.018	0.019	0.019	3.2E-07	6.0E-06	3.1E-05	na	na
Lead	18.4	0.005	0.034	**0.22**	**1.02**	**1.31**	**1.67**	0.059	**0.15**	**0.2**	0.011	**0.15**
Nickel	9.56	3.0E-08	1.8E-07	3.2E-06	7.5E-04	0.0026	0.0045	4.5E-05	0.0097	0.025	0.034	**0.25**
Selenium	0.306	1.3E-08	1.5E-07	3.1E-06	0.0029	0.0035	0.004	1.8E-04	0.0044	0.02	0.075	**0.59**
Aroclor-1254	0.21	1.1E-07	1.0E-06	4.1E-05	0.0018	0.025	0.048	6.1E-06	0.0047	0.013	na	0.0013
Bis(2-ethylhexyl)phthalate	0.12	9.1E-10	4.8E-07	4.6E-05	7.0E-05	0.028	0.056	8.0E-08	0.002	0.0057	na	na
Adjusted HI		0.005	0.03	0.2	1	1	**2**	0.06	0.2	0.3	0.1	1

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.
* na = Not available.

Table G-5.4-20
PAUFs for Ecological Receptors for SWMU 01-003(a)

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	1.21E-04
American Robin	0.42	16.8	3.05E-02
Deer Mouse	0.077	3	1.71E-01
Cottontail	3.1	124	4.14E-03
Montane Shrew	0.39	15.6	3.29E-02
Fox	1038	41,520	1.23E-05

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (0.513 ha) divided by the population area.

Table G-5.4-21
Adjusted HIs for SMWU 01-003(a)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Barium	44.3	1.40E-08	2.20E-07	7.10E-07	0.0019	0.0018	0.0016	6.20E-05	8.20E-04	0.0036	**0.13**	**0.4**
Chromium (Total)	11.8	8.1E-08	1.7E-06	8.4E-06	0.0071	0.011	0.016	1.2E-04	0.0062	0.018	na*	na
Copper	6	1.9E-08	6.6E-07	9.1E-06	0.0054	0.0092	0.013	9.5E-05	0.0047	0.016	0.075	0.086
Cyanide (Total)	1	3.7E-09	2.0E-04	3.4E-04	**0.31**	**0.31**	**0.31**	5.2E-06	1.0E-04	5.2E-04	na	na
Lead	18	6.0E-08	4.0E-06	2.6E-05	0.031	0.039	0.05	2.4E-04	0.0064	0.026	0.011	**0.15**
Manganese	268	8.3E-08	5.4E-07	1.4E-06	0.0063	0.0051	0.0037	5.5E-04	0.0031	0.033	**0.6**	**1.22**
Mercury	0.102	1.7E-08	3.9E-05	2.1E-04	0.046	**0.14**	**0.24**	1.8E-05	0.002	0.0058	**2.04**	0.003
Nickel	5.91	6.1E-08	3.6E-07	6.5E-06	0.0015	0.0052	0.009	9.1E-05	0.019	0.051	0.021	**0.16**
Selenium	0.243	3.3E-08	4.0E-07	7.9E-06	0.0076	0.0089	0.01	4.6E-04	0.011	0.051	0.059	**0.47**

Table G-5.4-21 (continued)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Vanadium	7.36	2.8E-08	8.1E-06	1.6E-05	0.033	0.041	0.048	4.1E-05	8.3E-04	0.0027	na	**0.12**
Zinc	45.9	5.9E-08	2.1E-06	2.5E-05	0.0042	0.017	0.03	1.1E-04	0.015	0.046	**0.38**	**0.29**
Acenaphthene	0.184	7.8E-11	na*	na	na	na	na	1.4E-06	4.7E-05	2.0E-04	na	**0.74**
Aroclor-1254	2.65	4.5E-06	4.2E-05	0.0017	0.074	**1.02**	**1.97**	2.5E-04	**0.19**	**0.52**	na	0.017
Aroclor-1260	0.59	4.9E-07	1.8E-07	1.7E-05	4.9E-04	0.011	0.02	1.4E-06	0.0019	0.005	na	na
Benzo(a)anthracene	1.66	1.9E-07	7.2E-06	3.1E-05	0.069	0.063	0.058	0.0011	0.014	0.083	na	0.092
Benzoic Acid	1.6	9.9E-09	na	na	na	na	na	0.0014	0.053	**0.21**	na	na
Bis(2-ethylhexyl)phthalate	0.38	9.4E-09	4.9E-06	4.8E-04	7.2E-04	**0.29**	**0.58**	8.3E-07	0.021	0.059	na	na
Chrysene	2.27	2.5E-07	na	na	na	na	na	0.0015	0.024	**0.13**	na	na
Di-n-butylphthalate	0.053	1.1E-11	3.2E-06	1.2E-04	0.0043	0.077	**0.15**	1.3E-08	9.7E-06	2.5E-05	na	3.3E-04
Fluoranthene	6.36	2.0E-08	na	na	na	na	na	9.7E-05	0.0095	0.029	**0.64**	na
Phenanthrene	2.23	1.4E-08	na	na	na	na	na	1.5E-04	0.0067	0.025	**0.41**	na
Pyrene	5.58	2.2E-08	2.2E-07	4.2E-06	0.0025	0.0039	0.0052	2.1E-04	0.008	0.031	**0.56**	na
Adjusted HI		6E-06	3E-04	0.003	0.6	**2**	**4**	0.007	0.4	1	**5**	**4**

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.

* na = Not available.

Table G-5.4-22
PAUFs for Ecological Receptors for AOC 01-003(b2)

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	4.44E-06
American Robin	0.42	16.8	1.12E-03
Deer Mouse	0.077	3	6.28E-03
Cottontail	3.1	124	1.52E-04
Montane Shrew	0.39	15.6	1.21E-03
Fox	1038	41,520	4.54E-07

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (0.0188 ha) divided by the population area.

Table G-5.4-23
Adjusted HIs for AOC 01-003(b2)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Antimony	2.1(U)	2.1E-08	na*	na	na	na	na	1.2E-04	3.2E-04	0.0057	0.027	**0.19**
Barium	117	1.3E-09	2.2E-08	6.9E-08	1.8E-04	1.7E-04	1.6E-04	6.1E-06	6.7E-05	4.1E-04	**0.35**	**1.06**
Beryllium	1.16	1.3E-09	na*	na	na	na	na	2.0E-06	4.0E-05	1.3E-04	0.029	**0.46**
Chromium (Total)	7.72	1.9E-09	4.0E-08	2.0E-07	1.7E-04	2.7E-04	3.8E-04	2.9E-06	1.5E-04	4.4E-04	na	na
Copper	6.71	7.6E-10	2.7E-08	3.7E-07	2.2E-04	3.8E-04	5.4E-04	3.9E-06	1.9E-04	6.7E-04	0.084	0.096
Lead	34.2	4.2E-09	2.8E-07	1.8E-06	0.0021	0.0027	0.0035	1.7E-05	4.4E-04	0.0018	0.02	**0.29**

Table G-5.4-23 (continued)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Nickel	4.66	1.8E-09	1.0E-08	1.9E-07	4.4E-05	1.5E-04	2.6E-04	2.6E-06	5.6E-04	0.0015	0.017	**0.12**
Perchlorate	0.039	5.4E-09	8.7E-08	4.4E-08	3.6E-04	1.8E-04	1.4E-06	2.3E-05	1.5E-06	0.0012	0.011	9.7E-04
Selenium	0.853	4.2E-09	5.1E-08	1.0E-06	9.8E-04	0.0012	0.0013	5.9E-05	0.0015	0.0065	**0.21**	**1.64**
Adjusted HI		4E-08	5E-07	4E-06	4E-03	5E-03	6E-03	2E-04	3E-03	0.02	**0.7**	**4**

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.

* na = Not available.

Table G-5.4-24
PAUFs for Ecological Receptors for SWMU 01-003(d)

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	2.90E-05
American Robin	0.42	16.8	7.31E-03
Deer Mouse	0.077	3	4.10E-02
Cottontail	3.1	124	9.91E-04
Montane Shrew	0.39	15.6	7.88E-03
Fox	1038	41,520	2.96E-06

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (0.123 ha) divided by the population area.

Table G-5.4-25
Adjusted HIs for SWMU 01-003(d)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Antimony	78.5	5.1E-06	na*	na	na	na	na	0.029	0.078	**1.4**	**1.01**	**7.14**
Barium	55.2	4E-9	6.7E-8	2.1E-7	5.6E-4	5.2E-4	4.9E-4	1.9E-5	2.1E-4	1.2E-3	**0.17**	**0.51**
Cadmium	0.27	1.5E-9	1.8E-8	6E-6	4.6E-4	3.7E-3	6.8E-3	2.7E-5	7.9E-3	0.022	0.0019	0.0084
Cyanide (Total)	0.51(UJ)	4.6E-10	2.5E-05	4.1E-05	0.037	0.038	0.038	6.4E-07	1.2E-05	6.3E-05	na	na
Lead	13.3	1.1E-08	7.1E-07	4.6E-06	0.0054	0.0069	0.0088	4.3E-05	0.0011	0.0045	0.0078	**0.11**
Selenium	0.39	1.3E-08	1.5E-07	3.1E-06	0.0029	0.0034	0.004	1.8E-04	0.0044	0.019	0.095	**0.75**
Zinc	53.3	1.6E-08	5.9E-07	7.0E-06	0.0012	0.0047	0.0083	2.9E-05	0.0042	0.013	**0.44**	**0.33**
Bis(2-ethylhexyl)phthalate	0.054	3.2E-10	1.7E-07	1.6E-05	2.5E-05	0.0099	0.02	2.8E-08	7.1E-04	0.002	na	na
Aroclor-1254	0.21	1.6E-07	1.4E-06	5.8E-05	0.0025	0.035	0.068	8.6E-06	0.0066	0.018	na	0.0013
	Adjusted HI	5E-06	2E-6	4E-5	0.01	0.03	0.005	0.03	0.1	1	**2**	**9**

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.

* na = Not available.

Table G-5.4-26
PAUFs for Ecological Receptors for SWMU 01-006(a)

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	1.08E-05
American Robin	0.42	16.8	2.72E-03
Deer Mouse	0.077	3	1.53E-02
Cottontail	3.1	124	3.69E-04
Montane Shrew	0.39	15.6	2.93E-03
Fox	1038	41,520	1.10E-06

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (0.0458 ha) divided by the population area.

Table G-5.4-27
Adjusted HIs for SMWU 01-006(a)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Arsenic	2.6	3.5E-09	3.8E-08	2.8E-07	2.1E-04	3.4E-04	4.7E-04	8.7E-06	4.0E-04	0.0012	**0.38**	**0.14**
Chromium (Total)	9.22	5.6E-09	1.2E-07	5.9E-07	4.9E-04	7.8E-04	0.0011	8.3E-06	4.3E-04	0.0013	na*	na
Copper	5.98	1.6E-09	5.9E-08	8.1E-07	4.8E-04	8.1E-04	0.0012	8.5E-06	4.2E-04	0.0014	0.075	0.085
Cyanide (Total)	0.6(U)	2.0E-10	1.1E-05	1.8E-05	0.016	0.017	0.017	2.8E-07	5.3E-06	2.8E-05	na	na
Lead	16.8	5.0E-09	3.4E-07	2.2E-06	0.0025	0.0033	0.0042	2.0E-05	5.3E-04	0.0021	0.0099	**0.14**
Mercury	0.0567	8.2E-10	1.9E-06	1.1E-05	0.0023	0.007	0.012	9.1E-07	9.8E-05	2.9E-04	**1.13**	0.0017
Nickel	5.29	4.9E-09	2.9E-08	5.2E-07	1.2E-04	4.1E-04	7.2E-04	7.2E-06	0.0016	0.004	0.019	**0.14**

Table G-5.4-27 (continued)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Selenium	0.247	3.0E-09	3.6E-08	7.2E-07	6.9E-04	8.1E-04	9.5E-04	4.1E-05	0.001	0.0046	0.06	**0.48**
Bis(2-ethylhexyl)phthalate	2.7	6.0E-09	3.1E-06	3.0E-04	4.6E-04	**0.18**	**0.37**	5.2E-07	0.013	0.037	na	na
Di-n-butylphthalate	0.15	2.7E-12	8.1E-07	3.1E-05	0.0011	0.019	0.037	3.3E-09	2.4E-06	6.4E-06	na	9.4E-04
Adjusted HI		3E-08	2E-05	4E-04	0.02	0.2	0.4	1E-04	0.02	0.05	**2**	1

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.

* na = Not available.

Table G-5.4-28
PAUFs for Ecological Receptors for AOC 01-006(e)

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	3.01E-05
American Robin	0.42	16.8	7.61E-03
Deer Mouse	0.077	3	4.26E-02
Cottontail	3.1	124	1.03E-03
Montane Shrew	0.39	15.6	8.19E-03
Fox	1038	41,520	3.08E-06

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (0.128 ha) divided by the population area.

Table H-5.4-29
Adjusted HIs for AOC 01-006(e)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Chromium (Total)	9.4	1.6E-08	3.3E-07	1.7E-06	0.0014	0.0022	0.0031	2.4E-05	0.0012	0.0036	na*	na
Cyanide (Total)	0.57(UJ)	5.3E-10	2.9E-05	4.8E-05	0.043	0.044	0.044	7.4E-07	1.4E-05	7.4E-05	na	na
Selenium	0.57(U)	1.9E-08	2.3E-07	4.6E-06	0.0044	0.0052	0.0061	2.7E-04	0.0067	0.03	**0.14**	**1.1**
	Adjusted HI	4E-08	3E-05	5E-05	0.05	0.05	0.05	3E-04	8E-03	0.03	0.1	1

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.

* na = Not available.

Table G-5.4-30
PAUFs for Ecological Receptors for SWMU 01-007(c)

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	3.44E-05
American Robin	0.42	16.8	8.67E-03
Deer Mouse	0.077	3	4.86E-02
Cottontail	3.1	124	1.17E-03
Montane Shrew	0.39	15.6	9.34E-03
Fox	1038	41,520	3.51E-06

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (0.146 ha) divided by the population area.

Table G-5.4-31
Adjusted HIs for SMWU 01-007(c)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Chromium (Total)	12.7	2.5E-08	5.1E-07	2.6E-06	0.0022	0.0034	0.0048	3.6E-05	0.0019	0.0056	na*	na
Cyanide (Total)	0.17	1.8E-10	9.9E-06	1.6E-05	0.015	0.015	0.015	2.5E-07	4.8E-06	2.5E-05	na	na
Lead	38.3	3.6E-08	2.4E-06	1.6E-05	0.018	0.024	0.03	1.5E-04	0.0038	0.016	0.023	**0.32**
Nickel	7.04	2.1E-08	1.2E-07	2.2E-06	5.1E-04	0.0017	0.0031	3.1E-05	0.0066	0.017	0.025	**0.19**
Selenium	0.4	1.5E-08	1.9E-07	3.7E-06	0.0035	0.0042	0.0049	2.1E-04	0.0053	0.024	0.098	**0.77**
Adjusted HI		3E-07	8E-05	2E-04	0.1	0.2	0.2	6E-04	0.03	0.1	0.6	**2**

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.

* na = Not available.

Table G-5.4-32
PAUFs for Ecological Receptors for SWMUs 03-038(a) and 03-038(b)

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	1.53E-05
American Robin	0.42	16.8	3.87E-03
Deer Mouse	0.077	3	2.17E-02
Cottontail	3.1	124	5.24E-04
Montane Shrew	0.39	15.6	4.17E-03
Fox	1038	41,520	1.56E-06

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (0.065 ha) divided by the population area.

Table G-5.4-33
Adjusted HIs for SWMUs 03-038(a) and 03-038(b)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Barium	58.6	2.2E-09	3.7E-08	1.2E-07	3.1E-04	2.9E-04	2.8E-04	1.1E-05	1.2E-04	7.1E-04	**0.18**	**0.53**
Chromium (Total)	14.1	1.2E-08	2.5E-07	1.3E-06	0.0011	0.0017	0.0024	1.8E-05	9.3E-04	0.0028	na*	na
Copper	5.3	2.1E-09	7.4E-08	1.0E-06	6.0E-04	0.001	0.0015	1.1E-05	5.3E-04	0.0018	0.066	0.076
Cyanide (Total)	0.54	2.6E-10	1.4E-05	2.3E-05	0.021	0.021	0.021	3.6E-07	6.8E-06	3.5E-05	na	na
Lead	13.5	5.7E-09	3.8E-07	2.5E-06	0.0029	0.0037	0.0047	2.3E-05	6.0E-04	0.0024	0.0079	**0.11**
Nickel	8.03	1.0E-08	6.2E-08	1.1E-06	2.6E-04	8.9E-04	0.0016	1.6E-05	0.0033	0.0087	0.029	**0.21**
Selenium	0.248	4.2E-09	5.1E-08	1.0E-06	9.8E-04	0.0012	0.0014	5.9E-05	0.0015	0.0066	0.06	**0.48**
Aroclor-1254	0.039	8.5E-09	7.9E-08	3.1E-06	1.4E-04	0.0019	0.0037	4.6E-07	3.6E-04	9.7E-04	na	2.4E-04
Bis(2-ethylhexyl)phthalate	0.066	2.1E-10	1.1E-07	1.1E-05	1.6E-05	0.0064	0.013	1.8E-08	4.6E-04	0.0013	na	na
Adjusted HI		5E-08	2E-05	4E-05	0.03	0.04	0.05	1E-04	8E-03	0.03	0.3	1

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.

* na = Not available.

Table G-5.4-34
PAUFs for Ecological Receptors for SWMU 03-055(c)

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	8.36E-06
American Robin	0.42	16.8	2.11E-03
Deer Mouse	0.077	3	1.18E-02
Cottontail	3.1	124	2.86E-04
Montane Shrew	0.39	15.6	2.27E-03
Fox	1038	41,520	8.53E-07

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (0.0354 ha) divided by the population area.

Table G-5.4-35
Adjusted HIs for SWMU 03-055(c)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Arsenic	3.09	3.2E-09	3.5E-08	2.6E-07	1.9E-04	3.1E-04	4.3E-04	8.0E-06	3.7E-04	0.0011	**0.45**	**0.17**
Copper	8.94	1.9E-09	6.8E-08	9.3E-07	5.5E-04	9.4E-04	0.0013	9.8E-06	4.8E-04	0.0017	**0.11**	**0.13**
Lead	64.1	1.5E-08	9.9E-07	6.5E-06	0.0075	0.0097	0.012	5.9E-05	0.0016	0.0063	0.038	**0.53**
Selenium	1.13	1.0E-08	1.3E-07	2.6E-06	0.0024	0.0029	0.0034	1.5E-04	0.0037	0.016	**0.28**	**2.17**
Zinc	108	1.0E-08	3.6E-07	4.3E-06	7.2E-04	0.0028	0.005	1.8E-05	0.0026	0.0078	**0.93**	**0.7**
Acenaphthene	0.135	4.0E-12	na*	na	na	na	na	7.3E-08	2.4E-06	1.0E-05	na	**0.54**
Aroclor-1254	0.0176	2.1E-09	1.9E-08	7.7E-07	3.4E-05	4.7E-04	9.1E-04	1.1E-07	8.9E-05	2.4E-04	na	1.1E-04

Table G-5.4-35 (continued)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Benzo(a)anthracene	0.507	3.9E-09	1.5E-07	6.6E-07	0.0015	0.0013	0.0012	2.4E-05	2.9E-04	0.0018	na	0.028
Benzoic Acid	0.36	1.5E-10	na	na	na	na	na	2.2E-05	8.2E-04	0.0033	na	na
Bis(2-ethylhexyl)phthalate	0.814	1.4E-09	7.3E-07	7.1E-05	1.1E-04	0.043	0.086	1.2E-07	0.0031	0.0087	na	na
Adjusted HI		5E-08	2E-06	9E-05	0.01	0.06	0.1	3E-04	0.02	0.05	**2**	**4**

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.

* na = Not available.

Table G-5.4-36
PAUFs for Ecological Receptors for SWMU 32-002(b2)

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	2.31E-05
American Robin	0.42	16.8	5.84E-03
Deer Mouse	0.077	3	3.27E-02
Cottontail	3.1	124	7.91E-04
Montane Shrew	0.39	15.6	6.29E-03
Fox	1038	41,520	2.36E-06

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (0.0981 ha) divided by the population area.

Table H-5.4-37
Adjusted HIs for SMWU 32-002(b2)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Antimony	0.79	4.1E-08	na*	na	na	na	na	0.00023	0.00063	0.011	0.01	0.072
Arsenic	3.65	1.1E-08	1.1E-07	8.4E-07	0.00063	0.001	0.0014	0.000026	0.0012	0.0037	**0.54**	**0.2**
Barium	79.8	4.6E-09	7.7E-08	2.5E-07	0.00065	0.00061	0.00057	0.000022	0.00024	0.0014	**0.24**	**0.73**
Cadmium	0.211	9.1E-10	1.1E-08	3.8E-06	0.00029	0.0023	0.0042	0.000017	0.0049	0.014	0.0015	0.0066
Chromium (Total)	23.7	3.1E-08	6.4E-07	3.2E-06	0.0027	0.0043	0.006	0.000046	0.0024	0.007	na	na
Copper	4.87	2.9E-09	1E-07	1.4E-06	0.00084	0.0014	0.002	0.000015	0.00073	0.0025	0.061	0.07
Cyanide (Total)	0.59	4.2E-10	0.000023	0.000038	0.034	0.035	0.035	5.9E-07	0.000011	5.8E-05	na	na
Lead	20.4	1.3E-08	8.7E-07	5.7E-06	0.0066	0.0085	0.011	0.000052	0.0014	0.0056	0.012	**0.17**
Mercury	4.21	1.3E-07	0.0003	0.0017	**0.37**	**1.12**	**1.89**	0.00014	0.016	0.046	**84.2**	**0.12**
Nickel	12.9	2.5E-08	1.5E-07	2.7E-06	0.00063	0.0022	0.0038	0.000038	0.0081	0.021	0.046	**0.34**
Selenium	0.321	8.2E-09	1E-07	0.000002	0.0019	0.0023	0.0026	0.00012	0.0029	0.013	0.078	**0.62**
Silver	3.17	1.7E-09	1.2E-07	5.6E-06	0.0019	0.0045	0.0071	0.000017	0.0014	0.0043	na	0.0057
Aroclor-1260	0.4	6.3E-08	2.3E-08	2.2E-06	0.000063	0.0014	0.0027	1.8E-07	0.00025	0.00065	na	na
Bis(2-ethylhexyl)phthalate	0.44	2.1E-09	1.1E-06	0.00011	0.00016	0.064	**0.13**	1.8E-07	0.0046	0.013	na	na
Adjusted HI		4.5E-07	0.00033	0.0019	0.42	**1.25**	**2.1**	0.00088	0.05	0.16	**85.6**	**6.82**

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.

* na = Not available.

Table G-5.4-38
PAUFs for Ecological Receptors for AOC C-43-001

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	5.06E-05
American Robin	0.42	16.8	1.28E-02
Deer Mouse	0.077	3	7.15E-02
Cottontail	3.1	124	1.73E-03
Montane Shrew	0.39	15.6	1.38E-02
Fox	1038	41,520	5.17E-06

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (0.215 ha) divided by the population area.

Table G-5.4-39
Adjusted HIs for AOC C-43-001

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Cadmium	0.221	2.1E-09	2.6E-08	8.6E-06	6.6E-04	0.0052	0.0097	3.8E-05	0.011	0.032	0.0016	0.0069
Chromium (Total)	18.7	5.4E-08	1.1E-06	5.6E-06	0.0047	0.0075	0.01	7.9E-05	0.0041	0.012	na*	na
Copper	16.9	2.2E-08	7.8E-07	1.1E-05	0.0063	0.011	0.015	1.1E-04	0.0055	0.019	**0.21**	**0.24**
Cyanide (Total)	1.3	2.0E-09	1.1E-04	1.8E-04	**0.17**	**0.17**	**0.17**	2.8E-06	5.4E-05	2.8E-04	na	na
Lead	24.4	4.7E-08	3.2E-06	2.1E-05	0.024	0.031	0.039	1.9E-04	0.005	0.02	0.02	**0.28**
Mercury	0.153	1.0E-08	2.4E-05	1.3E-04	0.029	0.089	**0.15**	1.2E-05	0.0012	0.0036	**3.06**	0.0045
Nickel	6.21	2.7E-08	1.6E-07	2.9E-06	6.6E-04	0.0023	0.004	4.0E-05	0.0085	0.022	0.022	**0.16**
Selenium	0.333	1.9E-08	2.3E-07	4.6E-06	0.0043	0.0051	0.006	2.6E-04	0.0065	0.029	0.081	**0.64**

Table G-5.4-39 (continued)

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Zinc	85.1	4.6E-08	1.7E-06	2.0E-05	0.0033	0.013	0.023	8.2E-05	0.012	0.036	**0.71**	**0.53**
Aroclor-1254	0.0951	6.8E-08	6.3E-07	2.5E-05	0.0011	0.015	0.03	3.7E-06	0.0029	0.0078	na	5.9E-04
Bis(2-ethylhexyl)phthalate	0.284	2.9E-09	1.5E-06	1.5E-04	2.3E-04	0.091	**0.18**	2.6E-07	0.0065	0.018	na	na
Adjusted HI		3E-07	1E-04	6E-04	0.2	0.4	0.6	8E-04	0.06	0.2	**4**	**2**

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.

* na = Not available.

Table G-5.4-40
PAUFs for Ecological Receptors for SWMU 61-007

Receptor	HR (ha)[a]	Population Area (ha)	PAUF[b]
American Kestrel	106	4240	2.49E-06
American Robin	0.42	16.8	6.27E-04
Deer Mouse	0.077	3	3.51E-03
Cottontail	3.1	124	8.50E-05
Montane Shrew	0.39	15.6	6.75E-04
Fox	1038	41,520	2.54E-07

[a] Values from EPA (1993, 059384).

[b] PAUF is calculated as the area of the site (0.0105 ha) divided by the population area.

Table G-5.4-41
Adjusted HIs for SWMU 61-007

COPEC	EPC (mg/kg)	Fox (mammalian top carnivore)	American Kestrel (avian Top carnivore)	American Kestrel (avian intermediate carnivore)	American Robin (avian herbivore)	American Robin (avian omnivore)	American Robin (avian insectivore)	Cottontail (mammalian herbivore)	Montane Shrew (mammalian insectivore)	Deer Mouse (mammalian omnivore)	Earthworm (soil-dwelling invertebrate)	Plant (terrestrial autotroph-producer)
Aroclor-1260	4.83	8.2E-08	3.0E-08	2.9E-06	8.2E-05	0.0018	0.0034	2.3E-07	3.3E-04	8.5E-04	na*	na
Bis(2-ethylhexyl)phthalate	0.079	4.0E-11	2.1E-08	2.0E-06	3.1E-06	0.0012	0.0025	3.5E-09	8.9E-05	2.5E-04	na	na
Adjusted HI		8E-08	5E-08	5E-06	9E-05	3E-03	6E-03	2E-07	4E-04	1E-03	na	na

Note: Bolded values indicate HQs greater than 0.1 or HI greater than 1.
* na = Not available.

Table G-5.4-42
Summary of LOAEL-Based ESLs for Terrestrial Receptors

COPEC	Receptor	LOAEL-Based ESL* (mg/kg)
Inorganic Chemicals (mg/kg)		
Antimony	Deer mouse	23
Antimony	Earthworm	780
Antimony	Plant	58
Antimony	Shrew	79
Arsenic	Earthworm	68
Arsenic	Plant	91
Barium	Earthworm	3200
Barium	Deer mouse	8700
Barium	Plant	260
Beryllium	Plant	25
Cadmium	Earthworm	760
Cadmium	Plant	160
Chromium hexavalent ion	Earthworm	3.4
Chromium hexavalent ion	Plant	4
Chrysene	Deer mouse	31
Copper	Earthworm	530
Copper	Plant	490
Cyanide (Total)	Robin (insectivore)	0.98
Cyanide (Total)	Robin (omnivore)	0.99
Lead	Robin (insectivore)	23
Lead	Robin (omnivore)	28
Lead	Deer mouse	230
Lead	Plant	570
Manganese	Deer mouse	5400
Manganese	Earthworm	4500
Manganese	Plant	1100
Mercury	Robin (herbivore)	0.67
Mercury	Robin (insectivore)	0.13
Mercury	Robin (omnivore)	0.22
Mercury	Deer mouse	30
Mercury	Shrew	17
Mercury	Earthworm	0.5
Mercury	Plant	64
Nickel	Plant	270
Selenium	Deer mouse	1.2
Selenium	Earthworm	41
Selenium	Plant	3

Table G-5.4-42 (continued)

COPEC	Receptor	LOAEL-Based ESL* (mg/kg)
Thallium	Plant	0.5
Vanadium	Plant	80
Zinc	Robin (insectivore)	120
Zinc	Deer mouse	1700
Zinc	Earthworm	930
Zinc	Plant	810
Organic Chemicals (mg/kg)		
Acenaphthene	Plant	2
Aroclor-1254	Robin (herbivore)	11
Aroclor-1254	Robin (insectivore)	0.41
Aroclor-1254	Robin (omnivore)	0.79
Benzoic Acid	Deer mouse	13
Bis(2-ethylhexyl)phthalate	Robin (insectivore)	0.2
Bis(2-ethylhexyl)phthalate	Robin (omnivore)	0.4
Bis(2-ethylhexyl)phthalate	Deer mouse	11
Di-n-butylphthalate	Robin (insectivore)	0.11
Di-n-butylphthalate	Robin (omnivore)	0.21
Fluoranthene	Earthworm	23
Pentachlorophenol	Robin (insectivore)	3.6
Pentachlorophenol	Deer mouse	15
Pentachlorophenol	Plant	50
Phenanthrene	Earthworm	12
Pyrene	Earthworm	20

*LOAEL-based ESLs from ECORISK Database, Release 4.1 (LANL 2017, 602538).

Table G-5.4-43
HI Analysis Using LOAEL-Based ESLs for SWMU 00-017

COPEC	EPC (mg/kg)	Deer Mouse	Earthworm	Plant
Antimony	12(UJ)	na*	0.015	**0.21**
Barium	81.2	na	0.025	**0.31**
Cadmium	0.151	0.022	0.002	0.00094
Lead	175	na	na	**0.31**
Mercury	0.036	na	0.072	na
Nickel	5.96	na	na	0.022
Selenium	0.296	na	na	0.099
Thallium	2.4(U)	**0.333**	na	**4.8**
	HI	0.4	0.1	**6**

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.
* na = Not available.

Table G-5.4-44
HI Analysis Using LOAEL-Based ESLs for AOC C-00-044

COPEC	EPC (mg/kg)	American Robin (avian insectivore)	American Robin (avian omnivore)	Deer Mouse	Earthworm	Plant
Antimony	1.92(U)	na*	na	0.083	na	0.033
Lead	72.5	**3.15**	**2.59**	**0.315**	na	**0.127**
Selenium	0.47	na	na	**0.39**	0.011	**0.16**
Zinc	45.7	**0.38**	na	0.027	0.049	0.056
Bis(2-ethylhexyl)phthalate	0.95	**4.75**	**2.38**	0.086	na	0.033
	HI	**8**	**5**	0.9	0.1	0.4

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.
*na = Not available.

Table G-5.4-45
Adjusted HI Analysis Using LOAEL-Based ESLs for AOC C-00-044

COPEC	EPC (mg/kg)	American Robin (avian insectivore)	American Robin (avian omnivore)
Antimony	1.92(U)	na*	na
Lead	72.5	**0.41**	**0.337**
Selenium	0.47	na	na
Zinc	45.7	0.049	na
Bis(2-ethylhexyl)phthalate	0.95	**0.62**	**0.31**
	HI	1	0.6

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.
* na = Not available.

Table G-5.4-46
HI Analysis Using LOAEL-Based ESLs for SWMU 01-001(a)

COPEC	EPC (mg/kg)	Plant
Barium	54.7	**0.21**
Copper	10	0.02
Lead	14.2	0.025
Nickel	6.16	0.023
Selenium	0.252	0.084
Vanadium	9.09	**0.11**
Acenaphthene	0.082	0.041
	HI	0.5

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.

Table G-5.4-47
HI Analysis Using LOAEL-Based ESLs for SWMU 01-001(d3)

COPEC	EPC (mg/kg)	American Robin (avian herbivore)	American Robin (avian insectivore)	American Robin (avian omnivore)	Deer Mouse	Montane Shrew	Earthworm	Plant
Antimony	27.4	na*	na	na	**1.19**	**0.35**	0.035	**0.47**
Barium	38.7	na	na	na	na	na	na	1.49E-01
Beryllium	0.828	na	na	na	na	na	na	0.033
Chromium hexavalent ion	1.13	na	na	na	na	na	**0.33**	**0.28**
Copper	8.87	na	na	na	na	na	0.017	0.018
Lead	17.6	na	na	na	na	na	na	3.09E-02
Manganese	261	na	na	na	na	na	0.058	**0.24**
Mercury	7.77	1.16E+01	5.98E+01	3.53E+01	2.59E-01	**4.57E-01**	1.55E+01	1.21E-01
Nickel	4.3	na	na	na	na	na	na	0.016
Selenium	0.497	na	na	na	**4.14E-01**	na	1.21E-02	1.66E-01
Zinc	48.46	na	na	na	na	na	5.20E-02	5.98E-02
Bis(2-ethylhexyl)phthalate	0.88	na	**4.4**	**2.2**	0.08	na	na	na
Di-n-butylphthalate	0.21	na	**1.91**	**1**	na	na	na	na
Pentachlorophenol	0.8	na	**0.22**	na	0.053	na	na	0.016
	HI	**12**	**67**	**39**	**2**	8.07E-01	**16**	**2**

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.
* na = Not available.

Table G-5.4-48
Adjusted HI Analysis Using LOAEL-Based ESLs for SWMU 01-001(d3)

COPEC	EPC (mg/kg)	American Robin (avian herbivore)	American Robin (avian insectivore)	American Robin (avian omnivore)	Deer Mouse
Antimony	27.4	na*	na	na	**0.32**
Mercury	7.77	**5.5E-01**	**2.8E+00**	**1.7E+00**	6.9E-02
Selenium	0.497	na	na	na	1.1E-01
Bis(2-ethylhexyl)phthalate	0.88	na	**0.21**	0.1	0.021
Di-n-butylphthalate	0.21	na	0.091	0.047	na
Pentachlorophenol	0.8	na	0.011	na	0.014
HI		0.6	3	2	0.5

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.
* na = Not available.

Table G-5.4-49
HI Analysis Using LOAEL-Based ESLs for SWMU 01-001(f)

COPEC	EPC (mg/kg)	American Robin (avian insectivore)	American Robin (avian omnivore)	Earthworm	Plant
Cyanide (Total)	0.72	**0.73**	**0.73**	na*	na
Lead	14.8	na	na	na	0.026
Manganese	266	na	na	0.059	**0.24**
Nickel	4.09	na	na	na	0.015
Selenium	0.262	na	na	na	0.087
Vanadium	9.44	na	na	na	**0.12**
Zinc	50.3	na	na	0.054	0.062
Aroclor-1254	6.06	**7.67**	**14.8**	na	na
Bis(2-ethylhexyl)phthalate	0.266	**0.67**	**1.33**	na	na
HI		**9**	**2**	0.1	0.6

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.
* na = Not available.

Table G-5.4-50
Adjusted HI Analysis Using LOAEL-Based ESLs for SWMU 01-001(f)

COPEC	EPC (mg/kg)	American Robin (avian insectivore)	American Robin (avian omnivore)
Cyanide (Total)	0.72	0.011	0.011
Aroclor-1254	6.06	0.12	0.23
Bis(2-ethylhexyl)phthalate	0.266	0.01	0.02
HI		0.1	0.3

Table G-5.4-51
HI Analysis Using LOAEL-Based ESLs for SWMU 01-001(o)

COPEC	EPC (mg/kg)	American Robin (avian insectivore)	Earthworm	Plant
Antimony	1.4(U)	na*	na	0.024
Cadmium	3.6	na	na	0.023
Copper	67.1	na	**0.13**	**0.14**
Lead	25.1	na	na	0.044
Mercury	0.161	na	**0.32**	na
Nickel	6.45	na	na	0.024
Selenium	0.225	na	na	0.075
Zinc	89.5	na	0.096	**0.11**
Aroclor-1254	0.756	**1.84**	na	na
Di-n-butylphthalate	1.1	**10**	na	na
	HI	**12**	0.5	0.4

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.
* na = Not available.

Table G-5.4-52
Adjusted HI Analysis Using LOAEL-Based ESLs for SWMU 01-001(o)

COPEC	EPC (mg/kg)	American Robin (avian insectivore)
Di-n-butylphthalate	1.1	0.063
	HI	0.06

Table G-5.4-53
HI Analysis Using LOAEL-Based ESLs for SWMU 01-001(s2)

COPEC	EPC (mg/kg)	Plant
Barium	108	**0.42**
Copper	10.5	0.021
Nickel	7.84	0.029
Selenium	0.352	**0.12**
	HI	0.6

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.

Table G-5.4-54
HI Analysis Using LOAEL-Based ESLs for SWMU 01-002(a2)-00

COPEC	EPC (mg/kg)	American Robin (avian herbivore)	American Robin (avian insectivore)	American Robin (avian omnivore)	Plant
Lead	18.4	**0.511**	**0.8**	**0.657**	0.028
Nickel	9.56	0.019	0.12	0.074	0.035
Selenium	0.306	na*	na	na	0.1
	HI	0.5	0.9	0.7	0.2

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.
* na = Not available.

Table G-5.4-55
HI Analysis Using LOAEL-Based ESLs for SWMU 01-003(a)

COPEC	EPC (mg/kg)	American Robin (avian insectivore)	American Robin (avian omnivore)	Deer Mouse	Earthworm	Plant
Barium	44.3	na*	na	na	0.0138	**0.487**
Cyanide (Total)	1	**1.02**	**1.01**	na	na	na
Lead	18	na	na	na	na	0.032
Manganese	268	na	na	na	0.06	**0.24**
Mercury	0.102	**0.78**	**0.46**	na	0.2	na
Nickel	5.91	na	na	na	na	0.022
Selenium	0.243	na	na	na	na	0.081
Vanadium	7.36	na	na	na	na	0.092
Zinc	45.9	na	na	na	0.049	0.057
Acenaphthene	0.184	na	na	na	na	0.092
Aroclor-1254	2.65	**6.46**	**3.35**	**0.55**	na	na
Benzoic Acid	1.6	na	na	**0.12**	na	na
Bis(2-ethylhexyl)phthalate	0.38	**1.9**	**0.95**	na	na	na
Chrysene	2.27	na	na	0.073	na	na
Di-n-butylphthalate	0.053	**0.48**		na	na	na
Fluoranthene	6.36	na	na	na	**0.28**	na
Phenanthrene	2.23	na	na	na	**0.19**	na
Pyrene	5.58	na	na	na	**0.28**	na
	HI	**11**	**6**	0.7	1	1

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.
* na = Not available.

Table G-5.4-56
Adjusted HI Analysis Using LOAEL-Based ESLs for SWMU 01-003(a)

COPEC	EPC (mg/kg)	American Robin (avian insectivore)	American Robin (avian omnivore)
Cyanide (Total)	1	0.031	0.031
Mercury	0.102	0.024	0.014
Aroclor-1254	2.65	**0.2**	0.1
Benzoic Acid	1.6	na*	na
Bis(2-ethylhexyl)phthalate	0.38	0.058	0.029
Chrysene	2.27	na	na
Di-n-butylphthalate	0.053	0.015	na
	HI	0.3	0.2

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.
* na = Not available.

Table G-5.4-57
HI Analysis Using LOAEL-Based ESLs for AOC 01-003(b2)

COPEC	EPC (mg/kg)	Earthworm	Plant
Antimony	2.1(U)	na*	0.036
Arsenic	11.9	**0.18**	**0.13**
Barium	117	0.037	**0.45**
Beryllium	1.16	na	0.046
Lead	34.2	na	0.06
Nickel	4.66	na	0.017
Selenium	0.853	0.021	**0.28**
	HI	0.2	1

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.
* na = Not available.

Table G-5.4-58
HI Analysis Using LOAEL-Based ESLs for SWMU 01-003(d)

COPEC	EPC (mg/kg)	**Deer Mouse**	Earthworm	Plant
Antimony	78.5	**3.41**	0.1	**1.35**
Barium	55.2	0.0063	0.017	.21
Beryllium	0.843	na*	na	0.034
Lead	13.3	na	na	0.023
Selenium	0.39	na	na	**0.13**
Zinc	53.3	na	0.057	0.066
	HI	3	0.2	**2**

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.
* na = Not available.

Table G-5.4-59
Adjusted HI Analysis Using
LOAEL-Based ESLs for SWMU 01-003(d)

COPEC	EPC (mg/kg)	**Deer Mouse**
Antimony	78.5	**0.14**
	HI	0.1

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.

Table G-5.4-60
HI Analysis Using LOAEL-Based ESLs for SWMU 01-006(a)

COPEC	EPC (mg/kg)	Earthworm	Plant
Arsenic	2.6	0.038	0.029
Lead	16.8	na*	0.029
Mercury	0.0567	**0.11**	na
Nickel	5.29	na	0.02
Selenium	0.247	na	0.082
	HI	0.1	0.2

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.
* na = Not available.

Table G-5.4-61
HI Analysis Using LOAEL-Based ESLs for AOC 01-006(e)

COPEC	EPC (mg/kg)	Plant
Selenium	0.57(U)	**0.19**
	HI	0.2

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.

Table G-5.4-62
HI Analysis Using LOAEL-Based ESLs for SWMU 01-007(c)

COPEC	EPC (mg/kg)	Plant
Lead	38.3	0.067
Nickel	7.04	0.026
Selenium	0.4	**0.13**
	HI	0.2

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.

Table G-5.4-63
HI Analysis Using LOAEL-Based
ESLs for SWMUs 03-038(a) and 03-038(b)

COPEC	EPC (mg/kg)	Plant
Barium	58.6	**0.23**
Lead	13.5	0.024
Nickel	8.03	0.03
Selenium	0.248	0.083
	HI	0.3

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.

Table G-5.4-64
HI Analysis Using LOAEL-Based ESLs for SWMU 03-055(c)

COPEC	EPC (mg/kg)	Earthworm	Plant
Arsenic	3.09	0.045	0.034
Copper	8.94	0.017	0.018
Lead	64.1	na*	**0.11**
Selenium	1.13	0.028	**0.38**
Zinc	108	0.12	**0.14**
Acenaphthene	0.135	na	0.068
	HI	0.2	0.8

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.
* na = Not available.

Table G-5.4-65
HI Analysis Using LOAEL-Based ESLs for SWMU 32-002(b2)

COPEC	EPC (mg/kg)	American Robin (avian insectivore)	American Robin (avian omnivore)	Earthworm	Plant
Arsenic	3.65	na*	na	0.054	0.04
Barium	79.8	na	na	0.025	0.31
Lead	20.4	na	na	0.0024	0.036
Mercury	4.21	na	na	8.42	0.066
Nickel	12.9	**19.1**	**32.4**	0.01	0.048
Selenium	0.321	na	na	0.0078	0.11
Thallium	0.21	na	na	na	0.42
Zinc	46.5	na	na	0.05	0.057
Bis(2-ethylhexyl)phthalate	0.44	na	2.2	na	na
	HI	**19**	**35**	**9**	**1**

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.
* na = Not available.

Table G-5.4-66
Adjusted HI Analysis Using LOAEL-Based ESLs for SWMU 32-002(b2)

COPEC	EPC (mg/kg)	American Robin (avian insectivore)	American Robin (avian omnivore)
Mercury	19.1	**0.11**	**0.19**
	HI	0.1	0.2

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.

Table G-5.4-67
HI Analysis Using LOAEL-Based ESLs for AOC C-43-001

COPEC	EPC (mg/kg)	Earthworm	Plant
Copper	16.9	0.032	0.034
Lead	24.4	na*	0.059
Mercury	0.153	**0.31**	na
Nickel	6.21	na	0.023
Selenium	0.333	na	**0.11**
Zinc	85.1	0.092	**0.11**
	HI	0.4	0.3

Note: Bolded values indicate HQ greater than 0.1 or HI greater than 1.
* na = Not available.

Attachment G-1

ProUCL Files
(on CD included with this document)

Attachment G-2

Ecological Scoping Checklists

G2-1.0 SOLID WASTE MANAGEMENT UNIT 00-017, AREAS OF CONCERN 00-044 AND C-43-001

G2-1.1 Part A—Scoping Meeting Documentation

Site IDs	SWMU 00-017, AOC C-00-044, AOC C-43-001
Form of site releases (solid, liquid, vapor). Describe all relevant known or suspected <u>mechanisms</u> of release (spills, dumping, material disposal, outfall, explosive testing, etc.) and describe potential <u>areas</u> of release. Reference locations on a map as appropriate.	Between 1943 and 1965, research work on nuclear weapons was carried out at Technical Area 00 (TA-00). At TA-43, the Health Research Laboratory (HRL) Complex is the focal point of biosciences and biotechnology at the Laboratory. These activities generated releases from septic tanks, sanitary lines, the industrial waste line, outfalls, storm water drains, accidental spills or leaks, and placement of contaminated of contaminated materials at landfills. Solid Waste Management Unit (SWMU) 00-017 includes former line 167, former manhole (unassigned land release) (ULR) 33, and lines 170 and 171. Former line 167 and former manhole ULR 33 were removed by 1985, except for the anchors and sections of pipe encased in anchors. Lines 170 and 171 are the only sections of industrial waste line known to remain in Los Alamos townsite. The site of former line 167 and former manhole ULR 33 under the Omega Bridge remains undeveloped. Nine concrete anchors and 3-ft-long sections of pipe encased in each of the anchors remain at the site. Area of Concern (AOC) C-00-044 is soil contamination associated with paint chips under the Omega Bridge. AOC C-43-001 is a storm drain outfall that receives discharges from two storm drains that collect runoff from the HRL loading dock and from the overflow at a lift station (structure 43-10), and drains onto the south-facing slope of Los Alamos Canyon. The potential areas of release would be the surface and subsurface media of the mesa.
List of Primary Impacted Media **(Indicate all that apply.)**	**Surface soil –** X **Surface water/sediment –** not applicable (N/A) **Subsurface –** X **Groundwater –** N/A **Other, explain –** None
FIMAD vegetation class based on Arcview vegetation coverage **(Indicate all that apply.)**	**Water –** N/A **Bare Ground/Unvegetated –** X **Spruce/fir/aspen/mixed conifer –** X **Ponderosa pine –** X **Piñon juniper/juniper savannah –** N/A **Grassland/shrubland –** N/A **Developed –** X **Burned –** NA
Is T&E Habitat Present? **If applicable, list species known or suspected to use the site for breeding or foraging.**	No threatened and endangered (T&E) species nesting habitat is present at the site. However, the area is within the foraging range of the Mexican spotted owl.

Site IDs	SWMU 00-017, AOC C-00-044, AOC C-43-001
Provide list of Neighboring/ Contiguous/ Upgradient sites, include a brief summary of COPCs and form of releases for relevant sites and reference map as appropriate. **(Use information to evaluate need to aggregate sites for screening.)**	All contiguous and neighboring sites are included in the Upper Los Alamos Canyon Aggregate Area investigation.
Surface Water Erosion Potential Information Surface water erosion potential is based on site observations.	Run-on to sites occurs from storms. Runoff may infiltrate into the shallow subsurface or move as sheet flow down the slope into Los Alamos Canyon.

G2-1.2 Part B—Site Visit Documentation

Site IDs	SWMU 00-017, AOC C-00-044, AOC C-43-001
Date of Site Visit	7/5/2018
Site Visit Conducted by	Randall Ryti, Tracy McFarland, Kent Rich, Robert Dickerson, Larry Salazar

Receptor Information:

Estimate cover	**Relative vegetative cover (high, medium, low, none)** = Medium **Relative wetland cover (high, medium, low, none)** = None **Relative structures/asphalt, etc., cover (high, medium, low, none)** = Medium
Field Notes on the GIS Vegetation Class to Assist in Verifying the Arcview Information	The areas in and around the SWMUs/AOCs on the mesa-top townsite are all urban. Some portion of these sites are in Los Alamos Canyon and have a high percentage of naturally occurring vegetation.
Are ecological receptors present at the site? **(yes/no/uncertain)** **Describe the general types of receptors present at the site (terrestrial and aquatic), and make notes on the quality of habitat present at the site.**	Yes. The general types of receptors are terrestrial biota such as reptiles, small mammals, insects, birds, and plants. Some of the habitat around the SWMUs/AOCs is highly developed and therefore not of high quality. The slopes into Los Alamos Canyon also provide habitat for ecological receptors.

Contaminant Transport Information:

Surface water transport **Field notes on the erosion potential, including a discussion of the terminal point of surface water transport (if applicable).**	There is a high potential for surface water transport from the mesa top because the SWMUs/AOCs were located in the subsurface.
Are there any off-site transport pathways (surface water, air, or groundwater)? **(yes/no/uncertain)** **Provide explanation**	Sheet flow from the mesa top to the canyons occurs during summer storms and as a result of snowmelt. Groundwater is located more than 1000 feet below the surface of the mesa top.

Ecological Effects Information:

Physical Disturbance **(Provide list of major types of disturbances, including erosion and construction activities; review historical aerial photos where appropriate.)**	Parts of the SWMUs/AOCs have a high amount of physical disturbances due to development. These sites are located within a highly developed residential and commercial area, including roads and buildings. As noted previously, some parts of these sites extend into Los Alamos Canyon with predominately natural vegetation.
Are there obvious ecological effects? **(yes/no/uncertain)** **Provide explanation and apparent cause (e.g., contamination, physical disturbance, other).**	Yes, due to the developed commercial and residential area. This habitat is not natural and is not of great quality.

No Exposure/Transport Pathways:

If there are no complete exposure pathways to ecological receptors on-site and no transport pathways to off-site receptors, the remainder of the checklist should not be completed. Stop here and provide additional explanation/justification for proposing an ecological No Further Action recommendation (if needed). At a minimum, the potential for future transport should include likelihood that future construction activities could make contamination more available for exposure or transport.

Not applicable.

Adequacy of Site Characterization:

Do existing or proposed data provide information on the nature, rate, and extent of contamination? **(yes/no/uncertain)** **Provide explanation** **(Consider if the maximum value was captured by existing sample data.)**	Yes. The nature and extent of potential contamination have been defined for the SWMUs and AOCs listed above.
Do existing or proposed data for the site address potential transport pathways of site contamination? **(yes/no/uncertain)** **Provide explanation** **(Consider if other sites should be aggregated to characterize potential ecological risk.)**	Yes. The extent of contamination has been defined.

Additional Field Notes:

Provide additional field notes on the site setting and potential ecological receptors.

SWMU 00-017. Part of this site is located under the Omega West Bridge and lies under the western side of the bridge. Both the north- and south-facing slopes are included in this site. New Mexico olive and other shrubs were noted. Ponderosa pine are present and one specimen near the top of the south-facing slope was dead.

AOC C-43-001. This site includes the slope and bench of the south-facing slope of Los Alamos Canyon. Oaks and ponderosa pine were noted.

AOC C-00-044. This site is located under the Omega West Bridge and extends west and east from that location. Both the north- and south-facing slopes are included in this site.

G2-1.3 Part C—Ecological Pathways Conceptual Exposure Model

Question A:

Could soil contaminants reach receptors via vapors?

- Volatility of the hazardous substance (volatile chemicals generally have Henry's Law constant >10^{-5} atm-me/mol and molecular weight <200 g/mol).

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: Volatile organic compounds are not frequently detected; most are in the subsurface and are at low concentrations.

Question B:

Could the soil contaminants reach receptors through fugitive dust carried in air?

- Soil contamination would have to be on the actual surface of the soil to become available for dust.
- In the case of dust exposures to burrowing animals, the contamination would have to occur in the depth interval where these burrows occur.

Answer (likely/unlikely/uncertain): Likely

Provide explanation: Some chemicals of potential concern (COPCs) were detected in the surface interval.

Question C:

Can contaminated soil be transported to aquatic ecological communities?

- If erosion is a transport pathway, evaluate the terminal point to see if aquatic receptors could be affected by contamination from this site.

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: No aquatic communities exist on the mesa top or the canyon slopes.

Question D:

Is contaminated groundwater potentially available to biological receptors through seeps or springs or shallow groundwater?

- Known or suspected presence of contaminants in groundwater.
- The potential for contaminants to migrate via groundwater and discharge into habitats and/or surface waters.
- Contaminants may be taken up by terrestrial and rooted aquatic plants whose roots are in contact with groundwater present within the root zone (~1 m depth).
- Terrestrial wildlife receptors generally will not contact groundwater unless it is discharged to the surface.

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: No seeps or springs are present on the mesa top or canyon slopes and no perched water has been found. The depth to groundwater is greater than 500–1000 ft below ground surface.

<u>Question E</u>:

Is infiltration/percolation from contaminated subsurface material a viable transport and exposure pathway?

- Suspected ability of contaminants to migrate to groundwater.
- The potential for contaminants to migrate via groundwater and discharge into habitats and/or surface waters.
- Contaminants may be taken up by terrestrial and rooted aquatic plants whose roots are in contact with groundwater present within the root zone (~1 m depth).
- Terrestrial wildlife receptors generally will not contact groundwater unless it is discharged to the surface.

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: Contaminants are unlikely to migrate to the regional aquifer given the depth to groundwater. The lack of a significant hydraulic driver (e.g., no ponded water on the surface) facilitating infiltration also mitigates the potential for contaminants reaching groundwater.

<u>Question F</u>:

Might erosion or mass wasting events be a potential release mechanism for contaminants from subsurface materials or perched aquifers to the surface?

- This question is only applicable to release sites located on or near the mesa edge.
- Consider the erodability of surficial material and the geologic processes of canyon/mesa edges.

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: Surface contamination is present for these sites. There are no perched aquifers near these sites.

<u>Question G</u>:

Could airborne contaminants interact with receptors through respiration of vapors?

- Contaminants must be present as volatiles in the air.
- Consider the importance of inhalation of vapors for burrowing animals.
- Foliar uptake of organic vapors is typically not a significant exposure pathway.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 2

Terrestrial Animals: 2

Provide explanation: Volatile organic compounds are detected infrequently and at low concentrations.

Question H:

Could airborne contaminants interact with plants through deposition of particulates or with animals through inhalation of fugitive dust?

- Contaminants must be present as particulates in the air or as dust for this exposure pathway to be complete.
- Exposure via inhalation of fugitive dust is particularly applicable to ground-dwelling species that would be exposed to dust disturbed by their foraging or burrowing activities or by wind movement.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 3

Terrestrial Animals: 3

Provide explanation: Surface soil contamination is present.

Question I:

Could contaminants interact with plants through root uptake or rain splash from surficial soils?

- Contaminants in bulk soil may partition into soil solution, making them available to roots.
- Exposure of terrestrial plants to contaminants present in particulates deposited on leaf and stem surfaces by rain striking contaminated soils (i.e., rain splash).

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 3

Provide explanation: Surface soil contamination is present.

Question J:

Could contaminants interact with receptors through food web transport from surficial soils?

- The chemicals may bioaccumulate in animals.
- Animals may ingest contaminated food items.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 3

Provide explanation: Surface soil contamination is present.

<u>Question K</u>:

Could contaminants interact with receptors via incidental ingestion of surficial soils?

- Incidental ingestion of contaminated soil could occur while animals grub for food resident in the soil, feed on plant matter covered with contaminated soil, or while grooming themselves clean of soil.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 3

Provide explanation: Surface and subsurface soil contamination is present.

<u>Question L</u>:

Could contaminants interact with receptors through dermal contact with surficial soils?

- Significant exposure via dermal contact would generally be limited to organic contaminants that are lipophilic and can cross epidermal barriers.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 2

Provide explanation: Lipophilic chemicals detected at some sites.

<u>Question M</u>:

Could contaminants interact with plants or animals through external irradiation?

- External irradiation effects are most relevant for gamma-emitting radionuclides.
- Burial of contamination attenuates radiological exposure.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 2

Terrestrial Animals: 2

Provide explanation: Gamma-emitting radionuclides detected only at some sites and at low concentrations.

<u>Question N</u>:

Could contaminants interact with plants through direct uptake from water and sediment or sediment rain splash?

- Contaminants may be taken up by terrestrial plants whose roots are in contact with surface waters.
- Terrestrial plants may be exposed to particulates deposited on leaf and stem surfaces by rain striking contaminated sediments (i.e., rain splash) in an area that is only periodically inundated with water.
- Contaminants in sediment may partition into soil solution, making them available to roots.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 0

Provide explanation: There is no aquatic habitat present.

<u>Question O</u>:

Could contaminants interact with receptors through food web transport from water and sediment?

- The chemicals may bioconcentrate in food items.
- Animals may ingest contaminated food items.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 0

Provide explanation: There is no aquatic habitat present.

<u>Question P</u>:

Could contaminants interact with receptors via ingestion of water and suspended sediments?

- If sediments are present in an area that is only periodically inundated with water, terrestrial receptors may incidentally ingest sediments.
- Terrestrial receptors may ingest water-borne contaminants if contaminated surface waters are used as a drinking water source.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 0

Provide explanation: There is no aquatic habitat present.

<u>Question Q</u>:

Could contaminants interact with receptors through dermal contact with water and sediment?

- If sediments are present in an area that is only periodically inundated with water, terrestrial species may be dermally exposed during dry periods.
- Terrestrial organisms may be dermally exposed to water-borne contaminants as a result of wading or swimming in contaminated waters.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 0

Provide explanation: There is no aquatic habitat present.

<u>Question R</u>:

Could contaminants interact with plants or animals through external irradiation?

- External irradiation effects are most relevant for gamma-emitting radionuclides.
- Burial of contamination attenuates radiological exposure.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 0

Terrestrial Animals: 0

Provide explanation: There is no aquatic habitat present.

<u>Question S</u>:

Could contaminants bioconcentrate in free-floating aquatic, attached aquatic plants, or emergent vegetation?

- Aquatic plants are in direct contact with water.
- Contaminants in sediment may partition into pore water, making them available to submerged roots.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Plants/Emergent Vegetation: 0

Provide explanation: There is no aquatic habitat present.

<u>Question T</u>:

Could contaminants bioconcentrate in sedimentary or water column organisms?

- Aquatic receptors may actively or incidentally ingest sediment while foraging.
- Aquatic receptors may be directly exposed to contaminated sediments or may be exposed to contaminants through osmotic exchange, respiration, or ventilation of sediment pore waters.
- Aquatic receptors may be exposed through osmotic exchange, respiration, or ventilation of surface waters.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Animals: 0

Provide explanation: There is no aquatic habitat present.

Question U:

Could contaminants bioaccumulate in sedimentary or water column organisms?

- Lipophilic organic contaminants and some metals may concentrate in an organism's tissues.
- Ingestion of contaminated food items may result in contaminant bioaccumulation through the food web.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Animals: 0

Provide explanation: There is no aquatic habitat present.

Question V:

Could contaminants interact with aquatic plants or animals through external irradiation?

- External irradiation effects are most relevant for gamma-emitting radionuclides.
- The water column acts to absorb radiation; thus external irradiation is typically more important for sediment-dwelling organisms.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

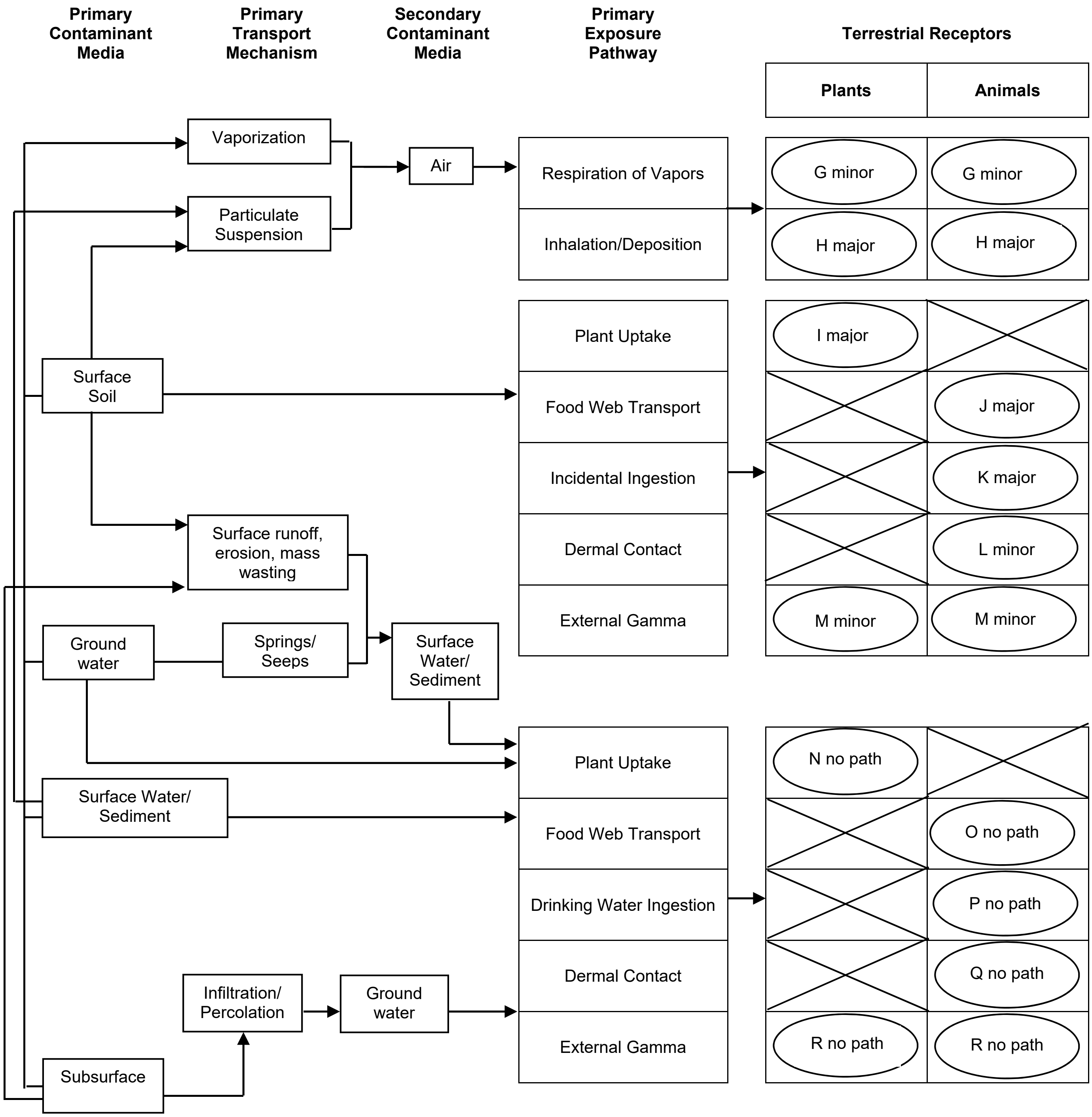
Aquatic Plants: 0

Aquatic Animals: 0

Provide explanation: There is no aquatic habitat present.

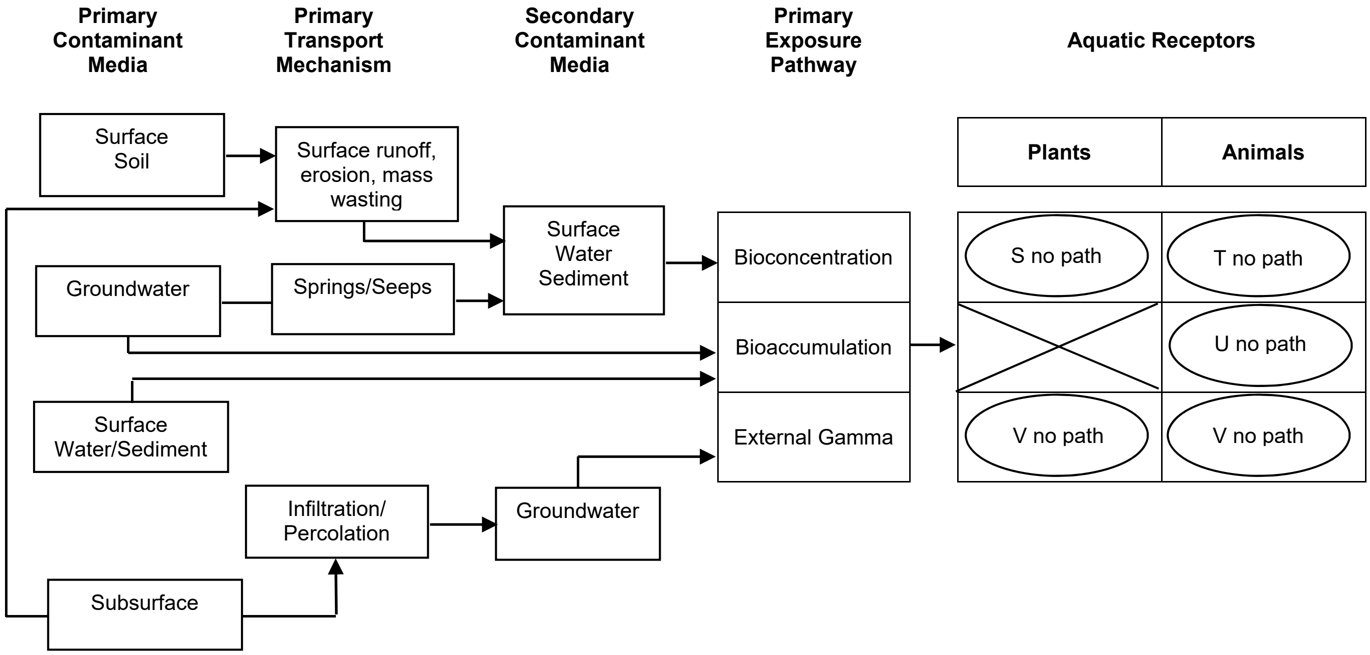
NOTE:
Letters in circles refer to questions on the Scoping Checklist

Ecological Scoping Checklist
Terrestrial Receptors
Ecological Pathways Conceptual Exposure Model



NOTE:
Letters in circles refer to questions on the Scoping Checklist

Ecological Scoping Checklist
Aquatic Receptors
Ecological Pathways Conceptual Exposure Model



SIGNATURES AND CERTIFICATION

Checklist completed by:

Name (printed): Randall Ryti

Name (signature): Randall Ryti

Organization: Neptune and Company, Inc.

Date completed: July 16, 2018

Checklist reviewed by:

Name (printed): Tracy McFarland

Name (signature): Tracy McFarland

Organization: N3B

Date reviewed: 9/14/18

G2-2.0 TA-1 SOLID WASTE MANAGEMENT UNITS 01-001(a), 01-001(d3), 01-001(f), 01-001(g), 01-001(o), 01-001(s2), 01-002(a2)-00, 01-003(a), 01-003(b2), 01-003(d), 01-006(a), 01-007(c), AND AREA OF CONCERN 01-006(e)

G2-2.1 Part A—Scoping Meeting Documentation

Site IDs	SWMU 01-001(a), SWMU 01-001(d3), SWMU 01-001(f), SWMU 01 001(g), SWMU 01-001(o), SWMU 01-001(s2), SWMU 01-002(a2)-00, SWMU 01-003(a), SWMU 01-003(b2), SWMU 01-003(d), SWMU 01-006(a), AOC 01-006(e), SWMU 01-007(c)

Form of site releases (solid, liquid, vapor). Describe all relevant known or suspected <u>mechanisms</u> of release (spills, dumping, material disposal, outfall, explosive testing, etc.) and describe potential <u>areas</u> of release. Reference locations on a map as appropriate.	Between 1943 and 1965, research work on nuclear weapons was carried out at former TA-01. These activities generated releases from septic tanks, sanitary lines, the industrial waste line, outfalls, storm water drains, accidental spills or leaks, and placement of contaminated materials at landfills.
	SWMU 01-001(a), septic tank
	SWMU 01-001(d3), septic tank
	SWMU 01-001(f), septic tank
	SWMU 01-001(g), septic tank
	SWMU 01-001(o), sanitary waste line
	01-002(a2)-00, industrial waste line
	SWMU 01-003(a), landfill
	SWMU 01-003(b2), landfill
	SWMU 01-003(d), landfill
	AOC 01-006(e), drain line
	SWMU 01-007(c), areas of suspected subsurface soil contamination
	The potential areas of release would be the surface and subsurface media of the mesa.

List of Primary Impacted Media **(Indicate all that apply.)**	**Surface soil –** X **Surface water/sediment –** N/A **Subsurface –** X **Groundwater –** N/A **Other, explain –** None
FIMAD vegetation class based on Arcview vegetation coverage **(Indicate all that apply.)**	**Water –** N/A **Bare Ground/Unvegetated –** X **Spruce/fir/aspen/mixed conifer –** X **Ponderosa pine –** X **Piñon juniper/juniper savannah –** N/A **Grassland/shrubland –** N/A **Developed –** X **Burned –** NA
Is T&E Habitat Present? **If applicable, list species known or suspected to use the site for breeding or foraging.**	No T&E species nesting habitat is present at the site. However, the area is within the foraging range of the Mexican spotted owl.

Site IDs	SWMU 01-001(a), SWMU 01-001(d3), SWMU 01-001(f), SWMU 01 001(g), SWMU 01-001(o), SWMU 01-001(s2), SWMU 01-002(a2)-00, SWMU 01-003(a), SWMU 01-003(b2), SWMU 01-003(d), SWMU 01-006(a), AOC 01-006(e), SWMU 01-007(c)
Provide list of Neighboring/ Contiguous/ Upgradient sites, include a brief summary of COPCs and form of releases for relevant sites and reference map as appropriate. **(Use information to evaluate need to aggregate sites for screening.)**	All contiguous and neighboring sites are included in the Upper Los Alamos Canyon Aggregate Area investigation.
Surface Water Erosion Potential Information Surface water erosion potential is based on site observations.	Run-on to sites occurs from storms. Runoff may infiltrate into the shallow subsurface or move as sheet flow down the slope into Los Alamos Canyon.

G2-2.2 Part B—Site Visit Documentation

Site IDs	SWMU 01-001(a), SWMU 01-001(d3), SWMU 01-001(f), SWMU 01-001(g), SWMU 01-001(o), SWMU 01-001(s2), SWMU 01-002(a2)-00, SWMU 01-003(a), SWMU 01-003(b2), SWMU 01-003(d), SWMU 01-006(a) AOC 01-006(e), SWMU 01-007(c)
Date of Site Visit	7/5/2018
Site Visit Conducted by	Randall Ryti, Tracy McFarland, Kent Rich, Robert Dickerson, Larry Salazar

Receptor Information:

Estimate cover	**Relative vegetative cover (high, medium, low, none)** = Medium **Relative wetland cover (high, medium, low, none)** = None **Relative structures/asphalt, etc., cover (high, medium, low, none)** = Medium
Field Notes on the GIS Vegetation Class to Assist in Verifying the Arcview Information	These sites are located in the former TA-01 and includes areas on the mesa-top townsite, which are all urban and highly developed and there is a very small percentage of naturally occurring vegetation. Many of the areas contain several types of landscaping ranging from gravel to lawn. There is natural vegetation on the portion of these sites that extend on the south-facing slope of Los Alamos Canyon.
Are ecological receptors present at the site? **(yes/no/uncertain)** **Describe the general types of receptors present at the site (terrestrial and aquatic), and make notes on the quality of habitat present at the site.**	Yes. Although parts of the SWMUs/AOCs are not abundantly populated with receptors, there are plant and other ecological receptors present, especially on the south-facing slope of Los Alamos Canyon. The general types of receptors are terrestrial biota such as reptiles, small mammals, insects, birds, and plants. Part of the habitat around the SWMUs/AOCs is highly developed and therefore not of high quality. The slope into Los Alamos Canyon also provides habitat for ecological receptors.

Contaminant Transport Information:

Surface water transport **Field notes on the erosion potential, including a discussion of the terminal point of surface water transport (if applicable).**	There is a low to moderate potential for surface water transport from the mesa top because the SWMUs/AOCs were located in the subsurface, but there are also parts of these sites that are outfalls onto the south-facing slope of Los Alamos Canyon.

Are there any off-site transport pathways (surface water, air, or groundwater)? **(yes/no/uncertain)** **Provide explanation**	Sheet flow from the mesa top to the canyons occurs during summer storms and as a result of snowmelt. Groundwater is located more than 1000 feet below the surface of the mesa top.

Ecological Effects Information:

Physical Disturbance **(Provide list of major types of disturbances, including erosion and construction activities; review historical aerial photos where appropriate.)**	Parts of the SWMUs/AOCs have a high amount of physical disturbances due to development. These sites are located within a highly developed residential and commercial area, including roads and buildings. The south-facing slope of Los Alamos Canyon generally has limited physical disturbance.
Are there obvious ecological effects? **(yes/no/uncertain)** **Provide explanation and apparent cause (e.g., contamination, physical disturbance, other).**	Yes, due to the developed commercial and residential area. Some of the habitat is not natural and is not of great quality. Other areas, such as the south-facing slope of Los Alamos Canyon, are not developed and have better-quality habitat.

No Exposure/Transport Pathways:

If there are no complete exposure pathways to ecological receptors on-site and no transport pathways to off-site receptors, the remainder of the checklist should not be completed. Stop here and provide additional explanation/justification for proposing an ecological No Further Action recommendation (if needed). At a minimum, the potential for future transport should include likelihood that future construction activities could make contamination more available for exposure or transport. Not applicable.

Adequacy of Site Characterization:

Do existing or proposed data provide information on the nature, rate, and extent of contamination? **(yes/no/uncertain)** **Provide explanation** **(Consider if the maximum value was captured by existing sample data.)**	Yes. The nature and extent of potential contamination have been defined for the SWMUs and AOCs listed above.
Do existing or proposed data for the site address potential transport pathways of site contamination? **(yes/no/uncertain)** **Provide explanation** **(Consider if other sites should be aggregated to characterize potential ecological risk.)**	Yes. The extent of contamination has been defined.

Additional Field Notes:

Provide additional field notes on the site setting and potential ecological receptors.
SWMU 01-001(a). Site is located adjacent to existing structures. Some natural habitat is adjacent to this site.
SWMU 01-001(d3). Site is located on the south-facing slope. Ponderosa pine and piñon were noted. The site had been disturbed by remediation activities.
SWMU 01-001(f). This is Hillside 140. Some mixed conifer noted. There is minimal disturbance near the canyon rim.
SWMU 01-001(g). This site includes drainage on the south-facing slope of Los Alamos Canyon. Vegetation is similar to the south-facing slope of this canyon with understory (grasses and forbs), shrubs (e.g., oaks), and overstory (ponderosa pine, piñon, and some mixed conifer species mixed in).
SWMU 01-001(o). This site is collocated with SWMU 01-003(a).
SWMU 01-001(s2). This site is entirely located on the developed part of the Los Alamos townsite.
SWMU 01-002(a2)-00. This site is entirely located on the developed part of the Los Alamos townsite.
SWMU 01-003(a). Some debris (concrete and rebar) associated with this former landfill was noted just below the canyon rim. Forbs and shrubs were noted in the south-facing slope. One large ponderosa pine (about 10 m tall) was also noted.
SWMU 01-003(b2). This site is proximal to SWMU 01-001(g) with habitat typical of the south-facing slope of Los Alamos Canyon,
SWMU 01-003(d). This is the “Can Dump” site. It is located on a bench below the canyon rim.
SWMU 01-006(a). This site is entirely located on the developed part of the Los Alamos townsite.
AOC 01-006(e). This site is entirely located on the developed part of the Los Alamos townsite, adjacent to Ashley Pond.
SWMU 01-007(c). This site is entirely located on the developed part of the Los Alamos townsite.

G2-2.3 Part C—Ecological Pathways Conceptual Exposure Model

Question A:

Could soil contaminants reach receptors via vapors?

- Volatility of the hazardous substance (volatile chemicals generally have Henry’s Law constant >10^{-5} atm-me/mol and molecular weight <200 g/mol).

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: Volatile organic compounds are not frequently detected and are at low concentrations.

Question B:

Could the soil contaminants reach receptors through fugitive dust carried in air?

- Soil contamination would have to be on the actual surface of the soil to become available for dust.
- In the case of dust exposures to burrowing animals, the contamination would have to occur in the depth interval where these burrows occur.

Answer (likely/unlikely/uncertain): Likely

Provide explanation: Some COPCs were detected in the surface interval.

<u>Question C</u>:

Can contaminated soil be transported to aquatic ecological communities?

- If erosion is a transport pathway, evaluate the terminal point to see if aquatic receptors could be affected by contamination from this site.

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: No aquatic communities are on the mesa top or on the south-facing slope of Los Alamos Canyon

<u>Question D</u>:

Is contaminated groundwater potentially available to biological receptors through seeps or springs or shallow groundwater?

- Known or suspected presence of contaminants in groundwater.
- The potential for contaminants to migrate via groundwater and discharge into habitats and/or surface waters.
- Contaminants may be taken up by terrestrial and rooted aquatic plants whose roots are in contact with groundwater present within the root zone (~1 m depth).
- Terrestrial wildlife receptors generally will not contact groundwater unless it is discharged to the surface.

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: No seeps or springs are present on the mesa top and no perched water has been found. The depth to groundwater is greater than 1000 ft below ground surface from the mesa top.

<u>Question E</u>:

Is infiltration/percolation from contaminated subsurface material a viable transport and exposure pathway?

- Suspected ability of contaminants to migrate to groundwater.
- The potential for contaminants to migrate via groundwater and discharge into habitats and/or surface waters.
- Contaminants may be taken up by terrestrial and rooted aquatic plants whose roots are in contact with groundwater present within the root zone (~1 m depth).
- Terrestrial wildlife receptors generally will not contact groundwater unless it is discharged to the surface.

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: Contaminants are unlikely to migrate to the regional aquifer given the depth to groundwater. The lack of a significant hydraulic driver (e.g., no ponded water on the surface) facilitating infiltration also mitigates the potential for contaminants reaching groundwater.

Question F:

Might erosion or mass wasting events be a potential release mechanism for contaminants from subsurface materials or perched aquifers to the surface?

- This question is only applicable to release sites located on or near the mesa edge.
- Consider the erodability of surficial material and the geologic processes of canyon/mesa edges.

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: Most sites are not located near the main canyon edge, so mass wasting is not relevant to these sites. There is minimal evidence of erosion at the sites.

Question G:

Could airborne contaminants interact with receptors through respiration of vapors?

- Contaminants must be present as volatiles in the air.
- Consider the importance of inhalation of vapors for burrowing animals.
- Foliar uptake of organic vapors is typically not a significant exposure pathway.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 2

Terrestrial Animals: 2

Provide explanation: Volatile organic compounds are detected infrequently and at low concentrations.

Question H:

Could airborne contaminants interact with plants through deposition of particulates or with animals through inhalation of fugitive dust?

- Contaminants must be present as particulates in the air or as dust for this exposure pathway to be complete.
- Exposure via inhalation of fugitive dust is particularly applicable to ground-dwelling species that would be exposed to dust disturbed by their foraging or burrowing activities or by wind movement.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 3

Terrestrial Animals: 3

Provide explanation: Surface soil contamination is present.

<u>Question I</u>:

Could contaminants interact with plants through root uptake or rain splash from surficial soils?

- Contaminants in bulk soil may partition into soil solution, making them available to roots.
- Exposure of terrestrial plants to contaminants present in particulates deposited on leaf and stem surfaces by rain striking contaminated soils (i.e., rain splash).

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 3

Provide explanation: Surface soil contamination is present.

<u>Question J</u>:

Could contaminants interact with receptors through food web transport from surficial soils?

- The chemicals may bioaccumulate in animals.
- Animals may ingest contaminated food items.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 3

Provide explanation: Some bioaccumulating contaminants are present.

<u>Question K</u>:

Could contaminants interact with receptors via incidental ingestion of surficial soils?

- Incidental ingestion of contaminated soil could occur while animals grub for food resident in the soil, feed on plant matter covered with contaminated soil, or while grooming themselves clean of soil.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 3

Provide explanation: Surface soil contamination is present.

<u>Question L</u>:

Could contaminants interact with receptors through dermal contact with surficial soils?

- Significant exposure via dermal contact would generally be limited to organic contaminants that are lipophilic and can cross epidermal barriers.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 2

Provide explanation: Lipophilic chemicals detected at some sites. Most detected concentrations are subsurface.

<u>Question M</u>:

Could contaminants interact with plants or animals through external irradiation?

- External irradiation effects are most relevant for gamma-emitting radionuclides.
- Burial of contamination attenuates radiological exposure.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 2

Terrestrial Animals: 2

Provide explanation: Gamma-emitting radionuclides detected at only a few sites and at low concentrations.

<u>Question N</u>:

Could contaminants interact with plants through direct uptake from water and sediment or sediment rain splash?

- Contaminants may be taken up by terrestrial plants whose roots are in contact with surface waters.
- Terrestrial plants may be exposed to particulates deposited on leaf and stem surfaces by rain striking contaminated sediments (i.e., rain splash) in an area that is only periodically inundated with water.
- Contaminants in sediment may partition into soil solution, making them available to roots.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 0

Provide explanation: There is no aquatic habitat present.

<u>Question O</u>:

Could contaminants interact with receptors through food web transport from water and sediment?

- The chemicals may bioconcentrate in food items.
- Animals may ingest contaminated food items.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 0

Provide explanation: There is no aquatic habitat present.

<u>Question P</u>:

Could contaminants interact with receptors via ingestion of water and suspended sediments?

- If sediments are present in an area that is only periodically inundated with water, terrestrial receptors may incidentally ingest sediments.
- Terrestrial receptors may ingest water-borne contaminants if contaminated surface waters are used as a drinking water source.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 0

Provide explanation: There is no aquatic habitat present.

<u>Question Q</u>:

Could contaminants interact with receptors through dermal contact with water and sediment?

- If sediments are present in an area that is only periodically inundated with water, terrestrial species may be dermally exposed during dry periods.
- Terrestrial organisms may be dermally exposed to water-borne contaminants as a result of wading or swimming in contaminated waters.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 0

Provide explanation: There is no aquatic habitat present.

<u>Question R</u>:

Could contaminants interact with plants or animals through external irradiation?

- External irradiation effects are most relevant for gamma-emitting radionuclides.
- Burial of contamination attenuates radiological exposure.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 0

Terrestrial Animals: 0

Provide explanation: There is no aquatic habitat present.

Question S:

Could contaminants bioconcentrate in free-floating aquatic, attached aquatic plants, or emergent vegetation?

- Aquatic plants are in direct contact with water.
- Contaminants in sediment may partition into pore water, making them available to submerged roots.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Plants/Emergent Vegetation: 0

Provide explanation: There is no aquatic habitat present.

Question T:

Could contaminants bioconcentrate in sedimentary or water column organisms?

- Aquatic receptors may actively or incidentally ingest sediment while foraging.
- Aquatic receptors may be directly exposed to contaminated sediments or may be exposed to contaminants through osmotic exchange, respiration, or ventilation of sediment pore waters.
- Aquatic receptors may be exposed through osmotic exchange, respiration, or ventilation of surface waters.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Animals: 0

Provide explanation: There is no aquatic habitat present.

Question U:

Could contaminants bioaccumulate in sedimentary or water column organisms?

- Lipophilic organic contaminants and some metals may concentrate in an organism's tissues.
- Ingestion of contaminated food items may result in contaminant bioaccumulation through the food web.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Animals: 0

Provide explanation: There is no aquatic habitat present.

Question V:

Could contaminants interact with aquatic plants or animals through external irradiation?

- External irradiation effects are most relevant for gamma-emitting radionuclides.
- The water column acts to absorb radiation; thus external irradiation is typically more important for sediment-dwelling organisms.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

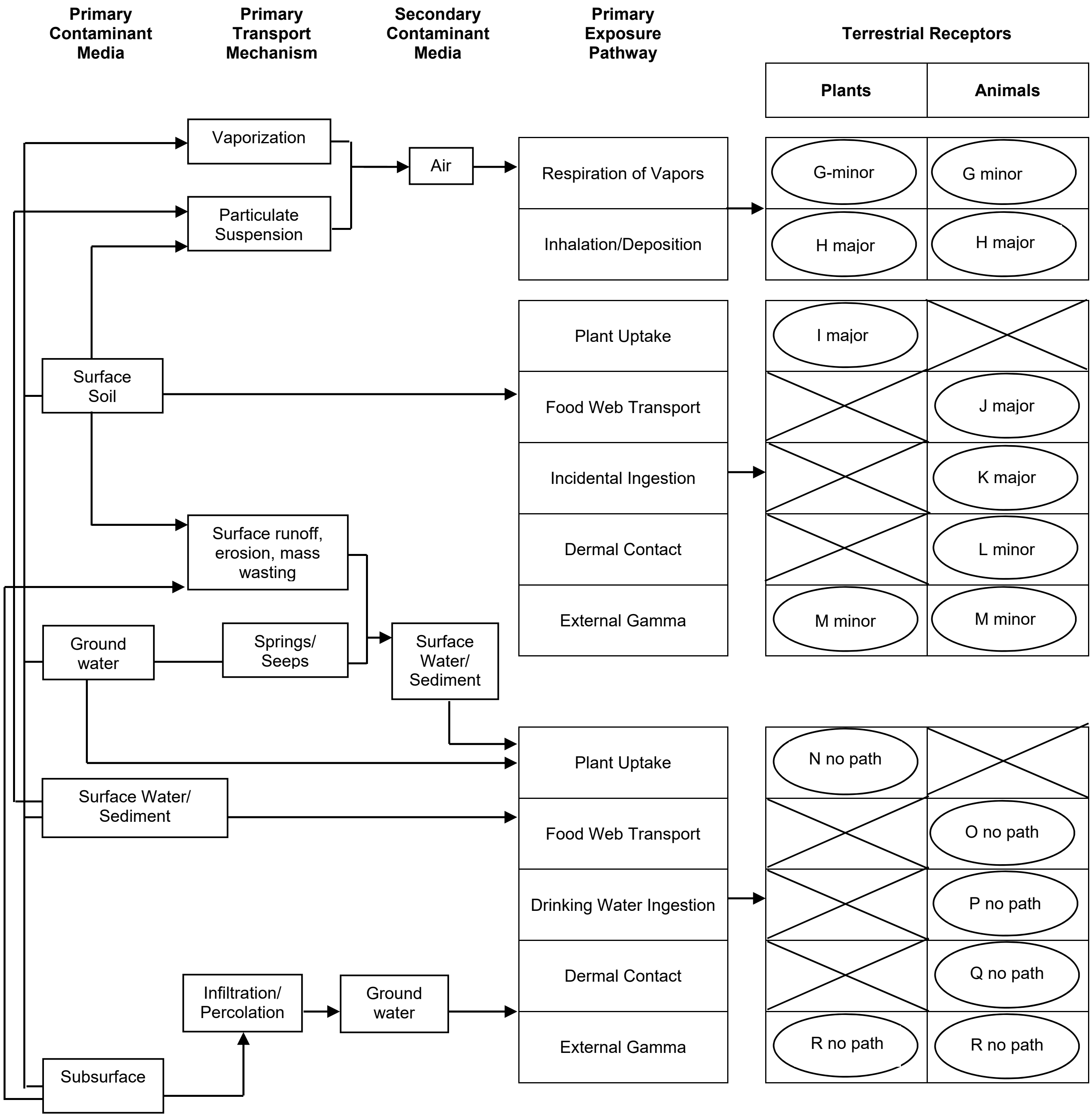
Aquatic Plants: 0

Aquatic Animals: 0

Provide explanation: There is no aquatic habitat present.

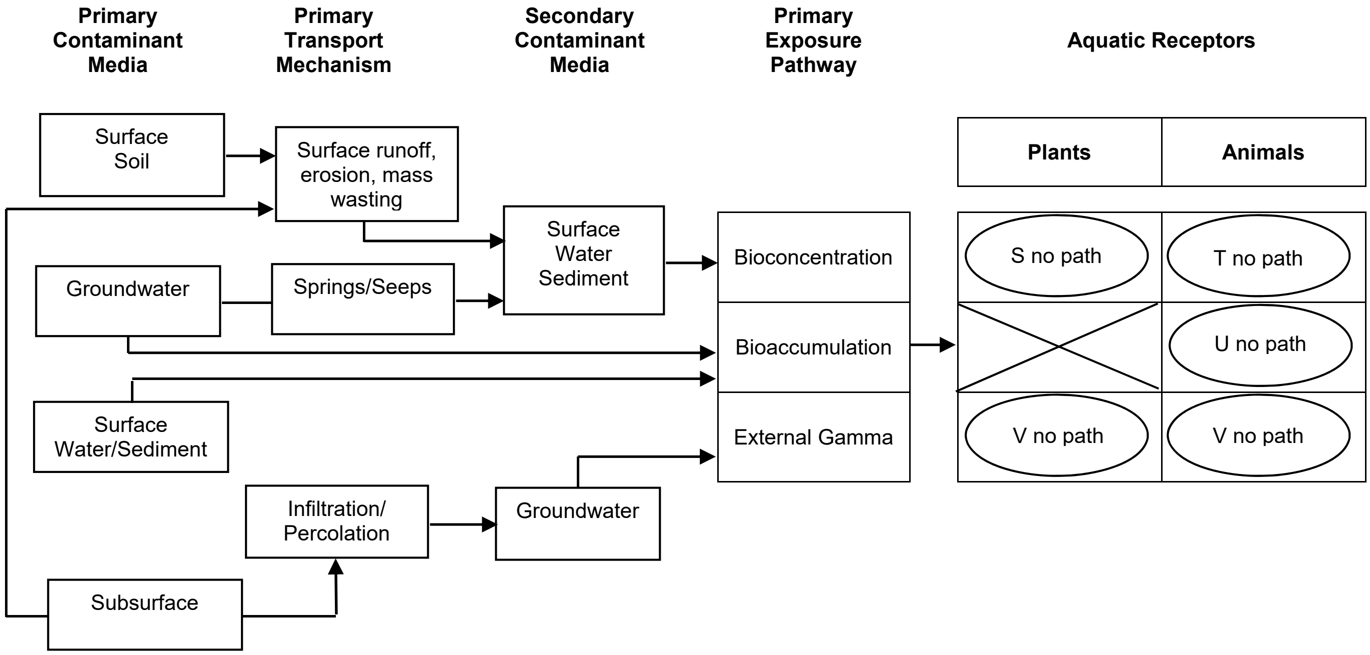
NOTE:
Letters in circles refer to questions on the Scoping Checklist

Ecological Scoping Checklist
Terrestrial Receptors
Ecological Pathways Conceptual Exposure Model



NOTE:
Letters in circles refer to questions on the Scoping Checklist

Ecological Scoping Checklist
Aquatic Receptors
Ecological Pathways Conceptual Exposure Model



SIGNATURES AND CERTIFICATION

Checklist completed by:

Name (printed): Randall Ryti

Name (signature): Randall Ryti

Organization: Neptune and Company, Inc.

Date completed: July 16, 2018

Checklist reviewed by:

Name (printed): Tracy McFarland

Name (signature): Tracy McFarland

Organization: N3B

Date reviewed: 9/14/18

G2-3.0 SOLID WASTE MANAGEMENT UNIT 32-002(b2)

G2-3.1 Part A—Scoping Meeting Documentation

Site ID	SWMU 32-002(b2)
Form of site releases (solid, liquid, vapor). Describe all relevant known or suspected mechanisms of release (spills, dumping, material disposal, outfall, explosive testing, etc.) and describe potential areas of release. Reference locations on a map as appropriate.	Between 1943 and 1965, research work on nuclear weapons was carried out at former TA-32. These activities generated releases from septic tanks, sanitary lines, outfalls, and an incinerator. SWMU 32-002(b) is former septic tank and its associated drainline and outfall. The potential areas of release would be the surface and subsurface media of the mesa.
List of Primary Impacted Media **(Indicate all that apply.)**	**Surface soil –** X **Surface water/sediment –** N/A **Subsurface –** X **Groundwater –** N/A **Other, explain –** None
FIMAD vegetation class based on Arcview vegetation coverage **(Indicate all that apply.)**	**Water –** N/A **Bare Ground/Unvegetated –** X **Spruce/fir/aspen/mixed conifer –** X **Ponderosa pine –** X **Piñon juniper/juniper savannah –** N/A **Grassland/shrubland –** N/A **Developed –** X **Burned –** NA
Is T&E Habitat Present? **If applicable, list species known or suspected to use the site for breeding or foraging.**	No T&E species nesting habitat is present at the site. However, the area is within the foraging range of the Mexican spotted owl.
Provide list of Neighboring/ Contiguous/ Upgradient sites, include a brief summary of COPCs and form of releases for relevant sites and reference map as appropriate. **(Use information to evaluate need to aggregate sites for screening.)**	All contiguous and neighboring sites are included in the Upper Los Alamos Canyon Aggregate Area investigation.
Surface Water Erosion Potential Information Surface water erosion potential is based on site observations.	Run-on to the site occurs from storms. Run-off may infiltrate into the shallow subsurface or move as sheet flow down the slope into Los Alamos Canyon.

G2-3.2 Part B—Site Visit Documentation

Site ID	SWMU 32-002(b2)
Date of Site Visit	7/5/2018
Site Visit Conducted by	Randall Ryti, Tracy McFarland, Kent Rich, Robert Dickerson, Larry Salazar

Receptor Information:

Estimate cover	**Relative vegetative cover (high, medium, low, none)** = Medium **Relative wetland cover (high, medium, low, none)** = None **Relative structures/asphalt, etc., cover (high, medium, low, none)** = Medium
Field Notes on the GIS Vegetation Class to Assist in Verifying the Arcview Information	This site is located in the south-facing slope of Los Alamos Canyon. The natural vegetation that does exist consists of large ponderosa pine trees, pinon-juniper stands, and small scrub species.
Are ecological receptors present at the site? **(yes/no/uncertain)** **Describe the general types of receptors present at the site (terrestrial and aquatic), and make notes on the quality of habitat present at the site.**	Yes. The general types of receptors are terrestrial biota such as reptiles, small mammals, insects, birds, and plants. The slope into Los Alamos Canyon also provides habitat for ecological receptors.

Contaminant Transport Information:

Surface water transport **Field notes on the erosion potential, including a discussion of the terminal point of surface water transport (if applicable).**	There is a potential for surface water transport from the slope further to Los Alamos Canyon.
Are there any off-site transport pathways (surface water, air, or groundwater)? **(yes/no/uncertain)** **Provide explanation**	Sheet flow from the mesa top to the canyons occurs during summer storms and as a result of snowmelt. Groundwater is located more than 1000 feet below the surface of the mesa top.

Ecological Effects Information:

Physical Disturbance **(Provide list of major types of disturbances, including erosion and construction activities; review historical aerial photos where appropriate.)**	The SWMU has some physical disturbances due to development.
Are there obvious ecological effects? **(yes/no/uncertain)** **Provide explanation and apparent cause (e.g., contamination, physical disturbance, other).**	No, the habitat is natural and is of moderate quality.

No Exposure/Transport Pathways:

If there are no complete exposure pathways to ecological receptors on-site and no transport pathways to off-site receptors, the remainder of the checklist should not be completed. Stop here and provide additional explanation/justification for proposing an ecological No Further Action recommendation (if needed). At a minimum, the potential for future transport should include likelihood that future construction activities could make contamination more available for exposure or transport. Not applicable.

Adequacy of Site Characterization:

Do existing or proposed data provide information on the nature, rate, and extent of contamination? **(yes/no/uncertain)** **Provide explanation** **(Consider if the maximum value was captured by existing sample data.)**	Yes. The nature and extent of potential contamination have been defined for the SWMU listed above.
Do existing or proposed data for the site address potential transport pathways of site contamination? **(yes/no/uncertain)** **Provide explanation** **(Consider if other sites should be aggregated to characterize potential ecological risk.)**	Yes. The extent of contamination has been defined.

Additional Field Notes:

Provide additional field notes on the site setting and potential ecological receptors. **SWMU 32-002(b2)**. This site is located on the south-facing slope of Los Alamos Canyon. The upper part of the site (about the first 10 m) is disturbed. This is likely related to the remedial activities at this site. Further down the slope there is moderate shrub and understory plant cover.

G2-3.3 Part C—Ecological Pathways Conceptual Exposure Model

Question A:

Could soil contaminants reach receptors via vapors?

- Volatility of the hazardous substance (volatile chemicals generally have Henry's Law constant >10^{-5} atm-me/mol and molecular weight <200 g/mol).

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: Volatile organic compounds are not frequently detected, most are in the subsurface and are at low concentrations.

Question B:

Could the soil contaminants reach receptors through fugitive dust carried in air?

- Soil contamination would have to be on the actual surface of the soil to become available for dust.
- In the case of dust exposures to burrowing animals, the contamination would have to occur in the depth interval where these burrows occur.

Answer (likely/unlikely/uncertain): Likely

Provide explanation: Some COPCs were detected in the surface interval.

Question C:

Can contaminated soil be transported to aquatic ecological communities?

- If erosion is a transport pathway, evaluate the terminal point to see if aquatic receptors could be affected by contamination from this site.

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: No aquatic communities are on the mesa top or the canyon slope.

Question D:

Is contaminated groundwater potentially available to biological receptors through seeps or springs or shallow groundwater?

- Known or suspected presence of contaminants in groundwater.
- The potential for contaminants to migrate via groundwater and discharge into habitats and/or surface waters.
- Contaminants may be taken up by terrestrial and rooted aquatic plants whose roots are in contact with groundwater present within the root zone (~1 m depth).
- Terrestrial wildlife receptors generally will not contact groundwater unless it is discharged to the surface.

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: No seeps or springs are present on the mesa top and no perched water has been found. The depth to groundwater is greater than 1000 ft below ground surface of the mesa top.

<u>**Question E**</u>**:**

Is infiltration/percolation from contaminated subsurface material a viable transport and exposure pathway?

- Suspected ability of contaminants to migrate to groundwater.
- The potential for contaminants to migrate via groundwater and discharge into habitats and/or surface waters.
- Contaminants may be taken up by terrestrial and rooted aquatic plants whose roots are in contact with groundwater present within the root zone (~1 m depth).
- Terrestrial wildlife receptors generally will not contact groundwater unless it is discharged to the surface.

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: Contaminants are unlikely to migrate to the regional aquifer given the depth to groundwater. The lack of a significant hydraulic driver (e.g., no ponded water on the surface) facilitating infiltration also mitigates the potential for contaminants reaching groundwater.

<u>**Question F**</u>**:**

Might erosion or mass wasting events be a potential release mechanism for contaminants from subsurface materials or perched aquifers to the surface?

- This question is only applicable to release sites located on or near the mesa edge.
- Consider the erodability of surficial material and the geologic processes of canyon/mesa edges.

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: Surface contamination exists but the slopes are generally stable. There are no perched aquifers near these sites.

<u>**Question G**</u>**:**

Could airborne contaminants interact with receptors through respiration of vapors?

- Contaminants must be present as volatiles in the air.
- Consider the importance of inhalation of vapors for burrowing animals.
- Foliar uptake of organic vapors is typically not a significant exposure pathway.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 2

Terrestrial Animals: 2

Provide explanation: Volatile organic compounds are detected infrequently and at low concentrations.

<u>Question H</u>:

Could airborne contaminants interact with plants through deposition of particulates or with animals through inhalation of fugitive dust?

- Contaminants must be present as particulates in the air or as dust for this exposure pathway to be complete.
- Exposure via inhalation of fugitive dust is particularly applicable to ground-dwelling species that would be exposed to dust disturbed by their foraging or burrowing activities or by wind movement.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 3

Terrestrial Animals: 3

Provide explanation: Surface soil contamination is present.

<u>Question I</u>:

Could contaminants interact with plants through root uptake or rain splash from surficial soils?

- Contaminants in bulk soil may partition into soil solution, making them available to roots.
- Exposure of terrestrial plants to contaminants present in particulates deposited on leaf and stem surfaces by rain striking contaminated soils (i.e., rain splash).

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 3

Provide explanation: Surface soil contamination is present.

<u>Question J</u>:

Could contaminants interact with receptors through food web transport from surficial soils?

- The chemicals may bioaccumulate in animals.
- Animals may ingest contaminated food items.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 3

Provide explanation: COPCs are present in the surface soil.

Question K:

Could contaminants interact with receptors via incidental ingestion of surficial soils?

- Incidental ingestion of contaminated soil could occur while animals grub for food resident in the soil, feed on plant matter covered with contaminated soil, or while grooming themselves clean of soil.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 3

Provide explanation: COPCs are present in the surface soil.

Question L:

Could contaminants interact with receptors through dermal contact with surficial soils?

- Significant exposure via dermal contact would generally be limited to organic contaminants that are lipophilic and can cross epidermal barriers.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 2

Provide explanation: Lipophilic chemicals are detected.

Question M:

Could contaminants interact with plants or animals through external irradiation?

- External irradiation effects are most relevant for gamma-emitting radionuclides.
- Burial of contamination attenuates radiological exposure.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 2

Terrestrial Animals: 2

Provide explanation: Gamma-emitting radionuclides detected only at low concentrations.

Question N:

Could contaminants interact with plants through direct uptake from water and sediment or sediment rain splash?

- Contaminants may be taken up by terrestrial plants whose roots are in contact with surface waters.
- Terrestrial plants may be exposed to particulates deposited on leaf and stem surfaces by rain striking contaminated sediments (i.e., rain splash) in an area that is only periodically inundated with water.
- Contaminants in sediment may partition into soil solution, making them available to roots.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 0

Provide explanation: There is no aquatic habitat present.

<u>Question O</u>:

Could contaminants interact with receptors through food web transport from water and sediment?

- The chemicals may bioconcentrate in food items.
- Animals may ingest contaminated food items.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 0

Provide explanation: There is no aquatic habitat present.

<u>Question P</u>:

Could contaminants interact with receptors via ingestion of water and suspended sediments?

- If sediments are present in an area that is only periodically inundated with water, terrestrial receptors may incidentally ingest sediments.
- Terrestrial receptors may ingest water-borne contaminants if contaminated surface waters are used as a drinking water source.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 0

Provide explanation: There is no aquatic habitat present.

<u>Question Q</u>:

Could contaminants interact with receptors through dermal contact with water and sediment?

- If sediments are present in an area that is only periodically inundated with water, terrestrial species may be dermally exposed during dry periods.
- Terrestrial organisms may be dermally exposed to water-borne contaminants as a result of wading or swimming in contaminated waters.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 0

Provide explanation: There is no aquatic habitat present.

<u>Question R</u>:

Could contaminants interact with plants or animals through external irradiation?

- External irradiation effects are most relevant for gamma-emitting radionuclides.
- Burial of contamination attenuates radiological exposure.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 0

Terrestrial Animals: 0

Provide explanation: There is no aquatic habitat present.

<u>Question S</u>:

Could contaminants bioconcentrate in free-floating aquatic, attached aquatic plants, or emergent vegetation?

- Aquatic plants are in direct contact with water.
- Contaminants in sediment may partition into pore water, making them available to submerged roots.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Plants/Emergent Vegetation: 0

Provide explanation: There is no aquatic habitat present.

<u>Question T</u>:

Could contaminants bioconcentrate in sedimentary or water column organisms?

- Aquatic receptors may actively or incidentally ingest sediment while foraging.
- Aquatic receptors may be directly exposed to contaminated sediments or may be exposed to contaminants through osmotic exchange, respiration, or ventilation of sediment pore waters.
- Aquatic receptors may be exposed through osmotic exchange, respiration, or ventilation of surface waters.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Animals: 0

Provide explanation: There is no aquatic habitat present.

<u>Question U</u>:

Could contaminants bioaccumulate in sedimentary or water column organisms?

- Lipophilic organic contaminants and some metals may concentrate in an organism's tissues.
- Ingestion of contaminated food items may result in contaminant bioaccumulation through the food web.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Animals: 0

Provide explanation: There is no aquatic habitat present.

<u>Question V</u>:

Could contaminants interact with aquatic plants or animals through external irradiation?

- External irradiation effects are most relevant for gamma-emitting radionuclides.
- The water column acts to absorb radiation; thus external irradiation is typically more important for sediment-dwelling organisms.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

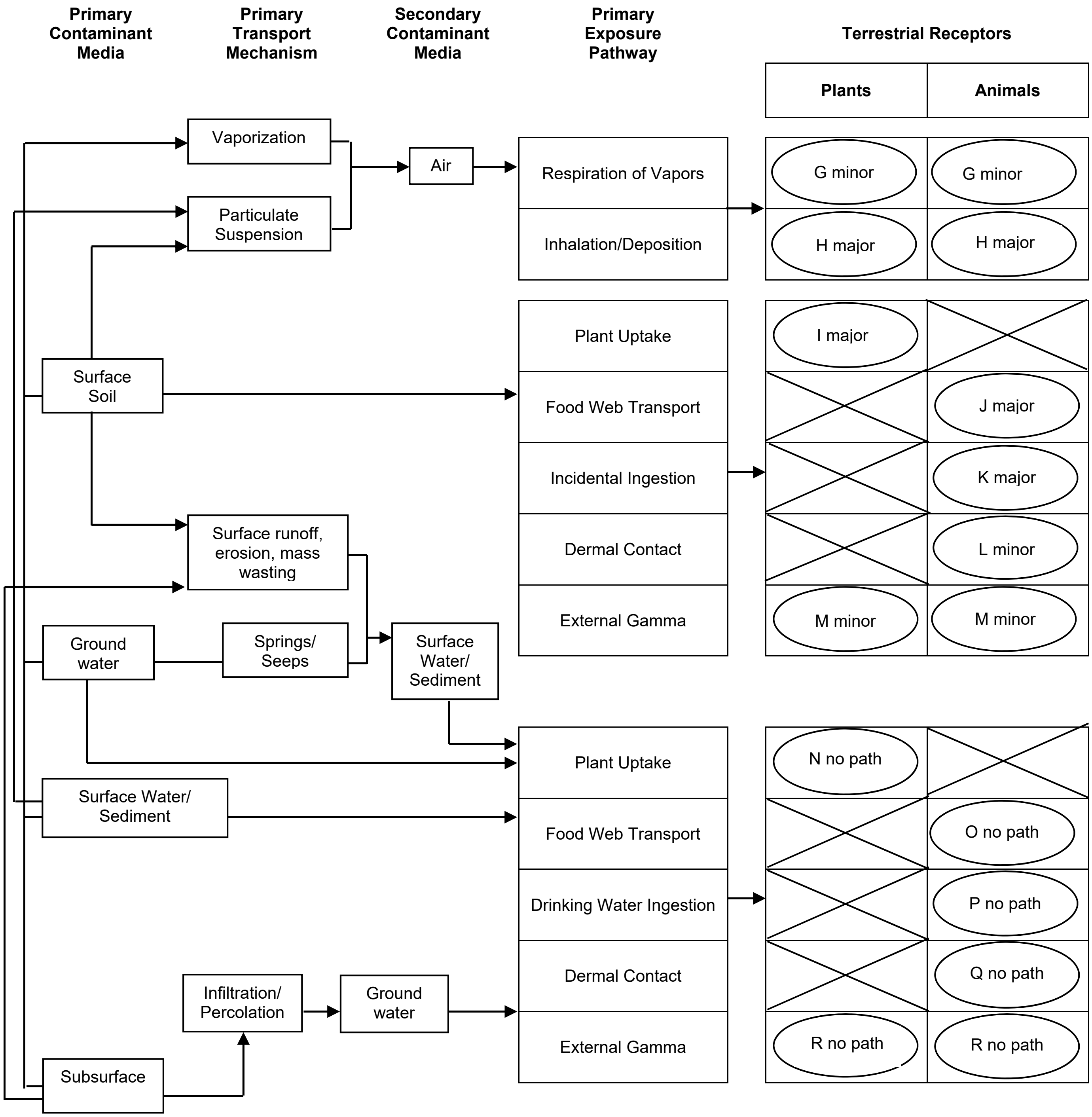
Aquatic Plants: 0

Aquatic Animals: 0

Provide explanation: There is no aquatic habitat present.

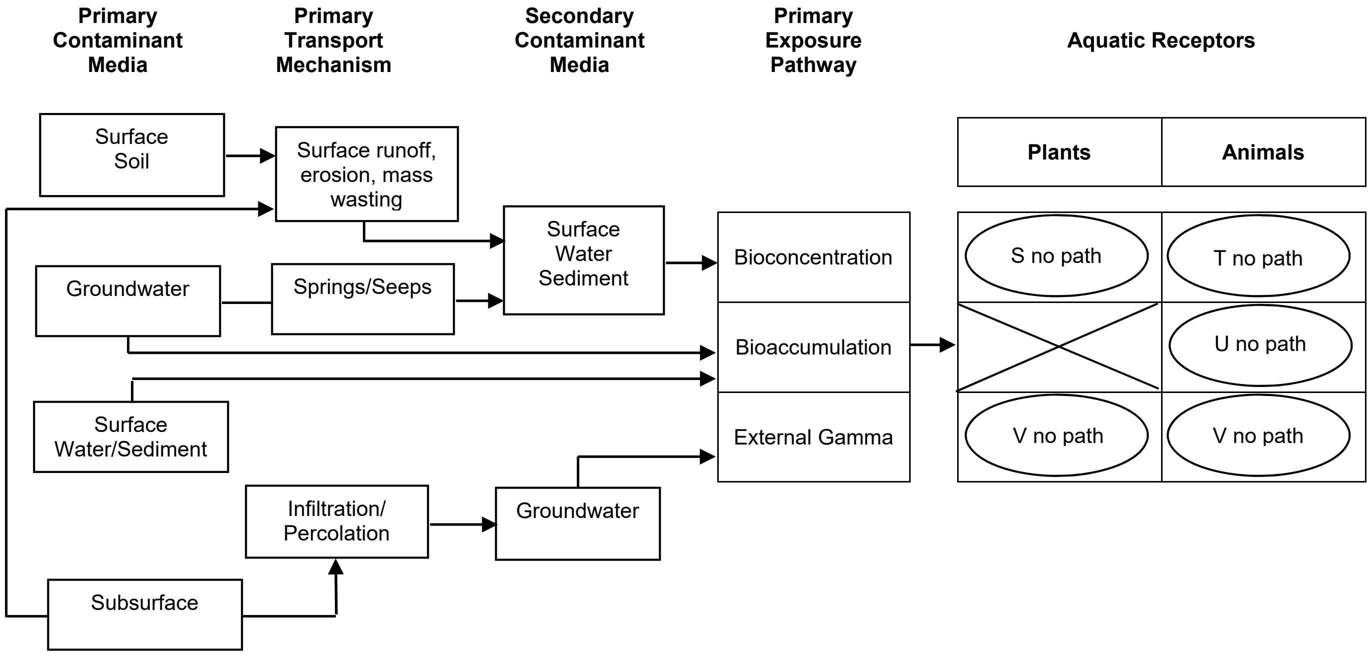
NOTE:
Letters in circles refer to questions on the Scoping Checklist

Ecological Scoping Checklist
Terrestrial Receptors
Ecological Pathways Conceptual Exposure Model



NOTE:
Letters in circles refer to questions on the Scoping Checklist

Ecological Scoping Checklist
Aquatic Receptors
Ecological Pathways Conceptual Exposure Model



SIGNATURES AND CERTIFICATION

Checklist completed by:

Name (printed):	Randall Ryti
Name (signature):	Randall Ryti
Organization:	Neptune and Company, Inc.
Date completed:	July 16, 2018

Checklist reviewed by:

Name (printed):	Tracy McFarland
Name (signature):	Tracy McFarland
Organization:	N3B
Date reviewed:	9/14/18

G2-4.0 SOLID WASTE MANAGEMENT UNITS 03-038(a,b), 03-055(c), AND 61-007

G2-4.1 Part A—Scoping Meeting Documentation

Site IDs	SWMUs 03-038(a,b), SWMU 03-055(c), SWMU 61-007
Form of site releases (solid, liquid, vapor). Describe all relevant known or suspected <u>mechanisms</u> of release (spills, dumping, material disposal, outfall, explosive testing, etc.) and describe potential <u>areas</u> of release. Reference locations on a map as appropriate.	SWMUs 03-038(a) and 03-038(b) are a former pump house with two concrete underground tanks and a former 28,500-gal. steel waste-holding tank, respectively. These sites, which are next to each other on the south rim of Los Alamos Canyon near the Omega Bridge. All the structures were removed in 1981 and 1982, and the site is currently undeveloped. SWMU 03-055(c) is the outfall of an active storm-drain system that previously received effluent from the floor drains of a nearby fire station. The storm drain currently collects and channels storm water runoff from parking lots and roads near the Laboratory's fire station. SWMU 61-007 is a former transformer-staging site along the south side of East Jemez Road. Currently, the site is under a dirt road and parking lot area near the Los Alamos County landfill and is not occupied. The potential areas of release would be the surface and subsurface media of the mesa.
List of Primary Impacted Media **(Indicate all that apply.)**	**Surface soil –** X **Surface water/sediment –** N/A **Subsurface –** X **Groundwater –** N/A **Other, explain –** None
FIMAD vegetation class based on Arcview vegetation coverage **(Indicate all that apply.)**	**Water –** N/A **Bare Ground/Unvegetated –** X **Spruce/fir/aspen/mixed conifer –** N/A **Ponderosa pine –** X **Piñon juniper/juniper savannah –** N/A **Grassland/shrubland –** X **Developed –** X **Burned –** NA
Is T&E Habitat Present? **If applicable, list species known or suspected to use the site for breeding or foraging.**	No T&E species nesting habitat is present at the site. However, the area is within the foraging range of the Mexican spotted owl.
Provide list of Neighboring/ Contiguous/ Upgradient sites, include a brief summary of COPCs and form of releases for relevant sites and reference map as appropriate. **(Use information to evaluate need to aggregate sites for screening.)**	All contiguous and neighboring sites are included in the Upper Los Alamos Canyon Aggregate Area investigation.
Surface Water Erosion Potential Information Surface water erosion potential is based on site observations.	Run-on to sites occurs from storms. Runoff may infiltrate into the shallow subsurface or move as sheet flow down the slope into Los Alamos Canyon.

G2-4.2 Part B—Site Visit Documentation

Site IDs	SWMUs 03-038(a,b), SWMU 03-055(c), SWMU 61-007
Date of Site Visit	7/5/2018
Site Visit Conducted by	Randall Ryti, Tracy McFarland, Kent Rich, Robert Dickerson, Larry Salazar

Receptor Information:

Estimate cover	**Relative vegetative cover (high, medium, low, none)** = Medium **Relative wetland cover (high, medium, low, none)** = None **Relative structures/asphalt, etc., cover (high, medium, low, none)** = Medium
Field Notes on the GIS Vegetation Class to Assist in Verifying the Arcview Information	The areas in and around the SWMUs on the mesa top are either developed or adjacent to developed landscapes. The natural vegetation that does exist consists of large ponderosa pine trees and scrub species.
Are ecological receptors present at the site? **(yes/no/uncertain)** **Describe the general types of receptors present at the site (terrestrial and aquatic), and make notes on the quality of habitat present at the site.**	Yes. There are plant and other ecological receptors present. The general types of receptors are terrestrial biota such as reptiles, small mammals, insects, birds, and plants.

Contaminant Transport Information:

Surface water transport **Field notes on the erosion potential, including a discussion of the terminal point of surface water transport (if applicable).**	There is a low to moderate potential for surface water transport from the mesa top because two of the sites are in close proximity to the canyon slope.
Are there any off-site transport pathways (surface water, air, or groundwater)? **(yes/no/uncertain)** **Provide explanation**	Sheet flow from the mesa top to the canyons occurs during summer storms and as a result of snowmelt. Groundwater is located more than 1000 feet below the surface of the mesa top.

Ecological Effects Information:

Physical Disturbance **(Provide list of major types of disturbances, including erosion and construction activities; review historical aerial photos where appropriate.)**	The SWMUs have a moderate to high amount of physical disturbances due to development. These sites are located adjacent to or in a developed area, including roads and buildings.
Are there obvious ecological effects? **(yes/no/uncertain)** **Provide explanation and apparent cause (e.g., contamination, physical disturbance, other).**	No, due to the developed area. Some of the habitat is not natural and is not of great quality.

No Exposure/Transport Pathways:

If there are no complete exposure pathways to ecological receptors on-site and no transport pathways to off-site receptors, the remainder of the checklist should not be completed. Stop here and provide additional explanation/justification for proposing an ecological No Further Action recommendation (if needed). At a minimum, the potential for future transport should include likelihood that future construction activities could make contamination more available for exposure or transport. Not applicable.

Adequacy of Site Characterization:

Do existing or proposed data provide information on the nature, rate, and extent of contamination? **(yes/no/uncertain)** **Provide explanation** **(Consider if the maximum value was captured by existing sample data.)**	Yes. The nature and extent of potential contamination have been defined for the SWMUs listed above.
Do existing or proposed data for the site address potential transport pathways of site contamination? **(yes/no/uncertain)** **Provide explanation** **(Consider if other sites should aggregated to characterize potential ecological risk.)**	Yes. The extent of contamination has been defined.

Additional Field Notes:

Provide additional field notes on the site setting and potential ecological receptors. **SWMU 03-038(a) and 03-038(b)**. Noted a 1.5-m tall ponderosa pine where the tanks had been located. Grasses and forbs were noted. Some landscaped areas are part of the site. **SWMU 03-055(c)**. Vegetation is fairly lush, indicating that the drainage must flow frequently after rain events. Grasses and forbs were noted. Ponderosa pines were noted near the outfall drainage. **SWMU 61-007**. The site is partly under a gravel road and is therefore moderately to highly disturbed. Some sparse plant cover was noted.

G2-4.3 Part C—Ecological Pathways Conceptual Exposure Model

Question A:

Could soil contaminants reach receptors via vapors?

- Volatility of the hazardous substance (volatile chemicals generally have Henry's Law constant >10^{-5} atm-me/mol and molecular weight <200 g/mol).

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: Volatile organic compounds are not frequently detected and are at low concentrations.

Question B:

Could the soil contaminants reach receptors through fugitive dust carried in air?

- Soil contamination would have to be on the actual surface of the soil to become available for dust.
- In the case of dust exposures to burrowing animals, the contamination would have to occur in the depth interval where these burrows occur.

Answer (likely/unlikely/uncertain): Likely

Provide explanation: Some COPCs were detected in the surface interval.

Question C:

Can contaminated soil be transported to aquatic ecological communities?

- If erosion is a transport pathway, evaluate the terminal point to see if aquatic receptors could be affected by contamination from this site.

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: No aquatic communities are on the mesa top.

Question D:

Is contaminated groundwater potentially available to biological receptors through seeps or springs or shallow groundwater?

- Known or suspected presence of contaminants in groundwater.
- The potential for contaminants to migrate via groundwater and discharge into habitats and/or surface waters.
- Contaminants may be taken up by terrestrial and rooted aquatic plants whose roots are in contact with groundwater present within the root zone (~1 m depth).
- Terrestrial wildlife receptors generally will not contact groundwater unless it is discharged to the surface.

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: No seeps or springs are present on the mesa top and no perched water has been found. The depth to groundwater is greater than 1000 ft below ground surface of the mesa top.

Question E:

Is infiltration/percolation from contaminated subsurface material a viable transport and exposure pathway?

- Suspected ability of contaminants to migrate to groundwater.
- The potential for contaminants to migrate via groundwater and discharge into habitats and/or surface waters.
- Contaminants may be taken up by terrestrial and rooted aquatic plants whose roots are in contact with groundwater present within the root zone (~1 m depth).
- Terrestrial wildlife receptors generally will not contact groundwater unless it is discharged to the surface.

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: Contaminants are unlikely to migrate to the regional aquifer given the depth to groundwater. The lack of a significant hydraulic driver (e.g., no ponded water on the surface) facilitating infiltration also mitigates the potential for contaminants reaching groundwater.

Question F:

Might erosion or mass wasting events be a potential release mechanism for contaminants from subsurface materials or perched aquifers to the surface?

- This question is only applicable to release sites located on or near the mesa edge.
- Consider the erodability of surficial material and the geologic processes of canyon/mesa edges.

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: Most of these sites are somewhat removed from the mesa top. There are no perched aquifers near these sites.

Question G:

Could airborne contaminants interact with receptors through respiration of vapors?

- Contaminants must be present as volatiles in the air.
- Consider the importance of inhalation of vapors for burrowing animals.
- Foliar uptake of organic vapors is typically not a significant exposure pathway.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 2

Terrestrial Animals: 2

Provide explanation: Volatile organic compounds are detected infrequently and at low concentrations.

<u>Question H</u>:

Could airborne contaminants interact with plants through deposition of particulates or with animals through inhalation of fugitive dust?

- Contaminants must be present as particulates in the air or as dust for this exposure pathway to be complete.
- Exposure via inhalation of fugitive dust is particularly applicable to ground-dwelling species that would be exposed to dust disturbed by their foraging or burrowing activities or by wind movement.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 3

Terrestrial Animals: 3

Provide explanation: Surface soil contamination is present.

<u>Question I</u>:

Could contaminants interact with plants through root uptake or rain splash from surficial soils?

- Contaminants in bulk soil may partition into soil solution, making them available to roots.
- Exposure of terrestrial plants to contaminants present in particulates deposited on leaf and stem surfaces by rain striking contaminated soils (i.e., rain splash).

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 3

Provide explanation: Surface soil contamination is present.

<u>Question J</u>:

Could contaminants interact with receptors through food web transport from surficial soils?

- The chemicals may bioaccumulate in animals.
- Animals may ingest contaminated food items.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 3

Provide explanation: Some bioaccumulating contaminants are present but at low concentrations.

Question K:

Could contaminants interact with receptors via incidental ingestion of surficial soils?

- Incidental ingestion of contaminated soil could occur while animals grub for food resident in the soil, feed on plant matter covered with contaminated soil, or while grooming themselves clean of soil.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 3

Provide explanation: COPCs are present in the surface soil.

Question L:

Could contaminants interact with receptors through dermal contact with surficial soils?

- Significant exposure via dermal contact would generally be limited to organic contaminants that are lipophilic and can cross epidermal barriers.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 2

Provide explanation: Lipophilic chemicals detected at some sites.

Question M:

Could contaminants interact with plants or animals through external irradiation?

- External irradiation effects are most relevant for gamma-emitting radionuclides.
- Burial of contamination attenuates radiological exposure.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 2

Terrestrial Animals: 2

Provide explanation: Gamma-emitting radionuclides detected only at some sites and at low concentrations.

Question N:

Could contaminants interact with plants through direct uptake from water and sediment or sediment rain splash?

- Contaminants may be taken up by terrestrial plants whose roots are in contact with surface waters.
- Terrestrial plants may be exposed to particulates deposited on leaf and stem surfaces by rain striking contaminated sediments (i.e., rain splash) in an area that is only periodically inundated with water.
- Contaminants in sediment may partition into soil solution, making them available to roots.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 0

Provide explanation: There is no aquatic habitat present.

Question O:

Could contaminants interact with receptors through food web transport from water and sediment?

- The chemicals may bioconcentrate in food items.
- Animals may ingest contaminated food items.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 0

Provide explanation: There is no aquatic habitat present.

Question P:

Could contaminants interact with receptors via ingestion of water and suspended sediments?

- If sediments are present in an area that is only periodically inundated with water, terrestrial receptors may incidentally ingest sediments.
- Terrestrial receptors may ingest water-borne contaminants if contaminated surface waters are used as a drinking water source.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 0

Provide explanation: There is no aquatic habitat present.

Question Q:

Could contaminants interact with receptors through dermal contact with water and sediment?

- If sediments are present in an area that is only periodically inundated with water, terrestrial species may be dermally exposed during dry periods.
- Terrestrial organisms may be dermally exposed to water-borne contaminants as a result of wading or swimming in contaminated waters.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 0

Provide explanation: There is no aquatic habitat present.

Question R:

Could contaminants interact with plants or animals through external irradiation?

- External irradiation effects are most relevant for gamma-emitting radionuclides.
- Burial of contamination attenuates radiological exposure.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 0

Terrestrial Animals: 0

Provide explanation: There is no aquatic habitat present.

Question S:

Could contaminants bioconcentrate in free-floating aquatic, attached aquatic plants, or emergent vegetation?

- Aquatic plants are in direct contact with water.
- Contaminants in sediment may partition into pore water, making them available to submerged roots.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Plants/Emergent Vegetation: 0

Provide explanation: There is no aquatic habitat present.

<u>Question T</u>:

Could contaminants bioconcentrate in sedimentary or water column organisms?

- Aquatic receptors may actively or incidentally ingest sediment while foraging.
- Aquatic receptors may be directly exposed to contaminated sediments or may be exposed to contaminants through osmotic exchange, respiration, or ventilation of sediment pore waters.
- Aquatic receptors may be exposed through osmotic exchange, respiration, or ventilation of surface waters.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Animals: 0

Provide explanation: There is no aquatic habitat present.

<u>Question U</u>:

Could contaminants bioaccumulate in sedimentary or water column organisms?

- Lipophilic organic contaminants and some metals may concentrate in an organism's tissues.
- Ingestion of contaminated food items may result in contaminant bioaccumulation through the food web.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Animals: 0

Provide explanation: There is no aquatic habitat present.

<u>Question V</u>:

Could contaminants interact with aquatic plants or animals through external irradiation?

- External irradiation effects are most relevant for gamma-emitting radionuclides.
- The water column acts to absorb radiation; thus external irradiation is typically more important for sediment-dwelling organisms.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

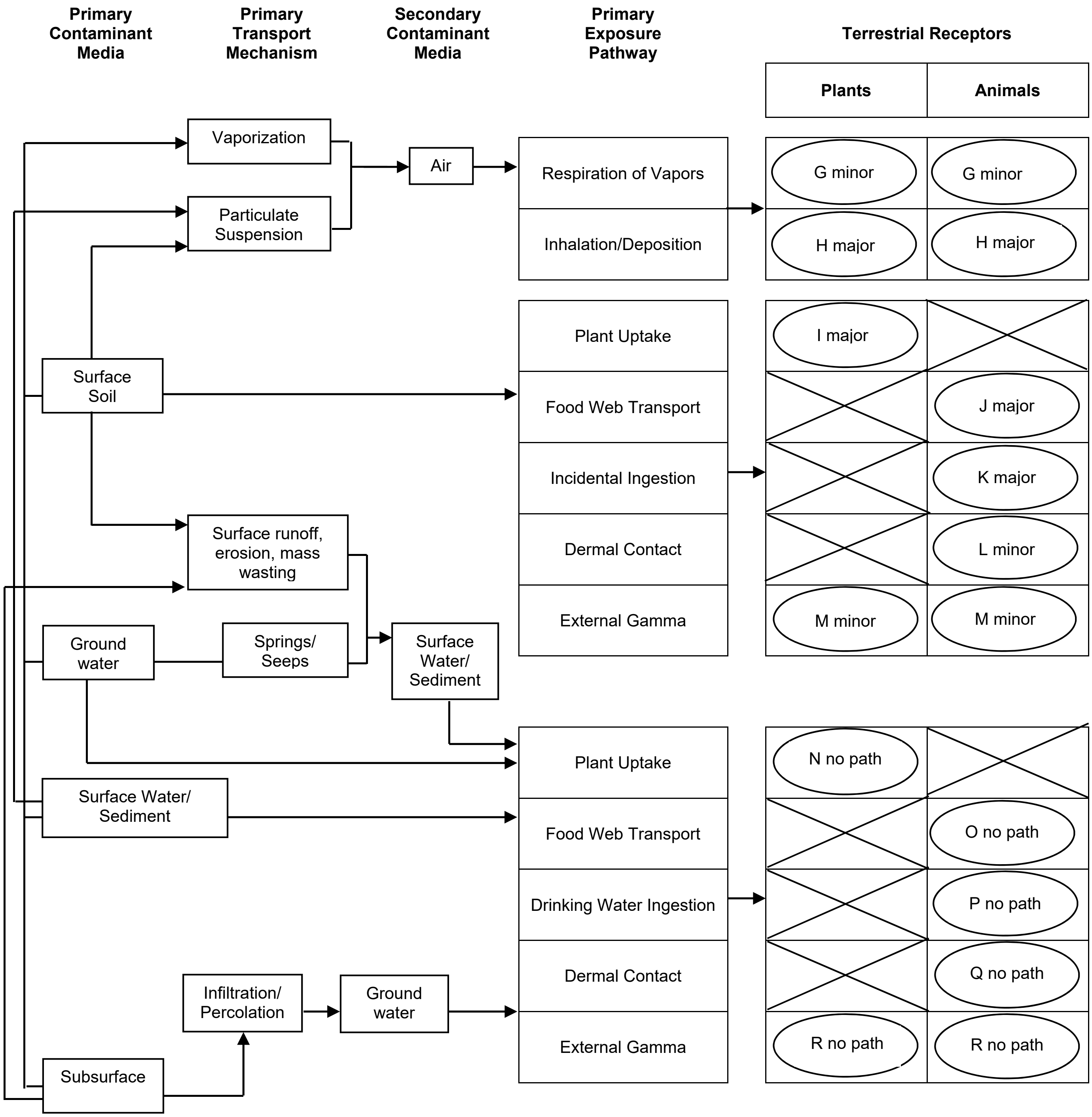
Aquatic Plants: 0

Aquatic Animals: 0

Provide explanation: There is no aquatic habitat present.

NOTE:
Letters in circles refer to questions on the Scoping Checklist

Ecological Scoping Checklist
Terrestrial Receptors
Ecological Pathways Conceptual Exposure Model



NOTE:
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Ecological Scoping Checklist
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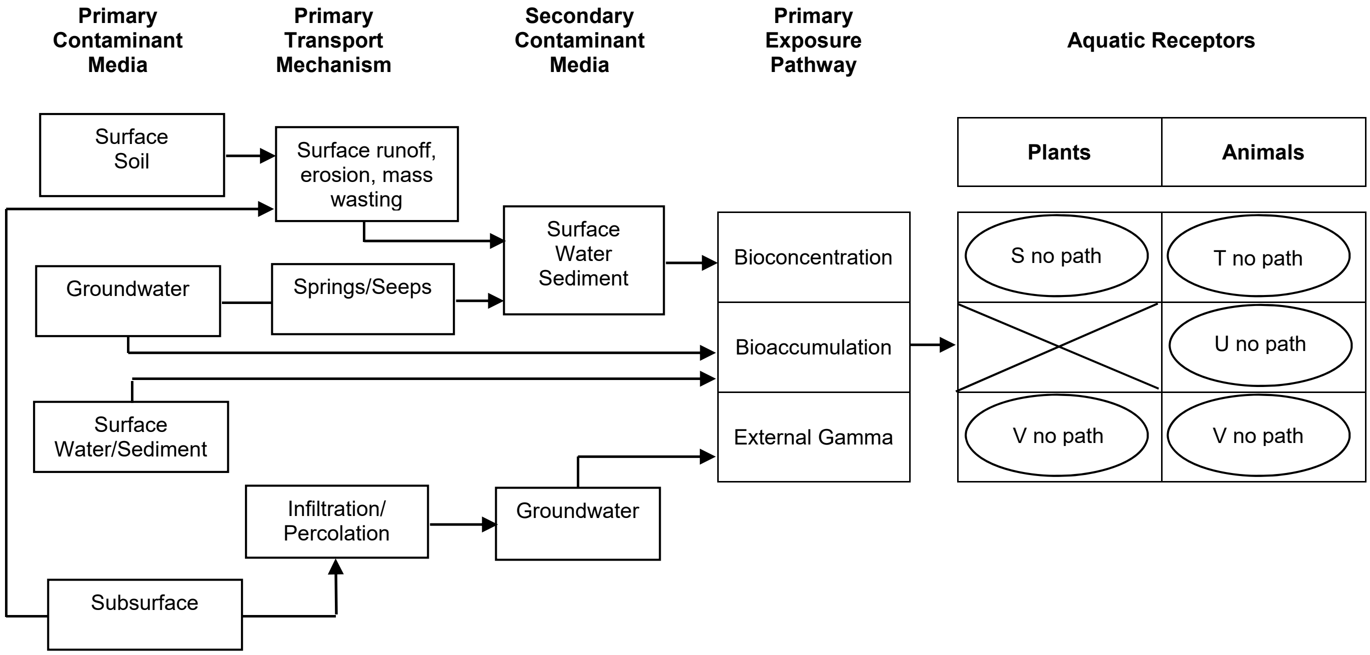

SIGNATURES AND CERTIFICATION

Checklist completed by:

Name (printed): Randall Ryti

Name (signature):

Organization: Neptune and Company, Inc.

Date completed: July 16, 2018

Checklist reviewed by:

Name (printed): Tracy McFarland

Name (signature):

Organization: N3B

Date reviewed: 9/14/18