LA-UR-07-7820
November 2007
EP2007-0720

Investigation Report for Guaje/Barrancas/Rendija Canyons Aggregate Area at Technical Area 00, Revision 1

Los Alamos
NATIONAL LABORATORY
EST. 1943

Prepared by the Environmental Programs Directorate

LA-UR-07-7820
EP2007-0720

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November 2007

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EXECUTIVE SUMMARY

This investigation report presents the results of investigation activities conducted in 2006–2007 at solid waste management units (SWMUs) and areas of concern (AOCs) located within the Guaje/Barrancas/Rendija Canyons Aggregate Area of Technical Area (TA) 00 at Los Alamos National Laboratory (the Laboratory). TA-00 is located in the northern portion of the Laboratory, north of Rendija Road and generally north of the Los Alamos townsite.

The objective of this investigation is to characterize potential contamination associated with the SWMUs/AOCs that are part of the Guaje/Barrancas/Rendija Canyons Aggregate Area.

The investigation activities were conducted in accordance with the “Investigation Work Plan for Guaje/Barrancas/Rendija Canyons Aggregate Area at Technical Area 00,” which was approved by the New Mexico Environment Department (NMED) in January 2006.

The investigation report for the Guaje/Barrancas/Rendija Canyons Aggregate Area includes the following SWMUs and AOCs:

- SWMU 00-011(a), a mortar impact area
- SWMU 00-011(c), a possible mortar impact area
- SWMU 00-011(d), a bazooka firing area
- SWMU 00-011(e), an ammunition impact area
- AOC C-00-020, a possible mortar impact area
- AOC C-00-041, an asphalt batch plant and tar remnant site

Field investigation activities included site surveys at SWMUs 00-011(a), 00-011(c), 00-011(d), and 00-011(e), and AOCs C-00-020 and AOC C-00-041. Surface and shallow subsurface sampling was conducted at SWMUs 00-011(a), 00 011(d), and 00-011(e) and at AOC C-00-041. Soil and tuff samples from SWMUs 00-011(a), 00-011(d), and 00-011(e) were analyzed for inorganic chemicals and perchlorate, and 20% of the samples collected were analyzed for high explosives. Samples from AOC C-00-041 were analyzed for inorganic chemicals, volatile organic chemicals, semivolatile organic chemicals, total petroleum hydrocarbons–gasoline range organics, and total petroleum hydrocarbons–diesel range organics. Based on the characterization data from the 2006–2007 investigation, the nature and extent of surface and subsurface contamination are defined for SWMUs 00-011(a), 00-011(d), and 00-011(e). Asphalt remains at AOC C-00-041, but the nature and extent of total petroleum hydrocarbon contamination have been defined for this site.

The sites are located within recreational areas that are expected to remain so for the reasonably foreseeable future. The risk screening assessments for human health under a residential scenario resulted in a maximum potential excess cancer risk of 1×10^{-7} and a maximum hazard index (HI) of 0.2. Both these values are below the applicable New Mexico Environment Department target levels for cancer risk and HI, indicating that SWMUs 00-011(a), 00-011(d), and 00-011(e) and AOC C-00-041 do not pose an unacceptable risk to human health under a residential scenario. The results of ecological risk screening assessment also indicate no unacceptable risk to the environment at SWMUs 00-011(a), 00-011(d), and 00-011(e) and AOC C-00-041.

The munitions-debris survey did not locate any munitions or explosives of concern at SWMU 00-011(c) or AOC C-00-020. Because no munitions debris was found during this survey or in previous surveys, these

sites were not used as impact areas, and no further investigation was conducted, per the approved work plan. These sites are being proposed for complete without controls.

Based on the results of this investigation, it is recommended that SWMUs 00-011(a), 00-011(c), 00-011(d), and 00-011(e) and AOCs C-00-020 and C-00-041 are complete without controls.

CONTENTS

Figures

Tables

Appendixes

1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the United States Department of Energy (DOE) and managed by the Los Alamos National Security, LLC. The Laboratory is located in north-central New Mexico approximately 60 mi northeast of Albuquerque and 20 mi northwest of Santa Fe. The Laboratory site covers 40 mi^2 of the Pajarito Plateau, which consists of a series of finger-like 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.

The Laboratory's Environmental Programs (EP) Directorate, which includes the former the Environmental Restoration (ER) Project, is participating in a national effort by DOE to clean up sites and facilities formerly involved in weapons research and development. The goal of the Directorate is to ensure that past operations do not threaten human or environmental health and safety in and around Los Alamos County, New Mexico. To achieve this goal, the Directorate is currently investigating sites potentially contaminated by past Laboratory operations. The sites under investigation are designated as either solid waste management units (SWMUs) or areas of concern (AOCs).

This investigation report describes the characterization activities conducted in 2006–2007 to complete the investigation of an aggregate of SWMUs and AOCs in Technical Area (TA) 00 within Guaje/Barrancas/ Rendija Canyons at the Laboratory (Figure 1.0-1). These SWMUs and AOCs, designated as SWMUs 00-011(a), 00-011(c), 00-011(d), and 00-011(e) and AOCs C-00-020 and C-00-041, are potentially contaminated with hazardous chemicals.

Corrective actions at the Laboratory are subject to the Compliance Order on Consent (the Consent Order) signed on March 1, 2005. The Consent Order was issued pursuant to the New Mexico Hazardous Waste Act, New Mexico Statutes Annotated (NMSA) 1978, § 74-4-10, and the New Mexico Solid Waste Act, NMSA 1978, § 74-9-36(D).

The SWMUs and AOCs addressed in this report lie within Rendija, Cabra, Barrancas, Guaje, and Bayo Watersheds (Figure 1.0-2). Laboratory operations in these canyons date back to the mid-1940s and had largely ceased by the late 1960s.

The Laboratory's EP Directorate evaluated the existing data, assessed potential impacts, and defined additional data needs for the SWMUs and AOCs. This information was documented in the "Investigation Work Plan for Guaje/Barrancas/Rendija Canyons Aggregate Area at TA-00" (LANL 2005, 089657, p. 1). The investigation work plan was approved by the NMED Hazardous Waste Bureau in January 2006 (NMED 2006, 091532).

1.1 General Site Information

The SWMUs and AOCs addressed in this report were formerly part of Operable Unit (OU) 1071 within TA-00, which is located in the northern portion of the Laboratory, north of Rendija Road and generally north of the Los Alamos townsite.

The Guaje/Barrancas/Rendija Canyons Aggregate Area consists of the following SWMUs and AOCs:

- SWMU 00-011(a), a mortar impact area
- SWMU 00-011(c), a possible mortar impact area
- SWMU 00-011(d), a bazooka firing area

- SWMU 00-011(e), an ammunition impact area
- AOC 00-015, an active firing range (Sportsmen's Club)
- SWMU 00-016, an inactive firing range
- AOC C-00-020, a possible mortar impact area
- AOC 00-024, a cistern
- AOC 00-025, a landfill
- AOC 00-026, a landfill
- AOC C-0-041, an asphalt batch plant and tar remnant site

Although previous investigations have addressed AOCs 00-024, 00-025, and 00-026 together because of their similarities, AOC 00-026 has been assigned to the Bayo Canyon Aggregate Area and is not discussed further in this work plan. SWMU 00-011(d), also located in Bayo Canyon, is included in this investigation because the nature of historical activities at this site is similar to activities conducted at the munitions-impact sites in Rendija Canyon [SWMUs 00-011(a) and SWMU 00-011(e) and AOC C-00-020]. The SWMU and AOC locations within the watershed aggregate area are shown in Figure 1.0-2.

The current use of the sites is recreational. The only site being used consistently and almost daily is AOC 00-015, a Sportsmen's Club small-arms firing range (SAFR), open to members of a nonprofit group.

1.2 Purpose of Investigation

The objective of this investigation is to characterize the nature and extent of contamination, if any, associated with the sites. This investigation report includes the results of site characterization activities and analysis of the results to evaluate site conditions.

1.3 Site Investigations

Investigation activities conducted in 2006–2007 included site surveys for munitions and explosives of concern (MEC), geophysical surveys, collection of surface and shallow subsurface samples, and asphalt removal.

The MEC survey was conducted by unexploded ordnance (UXO) technicians, who conducted a surface sweep of SWMUs 00-011(a), 00-011(c), 00-011(d), and 00-011(e), and AOC C-00-020. After the MEC site surveys, geophysical surveys were conducted to delineate subsurface anomalies that may be attributed to potential MEC and to clear sampling locations before surface and subsurface samples were collected. Samples were collected at sampling and screening locations, as defined in the approved work plan (LANL 2005, 089657; NMED 2006, 091532).

After sample collection at AOC C-00-041, visible asphalt was removed from the watercourse.

1.4 Investigation Report Overview

Section 1 of this investigation report describes the site and site contamination, discusses the purpose of the investigation, and presents an overview of the investigation conducted. Section 2 presents the history of site use and a summary of previous investigations. Section 3 describes the scope of field activities. Field investigation results are presented in section 4. Section 5 presents the current regulatory criteria for cleanup standards, human health screening levels, and ecological screening levels. The results of surface and subsurface contamination are summarized in section 6. Section 7 presents conclusions, including a summary of the nature and extent of surface and subsurface contamination, and the results of risk screening assessments. Section 8 presents recommendations for the sites. Section 9 contains the references.

The appendixes include acronyms and abbreviations, glossary, and metric conversions and data qualifier tables (Appendix A); field methods (Appendix B); analytical program descriptions (Appendix C); field and analytical records (Appendix D [on DVD included with this document]); data review (Appendix E); risk screening assessments (Appendix F); surface water assessments (Appendix G); investigation-derived waste storage and disposal documentation (Appendix H); munitions debris (MD)/MEC report (Appendix I); and geophysical reports (Appendix J).

2.0 BACKGROUND

In May 1992, a Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) work plan for OU 1071 (LANL 1992, 007667) was submitted to the U.S. Environmental Protection Agency (EPA). The OU 1071 work plan, which was approved by EPA in January 1993 (EPA 1993, 015110), specified investigation activities to be executed as a series of RFIs and voluntary corrective actions (VCAs) from 1993 through 1997. The results of those investigations were presented in various RFI and VCA reports. An additional investigation work plan (LANL 2005, 089657) was prepared and submitted to complete the investigation activities for the sites.

2.1 Site Descriptions and Operational Histories for Administratively Complete and Active Sites

2.1.1 Administratively Complete Sites

SWMU 00-016

SWMU 00-016 (Figure 1.0-2) is a former SAFR located on public land managed by the United States Forest Service (USFS) in Rendija Canyon. The area is approximately 4 acres. From 1947 to the early 1960s, Atomic Energy Commission (AEC) security personnel used the site as a SAFR. From the early 1960s until 1992, the public used the site for recreational shooting. The Laboratory implemented VCA activities at the site from 1993 to 1997 to remove lead and lead-contaminated soil. The VCA report recommended no further action (NFA) for the site, which was approved by NMED in 1999 (NMED 1999, 064564). The site was removed from Module VIII of the Hazardous Waste Facility Permit by NMED in 2001 (NMED 2001, 071256). Therefore, this SWMU is not discussed further in this report.

AOC 00-024

AOC 00-024 (Figure 1.0-2) was a cistern located on private property on Barranca Mesa. It was an unlined hole in the Bandelier Tuff with a wood cover. Before 1965, the cistern was used as a disposal site for expended munitions and gun components (LANL 1992, 007667, p. 6-3). The entire contents of the cistern were removed in 1965 (LANL 1992, 007667, p. 6-3). AOC 00-024 was recommended for NFA in the OU 1071 RFI work plan (LANL 1992, 007667). The NFA recommendation was approved by the EPA in 1993 (EPA 1993, 015110) and was later confirmed by EPA in a letter to NMED in 2005 (EPA 2005, 088464). Therefore, this AOC is not discussed further in this report.

AOC 00-025

AOC 00-025 (Figure 1.0-2) was the Tank Mesa “landfill,” a possible waste disposal area. Tank Mesa, currently named Otowi Mesa, is located between Barrancas and Bayo Canyons at the east end of

Barranca Mesa. The site of the landfill was never found (LANL 1992, 007667, p. 6-4). No documentation of the time of operation is available. In 1992, AOC 00-025 was recommended for NFA in the OU 1071 RFI work plan (LANL 1992, 007667). The NFA recommendation was approved by EPA in 1993 (EPA 1993, 015110) and was confirmed by EPA in a letter to NMED in 2005 (EPA 2005, 088464). Therefore, this AOC is not discussed further in this report.

2.1.2 Active Site

AOC 00-015

AOC 00-015 (Figure 1.0-2) is the Los Alamos Sportsmen's Club SAFR, an active range located on General Services Administration (GSA) land leased from DOE in Rendija Canyon. The area is approximately 30 acres. The Sportsmen's Club started operations in 1966. Several different firing ranges are currently used by members of the club, including pistol ranges, a skeet range, two trap ranges, and a rifle range. Each range contains one or more earthen primary impact berms and lateral or side berms. Shattered clay targets are present on the skeet and trap ranges, and lead is present within the earthen berms and on the range surfaces.

In 1992, the OU 1071 RFI work plan recommended that no action be taken at this site until the firing range ceased operation and the land use changed (LANL 1992, 007667, p. 6-3). This work plan was subsequently approved by EPA (EPA 1993, 015110). No sample collection or remedial actions have been conducted at the site. Investigation of this site will be deferred until the site is no longer active because ongoing activities at the site prevent performing a representative characterization. Deferring investigation of this site was proposed in the investigation work plan (LANL 2005, 089657) and was approved by NMED (NMED 2006, 091532). The Laboratory will notify NMED within 30 d after the site becomes inactive. Following this notification, an investigation work plan for AOC 00-015 will be submitted to NMED for review and approval. This AOC is not discussed further in this report.

2.2 Site Descriptions and Operational Histories for Sites Investigated

2.2.1 SWMU 00-011(a)

SWMU 00-011(a) (Figure 1.0-2) is a 28.5-acre former mortar impact area located on USFS land about 0.4 mi east of the Sportsmen's Club SAFR (AOC 00-015) in Rendija Canyon. The site was a mortar impact area in the mid-1940s, and operations ceased in the late 1940s (LANL 1990, 007511).

SWMU 00-011(a) is located east of the Rendija Sportsmen's Club in a relatively flat open grassland with scattered shrubs and trees. The site is bisected east to west by an unpaved road, called Rendija Road. On the north side of the road, the site has a gradual to steep slope to the ephemeral stream channel. The slope is covered by downed trees that burned during the Cerro Grande fire in 2000.

Currently, the site is fenced and posted with DOE "No Trespassing" signs. However, motocross trails are present within the SWMU boundary on the south side of Rendija Road (Forest Service Road 57), and an area is used as a shooting range. On the north side of Rendija Road are several former dirt roads and at least two shooting ranges.

2.2.2 SWMU 00-011(c)

SWMU 00-011(c) (Figure 1.0-2) is a possible mortar impact area located on USFS land in a tributary of Rendija Canyon north of the Sportsmen's Club SAFR (AOC 00-015). The area is approximately 10 acres and may have been used as a mortar impact area in the 1940s (LANL 1990, 007511). No documentation of the time of operations is available.

The site is within the area burned by the Cerro Grande fire in 2000. Current site conditions include numerous downed, burned trees and very little other vegetation. Public hiking trails run through and around the perimeter of the site. Several archaeological sites are currently under investigation.

2.2.3 SWMU 00-011(d)

SWMU 00-011(d) (Figure 1.0-2) is a bazooka firing area located largely on Los Alamos County land, except for a small section on private property. The area is in a small north-trending tributary of Bayo Canyon northeast of the intersection of San Ildefonso Road and Diamond Drive. The area is approximately 5 acres and was used as a target area for 2.36-in. bazooka rounds in the mid-1940s; operations ceased in the late 1940s (LANL 1990, 007511).

SWMU 00-011(d) is located near a hiking trail at the head of Bayo Canyon. A north-south trending drainage channel bisects SWMU 00-011(d) and a cliff is located on the east edge of the site. The southern section of the site is a grassy meadow with some shrubs and trees; the northern-most section of the site is within a pine forest.

2.2.4 SWMU 00-011(e)

SWMU 00-011(e) (Figure 1.0-2) is a former ammunition impact area located on USFS land in a tributary of Rendija Canyon north-northeast of the Sportsmen’s Club SAFR (AOC 00-015). The area extends north along the tributary to the top of a cliff face. The area is roughly rectangular and is approximately 14 acres and was used as an ammunition impact area in the mid-1940s; operations ceased in the late 1940s (LANL 1990, 007511).

SWMU 00-011(e) is located within a steep natural amphitheater with numerous loose rocks and boulders. The site is fenced with barbwire and posted with “Explosives No Trespassing” signs.

Active rifle firing areas at the Sportsmen’s Club are in direct alignment with the site.

2.2.5 AOC C-00-020

AOC C-00-020 (Figure 1.0-2) is a 30-acre possible mortar impact area located along the north valley wall of Rendija Canyon on USFS land. The site also includes a tributary of Rendija Canyon. Most of the site lies within the Santa Fe National Forest, except for a small area on the southeastern edge that is private property. This site was thought to be a former mortar impact area because of a “U.S. Property—No Trespassing” sign and nearly illegible, bilingual signs posted along the southern edge of the area. The signs are not currently posted (LANL 1992, 007667, p. 5-26).

The site is within an area burned by the Cerro Grande fire in 2000. The stream channel that runs through the center of the site has been widened by flooding. Currently, there are burned and live trees on the steep slopes adjacent to the stream.

2.2.6 AOC C-00-041

AOC C-00-041 (Figure 1.0-2) is the site of a former asphalt batch plant in a 600-ft-long portion of a side slope and drainage channel that flows into Rendija Canyon on USFS land. Aerial photographs indicate asphalt plant operations from the late 1940s to 1958 (LANL 1996, 054925, p. 1). In 1969, the land was transferred from the AEC to the USFS to manage as public land after the plant had been removed (LANL 1996, 054925, p.1). Currently, the site is undeveloped and is located in a grassy open meadow that is bisected north to south by an ephemeral stream. A hiking trail, Rendija Trail, is located to the west of AOC C-00-041.

2.3 Summary of Previous Investigations

2.3.1 SWMU 00-011(a)

The RFI activities conducted in 1993 included determination of the SWMU boundary, removal of UXO and MD, a geophysical quality assurance/quality control (QA/QC) survey, geomorphologic mapping, and collection of surface soil and quaternary alluvium (QAL) samples. Two live high explosives (HE) mortar rounds (60-mm and 81-mm) were found and destroyed without incident. After the detonations, the resulting MD was recovered (LANL 1994, 059427, p. 8). Other materials recovered during the ordnance sweep included almost 2400 ordnance fragments and three times as many pieces of scrap material. Two burial pits containing mostly tires and UXO/MD were excavated and removed (EHSI 1994, 059057, p. 1).

Soil and QAL samples were collected at 18 locations from sediment catchment areas within the drainage channels that drained the areas of high-fragment concentration. These samples were analyzed for inorganic chemicals by Chemical Sciences and Technology (CST) Division of the Laboratory and for HE at an off-site fixed laboratory. No HE compounds were detected. Although the CST inorganic chemical data are not useable for decision purposes, a qualitative discussion of the sample results is provided in section 2.5.1 of the approved investigation work plan (LANL 2005, 089657; NMED 2006, 091532). The CST data does not have adequate QA/QC information available for validation; therefore, the data are not included in this report.

An RFI report was submitted (LANL 1994, 059427). The 2005 investigation work plan addresses additional data needed to determine the nature and extent of contamination.

2.3.2 SWMU 00-011(c)

The RFI activities conducted in 1993 included an ordnance survey followed by a geophysical QA/QC survey. The ordnance survey found scrap metal such as bailing wire and tin cans. Because MD was completely absent, the Laboratory concluded that the site was never used as an ordnance impact area. Sampling was not conducted at SWMU 00-011(c) during the RFI.

An RFI report was submitted (LANL 1994, 059427). The 2005 investigation work plan addresses additional data needed to determine the nature and extent of contamination.

2.3.3 SWMU 00-011(d)

The RFI activities conducted in 1992 and 1993 included the removal of UXO and MD, a geophysical QA/QC survey, geomorphologic mapping, and collection of surface samples. The MD recovered included 2.36-in. bazooka round fragments, fin assemblies, motors, bullets, and one partly intact round (LANL 1994, 059427, p. 15).

Samples were collected at seven locations from sediment catchment areas along the drainage channels on the hillslope below the cliff and along the axial drainage channels. These samples were analyzed for inorganic chemicals by CST. Although the CST inorganic chemical data are not useable for decision purposes, a qualitative discussion of the sample results is provided in section 2.5.2 of the approved investigation work plan (LANL 2005, 089657; NMED 2006, 091532). The CST data does not have adequate QA/QC information for validation; therefore, the data are not included in this report. The samples were also analyzed for HE, but the results of HE analyses were not usable because holding times had been exceeded. Therefore, 13 additional samples were collected in 1993 from the same locations and from 2 additional locations. These samples were analyzed for lead by CST and for HE at an off-site fixed laboratory. No HE was detected.

An RFI report was submitted (LANL 1994, 059427). The 2005 investigation work plan addresses additional data needed to determine the nature and extent of contamination.

2.3.4 SWMU 00-011(e)

The RFI activities conducted in 1993 included determination of the SWMU boundary, removal of UXO and MD, a geophysical QA/QC survey, geomorphologic mapping, and collection of surface samples. During the ordnance sweep, the materials recovered included 2 20-mm rounds, 102 armor piercing rounds, and fragments of 37-mm HE rounds. Recovered rounds were detonated within the SWMU's main ordnance impact area. After each detonation, the resulting MD was recovered (LANL 1994, 059427, p. 24).

Samples were collected at eight locations in sediment catchment areas along the drainage channels of the hillslope below the cliff and within and directly below the main impact zone. These samples were analyzed for inorganic chemicals by CST. Although the CST inorganic chemical data are not useable for decision purposes, a qualitative discussion of the sample results is provided in section 2.5.2 of the approved investigation work plan (LANL 2005, 089657; NMED 2006, 091532). The CST data do not have adequate QA/QC information for validation; therefore, the data are not included in this report. The samples were also analyzed for HE at an off-site fixed laboratory. No HE compounds were detected.

An RFI report was submitted (LANL 1994, 059427). The 2005 investigation work plan addresses additional data needed to determine the nature and extent of contamination at the site.

2.3.5 AOC C-00-020

An ordnance team inspected AOC C-00-020 in 1991 and concluded that the site was not a former impact area. However, because the arrangement of the "No Trespassing" signs and the canyon geometry was similar to that found at SWMUs 00-011(c) and 00-011(d), the area was retained as an AOC (LANL 1992, 007667, p. 5 26).

The RFI activities conducted in 1993 included an ordnance survey, followed by a geophysical QA/QC survey. No MD or MEC was found. The geophysical survey found anomalies that turned out to be rocks and some pieces of tin. Sampling was not conducted at AOC C-00-020 during the RFI.

An RFI report was submitted (LANL 1994, 059427). The 2005 investigation work plan addresses additional data needed to determine the nature and extent of contamination at the site.

2.3.6 AOC C-00-041

In 1995, a VCA was conducted at AOC C-00-041 in response to requests from USFS and NMED. Water, soil, and tar were sampled at five locations, and analyzed for target analyte list (TAL) metals, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), polychlorinated biphenyls (PCBs), and pesticides (LANL 1996, 054925, p. 1). One tar sample was analyzed for metals and for waste characterization using the toxicity characteristic leaching procedure (TCLP). Asphalt was generally confined to the stream channel. A horizontal layer of asphalt, varying in thickness from 0.5 to 8 in., was found 3 to 4 ft below ground surface (bgs). Most of this layer was removed from within the stream channel by excavation. However, excavation stopped when the remaining asphalt had thinned to 1/16 to 1/4 in. thick by 3 ft wide at a depth of 4 ft bgs beneath a cover of soil and vegetation and could not be excavated further with the backhoe (LANL 1996, 054925, p. 2). Approximately 300 yd^3 of material was excavated and taken to the Los Alamos County landfill for disposal. The USFS Los Alamos Area Office declared the clean-up efforts to be satisfactory (LANL 1996, 054925, p. 2).

Because the 1995 samples were collected from locations where soil and tar were removed, the analytical results are not indicative of current conditions and therefore are not used to determine nature and extent.

In 1999, after public users of the area complained about tar and asphalt remaining on-site, a field inspection was conducted in the area. As a result, a small amount of visible tar/asphalt was removed from the drainage channel, a standpipe drain was installed downstream of the Ponderosa Estates subdivision to control storm-event runoff into the drainage channel, and rock-check dams were installed in the drainage channel. The standpipe drain was designed to use the natural drainage basin downstream of the subdivision as a stormwater retention area and to dissipate flow from large runoff events into the drainage channel where this AOC is located (Veenis 1999, 069722).

In May 2005, the Laboratory constructed additional rock check dams and other erosion control measures along the watercourse. The 2005 investigation work plan addresses additional data needed to characterize the nature and extent of contamination at the site.

3.0 SCOPE OF ACTIVITIES

This section describes the investigation activities conducted at the Guaje/Barrancas/Rendija Canyons Aggregate Area from October 2006 to May 2007 in accordance with the approved investigation work plan (LANL 2005, 089657; NMED 2006, 091532). Activities included munitions debris surveys to look for MD/MEC at SWMUs 00-011(a), 00-011(c), 00-011(d), and 00-011(e) and AOC C-00-020; geophysical surveys to locate underground MD at SWMUs 00-011(a), 00-011(d), and 00-011(e); collection of surface and shallow subsurface samples at SWMUs 00-011(a), 00-011(d), and 00-011(e) and AOC C-00-041; and removal of asphalt at AOC C-00-041.

A total of 304 samples were collected and submitted to an off-site contract analytical laboratory for inorganic chemical analyses. A total of 121 samples were collected and submitted for HE analyses. A total of 34 samples were collected and submitted for analyses of VOCs, SVOCs, TPH–gasoline range organics (GRO), and TPH–diesel range organics (DRO). A total of 270 samples were collected and submitted for perchlorate analyses. Characterization sampling was completed in March 2007. Asphalt removal from AOC C-00-041 was completed in May 2007.

The quality procedures (QPs) and standard operating procedures (SOPs) used during 2006–2007 characterization activities are listed in Table 3.0-1. Specific details of the methods used for sampling activities are presented in Appendix B, along with descriptions of deviations from the approved work plan. The results of sample analyses are summarized in section 6.0 and in Appendix E.

3.1 MEC Site Surveys

In October 2006, reconnaissance walks were conducted by HydroGeoLogic, Inc., UXO technicians to identify and locate MD and MEC at SWMUs 00-011(a), 00-011(c), 00-011(d), and 00-011(e) and at AOC C-00-020. The reconnaissance walks were conducted using 10- to 15-ft lane spacing. In areas with very steep grades and unstable ground, the maximum area that could be navigated safely was walked. The remaining area that could not be walked was given a thorough visual sweep from the top and the bottom of the grade. In areas overgrown with brush, a handheld metal detector was used to sweep for metallic debris in and under the brush.

All locations where MD was found were surveyed either by traditional surveying methods or by differentially corrected global-positioning system (GPS). The results are presented in Table 3.1-1. The survey methods are described in Appendix B. The MD/MEC report is included in Appendix I (on CD included with this document). Disposal of the MD is described in Appendix H.

3.1.1 SWMU 00-011(a)

MD/MEC was found at SWMU 00-011(a) at seven locations (Appendix I). The MD/MEC found included a mortar fuse, a mortar fin assembly, and projectile fragments.

3.1.2 SWMU 00-011(c)

No MD/MEC was found at SWMU 00-011(c). As stated in the approved investigation work plan (LANL 2005, 089657, p. 22; NMED 2006. 091532), the absence of MEC or MD as determined by the MEC survey supports the previous conclusion that SWMU 00-011(c) was never used as an impact area. Therefore, no further investigation was conducted at this site, per the approved investigation work plan (LANL 2005, 089657; NMED 2006, 091532).

3.1.3 SWMU 00-011(d)

MD/MEC was found at SWMU 00-011(d) at five locations (Appendix I). The MD/MEC found included rocket motor debris, rocket warhead debris, an expended rocket motor, and high-explosive anti-tank (HEAT) debris.

3.1.4 SWMU 00-011(e)

A 37-mm projectile fragment was discovered at SWMU 00-011(e) (Appendix I). The projectile fragment was found on a boulder and appeared to have been placed at that location. Minimal evidence of additional MD were found at SWMU 00-011(e), and it is unlikely that the fragment was found in its original position.

3.1.5 AOC C-00-020

No MD/MEC was found at AOC C-00-020. As stated in the approved investigation work plan (LANL 2005, 089657, p. 26; NMED 2006, 091532), the absence of MEC or MD as determined by the MEC survey supports the previous conclusion that AOC C-00-020 was never used as an impact area. Therefore, no further investigation was conducted at this site, per the approved investigation work plan (LANL 2005, 089657; NMED 2006, 091532).

3.2 Geophysical Surveys

In November 2006, ARM Group, Inc., performed a geophysical investigation using either digital data or the supporting analog data to locate potential subsurface MEC/MD and to verify that specific sampling locations were clear of metal and potential hazards before sample collection. Three geophysical techniques were used: an electromagnetic metal detector (EM61-MK2), a cesium vapor magnetometer (Geometrics-858), and a handheld metal detector (Minelab F3 and Schonstedt).

Following the MD/MEC surveys, the geophysical surveys were conducted in the former high-impact areas, as defined in the approved work plan (LANL 2005, 089657, p. 18; NMED 2006, 091532), at SWMUs 00-011(a), 00-011(d), and 00-011(e). The geophysical surveys were inconclusive; the geophysical reports are included in Appendix J (on CD included with this document).

Before sampling activities began, a hand-held Schonstedt metal detector and a Minelab F3 metal detector were used to survey each location. Some of the locations were moved slightly to adjust for magnetic readings from one or both of the instruments.

3.3 Field Screening

Each sample was screened for VOCs using a MiniRAE 2000 photoionization detector (PID) with an 11.7 electron-volt (eV) lamp. The PID was calibrated at least daily during field activities, and the PID is calibrated yearly by the vendor. Daily calibration was performed using a standard source of 100 parts per million (ppm) isobutylene. The rated detection limit for the MiniRAE 2000 is 0.2 ppm.

All samples from SWMUs 00-011(a), 00-011(d), and 00-011(e) were screened for TNT (2,4,6-trinitrotoluene) and RDX (research department explosives or hexahydro-1,3,5-trinitro-1,3,5-triazine) using D TECH TNT explosives test kits or D TECH RDX explosives test kits. Soil samples were prepared for testing using the D TECH TNT/RDX Soil Extraction Pac. Both sample preparation and testing were performed according to vendor specifications. The location, depth, date, and time at which each sample was collected were recorded, along with the date, time, and result of each screening test (TNT and RDX). Samples were extracted and tested in a climate-controlled field laboratory trailer to maintain a relatively constant temperature during testing. To ensure quality, a blank was included in every batch. If TNT or RDX was detected with the test kit, the corresponding sample was submitted to an off-site contract laboratory for explosive compound analyses.

3.4 Surface and Shallow Subsurface Sampling Activities

This section describes the sampling activities conducted from December 2006 to May 2007. The approved work plan (LANL 2005, 089657; NMED 2006, 091532) specified the locations (“sampling locations”) from which samples were collected to submit to off-site laboratories for analysis. At other locations (“screening locations”), samples were collected initially only for field screening of VOCs, TNT, and RDX. If the field-screening results were positive, those samples were submitted for analyses at off-site laboratories. A minimum of 20% of screening samples were submitted for analyses at off-site laboratories, regardless of screening results. All screening locations were originally designated as location S-xxx. If a screening sample was submitted for explosive compound analysis at a fixed analytical laboratory, then the location was renamed 00-27xxx, and its location coordinates were entered into the ER Database.

A stainless-steel hand auger was used to collect the samples in accordance with SOP-06.10, “Hand Auger and Thin-Wall Tube Sampler” (Table 3.0-1). A stainless-steel scoop and bowl were used to homogenize the samples, which were then transferred to sterile sample collection jars.

All sampling and screening locations were surveyed by differentially corrected GPS. The surveyed coordinates for all sampling and screening locations are presented in Table 3.1-1. The survey methods are described in Appendix B.

3.4.1 SWMU 00-011(a)

In the approved work plan (LANL 2005, 089657; NMED 2006, 091532), SWMU 00-011(a) was divided into high-recovery and low-recovery areas, depending upon how many pieces of MD or MEC had been located during the previous investigation. A grid was set up over the site with most of the sampling and screening locations within the high-recovery areas.

Fifty-six sampling locations were selected for off-site laboratory analysis (Figure 3.4-1); 33 locations were sampled from the grid and 23 locations were sampled from sediment pockets within drainage channels. All but two of these locations were sampled from two depths (generally from 0.0 to 0.5 ft bgs and from 2.0 to 3.0 ft bgs) for a total of 110 samples. The grid and drainage samples were submitted to an off-site laboratory for analysis of TAL metals and perchlorate. All samples were field screened for organic vapors with the PID and for RDX and TNT with the D TECH kits (Table 3.3-1); none had positive results. Therefore, 22 of the 110 samples (20%) were randomly selected and submitted for explosive compound analysis at an off-site laboratory.

Sixty-two screening locations were selected for RDX and TNT screening at two depths, for a total of 124 screening samples. Two screening samples tested positive: one for RDX and one for TNT. These two samples were submitted to an analytical laboratory for analysis of TAL metals, perchlorate, and explosive compounds. Twenty-three additional screening samples from 22 locations (Figure 3.4-1) were submitted for explosive compound analysis.

In summary, from a total of 80 sampling locations (Figure 3.4-1), 112 samples (plus 11 field duplicates) were collected and analyzed at an off-site laboratory for TAL metals and perchlorate, and 47 samples (plus 4 field duplicates) were analyzed at an off-site laboratory for explosive compounds.

3.4.2 SWMU 00-011(d)

Twenty-one sampling locations were selected (Figure 3.4-2); nine locations were sampled in the main drainage channel approximately 100 ft apart in sediment pockets, three locations were sampled in the former bazooka impact area, three locations were sampled in the small drainages in the cliff area, and six locations were sampled west of the drainage channel to define lateral extent. All locations were sampled from 0.0 to 0.5 ft and 2.0 to 3.0 ft bgs, and all were analyzed for TAL metals and perchlorate.

All samples were field screened for organic vapors with the PID and for RDX and TNT with the D TECH kit (Table 3.3-2). One sample tested positive for RDX and was submitted for explosive compound analysis. A total of 42 samples (plus 4 duplicates) were collected and analyzed for TAL metals and perchlorate, and 20% of these samples (9 samples plus 1 duplicate) were submitted to an off-site laboratory for explosive compound analyses.

3.4.3 SWMU 00-011(e)

In the approved work plan (LANL 2005, 089657; NMED 2006, 091532), SWMU 00-011(e) was divided into high-recovery and low-recovery areas, depending upon how many pieces of MD or MEC had been located during the previous investigation. A grid was set up over the site with most of the sampling and screening locations within the high-recovery areas.

Sixty-three sampling locations were selected for fixed laboratory analysis (Figure 3.4-3); 50 locations were sampled from the grid and 13 locations were sampled from sediment pockets within drainage channels. All but 11 of these locations were sampled from two depths (generally from 0.0 to 0.5 ft bgs and from 2.0 to 3.0 ft bgs) for a total of 115 samples. All grid and drainage samples were analyzed for TAL metals and perchlorate, and all were field screened for VOCs with a PID and for RDX and TNT with the D TECH kit (Table 3.3-3). One grid sample (location 00-27053) and one drainage sample (location 00-27057) tested positive for TNT. Twenty-four samples (plus 3 field duplicate samples) from 23 locations were submitted for explosive compound analysis.

A total of 100 locations were selected for RDX and TNT screening. All but 11 of these locations were sampled from two depths for a total of 189 screening samples. From the screening locations, one positive RDX result was recorded, and this sample was submitted for TAL metals, perchlorate, and explosive compound analysis. Forty additional samples (plus 4 field duplicate samples) were submitted for explosive compound analysis.

In summary, a total of 116 samples (plus 12 field duplicates) were collected from SWMU 00-011(e) and analyzed for TAL metals and perchlorate, and 65 samples (plus 7 field duplicates) were submitted for analysis of explosive compounds.

3.4.4 AOC C-00-041

A total of 17 locations (Figure 3.4-4) were sampled from two depths during the 2006–2007 investigation, for a total of 34 samples. The samples were collected at approximately 100-ft intervals down the center of the AOC near the ephemeral watercourse. Sampling locations were biased toward sediment pockets. Two sampling locations were collected in the footprint of the former asphalt batch plant. Three additional sampling locations were collected downslope from the former batch plant location. The samples were analyzed for TAL metals, VOCs, SVOCs, TPH-DRO, and TPH-GRO. All the sampling locations were field screened for organic vapors with the PID (Table 3.3-4).

3.5 Asphalt Removal Activities

At AOC C-00-041, visible asphalt was removed from the vicinity of the stream channel in April and May 2007. Asphalt was not removed from the side of the bank if removal would cause additional erosion of the bank. A total of approximately 10 yd^3 of asphalt was removed by hand to avoid heavy-equipment damage to the drainage.

3.6 Equipment Decontamination

Project personnel decontaminated all equipment before and after each sample was collected. Residual material adhering to equipment was removed using dry decontamination methods. All parts of the equipment were thoroughly cleaned. A rinsate was collected off the sampling equipment at a rate of 1 per 10 samples and analyzed for TAL metals and perchlorate.

3.7 Investigation-Derived Waste Storage and Disposal

The investigation-derived waste (IDW) resulting from the 2006–2007 activities included returned sampling material, personal protective equipment (PPE), miscellaneous materials used during dry decontamination of sampling equipment (e.g., paper towels and nitrile gloves), metal shrapnel debris, returned samples, and waste from the D TECH kits. The PPE and miscellaneous materials may have come into contact with contaminated environmental media. The IDW was characterized using analytical data from the samples and acceptable knowledge. Review of the data and acceptable knowledge indicates that some of the IDW is industrial waste, some is nonhazardous waste, and some is hazardous waste. The waste is currently staged at TA-54 and will be disposed of at an appropriate off-site disposal facility. Although final disposition of all of the waste has not occurred, all available waste documentation, including waste characterization strategy forms (WCSFs), WCSF amendments, and waste profile forms, is provided in Appendix H.

4.0 FIELD INVESTIGATION RESULTS

4.1 Surface Conditions

4.1.1 Topography and Surface Drainage

The Guaje Canyon watershed, which heads on the flanks of the Sierra de los Valles at an elevation of 10,497 ft above sea level (asl), has a drainage area of approximately 16.9 mi^2. The Guaje Canyon stream channel extends east-southeast for approximately 16.4 mi to its confluence with Los Alamos Canyon at an elevation of approximately 5660 ft asl (LANL 1997, 055622, p. 3-2). The Guaje Canyon stream channel, which is ephemeral, traverses USFS land, except for the lower 2.3 mi, which are within San Ildefonso Pueblo. The tributaries of the Guaje Canyon Watershed likewise contain ephemeral streams. Two springs support a perennial reach in upper Guaje Canyon, where the Guaje Reservoir is located. The reservoir receives flow from the springs and from the 6 mi^2 watershed area above the reservoir. The Guaje well field is located in the middle and lower parts of Guaje Canyon and provides a significant portion of the municipal water supply for the Los Alamos area.

Barrancas Canyon has a drainage area of 4.9 mi^2 that heads on the northern Pajarito Plateau east of Barranca Mesa at an elevation of 7278 ft asl (LANL 1997, 055622, p. 3-2). The canyon extends east-southeast approximately 5.5 mi to its confluence with Guaje Canyon at an elevation of 5860 ft asl (LANL 1997, 055622, p. 3-2). The main Barrancas Canyon channel crosses 1.6 mi of Los Alamos County land, 0.4 mi of USFS land, 2.7 mi of Laboratory property, and 0.7 mi of San Ildefonso Pueblo land. Three unnamed tributaries are present in the Barrancas Canyon Watershed; Barrancas Canyon and its tributaries contain ephemeral streams. The watershed drains a portion of the Los Alamos townsite, Laboratory property at TA-74, and USFS land. No effluent is discharged to the watershed.

Bayo Canyon has a drainage area of 4.0 mi^2 and heads on the Pajarito Plateau in a residential area of Los Alamos at an elevation of approximately 7400 ft asl (LANL 1997, 055622, p. 3-2). The canyon extends east-southeast between North Mesa on the south and Barranca and Otowi Mesas on the north for a distance of 8.2 mi to its confluence with Los Alamos Canyon. The elevation at the confluence is approximately 5790 ft (LANL 1997, 055622, p. 3-2). The channel traverses 3.47 mi of Los Alamos County land, 3.12 mi of Laboratory property (TA-74), and 1.66 mi of San Ildefonso Pueblo land above the confluence with Los Alamos Canyon (LANL 1997, 055622, p. 3-2). Two unnamed tributaries are present in the Bayo Canyon Watershed. Bayo Canyon contains an ephemeral stream. Bayo Canyon transects the northern section of the Laboratory and drains a portion of the Barranca Mesa residential area, some SWMUs and AOCs within TA-00, former TA-10, and the central portion of TA-74. No effluent is discharged to the watershed.

Rendija Canyon is located immediately north of the Los Alamos townsite and has a drainage area of 9.5 mi^2. The canyon heads on the flanks of the Sierra de los Valle just west of the townsite at an elevation of 9826 ft asl. The channel extends approximately 9 mi east to its confluence with Guaje Canyon. The lowest elevation of the watershed is approximately 6300 ft asl (LANL 1997, 055622, p. 3-2). Rendija Canyon crosses USFS land, except for 1.6 mi of the middle portion of the canyon that crosses GSA land. Four tributaries are present in the Rendija Canyon watershed. Rendija Canyon and its tributaries contain ephemeral streams. The watershed drains portions of Los Alamos townsite, GSA land, and USFS land.

4.1.2 Features and Structures

Vegetation at these SWMUs and AOCs generally includes a ponderosa pine-mixed conifer series in the higher western portions of the watersheds and a piñon-juniper series in the lower eastern portions of the watersheds (Appendix F, Figure F-5.2-1) (Biggs 1993, 048979).

Recent sedimentation and degradation rates vary within each watershed and have not been fully characterized. Localized aggradation and degradation processes may occur to raise or incise a specific interval of the streambed. The upper portions of the Guaje Canyon and Rendija Canyon Watersheds burned extensively during the Cerro Grande fire in May 2000 (BAER Team 2000, 068662). Hydrologic changes caused by the fire have increased sediment load, peak flood discharges, and runoff volumes in these canyons. Post-fire floods have contributed to significant channel erosion in some places and sediment aggradation in others. Barrancas Canyon and its tributaries have not been significantly impacted by Laboratory operations or other historic activities, with the exception of grazing and logging, and the canyon is in a relatively natural state. In Bayo Canyon, sediments deposited since the 1950s near former TA-10 range from 0.5 to 2 ft thick and include fragments of Laboratory debris. Sediment deposits associated with activities at former TA-10 are up to 3.5 ft thick (Drake and Inoué 1993, 053456, pp. 1, 26, and 27).

Man-made alterations to the Bayo, Rendija, Barrancas, and Guaje Canyon Watersheds have probably changed the channel and drainage pathways in these canyons. Anthropogenic impact to the canyon floors and drainage has occurred from the installation of the roads serving these canyons, construction of sewers and water-supply pipelines for the Los Alamos townsite, and Laboratory activities conducted within some of the watersheds. Within Guaje Canyon, additional changes have resulted from the construction of Guaje Reservoir and installation of municipal water-supply wells and pumping stations.

Several structural basins are located within the watersheds. These basins are discussed in detail in Appendix D of the approved investigation work plan (LANL 2005, 089657; NMED 2006, 091532).

4.2 Collection of Soil and Rock Samples

The surface and shallow subsurface samples were collected using a hand auger. Stainless-steel augers, spoons, and bowls were used because they can be easily decontaminated.

All samples (surface and subsurface) were shipped through the Sample Management Office (SMO) to off-site contract laboratories for analysis. Samples were sent to laboratories on the approved suppliers list. The analytical suites for each sample are described in the sections pertaining to the individual site and listed in Appendix E (Tables E-2.0-1, E-3.0-1, E-4.0-1, and E-5.0-1).

Quality assurance/quality control samples included field duplicate samples and rinsate blanks. Field duplicate samples were collected as directed by the Consent Order at a frequency of at least 1 for every 10 regular samples. Rinsate blanks were also collected to confirm sampling equipment had been decontaminated.

4.3 Subsurface Conditions

The stratigraphy consists of Quaternary Cerro Toledo interval (Qct) and the Tshirege Member of the Bandelier Tuff overlain by a thin layer of alluvium and soil. The alluvium is of Pleistocene and Holocene age and rests unconformably on the Bandelier Tuff and deeper units in some parts of the canyons. The alluvium in the canyons consists generally of reworked Bandelier Tuff and older bedrock units. The alluvium may also contain a minor eolian component.

Sampling at the sites did not exceed a depth of about 4.1 ft bgs. Therefore, the stratigraphic units encountered include surface soils, alluvium (QAL), and portions of the Bandelier Tuff (Qbt 3) and Cerro Toledo interval (Qct).

No subsurface structures are known to exist at any of the sites investigated, with the exception of underground utilities at SWMU 00-011(a) (Figure 3.4-1).

4.4 Groundwater Conditions

Subsurface investigations that had the potential to encounter groundwater were conducted in Bayo and Guaje Canyons but not in Barrancas and Rendija Canyons. Boreholes were drilled at former TA-10 in Bayo Canyon during several subsurface investigations. Four boreholes were drilled in 1961 to a maximum depth of 88.9 ft bgs (Mayfield et al. 1979, 011717, pp. 50-51). Fourteen boreholes were drilled in 1973 and 1974 to depths ranging from 6 ft to 39 ft bgs (Mayfield et al. 1979, 011717, pp. 47-59). Seven boreholes were drilled in 1980 to depths ranging from 12 ft to 37 ft bgs (Purtymun 1994, 058233, p. 97-1). A total of 93 boreholes were drilled to approximately 50 ft bgs during the RFI in 1994 (LANL 1996, 054332, pp. i, ii). Groundwater was not encountered in the alluvium or the underlying formations in any of the Bayo Canyon boreholes drilled to date.

Water-supply wells have been drilled in Guaje Canyon. A test well was drilled in lower Guaje Canyon at the confluence with Los Alamos Canyon to a total depth of 315 ft bgs in 1946. The borehole log indicated 54 ft of alluvium, and no alluvial groundwater was observed (Purtymun 1995, 045344, pp. 245, 246). In 1950, a water-supply well was drilled in lower Guaje Canyon to a depth of 157 ft bgs to supply water to drill and construct the municipal supply wells in the Guaje well field. Approximately 12 ft of alluvium was encountered, and no alluvial groundwater was reported (Purtymun 1995, 045344, pp. 211, 219, 226). From 1950 to 1954, six municipal water-supply wells were completed in Guaje Canyon. A seventh well was completed in 1964 (Purtymun 1995, 045344, p. 247). Alluvium ranged from 8 to 40 ft thick, and alluvial groundwater was not reported in any water-supply wells (Purtymun 1995, 045344, pp. 253–259). Four replacement wells were installed near the original wells in 1997 and 1998 (Nylander et al. 1999, 063516, p. 77).

Two test boreholes were drilled in 1966 in Guaje Canyon between the Rendija Canyon fault and the Guaje Mountain fault to investigate geologic structures and their relationship to the presence of groundwater. One borehole was drilled in alluvium to a depth a 23 ft bgs; the other was drilled to a depth of 103 ft bgs, encountering 17 ft of alluvium overlying the Puye Formation. Saturated alluvium was observed in both wells, and saturation was observed to a depth of 103 ft bgs in the Puye Formation (Purtymun 1995, 045344, p. 299).

Observations of perched intermediate groundwater in Laboratory wells are rare on the Pajarito Plateau. Perched waters are thought to form mainly at horizons where medium properties change dramatically, such as at paleosol horizons with clay or caliche found in basalt and volcanic sediment sequences. The Cerro Toledo interval, Guaje Pumice Bed, and Puye Formation are local examples where medium properties change dramatically.

4.5 Surface Water Conditions

Stream flow in Rendija, Barrancas, and Bayo Canyons is entirely ephemeral, arising from stormwater runoff and snowmelt. A perennial stream flow is maintained in upper Guaje Canyon by two springs in the upper watershed. Guaje Canyon receives stormwater runoff and snowmelt primarily from USFS land in the upper and middle part of the canyon and occasional runoff from Rendija and Barrancas Canyons in the lower part of the canyon. As the surface water flows downstream, the water infiltrates the alluvium and the underlying formations or is lost to evapotranspiration.

The Laboratory monitors site-specific stormwater runoff from SWMU 00-011(d) and AOC C-00-041 in accordance with the Federal Facility Compliance Agreement. Samples of runoff from SWMU 00-011(d) are collected at a single-stage sampler (sample management area B-SMA-1), located approximately 150 ft east of SWMU 00-011(d). Samples collected at B-SMA-1 are submitted for analysis of inorganic chemicals (except mercury) and suspended sediments. Samples of runoff from AOC C-00-041 are collected at a single-stage sampler (sample management area R-SMA-1), located along the northern boundary of AOC C-00-041. Samples collected at P-SMA-2 are submitted for analysis of inorganic chemicals, total petroleum hydrocarbons-diesel range organics, and suspended sediments. The results of the site-specific monitoring conducted in 2004, 2005, and 2006 are provided in the Storm Water Pollution Prevention Plan (LANL 2007, 096981, Volume 1, Attachment 2, Tables B1–B3, B4, B5, B8, and B9).

Between 1999 and 2005, surface water site assessments were completed for each of the SWMUs and AOCs investigated and are included in Appendix G. Based on the surface water site assessments for SWMUs 00-011(a) and 00-011(e), the potential for surface water transport is low. Based on the surface water site assessments for SWMU 00-011(c) and AOC C-00-020, the potential for surface water transport is low to moderate. The potential for surface water transport at SWMU 00-011(d) is high, and the potential for surface water transport at AOC C-00-041 is moderate. The Cerro Grande fire in 2000 affected SWMUs 00-011(a) and 00-011(e), and these are the two SWMUs in which the surface water site assessments were conducted in 1999.

5.0 REGULATORY CRITERIA

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

5.1 Screening Levels

The human health risk screening assessments follow guidance provided by the EPA and NMED. The human health soil screening levels (SSLs) for chemicals are obtained from NMED guidance (NMED 2006, 092513). If screening levels are not available from NMED, EPA Region 6 (EPA 2007, 095866) SSLs are used. The residential SSLs are used in the human health risk screening assessments (Appendix F).

5.2 Ecological Screening Levels

The ecological risk screening assessment follows guidance provided in the Laboratory's "Screening Level Ecological Risk Assessment Methods, Revision 2" (LANL 2004, 087630). The evaluation involves the calculation of hazard quotients for all chemicals of potential ecological concern (COPECs) and all appropriate screening receptors. The ecological screening levels (ESLs) for terrestrial receptors are obtained from the ECORISK Database, Version 2.2 (LANL 2005, 090032) and are presented in Appendix F.

5.3 Cleanup Standards

As specified in Section VIII.B.1 of the Consent Order, the screening levels will be used as soil cleanup levels unless they are determined to be impracticable or unless values do not exist for the current and reasonably foreseeable future land use. Although the current land use is recreational, the reasonably foreseeable future use may be residential so the screening assessments compared COPC concentrations for each site with residential SSLs.

The cleanup goals specified in Section VIII of the Consent Order are a target risk level of 10^{-5} for carcinogens and a hazard index (HI) of 1.0 for noncarcinogens. The screening levels presented in Appendix F are based on these cleanup goals.

6.0 SITE CONTAMINATION

6.1 Soil and Rock Sampling

6.1.1 SWMU 00-011(a)

A total of 112 soil samples and 11 field duplicates, were collected in 2006–2007 at SWMU 00-011(a) and analyzed for TAL metals and perchlorate. An additional 47 soil samples, including 5 field duplicates, were analyzed for explosive compounds (Appendix E Table E-2.0-1).

The locations of samples collected and/or screened at SWMU 00-011(a) are identified in Table 3.3-1. Figure 3.4-1 shows the screening locations, the sampling locations, and the locations where both screening and sampling were conducted. All screening locations were originally numbered S-xxx, but the screening locations where samples were selected to submit for explosive compound analysis were renumbered with an actual location identification number (i.e., 00-27xxx).

6.1.2 SWMU 00-011(d)

A total of 42 samples and 4 field duplicates were collected in 2006–2007 from 21 locations at SWMU 00-011(d) and analyzed for TAL metals and perchlorate. An additional nine soil samples and one field duplicate were analyzed for explosive compounds (Appendix E Table E-3.0-1).

The locations of samples collected at SWMU 00-011(d) are identified in Table 3.3-1. Figure 3.4-2 shows the sampling locations.

6.1.3 SWMU 00-011(e)

A total of 116 samples and 12 field duplicates were collected in 2006–2007 from 64 locations at SWMU 00-011(e) and analyzed for TAL metals and perchlorate. An additional 65 samples and 7 field duplicates were analyzed for explosive compounds (Appendix E Table E-4.0-1).

The locations of samples collected and/or screened at SWMU 00-011(e) are identified in Table 3.1-1. Figure 3.4-3 shows the screening locations, the sampling locations, and the locations where both screening and sampling were conducted. All screening locations were originally numbered S-xxx, but the screening locations where samples were selected to submit for explosive compound analysis were renumbered with an actual location identification number (i.e., 00-27xxx).

6.1.4 AOC C-00-041

A total of 34 soil samples and 3 field duplicates were collected in 2006–2007 from 17 locations at AOC C-00-41 and analyzed for TAL metals, TPH-GRO, TPH-DRO, VOCs, and SVOCs (Appendix E Table E-5.0-1).

The locations of samples collected at AOC C-00-041 are identified in Table 3.1-1 and shown in Figure 3.4-4.

6.2 Soil and Rock Sample Field Screening Results

The field screening of samples for organic vapors during the investigation activities was conducted to monitor the health and safety of the field team. Field team members had the option, upon consulting with the project leader, of adjusting sample depths or analytical requests if the field-screening results indicated unusual conditions or contamination. Tables 6.2-1, 6.2-2, 6.2-3, and 6.2-4 present the PID screening results for SWMUs 00-011(a), 00-011(d), and 00-011(e) and AOC C-00-041, respectively.

Field screening for TNT and RDX was performed on all samples collected at SWMUs 00-011(a), 00-011(d), and 00-011(e) using D TECH TNT explosives test kits or D TECH RDX explosives test kits per the approved investigation work plan (LANL 2005, 089657, p. 18; NMED 2006, 091532). A total of 582 samples were screened, and 6 indicated positive results. Tables 6.2-1, 6.2-2, 6.2-3, and 6.2-4 present the RDX and TNT screening results for SWMU 00-011(a), 00-011(d), and 00-011(e), respectively.

6.3 Soil and Rock Sample Analytical Results

The analytical results for all soil samples are reviewed in Appendix E, and complete data sets are provided in Appendix D (on DVD). Appendix E also provides an overview of the process for identifying COPCs. Inorganic chemicals are identified as COPCs based on comparisons of site data to applicable background data, if available. Organic chemicals are identified as COPCs on the basis of detection status (all detected organic chemicals are COPCs regardless of concentration). The following sections summarize the analytical results and COPCs for each site.

6.3.1 SWMU 00-011(a)

Samples collected and analyses requested for SWMU 00-011(a) are presented in Table E-2.0-1. Table 6.3-1 presents the analytical results for samples with inorganic chemicals either detected without background values (BVs) or detected above BVs. The locations and detected concentrations of inorganic chemicals above BVs are shown in Figure 6.3-1. No organic chemicals were detected at SWMU 00 011(a).

Section E-2.0 in Appendix E includes an overview of the process of identifying COPCs. A summary of all COPCs identified is presented in Table E-2.1-1. The inorganic chemicals identified as COPCs at SWMU 00-011(a) are cadmium, cobalt, lead, manganese, perchlorate, and selenium.

Appendix E includes a discussion of the nature and extent of contamination at SWMU 00-011(a) (section E-6.1). Appendix F presents calculations and discusses human health and ecological risk (sections F-4.0 and F-5.0, respectively).

6.3.2 SWMU 00-011(d)

Samples collected and analyses requested for SWMU 00-011(d) are presented in Table E-3.0-1. Table 6.3-2 presents the analytical results for samples with inorganic chemicals either detected without BVs or detected above BVs. The locations and detected concentrations of inorganic chemicals above BVs are shown in Figure 6.3-2. No organic chemicals were detected at SWMU 00-011(d).

Section E-3.0 in Appendix E includes an overview of the process of identifying COPCs. A summary of all COPCs identified is presented in Table E-3.1-1. The inorganic chemicals identified as COPCs at SWMU 00-011(d) are barium, lead, perchlorate, and selenium.

Appendix E includes a discussion of the nature and extent of contamination at SWMU 00-011(d) (section E-6.2). Appendix F presents calculations and a discussion of human health and ecological risk (sections F-4.0 and F-5.0, respectively).

6.3.3 SWMU 00-011(e)

The samples collected and the analyses requested for SWMU 00-011(e) are presented in Table E-4.0-1. Table 6.3-3 presents the analytical results for samples with inorganic chemicals either detected without BVs or detected above BVs. The locations and detected concentrations of inorganic chemicals above BVs are shown in Figure 6.3-3. No organic chemicals were detected at SWMU 00-011(e).

Section E-4.0 in Appendix E includes an overview of the process of identifying COPCs. A summary of all COPCs identified is presented in Table E-4.1-1. The inorganic chemicals identified as COPCs at SWMU 00-011(d) are lead, mercury, nickel, selenium, and perchlorate.

Appendix E includes a discussion of the nature and extent of contamination at SWMU 00-011(e) (section E-6.3). Appendix F presents calculations and a discussion of human health and ecological risk (sections F-4.0 and F-5.0, respectively).

6.3.4 AOC C-00-041

Samples collected and analyses requested for AOC C-00-041 are presented in Table E-5.0-1. Table 6.3-4 presents the analytical results for samples with inorganic chemicals either detected without BVs or detected above BVs. Table 6.3-5 presents the analytical results for samples with organic chemicals detected. The locations and detected concentrations of inorganic chemicals above BVs are shown in Figure 6.3-4. The locations and concentrations of the detected organic chemicals are shown in Figure 6.3-5.

Section E-5.0 in Appendix E includes an overview of the process of identifying COPCs. A summary of all COPCs identified is presented in Table E-5.1-1. The inorganic chemicals identified as COPCs at AOC C-00-041 are lead and selenium. The organic chemicals identified as COPCs at AOC C-00-041 are acenaphthene; benzo(b)fluoranthene; benzoic acid; chloroform; chrysene; 1,4-dichlorobenzene; 1,1 dichloroethene; fluoranthene; phenanthrene; pyrene; toluene; TPH-DRO; TPH-GRO; and 1,2,4 trimethylbenzene.

Appendix E includes a discussion of the nature and extent of contamination at AOC C-00-041 (section E-6.4). Appendix F presents calculations and a discussion of human health and ecological risk (sections F-4.0 and F-5.0, respectively).

7.0 CONCLUSIONS

7.1 Nature and Extent of Soil and Rock Contamination

The following sections summarize the nature and extent of contamination at each site. A complete discussion of nature and extent is presented in Appendix E.

7.1.1 SWMU 00-011(a)

Six inorganic chemicals (cadmium, cobalt, lead, manganese, perchlorate, and selenium) were identified as COPCs at SWMU 00-011(a) (Figure 6.3-1; Table 6.3-1).

Cadmium was not detected throughout the site. Although it had multiple detection limits above the soil BV (0.4 mg/kg), the nondetected concentrations do not indicate a release. The extent of cadmium is defined.

Cobalt was detected above the soil BV (8.64 mg/kg) at concentrations ranging from 9.14 to 16.5 mg/kg at eight locations (00-27140, 00-27142, 00-27148, 00-27156, 00-27192, 00-27197, 00-27199, and 00-27201). The infrequent detection of cobalt above BV at depth (2.0 to 3.0 ft), but not in surface soil, and the low detected concentrations above the BV (either less than the maximum background concentration or less than twice the maximum background concentration [9.5 mg/kg]) likely reflect the natural variability of the soil. There is no known subsurface source of contamination at SWMU 00-011(a), a firing site.

Lead was detected above the soil BV (22.3 mg/kg) at concentrations ranging from 22.8 to 40.6 mg/kg at three locations (00-27132, 00-27148, and 00-27209). Lead concentrations decreased with depth at two locations, and at the third location (00-27143), the concentration (28.9 mg/kg) is equivalent to the maximum soil background concentration (28 mg/kg).

Manganese was detected above the soil BV (671 mg/kg) at concentrations ranging from 728 to 1540 mg/kg at seven locations (00-27140, 00-27142, 00-27148, 00-27156, 00-27192, 00-27197, and 00-27199). The infrequent detection of manganese above BV at depth (2.0 to 3.0 ft), but not in surface soil, and the low detected concentrations above the BV (either less than the maximum background concentration or less than twice the maximum [1100 mg/kg]) likely reflect the natural variability of the soil. There is no known subsurface source of contamination at SWMU 00-011(a).

Perchlorate was detected at low concentrations (less than 0.005 mg/kg) throughout the site, except at two locations, 00-27130 and 00-27201, where perchlorate was detected at slightly higher concentrations (0.01 mg/kg to 0.18 mg/kg).

Selenium was detected above the soil BV (1.52 mg/kg) at concentrations ranging from 1.64 to 2.55 mg/kg in four samples from three locations (00-27156, 00-27201, and 00-27209). The maximum detected selenium concentration (2.55 mg/kg from 0.0 to 0.5 ft at location 00-27209) is less than twice the BV (1.7 mg/kg), and selenium was not detected above its BV in the deeper sample. The other selenium concentrations are below or slightly above the maximum soil background concentration (1.7 mg/kg). The infrequent detection of selenium above BV and the low detected concentrations above the BV (either less than the maximum background concentration or less than twice the maximum soil background concentration) likely reflect the natural variability of the soil.

Of the inorganic COPCs, only lead appears to be potentially associated with historical site activities based on contaminant distribution. The inorganic COPCs were detected infrequently (generally less than 10 out of 112 samples) across the site, and the extent of contamination is defined vertically and laterally.

No explosive compounds were detected at the site.

7.1.2 SWMU 00-011(d)

Six inorganic chemicals (barium, cobalt, lead, manganese, perchlorate, and selenium) were identified as COPCs at SWMU 00-011(d) (Figure 6.3-2; Table 6.3-2).

Barium was detected above the Qbt 3 BV (46 mg/kg) and the maximum background concentration (51.6 mg/kg) in only one sample at a concentration of 60.2 mg/kg (location 00-27230). Barium was not detected in any of the downslope samples; therefore, the extent of barium is defined.

Cobalt was detected above the BV in only one sample at a concentration of 20.3 mg/kg at location 00-27224. It was not detected in the deeper sample at this location.

Lead was detected above the soil BV (22.3 mg/kg) at concentrations ranging from 22.4 to 47.7 mg/kg at seven locations (00-27211, 00-27214, 00-27216, 00-27218, 00-27221, 00-27224, and 00-27228). At two locations, lead was detected above the maximum soil background concentration of 28 mg/kg (47.7 mg/kg from 0.0 to 0.5 ft at location 00-27224 and 33 mg/kg from 0.0 to 0.5 ft at location 00-27214) but was not detected above background in the deeper samples.

Manganese was detected above the BV in only one sample, at a concentration of 1650 mg/kg, at location 00-27224. It was not detected in the deeper sample at this location.

Perchlorate was detected at several locations at low concentrations (less than 0.0035 mg/kg). Its concentrations were slightly above (less than twice) or less than the detection limits (0.0021 mg/kg to 0.0029 mg/kg). Perchlorate was not detected in the drainage samples.

Selenium was detected above the BVs of associated media at two locations (00-27211 and 00-27227). At location 00-27211, selenium was detected at a concentration of 1.92 mg/kg at 0.0 to 0.5 ft, but it was not detected above the soil BV in the deeper sample. Selenium was detected above the tuff BV at location 00-27227 (0.94 mg/kg at 2.0 to 3.0 ft) but was not detected in the surface sample or in the downgradient or down-drainage samples.

Inorganic COPCs were detected infrequently across the site and generally only in surface samples. Therefore, the extent of contamination is defined vertically and laterally.

No explosive compounds were detected at the site.

7.1.3 SWMU 00-011(e)

Five inorganic chemicals (lead, mercury, nickel, selenium, and perchlorate) were identified as COPCs at SWMU 00-011(e) (Figure 6.3-3; Table 6.3-3).

Lead was detected above the soil BV (22.3 mg/kg) at concentrations of 22.5 and 330 mg/kg in one sample each at location 00-27031 and location 00-27125, respectively. At location 00-27125, the concentration of lead (22.5 mg/kg) is less than the maximum soil background concentration (28 mg/kg). At location 00-27031, lead was detected at a concentration of 330 mg/kg (0.0 to 0.5 ft) but was not detected above the BV in the deeper sample or in any of the surrounding samples.

Mercury was detected above the soil BV (0.1 mg/kg) at a concentration of 0.525 mg/kg (2.0 to 3.0 ft at location 00-27048). Mercury was not detected above BV in the surface sample or in any surrounding samples.

Nickel was detected above the Qct BV (2 mg/kg) at a concentration of 3.86 mg/kg (2 to 3 ft at location 00-27041). Nickel was not detected above BV in the surface sample or in any surrounding samples. The extent of nickel is defined.

Selenium was not detected throughout the site. Although it had multiple detection limits above the soil and QAL BV (1.52 mg/kg) and had one detection limit above the Qct BV (0.3 mg/kg), the nondetected concentrations do not indicate a release. The extent of selenium is defined.

Perchlorate was detected at several locations at low concentrations (less than 0.003 mg/kg). Its concentrations were either slightly above the detection limits (less than twice) or less than the detection limits (0.0021 mg/kg to 0.0026 mg/kg). Perchlorate was detected primarily in the deeper samples, not in the surface samples. If it was detected in the surface sample, its concentrations decreased slightly with depth. Perchlorate was not detected in the drainage samples.

The inorganic COPCs were detected infrequently across the site (only 1 or 2 samples out of 116 in the case of lead and mercury) or at low concentrations (in the case of perchlorate). The extent of contamination is defined vertically and laterally.

No explosive compounds were detected at the site.

7.1.4 AOC C-00-041

Two inorganic chemicals (lead and selenium) were identified as COPCs at AOC C-00-041 (Figure 6.3-4; Table 6.3-4).

Lead was detected above the soil BV (22.3 mg/kg) at a concentration of 33.9 mg/kg (0.0 to 0.5 ft) and 25 mg/kg (2.0-3.0 ft) at location 00-27650. The deeper sample result is less than the maximum soil background concentration (28 mg/kg). Lead was detected at a concentration of 30.3 mg/kg (0 to 0.5 ft) at location 00-27651 but was not detected above background in the deeper sample.

Selenium was detected above the soil BV (1.52 mg/kg) at 16 of 17 sampling locations. There is no consistent trend of selenium with depth, with concentrations remaining essentially the same in both sampling intervals at several locations. Selenium concentrations generally decreased down channel with the lowest concentration (1.66 mg/kg) detected at the most downstream location (00-27657). Selenium is present above BV upgradient of the asphalt batch plant and does not appear to be related to site activities at AOC C-00-041. No additional sampling to determine the extent of selenium is warranted at AOC C-00-041.

Fourteen organic chemicals were detected and are retained as COPCs at AOC C-00-041 (Figure 6.3-5; Table 6.3-5). Acenaphthene; benzo(b)fluoranthene; benzoic acid; chloroform; chrysene; 1,4 dichlorobenzene; 1,1 dichloroethene; fluoranthene; phenanthrene; pyrene; toluene; TPH-DRO; TPH-GRO; and 1,2,4 trimethylbenzene were detected.

Acenaphthene, benzo(b)fluoranthene, chrysene, and 1,4-dichlorobenzene were detected in one sample each. All were detected in a surface sample but were not detected in the deeper sample at the same location.

Benzoic acid, phenanthrene, and pyrene were detected at three locations. Benzoic acid and phenanthrene were detected in surface samples but were not detected in the deeper samples at the same locations. At two locations, pyrene was detected in the surface sample but was not detected in the deeper sample. Pyrene was detected at a concentration of 0.03 mg/kg (1.0 to 1.6 ft) at location 00-27657, which is less than the estimated quantitation limit (EQL) of 0.048 mg/kg, and was not detected in the surface sample.

Fluoranthene was detected at four locations. It was detected in the surface samples but was not detected in the deeper samples at three locations (00-27646, 00-27655, and 00-27656). Fluoranthene was detected at a concentration of 0.0261 mg/kg at location 00-27657(1.0 to 1.6 ft), which is less than the EQL of 0.037 mg/kg and was not detected in the surface sample.

Chloroform; 1,1-dichloroethene; toluene; TPH-DRO; TPH-GRO; and 1,2,4-trimethylbenzene were detected at five or more locations at low concentrations. Chloroform concentrations decreased with depth in four of the five locations at which it was detected and was detected below the EQL (0.0012 mg/kg) at depth (2 to 3 ft) at the other location. Concentrations of 1,1-dichloroethene either decreased with depth or were less than the EQLs (0.0011 mg/kg to 0.0017 mg/kg) at all locations. Toluene concentrations decreased slightly or were generally unchanged with depth at seven locations and increased slightly with depth at three other locations. All concentrations were near the EQLs (0.0011 mg/kg to 0.0017 mg/kg). Concentrations of 1,2,4-trimethylbenzene were less than the EQLs (0.0011 mg/kg to 0.0017 mg/kg) and decreased with depth at all locations.

TPH-DRO concentrations were highest in the vicinity of the former asphalt batch plant (up to 319 mg/kg) but were also elevated at locations upstream of the former plant (up to 112 mg/kg). The concentrations of TPH-DRO detected upstream of the former asphalt batch plant probably came from Diamond Drive, a major thoroughfare that contributes stormwater to this drainage. TPH-DRO concentrations decreased with depth at nine locations and decreased down the stream channel; its concentrations were less than 20 mg/kg at the furthest downstream locations (00-27656 and 00-27657).

TPH-GRO was detected at several locations at low concentrations (less than 0.3 mg/kg). Concentrations decreased slightly with depth (0.1 mg/kg or less) at five locations and increased slightly with depth (0.3 mg/kg or less) at the other locations. Concentrations did not show any spatial trends laterally but were either less than the EQLs (0.11 mg/kg to 0.17 mg/kg) or approximately a factor of 2 above the EQLs.

The nature and extent of inorganic and organic COPCs are defined at AOC C-00-041.

7.2 Risk Screening Results

The following sections summarize the human health and ecological risk screening results for each site. Appendix F presents a complete discussion of the risk screening results.

7.2.1 SWMU 00-011(a)

Based on a residential scenario, the HI (0.2) for SWMU 00-011(a) is less than NMED’s target level of 1.0 (NMED 2006, 092513) (Table F-4.1-5). No carcinogenic chemicals were detected. Therefore, SWMU 00-011(a) poses no potential unacceptable risk to human health under a residential scenario.

Based on the ecological screening assessment for SWMU 00-011(a), five COPECs (including one COPEC without ESLs) were identified. All of the COPECs were eliminated in the uncertainty analysis by comparing to background concentrations and comparing the low concentrations to SSLs. Therefore, SWMU 00-011(a) poses no potential unacceptable risk to ecological receptors.

7.2.2 SWMU 00-011(d)

Based on a residential scenario, the HI (0.06 for SWMU 00-011(d) is less than NMED's target level of 1.0 (NMED 2006, 092513) (Table F-4.1-6). No carcinogenic chemicals were detected. Therefore, SWMU 00-011(d) poses no potential unacceptable risk to human health under a residential scenario.

Based on the ecological screening assessment for SWMU 00-011(d), three COPECs (including one COPEC without ESLs) were identified. All of these COPECs were eliminated in the uncertainty analysis by comparing to background concentrations and comparing the low concentrations to SSLs. Therefore, SWMU 00-011(d) poses no potential unacceptable risk to ecological receptors.

7.2.3 SWMU 00-011(e)

Based on a residential scenario, the HI (0.04) for SWMU 00-011(e) is less than NMED's target level of 1.0 (NMED 2006, 092513) (Table F-4.1-7). No carcinogenic chemicals were detected. Therefore, SWMU 00-011(e) poses no potential unacceptable risk to human health under a residential scenario.

Based on the ecological screening assessment for SWMU 00-011(e), three COPECs (including one COPEC without ESLs) were identified. All of these COPECs were eliminated in the uncertainty analysis by comparing to background concentrations and comparing the low concentrations to SSLs. Therefore, SWMU 00-011(e) poses no potential unacceptable risk to ecological receptors.

7.2.4 AOC C-00-041

Based on a residential scenario, the HI (0.05) for AOC C-00-041 is less than NMED's target level of 1.0 (NMED 2006, 092513) (Table F-4.1-8) and the total excess cancer risk (1×10^{-7}) is less than the NMED target level of 1×10^{-5} (NMED 2006, 092513) (Table F-4.1-9). The screening assessments indicate no potential for unacceptable risk to human health at AOC C-00-041 under a residential scenario.

Based on the ecological screening assessment for AOC C-00-041, seven COPECs (including three COPECs without ESLs) were identified. Most of the COPECs were eliminated in the uncertainty analysis by considering a number of factors including background concentrations, the analysis for potential effects to populations (individuals for threatened and endangered species), the relative toxicity of related compounds, and the infrequency of detected concentrations. The remaining COPECs do not present a potential risk to ecological receptors.

8.0 RECOMMENDATIONS

In part, the determination of site status is based on the results of the risk screening assessments. Based upon the residential scenario as the decision scenario for a site, the site condition is identified as corrective action complete without controls if it passes the screening assessments. 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.

SWMUs 00-011(a), 00-011(d), and 00-011(e) and AOC C-00-041 have been identified as posing no potential unacceptable risk to human health under the residential scenario, and as requiring no further remediation or investigation. In addition, ecological risk screening determined that none of the sites poses a potential unacceptable risk to ecological receptors. The Laboratory is requesting a Certificate of Completion (corrective action complete without controls) from NMED for those sites identified as "complete without controls" in Table 8.0-1. Because these sites pose no unacceptable risk to human health under the residential scenario and no risk to the environment, neither site controls nor future actions are necessary.

SWMU 00-011(c) and AOC C-00-020 have been identified as requiring no further remediation or investigation per the approved work plan (LANL 2005, 089657, pp. 22, 26; NMED 2006, 091532). The Laboratory is requesting a Certificate of Completion (corrective action complete without controls) from NMED for those sites identified as “complete without controls” in Table 8.0-1. Because it is unlikely that these sites were ever used as mortar impact areas, it is appropriate to conclude that no site controls and future actions are necessary.

9.0 REFERENCES AND MAP DATA SOURCES

9.1 References

The following list includes all documents cited in this report. Parenthetical information following each reference provides the author(s), publication date, and ER ID number. This information is also included in text citations. ER ID numbers are assigned by the Environmental Programs Directorate’s Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.

Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau; the U.S. Department of Energy–Los Alamos Site Office; the U.S. Environmental Protection Agency, Region 6; and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.

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Potential Release Sites; Los Alamos National Laboratory, ENV Environmental Remediation and Surveillance Program, ER2005-0403; 1:2,500 Scale Data; 21 June 2005.

ksl_dirt_rds_arc

Dirt Road Arcs; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; Development Edition of 06 January 2005.

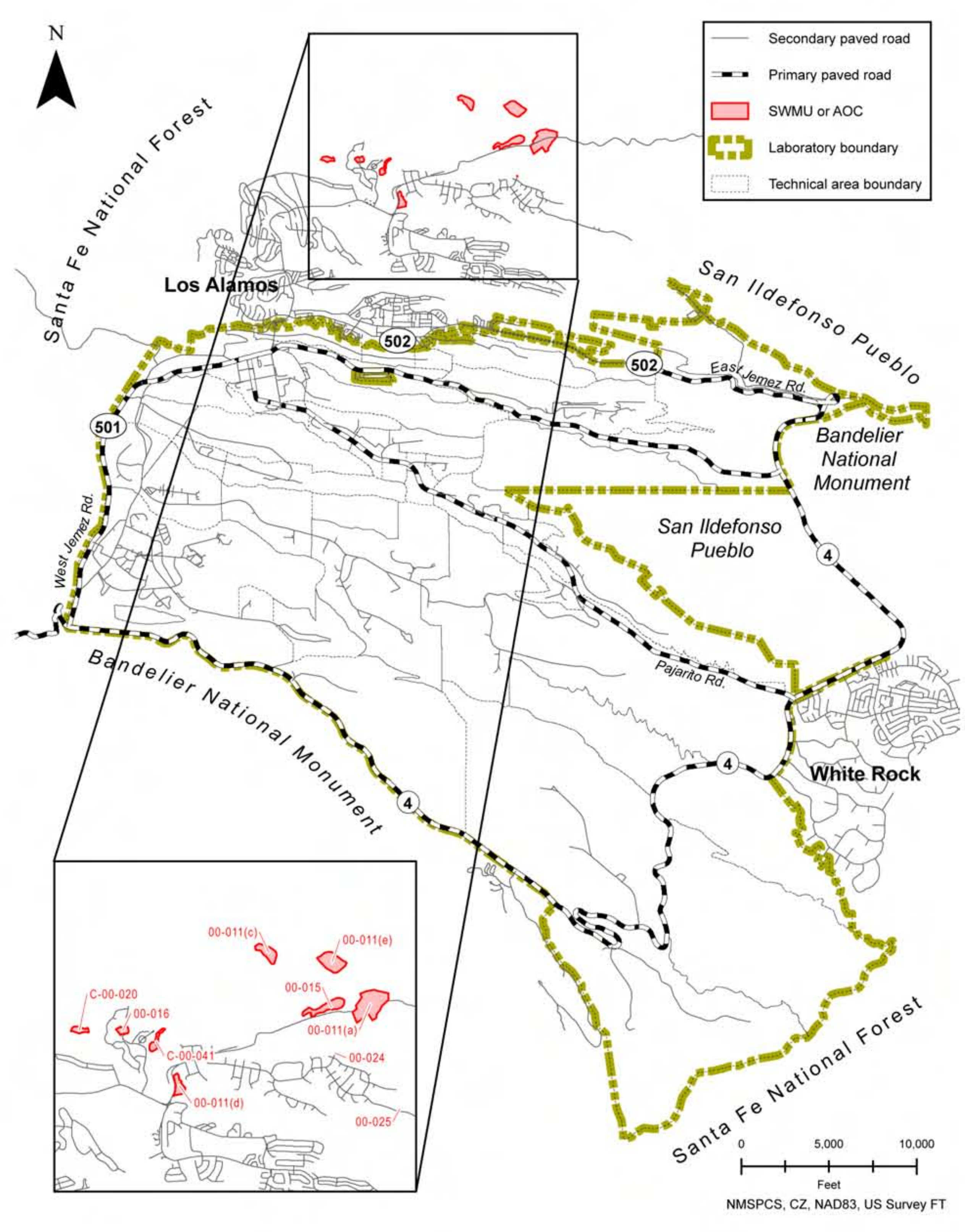

Figure 1.0-1 Guaje/Barrancas/Rendija Canyons Aggregate Area SWMUs and AOCs

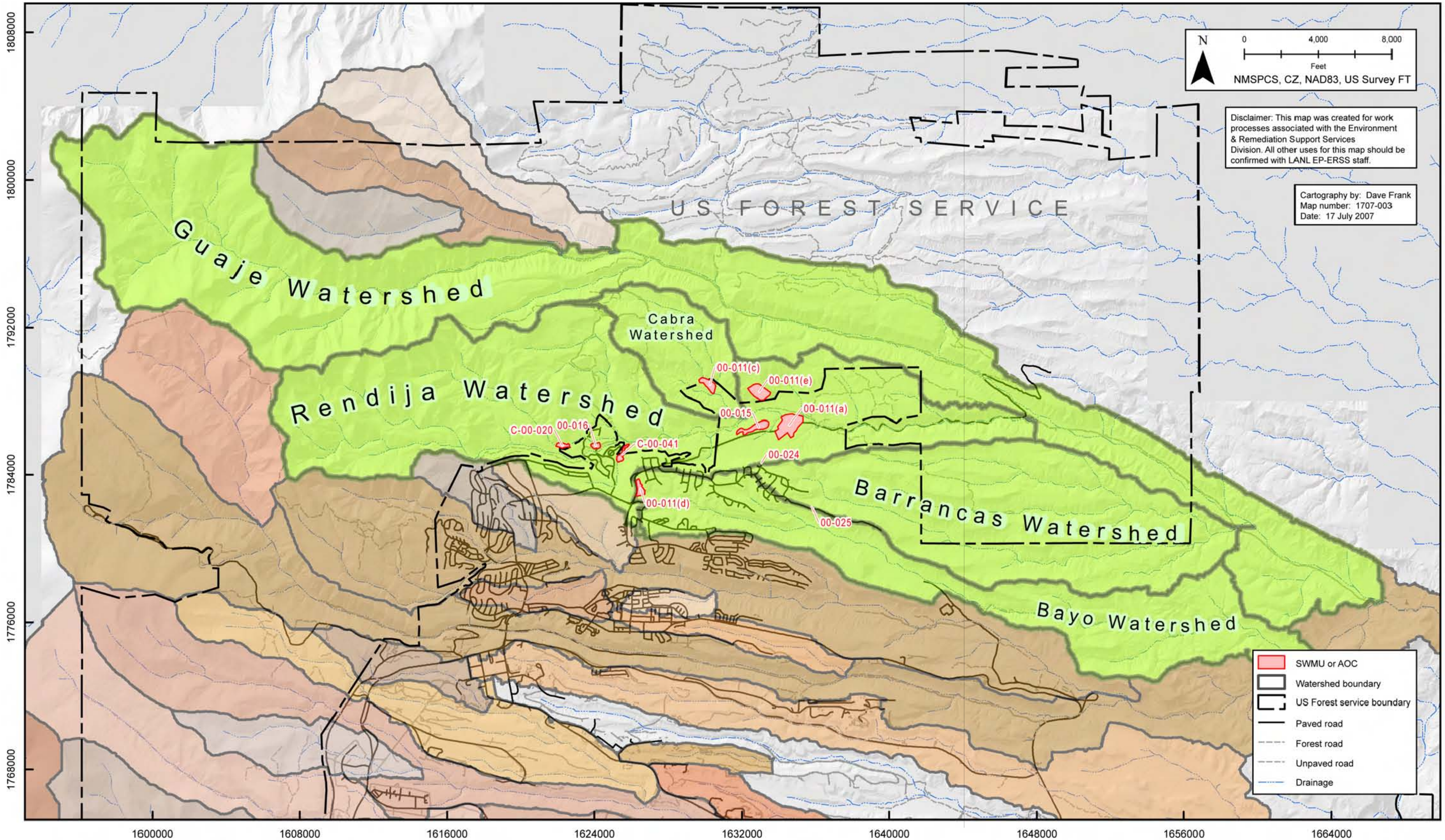

Figure 1.0-2 Location of SWMUs and AOCs within the Bayo, Barrancas, Cabra, Guaje, and Rendija Watersheds

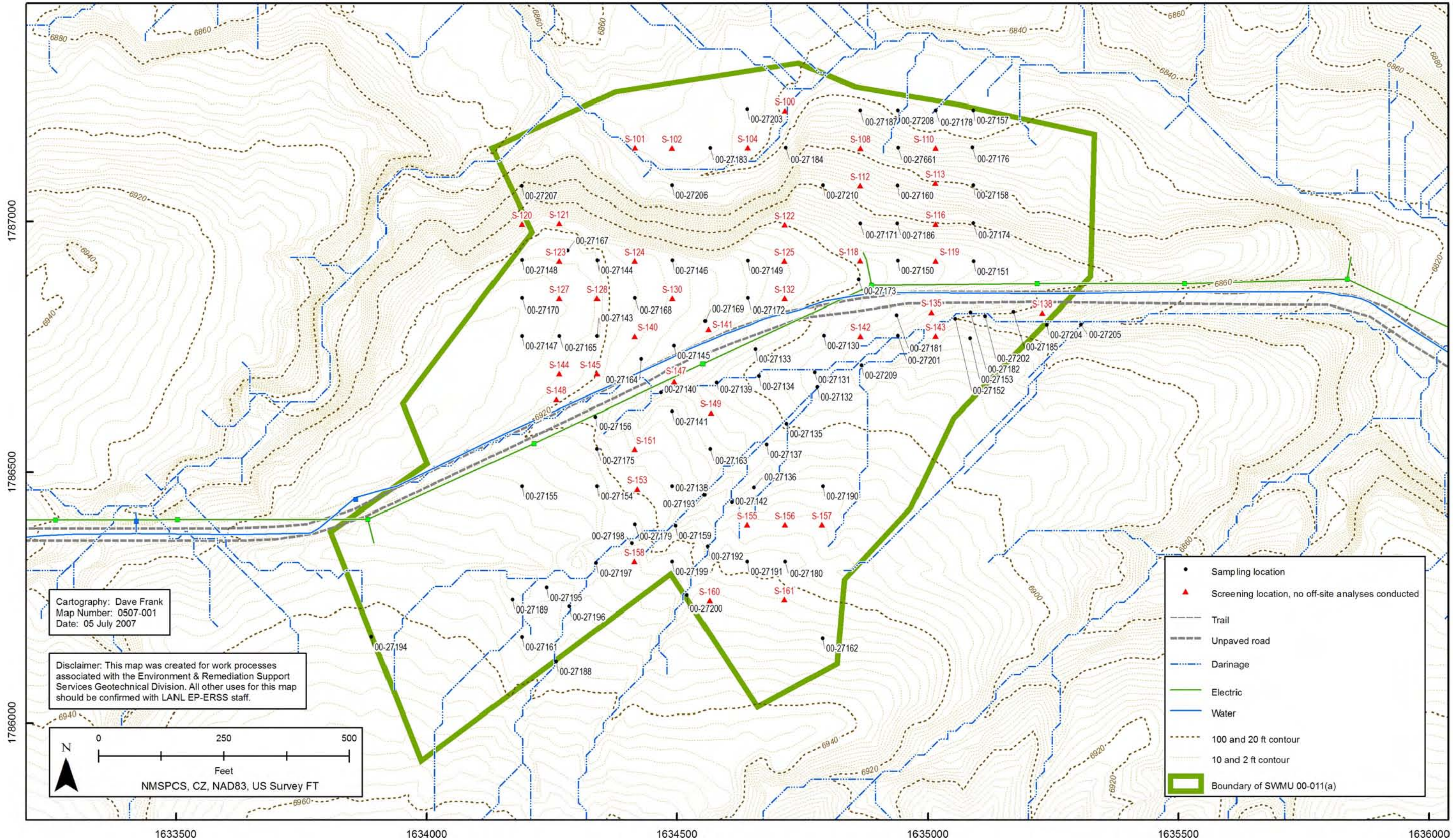

Figure 3.4-1 SWMU 00-011(a) sampling and screening locations

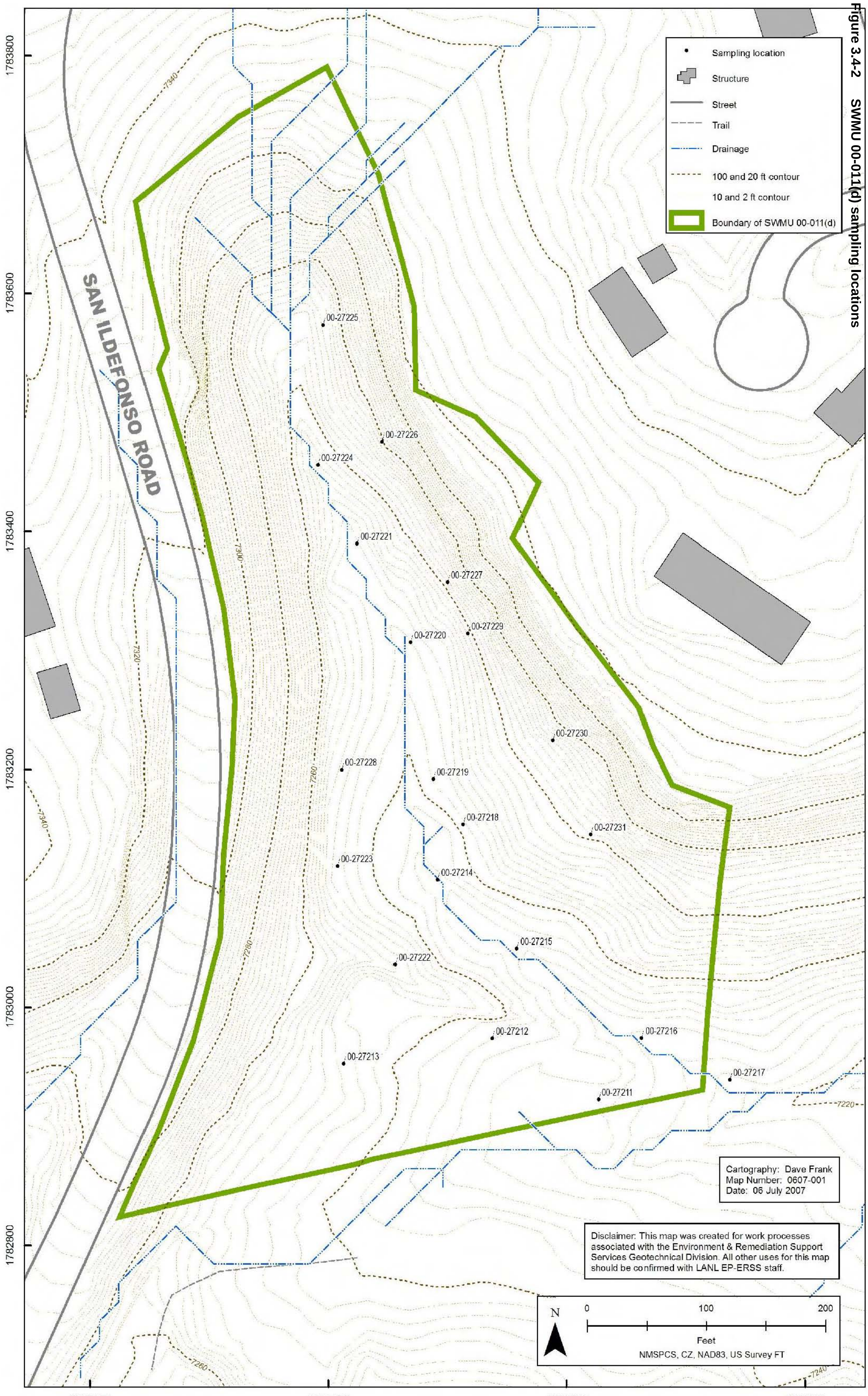

Figure 3.4-2 SWMU 00-011(d) sampling locations

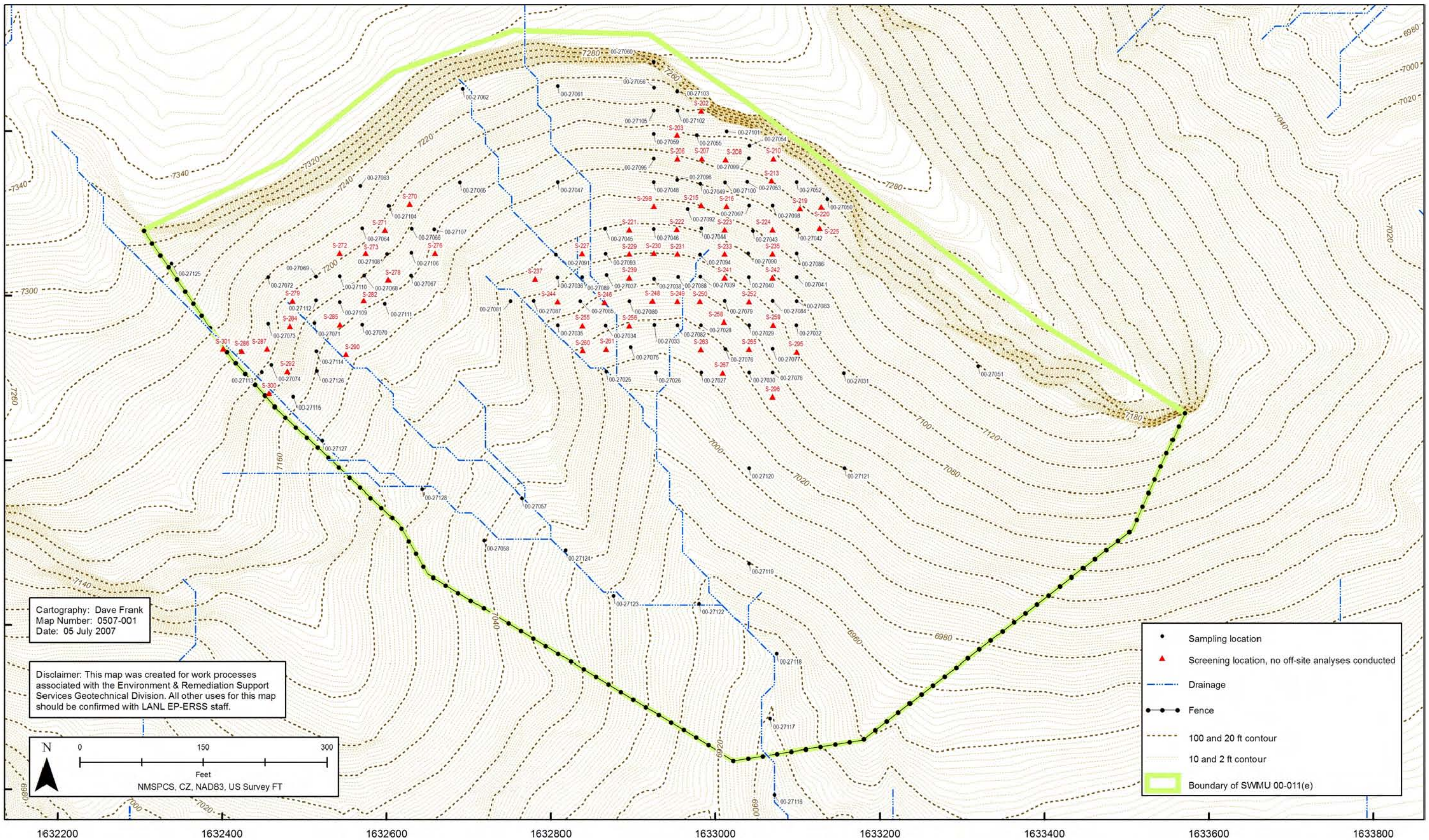

Figure 3.4-3 SWMU 00-011(e) sampling and screening locations

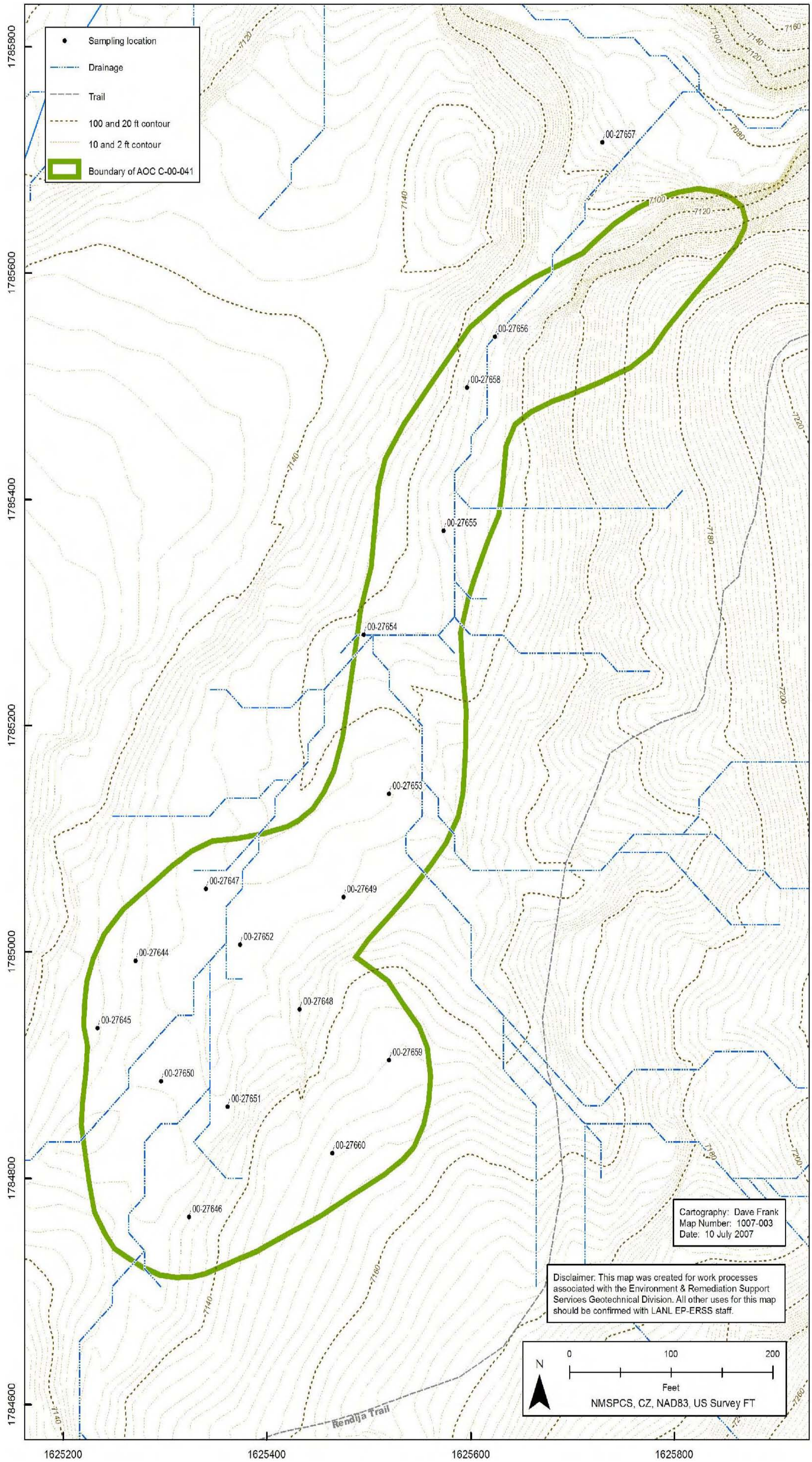

Figure 3.4-4 AOC C-00-041 sampling locations

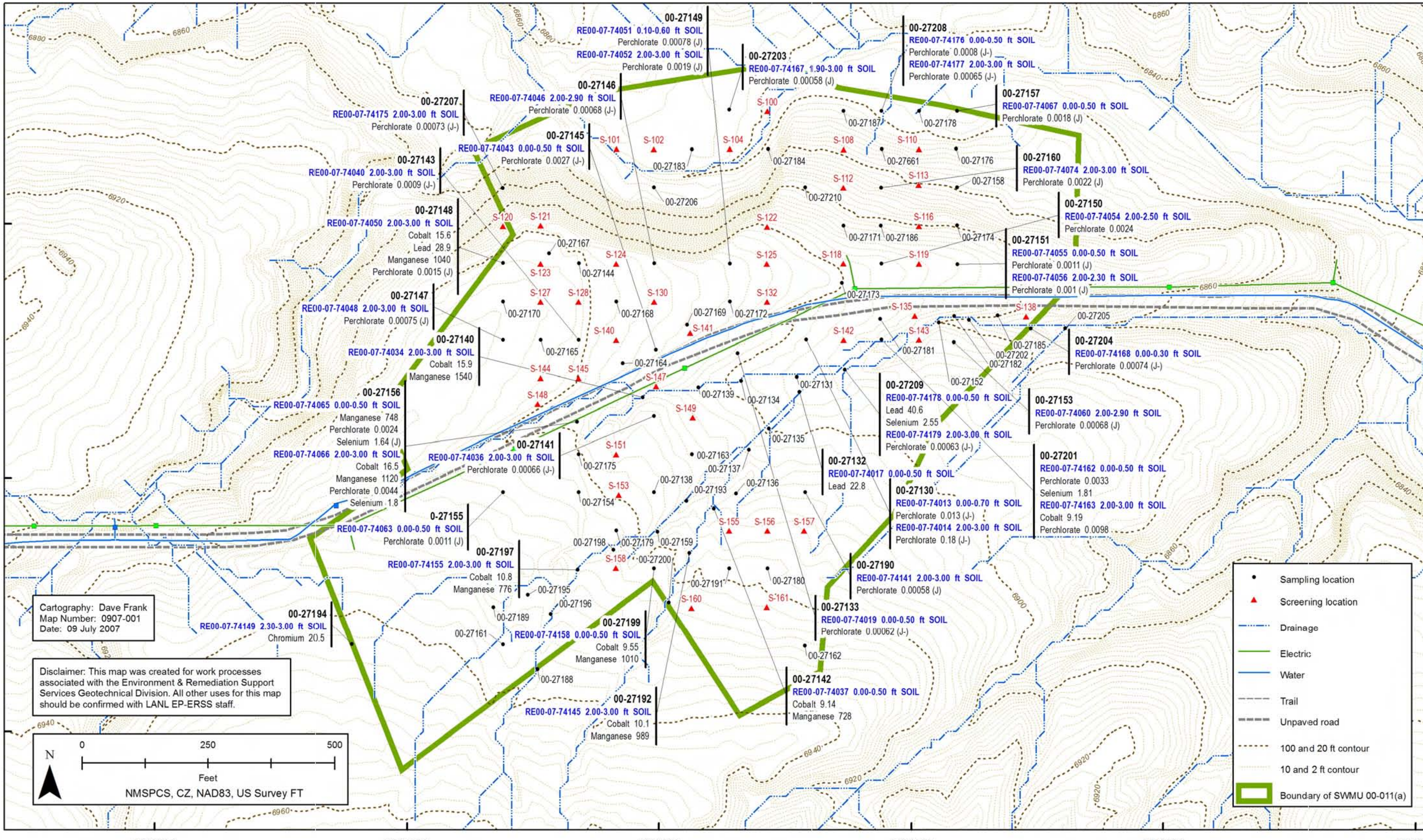

Figure 6.3-1 SWMU 00-011(a) sampling locations with inorganic COPCs detected or detected above background in all media

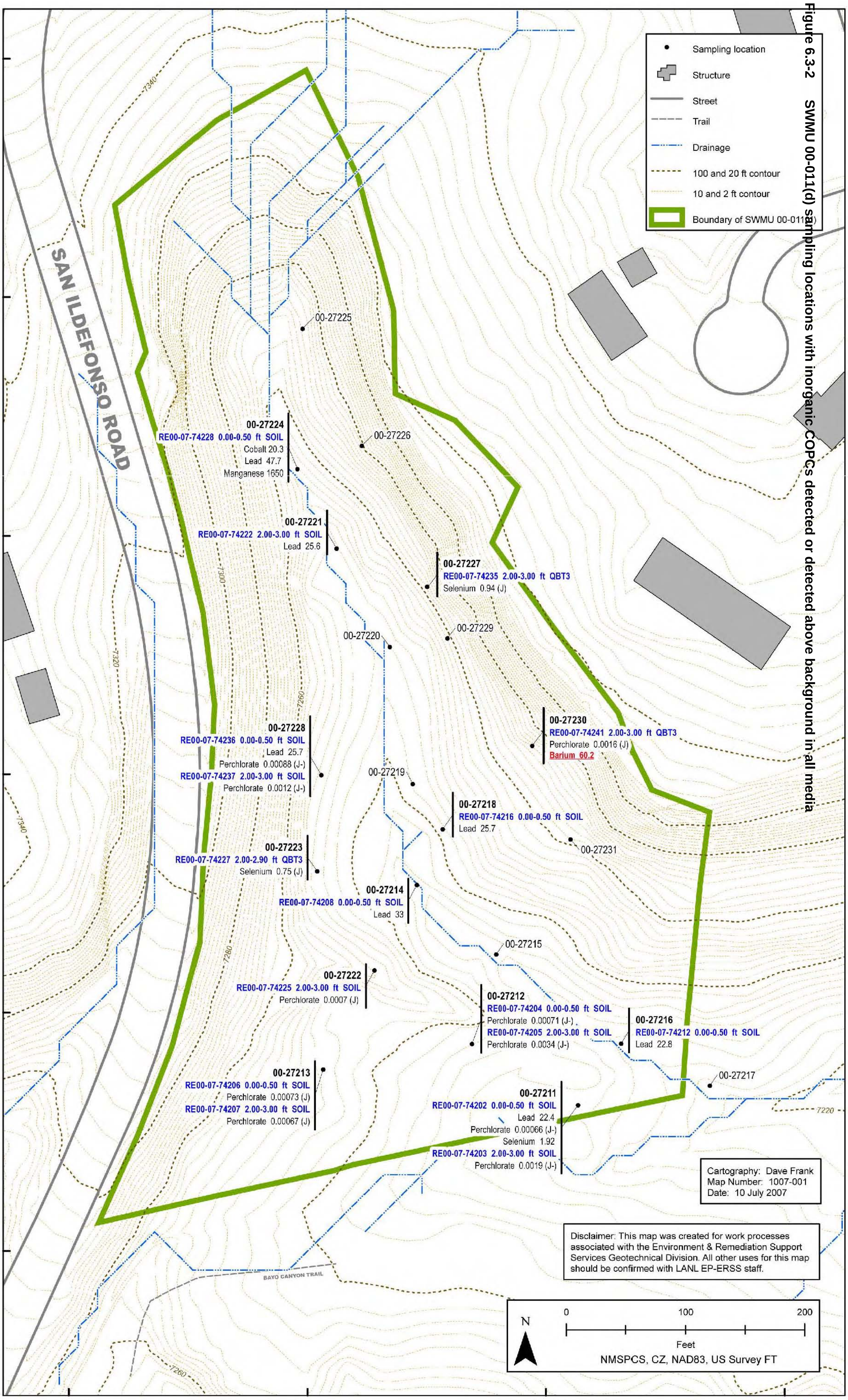

Figure 6.3-2 SWMU 00-011(d) sampling locations with inorganic COPCs detected or detected above background in all media

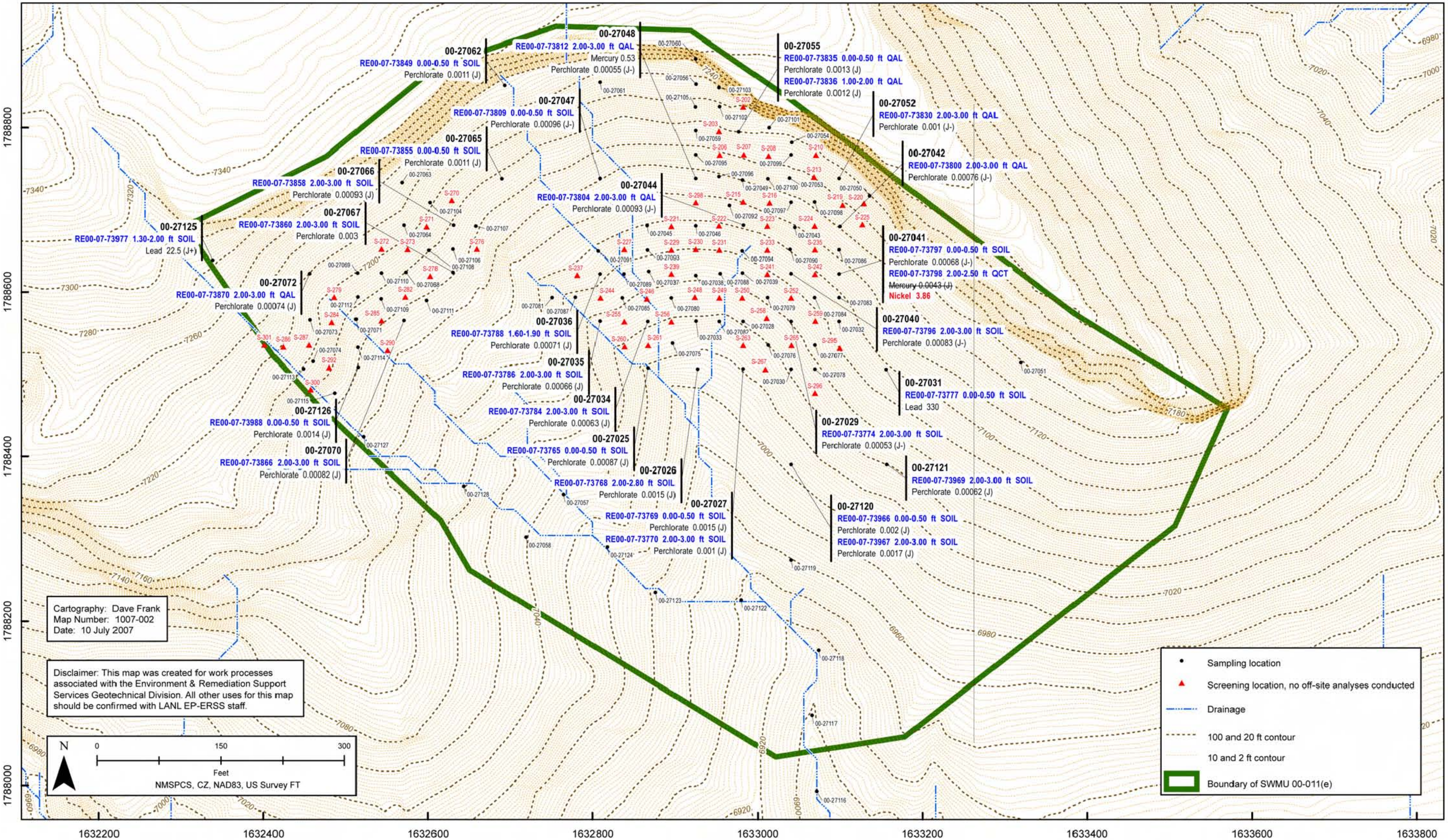

Figure 6.3-3 SWMU 00-011(e) sampling locations with inorganic COPCs detected or detected above background in all media

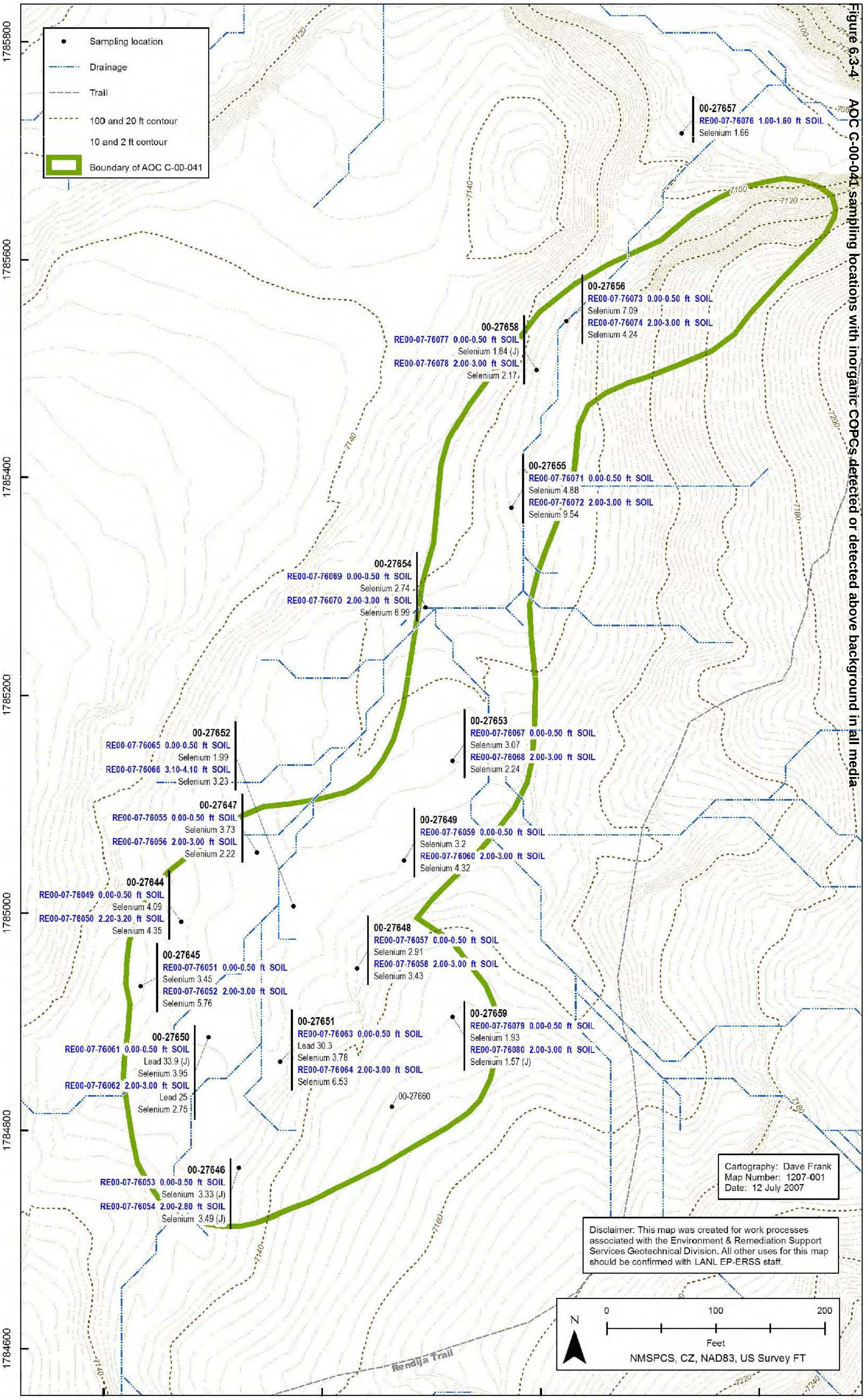

Figure 6.3-4 AOC C-00-041 sampling locations with inorganic COPCs detected or detected above background in all media

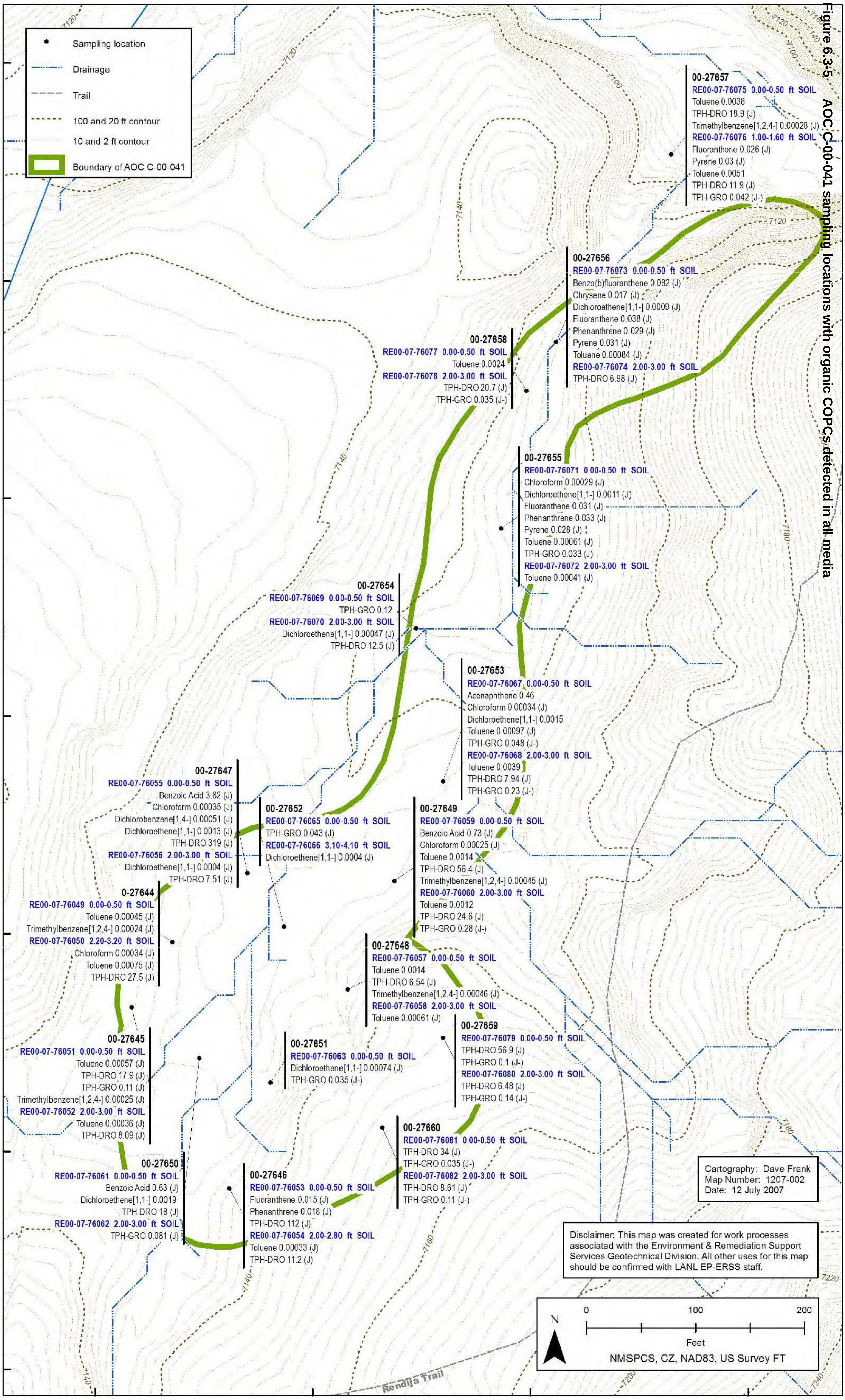

Figure 6.3-5 AOC C-00-041 sampling locations with organic COPCs detected in all media

Table 3.0-1
Quality Procedures and Standard Operating Procedures
Used for the Investigation Activities at Guaje/Barrancas/Rendija Canyons

QP-2.1, Personnel Qualification and Selection Process
QP-2.2, Personnel Training Management
QP-3.4, Corrective Action Process
QP-3.5, Peer Review Process
QP-4.3, Records Management
QP-4.4, Record Transmittal to the Record Processing Facility
QP-4.5, Document Control
QP-4.9, Document Development and Approval Process: Peer Review Required
QP-5.2, Control of Measuring and Test Equipment
QP-5.3, Readiness Planning and Review
QP-5.7, Notebook Documentation for Environmental Restoration Technical Activities
QP-7.1, Procurement
QP-8.1, Inspection and Acceptance Testing
QP-10.3, Stop Work and Restart
SOP-01.01, General Instructions for Field Investigations
SOP-01.02, Sample Containers and Preservation
SOP-01.03, Handling, Packaging, and Transporting Field Samples
SOP-01.04. Sample Control and Field Documentation
SOP-01.05, Field Quality Control Samples
SOP-01.06, Management of Environmental Restoration Project Waste
SOP-01.08, Field Decontamination of Drilling and Sampling Equipment
SOP-01.10, Waste Characterization
SOP-01.12, Field Site Closeout Checklist
SOP-01.13, Initiating and Managing Data Set Requests
SOP-02.01, Surface Water Site Assessments
SOP-03.11, Coordinating and Evaluating Geodetic Surveys
SOP-04.01, Drilling Methods and Drill Site Management
SOP-04.04, Contract Geophysical Logging
SOP-06.09, Spade and Scoop Method for Collection of Soil Samples
SOP-06.10, Hand Auger and Thin-Wall Tube Sampler
SOP-06.24, Sample Collection from Split-Spoon Samplers and Shelby Tube Samplers
SOP-06.26, Core Barrel Sampling for Subsurface Earth Materials
SOP-06.33, Headspace Vapor Screening with a Photoionization Detector
SOP-09.10, Field Sampling of Core and Cuttings for Geological Analysis

Note: These procedures are available at http://erproject.lanl.gov/documents/procedures/sops.html.

Table 3.1-1
Surveyed Coordinates for All Sampling and Screening Locations

SWMU or AOC	Sample ID	Location ID	Easting (ft)	Northing (ft)
00-011(a)	RE00-07-74013	00-27130	1634792.778	1786772.273
00-011(a)	RE00-07-74014	00-27130	1634792.778	1786772.273
00-011(a)	RE00-07-74015	00-27131	1634774.257	1786698.876
00-011(a)	RE00-07-74016	00-27131	1634774.257	1786698.876
00-011(a)	RE00-07-74093	00-27131	1634774.257	1786698.876
00-011(a)	RE00-07-74017	00-27132	1634779.24	1786669.444
00-011(a)	RE00-07-74018	00-27132	1634779.24	1786669.444
00-011(a)	RE00-07-74019	00-27133	1634656.219	1786745.401
00-011(a)	RE00-07-74020	00-27133	1634656.219	1786745.401
00-011(a)	RE00-07-74021	00-27134	1634663.401	1786690.92
00-011(a)	RE00-07-74022	00-27134	1634663.401	1786690.92
00-011(a)	RE00-07-74079	00-27134	1634663.401	1786690.92
00-011(a)	RE00-07-74094	00-27134	1634663.401	1786690.92
00-011(a)	RE00-07-74107	00-27134	1634663.401	1786690.92
00-011(a)	RE00-07-74023	00-27135	1634718.503	1786597.209
00-011(a)	RE00-07-74024	00-27135	1634718.503	1786597.209
00-011(a)	RE00-07-74025	00-27136	1634653.289	1786469.165
00-011(a)	RE00-07-74026	00-27136	1634653.289	1786469.165
00-011(a)	RE00-07-74027	00-27137	1634678.605	1786555.832
00-011(a)	RE00-07-74028	00-27137	1634678.605	1786555.832
00-011(a)	RE00-07-74095	00-27137	1634678.605	1786555.832
00-011(a)	RE00-07-74029	00-27138	1634490.602	1786471.808
00-011(a)	RE00-07-74030	00-27138	1634490.602	1786471.808
00-011(a)	RE00-07-74080	00-27138	1634490.602	1786471.808
00-011(a)	RE00-07-74031	00-27139	1634578.255	1786678.204
00-011(a)	RE00-07-74032	00-27139	1634578.255	1786678.204
00-011(a)	RE00-07-74096	00-27139	1634578.255	1786678.204
00-011(a)	RE00-07-74033	00-27140	1634467.7	1786658.542
00-011(a)	RE00-07-74034	00-27140	1634467.7	1786658.542
00-011(a)	RE00-07-74097	00-27140	1634467.7	1786658.542
00-011(a)	RE00-07-74035	00-27141	1634490.598	1786621.869
00-011(a)	RE00-07-74036	00-27141	1634490.598	1786621.869
00-011(a)	RE00-07-74037	00-27142	1634608.907	1786439.928
00-011(a)	RE00-07-74038	00-27142	1634608.907	1786439.928
00-011(a)	RE00-07-74081	00-27142	1634608.907	1786439.928
00-011(a)	RE00-07-74039	00-27143	1634340.706	1786771.769
00-011(a)	RE00-07-74040	00-27143	1634340.706	1786771.769
00-011(a)	RE00-07-74098	00-27143	1634340.706	1786771.769

Table 3.1-1 (continued)

SWMU or AOC	Sample ID	Location ID	Easting (ft)	Northing (ft)
00-011(a)	RE00-07-74041	00-27144	1634341.137	1786922.456
00-011(a)	RE00-07-74042	00-27144	1634341.137	1786922.456
00-011(a)	RE00-07-74043	00-27145	1634494.433	1786752.601
00-011(a)	RE00-07-74044	00-27145	1634494.433	1786752.601
00-011(a)	RE00-07-74099	00-27145	1634494.433	1786752.601
00-011(a)	RE00-07-74045	00-27146	1634490.682	1786921.991
00-011(a)	RE00-07-74046	00-27146	1634490.682	1786921.991
00-011(a)	RE00-07-74082	00-27146	1634490.682	1786921.991
00-011(a)	RE00-07-74047	00-27147	1634190.573	1786771.784
00-011(a)	RE00-07-74048	00-27147	1634190.573	1786771.784
00-011(a)	RE00-07-74049	00-27148	1634190.513	1786922.732
00-011(a)	RE00-07-74050	00-27148	1634190.513	1786922.732
00-011(a)	RE00-07-74100	00-27148	1634190.513	1786922.732
00-011(a)	RE00-07-74051	00-27149	1634640.791	1786921.72
00-011(a)	RE00-07-74052	00-27149	1634640.791	1786921.72
00-011(a)	RE00-07-74053	00-27150	1634940.636	1786921.746
00-011(a)	RE00-07-74054	00-27150	1634940.636	1786921.746
00-011(a)	RE00-07-74055	00-27151	1635091.663	1786920.13
00-011(a)	RE00-07-74056	00-27151	1635091.663	1786920.13
00-011(a)	RE00-07-74057	00-27152	1635054.345	1786806.213
00-011(a)	RE00-07-74058	00-27152	1635054.345	1786806.213
00-011(a)	RE00-07-74083	00-27152	1635054.345	1786806.213
00-011(a)	RE00-07-74101	00-27152	1635054.345	1786806.213
00-011(a)	RE00-07-74059	00-27153	1635084.481	1786766.751
00-011(a)	RE00-07-74060	00-27153	1635084.481	1786766.751
00-011(a)	RE00-07-74061	00-27154	1634340.65	1786471.802
00-011(a)	RE00-07-74062	00-27154	1634340.65	1786471.802
00-011(a)	RE00-07-74063	00-27155	1634190.574	1786471.8
00-011(a)	RE00-07-74064	00-27155	1634190.574	1786471.8
00-011(a)	RE00-07-74102	00-27155	1634190.574	1786471.8
00-011(a)	RE00-07-74065	00-27156	1634337.5	1786610.705
00-011(a)	RE00-07-74066	00-27156	1634337.5	1786610.705
00-011(a)	RE00-07-74067	00-27157	1635090.684	1787221.871
00-011(a)	RE00-07-74068	00-27157	1635090.684	1787221.871
00-011(a)	RE00-07-74084	00-27157	1635090.684	1787221.871
00-011(a)	RE00-07-74069	00-27158	1635090.786	1787071.888
00-011(a)	RE00-07-74070	00-27158	1635090.786	1787071.888
00-011(a)	RE00-07-74103	00-27158	1635090.786	1787071.888
00-011(a)	RE00-07-74071	00-27159	1634497.005	1786393.878

Table 3.1-1 (continued)

SWMU or AOC	Sample ID	Location ID	Easting (ft)	Northing (ft)
00-011(a)	RE00-07-74072	00-27159	1634497.005	1786393.878
00-011(a)	RE00-07-74104	00-27159	1634497.005	1786393.878
00-011(a)	RE00-07-74073	00-27160	1634940.103	1787071.212
00-011(a)	RE00-07-74074	00-27160	1634940.103	1787071.212
00-011(a)	RE00-07-74075	00-27161	1634190.552	1786171.847
00-011(a)	RE00-07-74076	00-27161	1634190.552	1786171.847
00-011(a)	RE00-07-74085	00-27161	1634190.552	1786171.847
00-011(a)	RE00-07-74077	00-27162	1634789.978	1786169.174
00-011(a)	RE00-07-74078	00-27162	1634789.978	1786169.174
00-011(a)	RE00-07-74106	00-27162	1634789.978	1786169.174
00-011(a)	RE00-07-74111	00-27163	1634565.617	1786546.87
00-011(a)	RE00-07-74112	00-27164	1634428.311	1786725.295
00-011(a)	RE00-07-74113	00-27165	1634265.598	1786771.832
00-011(a)	RE00-07-74114	00-27165	1634265.598	1786771.832
00-011(a)	RE00-07-74115	00-27167	1634282.079	1786941.942
00-011(a)	RE00-07-74116	00-27168	1634415.597	1786846.892
00-011(a)	RE00-07-74117	00-27169	1634555.98	1786801.578
00-011(a)	RE00-07-74118	00-27170	1634190.714	1786846.771
00-011(a)	RE00-07-74119	00-27171	1634865.53	1786996.624
00-011(a)	RE00-07-74120	00-27172	1634640.763	1786846.923
00-011(a)	RE00-07-74121	00-27173	1634862.412	1786884.137
00-011(a)	RE00-07-74122	00-27174	1635090.761	1786996.848
00-011(a)	RE00-07-74123	00-27175	1634340.598	1786546.826
00-011(a)	RE00-07-74124	00-27176	1635088.962	1787148.049
00-011(a)	RE00-07-74125	00-27176	1635088.962	1787148.049
00-011(a)	RE00-07-74108	00-27178	1635015.638	1787221.874
00-011(a)	RE00-07-74126	00-27178	1635015.638	1787221.874
00-011(a)	RE00-07-74127	00-27179	1634415.588	1786396.34
00-011(a)	RE00-07-74128	00-27180	1634715.65	1786321.797
00-011(a)	RE00-07-74129	00-27181	1634938.235	1786813.258
00-011(a)	RE00-07-74130	00-27182	1635085.061	1786819.107
00-011(a)	RE00-07-74131	00-27183	1634565.524	1787146.733
00-011(a)	RE00-07-74132	00-27184	1634716.962	1787146.985
00-011(a)	RE00-07-74133	00-27185	1635171.654	1786819.765
00-011(a)	RE00-07-74134	00-27186	1634939.422	1786996.385
00-011(a)	RE00-07-74135	00-27187	1634865.043	1787222.256
00-011(a)	RE00-07-74136	00-27188	1634259.242	1786122.59
00-011(a)	RE00-07-74137	00-27188	1634259.242	1786122.59
00-011(a)	RE00-07-74105	00-27189	1634171.714	1786246.02

Table 3.1-1 (continued)

SWMU or AOC	Sample ID	Location ID	Easting (ft)	Northing (ft)
00-011(a)	RE00-07-74138	00-27189	1634171.714	1786246.02
00-011(a)	RE00-07-74139	00-27189	1634171.714	1786246.02
00-011(a)	RE00-07-74140	00-27190	1634790.534	1786471.799
00-011(a)	RE00-07-74141	00-27190	1634790.534	1786471.799
00-011(a)	RE00-07-74142	00-27191	1634639.739	1786321.754
00-011(a)	RE00-07-74143	00-27191	1634639.739	1786321.754
00-011(a)	RE00-07-74191	00-27191	1634639.739	1786321.754
00-011(a)	RE00-07-74109	00-27192	1634560.717	1786352.68
00-011(a)	RE00-07-74144	00-27192	1634560.717	1786352.68
00-011(a)	RE00-07-74145	00-27192	1634560.717	1786352.68
00-011(a)	RE00-07-74146	00-27193	1634554.971	1786454.333
00-011(a)	RE00-07-74147	00-27193	1634554.971	1786454.333
00-011(a)	RE00-07-74148	00-27194	1633890.664	1786172.03
00-011(a)	RE00-07-74149	00-27194	1633890.664	1786172.03
00-011(a)	RE00-07-74182	00-27194	1633890.664	1786172.03
00-011(a)	RE00-07-74150	00-27195	1634239.847	1786269.82
00-011(a)	RE00-07-74151	00-27195	1634239.847	1786269.82
00-011(a)	RE00-07-74152	00-27196	1634285.495	1786232.109
00-011(a)	RE00-07-74153	00-27196	1634285.495	1786232.109
00-011(a)	RE00-07-74183	00-27196	1634285.495	1786232.109
00-011(a)	RE00-07-74192	00-27196	1634285.495	1786232.109
00-011(a)	RE00-07-74154	00-27197	1634339.077	1786319.068
00-011(a)	RE00-07-74155	00-27197	1634339.077	1786319.068
00-011(a)	RE00-07-74156	00-27198	1634410.062	1786358.868
00-011(a)	RE00-07-74157	00-27198	1634410.062	1786358.868
00-011(a)	RE00-07-74158	00-27199	1634490.589	1786321.929
00-011(a)	RE00-07-74159	00-27199	1634490.589	1786321.929
00-011(a)	RE00-07-74160	00-27200	1634519.424	1786254.499
00-011(a)	RE00-07-74161	00-27200	1634519.424	1786254.499
00-011(a)	RE00-07-74184	00-27200	1634519.424	1786254.499
00-011(a)	RE00-07-74162	00-27201	1634940.666	1786771.872
00-011(a)	RE00-07-74163	00-27201	1634940.666	1786771.872
00-011(a)	RE00-07-74185	00-27201	1634940.666	1786771.872
00-011(a)	RE00-07-74196	00-27201	1634940.666	1786771.872
00-011(a)	RE00-07-74164	00-27202	1635114.178	1786811.427
00-011(a)	RE00-07-74165	00-27202	1635114.178	1786811.427
00-011(a)	RE00-07-74193	00-27202	1635114.178	1786811.427
00-011(a)	RE00-07-74166	00-27203	1634639.861	1787224.433
00-011(a)	RE00-07-74167	00-27203	1634639.861	1787224.433

Table 3.1-1 (continued)

SWMU or AOC	Sample ID	Location ID	Easting (ft)	Northing (ft)
00-011(a)	RE00-07-74168	00-27204	1635237.341	1786793.976
00-011(a)	RE00-07-74169	00-27204	1635237.341	1786793.976
00-011(a)	RE00-07-74170	00-27205	1635305.271	1786794.834
00-011(a)	RE00-07-74171	00-27205	1635305.271	1786794.834
00-011(a)	RE00-07-74186	00-27205	1635305.271	1786794.834
00-011(a)	RE00-07-74172	00-27206	1634490.569	1787071.722
00-011(a)	RE00-07-74173	00-27206	1634490.569	1787071.722
00-011(a)	RE00-07-74187	00-27206	1634490.569	1787071.722
00-011(a)	RE00-07-74174	00-27207	1634190.176	1787070.823
00-011(a)	RE00-07-74175	00-27207	1634190.176	1787070.823
00-011(a)	RE00-07-74176	00-27208	1634940.697	1787221.819
00-011(a)	RE00-07-74177	00-27208	1634940.697	1787221.819
00-011(a)	RE00-07-74178	00-27209	1634868.061	1786713.04
00-011(a)	RE00-07-74179	00-27209	1634868.061	1786713.04
00-011(a)	RE00-07-74188	00-27209	1634868.061	1786713.04
00-011(a)	RE00-07-74194	00-27209	1634868.061	1786713.04
00-011(a)	RE00-07-74180	00-27210	1634790.539	1787071.779
00-011(a)	RE00-07-74181	00-27210	1634790.539	1787071.779
00-011(a)	RE00-07-76095	00-27661	1634945.626	1787148.092
00-011(a)	n/a*	S-100	1634715.557	1787221.819
00-011(a)	n/a	S-101	1634416.159	1787147.761
00-011(a)	n/a	S-102	1634490.424	1787147.094
00-011(a)	n/a	S-104	1634641.126	1787147.635
00-011(a)	n/a	S-108	1634865.720	1787146.812
00-011(a)	n/a	S-110	1635015.433	1787147.311
00-011(a)	n/a	S-112	1634865.537	1787071.855
00-011(a)	n/a	S-113	1635014.699	1787077.119
00-011(a)	n/a	S-116	1635015.390	1786996.084
00-011(a)	n/a	S-118	1634865.590	1786922.036
00-011(a)	n/a	S-119	1635015.397	1786921.964
00-011(a)	n/a	S-120	1634190.510	1786995.740
00-011(a)	n/a	S-121	1634265.701	1786996.948
00-011(a)	n/a	S-122	1634715.101	1786994.583
00-011(a)	n/a	S-123	1634265.692	1786921.772
00-011(a)	n/a	S-124	1634415.706	1786921.781
00-011(a)	n/a	S-125	1634714.801	1786921.405
00-011(a)	n/a	S-127	1634265.619	1786846.776
00-011(a)	n/a	S-128	1634340.563	1786846.859
00-011(a)	n/a	S-130	1634490.644	1786846.961

Table 3.1-1 (continued)

SWMU or AOC	Sample ID	Location ID	Easting (ft)	Northing (ft)
00-011(a)	n/a	S-132	1634715.413	1786846.782
00-011(a)	n/a	S-135	1635007.405	1786819.154
00-011(a)	n/a	S-138	1635228.398	1786818.202
00-011(a)	n/a	S-140	1634415.722	1786771.786
00-011(a)	n/a	S-141	1634562.791	1786785.467
00-011(a)	n/a	S-142	1634865.657	1786771.816
00-011(a)	n/a	S-143	1635015.606	1786771.892
00-011(a)	n/a	S-144	1634265.580	1786696.884
00-011(a)	n/a	S-145	1634340.520	1786696.809
00-011(a)	n/a	S-147	1634495.022	1786680.802
00-011(a)	n/a	S-148	1634259.516	1786645.688
00-011(a)	n/a	S-149	1634567.907	1786619.248
00-011(a)	n/a	S-151	1634415.566	1786546.764
00-011(a)	n/a	S-153	1634420.485	1786467.069
00-011(a)	n/a	S-155	1634639.491	1786396.430
00-011(a)	n/a	S-156	1634715.650	1786396.348
00-011(a)	n/a	S-157	1634788.619	1786396.211
00-011(a)	n/a	S-158	1634414.809	1786323.156
00-011(a)	n/a	S-160	1634564.954	1786244.151
00-011(a)	n/a	S-161	1634714.747	1786246.069
00-011(a)	RE00-07-74086	n/a	n/a	n/a
00-011(a)	RE00-07-74087	n/a	n/a	n/a
00-011(a)	RE00-07-74088	n/a	n/a	n/a
00-011(a)	RE00-07-74089	n/a	n/a	n/a
00-011(a)	RE00-07-74090	n/a	n/a	n/a
00-011(a)	RE00-07-74091	n/a	n/a	n/a
00-011(a)	RE00-07-74092	n/a	n/a	n/a
00-011(a)	RE00-07-74197	n/a	n/a	n/a
00-011(a)	RE00-07-74198	n/a	n/a	n/a
00-011(a)	RE00-07-74199	n/a	n/a	n/a
00-011(a)	RE00-07-74200	n/a	n/a	n/a
00-011(d)	RE00-07-74202	00-27211	1626627.048	1782922.551
00-011(d)	RE00-07-74203	00-27211	1626627.048	1782922.551
00-011(d)	RE00-07-74204	00-27212	1626537.799	1782973.969
00-011(d)	RE00-07-74205	00-27212	1626537.799	1782973.969
00-011(d)	RE00-07-74206	00-27213	1626413.114	1782952.482
00-011(d)	RE00-07-74207	00-27213	1626413.114	1782952.482
00-011(d)	RE00-07-74245	00-27213	1626413.114	1782952.482
00-011(d)	RE00-07-74208	00-27214	1626491.681	1783107.163

Table 3.1-1 (continued)

SWMU or AOC	Sample ID	Location ID	Easting (ft)	Northing (ft)
00-011(d)	RE00-07-74209	00-27214	1626491.681	1783107.163
00-011(d)	RE00-07-74244	00-27214	1626491.681	1783107.163
00-011(d)	RE00-07-74210	00-27215	1626558.283	1783049.114
00-011(d)	RE00-07-74211	00-27215	1626558.283	1783049.114
00-011(d)	RE00-07-74253	00-27215	1626558.283	1783049.114
00-011(d)	RE00-07-74212	00-27216	1626663.155	1782974.096
00-011(d)	RE00-07-74213	00-27216	1626663.155	1782974.096
00-011(d)	RE00-07-74214	00-27217	1626737.173	1782938.935
00-011(d)	RE00-07-74215	00-27217	1626737.173	1782938.935
00-011(d)	RE00-07-74246	00-27217	1626737.173	1782938.935
00-011(d)	RE00-07-74216	00-27218	1626513.393	1783153.981
00-011(d)	RE00-07-74217	00-27218	1626513.393	1783153.981
00-011(d)	RE00-07-74218	00-27219	1626488.138	1783192.112
00-011(d)	RE00-07-74219	00-27219	1626488.138	1783192.112
00-011(d)	RE00-07-74220	00-27220	1626469.021	1783306.935
00-011(d)	RE00-07-74221	00-27220	1626469.021	1783306.935
00-011(d)	RE00-07-74247	00-27220	1626469.021	1783306.935
00-011(d)	RE00-07-74222	00-27221	1626424.322	1783389.741
00-011(d)	RE00-07-74223	00-27221	1626424.322	1783389.741
00-011(d)	RE00-07-74224	00-27222	1626456.206	1783035.73
00-011(d)	RE00-07-74225	00-27222	1626456.206	1783035.73
00-011(d)	RE00-07-74254	00-27222	1626456.206	1783035.73
00-011(d)	RE00-07-74226	00-27223	1626407.861	1783118.793
00-011(d)	RE00-07-74227	00-27223	1626407.861	1783118.793
00-011(d)	RE00-07-74228	00-27224	1626391.41	1783455.844
00-011(d)	RE00-07-74229	00-27224	1626391.41	1783455.844
00-011(d)	RE00-07-74248	00-27224	1626391.41	1783455.844
00-011(d)	RE00-07-74230	00-27225	1626395.597	1783573.672
00-011(d)	RE00-07-74231	00-27225	1626395.597	1783573.672
00-011(d)	RE00-07-74232	00-27226	1626445.332	1783475.401
00-011(d)	RE00-07-74233	00-27226	1626445.332	1783475.401
00-011(d)	RE00-07-74255	00-27226	1626445.332	1783475.401
00-011(d)	RE00-07-74234	00-27227	1626500.13	1783357.55
00-011(d)	RE00-07-74235	00-27227	1626500.13	1783357.55
00-011(d)	RE00-07-74249	00-27227	1626500.13	1783357.55
00-011(d)	RE00-07-74236	00-27228	1626411.359	1783199.629
00-011(d)	RE00-07-74237	00-27228	1626411.359	1783199.629
00-011(d)	RE00-07-74250	00-27228	1626411.359	1783199.629
00-011(d)	RE00-07-74238	00-27229	1626517.329	1783314.345

Table 3.1-1 (continued)

SWMU or AOC	Sample ID	Location ID	Easting (ft)	Northing (ft)
00-011(d)	RE00-07-74239	00-27229	1626517.329	1783314.345
00-011(d)	RE00-07-74251	00-27229	1626517.329	1783314.345
00-011(d)	RE00-07-74257	00-27229	1626517.329	1783314.345
00-011(d)	RE00-07-74240	00-27230	1626588.349	1783224.259
00-011(d)	RE00-07-74241	00-27230	1626588.349	1783224.259
00-011(d)	RE00-07-74252	00-27230	1626588.349	1783224.259
00-011(d)	RE00-07-74256	00-27230	1626588.349	1783224.259
00-011(d)	RE00-07-74242	00-27231	1626620.538	1783145.46
00-011(d)	RE00-07-74243	00-27231	1626620.538	1783145.46
00-011(d)	RE00-07-74258	n/a	n/a	n/a
00-011(d)	RE00-07-74259	n/a	n/a	n/a
00-011(d)	RE00-07-74260	n/a	n/a	n/a
00-011(d)	RE00-07-74261	n/a	n/a	n/a
00-011(e)	RE00-07-73765	00-27025	1632867.175	1788507.825
00-011(e)	RE00-07-73766	00-27025	1632867.175	1788507.825
00-011(e)	RE00-07-73767	00-27026	1632927.076	1788506.477
00-011(e)	RE00-07-73768	00-27026	1632927.076	1788506.477
00-011(e)	RE00-07-73888	00-27026	1632927.076	1788506.477
00-011(e)	RE00-07-73769	00-27027	1632982.69	1788506.523
00-011(e)	RE00-07-73770	00-27027	1632982.69	1788506.523
00-011(e)	RE00-07-73815	00-27027	1632982.69	1788506.523
00-011(e)	RE00-07-73771	00-27028	1632982.515	1788564.321
00-011(e)	RE00-07-73772	00-27028	1632982.515	1788564.321
00-011(e)	RE00-07-73773	00-27029	1633040.559	1788564.351
00-011(e)	RE00-07-73774	00-27029	1633040.559	1788564.351
00-011(e)	RE00-07-73889	00-27029	1633040.559	1788564.351
00-011(e)	RE00-07-73775	00-27030	1633040.605	1788506.303
00-011(e)	RE00-07-73776	00-27030	1633040.605	1788506.303
00-011(e)	RE00-07-73777	00-27031	1633155.986	1788505.786
00-011(e)	RE00-07-73778	00-27031	1633155.986	1788505.786
00-011(e)	RE00-07-73816	00-27031	1633155.986	1788505.786
00-011(e)	RE00-07-73890	00-27031	1633155.986	1788505.786
00-011(e)	RE00-07-73779	00-27032	1633098.466	1788564.387
00-011(e)	RE00-07-73780	00-27032	1633098.466	1788564.387
00-011(e)	RE00-07-73781	00-27033	1632925.087	1788564.776
00-011(e)	RE00-07-73782	00-27033	1632925.087	1788564.776
00-011(e)	RE00-07-73783	00-27034	1632866.548	1788564.157
00-011(e)	RE00-07-73784	00-27034	1632866.548	1788564.157
00-011(e)	RE00-07-73891	00-27034	1632866.548	1788564.157

Table 3.1-1 (continued)

SWMU or AOC	Sample ID	Location ID	Easting (ft)	Northing (ft)
00-011(e)	RE00-07-73785	00-27035	1632808.462	1788564.445
00-011(e)	RE00-07-73786	00-27035	1632808.462	1788564.445
00-011(e)	RE00-07-73787	00-27036	1632808.233	1788622.038
00-011(e)	RE00-07-73788	00-27036	1632808.233	1788622.038
00-011(e)	RE00-07-73892	00-27036	1632808.233	1788622.038
00-011(e)	RE00-07-73789	00-27037	1632867.726	1788625.131
00-011(e)	RE00-07-73790	00-27037	1632867.726	1788625.131
00-011(e)	RE00-07-73791	00-27038	1632924.73	1788620.427
00-011(e)	RE00-07-73792	00-27038	1632924.73	1788620.427
00-011(e)	RE00-07-73793	00-27039	1632981.771	1788623.203
00-011(e)	RE00-07-73794	00-27039	1632981.771	1788623.203
00-011(e)	RE00-07-73817	00-27039	1632981.771	1788623.203
00-011(e)	RE00-07-73795	00-27040	1633040.511	1788622.413
00-011(e)	RE00-07-73796	00-27040	1633040.511	1788622.413
00-011(e)	RE00-07-73893	00-27040	1633040.511	1788622.413
00-011(e)	RE00-07-73797	00-27041	1633098.52	1788622.382
00-011(e)	RE00-07-73798	00-27041	1633098.52	1788622.382
00-011(e)	RE00-07-73799	00-27042	1633099.687	1788679.922
00-011(e)	RE00-07-73800	00-27042	1633099.687	1788679.922
00-011(e)	RE00-07-73894	00-27042	1633099.687	1788679.922
00-011(e)	RE00-07-73801	00-27043	1633045.247	1788678.451
00-011(e)	RE00-07-73802	00-27043	1633045.247	1788678.451
00-011(e)	RE00-07-73803	00-27044	1632982.808	1788681.347
00-011(e)	RE00-07-73804	00-27044	1632982.808	1788681.347
00-011(e)	RE00-07-73895	00-27044	1632982.808	1788681.347
00-011(e)	RE00-07-73914	00-27044	1632982.808	1788681.347
00-011(e)	RE00-07-73805	00-27045	1632865.897	1788681.075
00-011(e)	RE00-07-73806	00-27045	1632865.897	1788681.075
00-011(e)	RE00-07-73896	00-27045	1632865.897	1788681.075
00-011(e)	RE00-07-73807	00-27046	1632924.565	1788680.501
00-011(e)	RE00-07-73808	00-27046	1632924.565	1788680.501
00-011(e)	RE00-07-73818	00-27046	1632924.565	1788680.501
00-011(e)	RE00-07-73809	00-27047	1632808.527	1788738.279
00-011(e)	RE00-07-73810	00-27047	1632808.527	1788738.279
00-011(e)	RE00-07-73811	00-27048	1632924.534	1788738.365
00-011(e)	RE00-07-73812	00-27048	1632924.534	1788738.365
00-011(e)	RE00-07-73897	00-27048	1632924.534	1788738.365
00-011(e)	RE00-07-73813	00-27049	1632981.635	1788736.463
00-011(e)	RE00-07-73814	00-27049	1632981.635	1788736.463

Table 3.1-1 (continued)

SWMU or AOC	Sample ID	Location ID	Easting (ft)	Northing (ft)
00-011(e)	RE00-07-73819	00-27049	1632981.635	1788736.463
00-011(e)	RE00-07-73825	00-27050	1633135.807	1788717.25
00-011(e)	RE00-07-73826	00-27050	1633135.807	1788717.25
00-011(e)	RE00-07-73827	00-27051	1633319.57	1788514.239
00-011(e)	RE00-07-73828	00-27051	1633319.57	1788514.239
00-011(e)	RE00-07-73829	00-27052	1633098.563	1788738.4
00-011(e)	RE00-07-73830	00-27052	1633098.563	1788738.4
00-011(e)	RE00-07-73831	00-27053	1633038.481	1788738.805
00-011(e)	RE00-07-73832	00-27053	1633038.481	1788738.805
00-011(e)	RE00-07-73898	00-27053	1633038.481	1788738.805
00-011(e)	RE00-07-73899	00-27053	1633038.481	1788738.805
00-011(e)	RE00-07-73833	00-27054	1633041.217	1788782.08
00-011(e)	RE00-07-73834	00-27054	1633041.217	1788782.08
00-011(e)	RE00-07-73875	00-27054	1633041.217	1788782.08
00-011(e)	RE00-07-73835	00-27055	1632977.328	1788795.026
00-011(e)	RE00-07-73836	00-27055	1632977.328	1788795.026
00-011(e)	RE00-07-73900	00-27055	1632977.328	1788795.026
00-011(e)	RE00-07-73837	00-27056	1632924.926	1788853.382
00-011(e)	RE00-07-73838	00-27056	1632924.926	1788853.382
00-011(e)	RE00-07-73839	00-27057	1632764.53	1788354.183
00-011(e)	RE00-07-73901	00-27057	1632764.53	1788354.183
00-011(e)	RE00-07-73841	00-27058	1632718.361	1788302.181
00-011(e)	RE00-07-73843	00-27059	1632924.608	1788796.439
00-011(e)	RE00-07-73844	00-27059	1632924.608	1788796.439
00-011(e)	RE00-07-73845	00-27060	1632924.577	1788883.964
00-011(e)	RE00-07-73846	00-27060	1632924.577	1788883.964
00-011(e)	RE00-07-73902	00-27060	1632924.577	1788883.964
00-011(e)	RE00-07-73915	00-27060	1632924.577	1788883.964
00-011(e)	RE00-07-73847	00-27061	1632808.419	1788855.373
00-011(e)	RE00-07-73848	00-27061	1632808.419	1788855.373
00-011(e)	RE00-07-73849	00-27062	1632693.249	1788851.653
00-011(e)	RE00-07-73850	00-27062	1632693.249	1788851.653
00-011(e)	RE00-07-73876	00-27062	1632693.249	1788851.653
00-011(e)	RE00-07-73851	00-27063	1632568.373	1788733.414
00-011(e)	RE00-07-73852	00-27063	1632568.373	1788733.414
00-011(e)	RE00-07-73904	00-27063	1632568.373	1788733.414
00-011(e)	RE00-07-73853	00-27064	1632570.709	1788681.43
00-011(e)	RE00-07-73855	00-27065	1632689.6	1788737.889
00-011(e)	RE00-07-73857	00-27066	1632630.469	1788681.191

Table 3.1-1 (continued)

SWMU or AOC	Sample ID	Location ID	Easting (ft)	Northing (ft)
00-011(e)	RE00-07-73858	00-27066	1632630.469	1788681.191
00-011(e)	RE00-07-73903	00-27066	1632630.469	1788681.191
00-011(e)	RE00-07-73859	00-27067	1632629.845	1788624.303
00-011(e)	RE00-07-73860	00-27067	1632629.845	1788624.303
00-011(e)	RE00-07-73861	00-27068	1632573.074	1788624.169
00-011(e)	RE00-07-73862	00-27068	1632573.074	1788624.169
00-011(e)	RE00-07-73905	00-27068	1632573.074	1788624.169
00-011(e)	RE00-07-73863	00-27069	1632514.08	1788623.297
00-011(e)	RE00-07-73864	00-27069	1632514.08	1788623.297
00-011(e)	RE00-07-73865	00-27070	1632570.741	1788565.274
00-011(e)	RE00-07-73866	00-27070	1632570.741	1788565.274
00-011(e)	RE00-07-73877	00-27070	1632570.741	1788565.274
00-011(e)	RE00-07-73906	00-27070	1632570.741	1788565.274
00-011(e)	RE00-07-73867	00-27071	1632512.387	1788566.993
00-011(e)	RE00-07-73868	00-27071	1632512.387	1788566.993
00-011(e)	RE00-07-73869	00-27072	1632456.181	1788622.499
00-011(e)	RE00-07-73870	00-27072	1632456.181	1788622.499
00-011(e)	RE00-07-73871	00-27073	1632456.36	1788566.365
00-011(e)	RE00-07-73907	00-27073	1632456.36	1788566.365
00-011(e)	RE00-07-73873	00-27074	1632460.301	1788515.79
00-011(e)	RE00-07-73910	00-27075	1632897.178	1788537.758
00-011(e)	RE00-07-73917	00-27075	1632897.178	1788537.758
00-011(e)	RE00-07-73918	00-27076	1633012.512	1788535.278
00-011(e)	RE00-07-73919	00-27077	1633069.587	1788535.475
00-011(e)	RE00-07-73920	00-27078	1633069.658	1788506.38
00-011(e)	RE00-07-73921	00-27079	1633011.612	1788593.489
00-011(e)	RE00-07-73922	00-27080	1632895.514	1788593.074
00-011(e)	RE00-07-73923	00-27081	1632750.446	1788593.331
00-011(e)	RE00-07-73924	00-27082	1632953.47	1788564.226
00-011(e)	RE00-07-73925	00-27083	1633098.547	1788593.374
00-011(e)	RE00-07-73926	00-27084	1633069.507	1788593.402
00-011(e)	RE00-07-73927	00-27085	1632835.487	1788593.183
00-011(e)	RE00-07-73911	00-27086	1633098.548	1788651.336
00-011(e)	RE00-07-73928	00-27086	1633098.548	1788651.336
00-011(e)	RE00-07-73929	00-27087	1632779.006	1788593.624
00-011(e)	RE00-07-73930	00-27088	1632954.507	1788622.676
00-011(e)	RE00-07-73931	00-27089	1632837.659	1788622.25
00-011(e)	RE00-07-73932	00-27090	1633039.45	1788651.586
00-011(e)	RE00-07-73912	00-27091	1632806.21	1788649.823

Table 3.1-1 (continued)

SWMU or AOC	Sample ID	Location ID	Easting (ft)	Northing (ft)
00-011(e)	RE00-07-73933	00-27091	1632806.21	1788649.823
00-011(e)	RE00-07-73934	00-27092	1632965.931	1788705.331
00-011(e)	RE00-07-73935	00-27093	1632866.328	1788650.982
00-011(e)	RE00-07-73936	00-27094	1632981.418	1788649.915
00-011(e)	RE00-07-73937	00-27095	1632924.536	1788767.129
00-011(e)	RE00-07-73938	00-27096	1632953.216	1788740.865
00-011(e)	RE00-07-73939	00-27097	1633040.554	1788709.448
00-011(e)	RE00-07-73940	00-27098	1633069.363	1788709.569
00-011(e)	RE00-07-73941	00-27099	1633040.49	1788767.378
00-011(e)	RE00-07-73942	00-27100	1633012.002	1788738.024
00-011(e)	RE00-07-73943	00-27101	1633013.703	1788799.784
00-011(e)	RE00-07-73944	00-27102	1632953.687	1788825.519
00-011(e)	RE00-07-73993	00-27102	1632953.687	1788825.519
00-011(e)	RE00-07-73996	00-27102	1632953.687	1788825.519
00-011(e)	RE00-07-73945	00-27103	1632953.104	1788848.883
00-011(e)	RE00-07-73946	00-27104	1632602.746	1788708.911
00-011(e)	RE00-07-73947	00-27105	1632924.465	1788825.332
00-011(e)	RE00-07-73948	00-27106	1632629.927	1788652.19
00-011(e)	RE00-07-73949	00-27107	1632657.995	1788680.314
00-011(e)	RE00-07-73950	00-27108	1632600.924	1788650.698
00-011(e)	RE00-07-73951	00-27109	1632542.899	1788591.854
00-011(e)	RE00-07-73952	00-27110	1632543.008	1788623.488
00-011(e)	RE00-07-73953	00-27111	1632598.308	1788590.097
00-011(e)	RE00-07-73913	00-27112	1632514.225	1788594.296
00-011(e)	RE00-07-73954	00-27112	1632514.225	1788594.296
00-011(e)	RE00-07-73955	00-27113	1632448.578	1788506.875
00-011(e)	RE00-07-73956	00-27114	1632514.531	1788532.57
00-011(e)	RE00-07-73957	00-27115	1632486.85	1788477.09
00-011(e)	RE00-07-73885	00-27116	1633072.002	1787993.318
00-011(e)	RE00-07-73958	00-27116	1633072.002	1787993.318
00-011(e)	RE00-07-73959	00-27116	1633072.002	1787993.318
00-011(e)	RE00-07-73960	00-27117	1633066.372	1788085.512
00-011(e)	RE00-07-73886	00-27118	1633074.474	1788164.544
00-011(e)	RE00-07-73962	00-27118	1633074.474	1788164.544
00-011(e)	RE00-07-73964	00-27119	1633040.535	1788274.26
00-011(e)	RE00-07-73965	00-27119	1633040.535	1788274.26
00-011(e)	RE00-07-73982	00-27119	1633040.535	1788274.26
00-011(e)	RE00-07-73966	00-27120	1633040.667	1788390.336
00-011(e)	RE00-07-73967	00-27120	1633040.667	1788390.336

Table 3.1-1 (continued)

SWMU or AOC	Sample ID	Location ID	Easting (ft)	Northing (ft)
00-011(e)	RE00-07-73887	00-27121	1633156.682	1788390.318
00-011(e)	RE00-07-73968	00-27121	1633156.682	1788390.318
00-011(e)	RE00-07-73969	00-27121	1633156.682	1788390.318
00-011(e)	RE00-07-73970	00-27122	1632980.093	1788225.865
00-011(e)	RE00-07-73972	00-27123	1632876.089	1788235.356
00-011(e)	RE00-07-73974	00-27124	1632817.494	1788290.11
00-011(e)	RE00-07-73975	00-27124	1632817.494	1788290.11
00-011(e)	RE00-07-73983	00-27124	1632817.494	1788290.11
00-011(e)	RE00-07-73976	00-27125	1632338.261	1788638.982
00-011(e)	RE00-07-73977	00-27125	1632338.261	1788638.982
00-011(e)	RE00-07-73984	00-27125	1632338.261	1788638.982
00-011(e)	RE00-07-73988	00-27126	1632514.864	1788508.604
00-011(e)	RE00-07-73989	00-27126	1632514.864	1788508.604
00-011(e)	RE00-07-73990	00-27127	1632521.406	1788424.06
00-011(e)	RE00-07-73991	00-27127	1632521.406	1788424.06
00-011(e)	RE00-07-73994	00-27127	1632521.406	1788424.06
00-011(e)	RE00-07-73997	00-27127	1632521.406	1788424.06
00-011(e)	RE00-07-73992	00-27128	1632643.248	1788364.454
00-011(e)	n/a	S-202	1632982.642	1788825.516
00-011(e)	n/a	S-203	1632953.202	1788795.799
00-011(e)	n/a	S-206	1632953.733	1788767.223
00-011(e)	n/a	S-207	1632983.510	1788767.585
00-011(e)	n/a	S-208	1633012.900	1788766.249
00-011(e)	n/a	S-210	1633070.746	1788767.417
00-011(e)	n/a	S-213	1633068.451	1788740.491
00-011(e)	n/a	S-215	1632982.696	1788710.259
00-011(e)	n/a	S-216	1633013.989	1788709.041
00-011(e)	n/a	S-219	1633102.918	1788706.307
00-011(e)	n/a	S-220	1633128.925	1788708.314
00-011(e)	n/a	S-221	1632895.676	1788680.249
00-011(e)	n/a	S-222	1632952.920	1788680.732
00-011(e)	n/a	S-223	1633011.435	1788680.454
00-011(e)	n/a	S-224	1633069.464	1788680.493
00-011(e)	n/a	S-225	1633127.016	1788682.403
00-011(e)	n/a	S-227	1632837.875	1788651.953
00-011(e)	n/a	S-229	1632895.570	1788651.393
00-011(e)	n/a	S-230	1632924.828	1788652.131
00-011(e)	n/a	S-231	1632953.610	1788651.388
00-011(e)	n/a	S-233	1633011.527	1788651.420

Table 3.1-1 (continued)

SWMU or AOC	Sample ID	Location ID	Easting (ft)	Northing (ft)
00-011(e)	n/a	S-235	1633069.630	1788651.553
00-011(e)	n/a	S-237	1632781.056	1788620.913
00-011(e)	n/a	S-239	1632895.596	1788622.412
00-011(e)	n/a	S-241	1633011.485	1788622.342
00-011(e)	n/a	S-242	1633069.589	1788622.364
00-011(e)	n/a	S-244	1632808.602	1788593.230
00-011(e)	n/a	S-246	1632865.420	1788592.360
00-011(e)	n/a	S-248	1632923.329	1788594.012
00-011(e)	n/a	S-249	1632953.578	1788593.555
00-011(e)	n/a	S-250	1632981.277	1788593.515
00-011(e)	n/a	S-252	1633040.589	1788593.338
00-011(e)	n/a	S-255	1632838.056	1788564.406
00-011(e)	n/a	S-256	1632895.515	1788564.306
00-011(e)	n/a	S-258	1633010.716	1788568.564
00-011(e)	n/a	S-259	1633070.250	1788565.089
00-011(e)	n/a	S-260	1632838.391	1788534.059
00-011(e)	n/a	S-261	1632867.118	1788535.480
00-011(e)	n/a	S-263	1632982.536	1788535.405
00-011(e)	n/a	S-265	1633040.762	1788535.492
00-011(e)	n/a	S-267	1633009.066	1788506.379
00-011(e)	n/a	S-270	1632628.144	1788711.936
00-011(e)	n/a	S-271	1632598.541	1788679.768
00-011(e)	n/a	S-272	1632543.106	1788652.471
00-011(e)	n/a	S-273	1632574.974	1788652.184
00-011(e)	n/a	S-276	1632659.124	1788652.433
00-011(e)	n/a	S-278	1632602.643	1788619.915
00-011(e)	n/a	S-279	1632486.109	1788594.033
00-011(e)	n/a	S-282	1632572.330	1788594.635
00-011(e)	n/a	S-284	1632483.018	1788563.514
00-011(e)	n/a	S-285	1632543.216	1788565.401
00-011(e)	n/a	S-286	1632423.860	1788533.467
00-011(e)	n/a	S-287	1632455.214	1788535.941
00-011(e)	n/a	S-290	1632550.618	1788529.225
00-011(e)	n/a	S-292	1632479.778	1788508.507
00-011(e)	n/a	S-295	1633099.242	1788532.068
00-011(e)	n/a	S-296	1633069.528	1788477.412
00-011(e)	n/a	S-298	1632924.772	1788709.115
00-011(e)	n/a	S-300	1632457.202	1788481.700
00-011(e)	n/a	S-301	1632401.168	1788535.931

Table 3.1-1 (continued)

SWMU or AOC	Sample ID	Location ID	Easting (ft)	Northing (ft)
00-011(e)	RE00-07-73820	n/a	n/a	n/a
00-011(e)	RE00-07-73821	n/a	n/a	n/a
00-011(e)	RE00-07-73822	n/a	n/a	n/a
00-011(e)	RE00-07-73823	n/a	n/a	n/a
00-011(e)	RE00-07-73824	n/a	n/a	n/a
00-011(e)	RE00-07-73880	n/a	n/a	n/a
00-011(e)	RE00-07-73881	n/a	n/a	n/a
00-011(e)	RE00-07-73882	n/a	n/a	n/a
00-011(e)	RE00-07-73883	n/a	n/a	n/a
00-011(e)	RE00-07-73986	n/a	n/a	n/a
00-011(e)	RE00-07-73987	n/a	n/a	n/a
C-00-041	RE00-07-76049	00-27644	1625271.076	1784992.459
C-00-041	RE00-07-76050	00-27644	1625271.076	1784992.459
C-00-041	RE00-07-76051	00-27645	1625233.791	1784933.101
C-00-041	RE00-07-76052	00-27645	1625233.791	1784933.101
C-00-041	RE00-07-76053	00-27646	1625323.502	1784766.259
C-00-041	RE00-07-76054	00-27646	1625323.502	1784766.259
C-00-041	RE00-07-76083	00-27646	1625323.502	1784766.259
C-00-041	RE00-07-76055	00-27647	1625340.301	1785055.991
C-00-041	RE00-07-76056	00-27647	1625340.301	1785055.991
C-00-041	RE00-07-76057	00-27648	1625431.951	1784949.486
C-00-041	RE00-07-76058	00-27648	1625431.951	1784949.486
C-00-041	RE00-07-76059	00-27649	1625474.952	1785048.685
C-00-041	RE00-07-76060	00-27649	1625474.952	1785048.685
C-00-041	RE00-07-76061	00-27650	1625296.09	1784886.072
C-00-041	RE00-07-76062	00-27650	1625296.09	1784886.072
C-00-041	RE00-07-76063	00-27651	1625361.621	1784863.617
C-00-041	RE00-07-76064	00-27651	1625361.621	1784863.617
C-00-041	RE00-07-76065	00-27652	1625373.89	1785006.631
C-00-041	RE00-07-76066	00-27652	1625373.89	1785006.631
C-00-041	RE00-07-76067	00-27653	1625519.74	1785140.192
C-00-041	RE00-07-76068	00-27653	1625519.74	1785140.192
C-00-041	RE00-07-76084	00-27653	1625519.74	1785140.192
C-00-041	RE00-07-76069	00-27654	1625494.852	1785280.711
C-00-041	RE00-07-76070	00-27654	1625494.852	1785280.711
C-00-041	RE00-07-76071	00-27655	1625573.256	1785372.465
C-00-041	RE00-07-76072	00-27655	1625573.256	1785372.465
C-00-041	RE00-07-76073	00-27656	1625623.669	1785543.875
C-00-041	RE00-07-76074	00-27656	1625623.669	1785543.875

Table 3.1-1 (continued)

SWMU or AOC	Sample ID	Location ID	Easting (ft)	Northing (ft)
C-00-041	RE00-07-76075	00-27657	1625729.228	1785715.859
C-00-041	RE00-07-76076	00-27657	1625729.228	1785715.859
C-00-041	RE00-07-76077	00-27658	1625596.442	1785499.045
C-00-041	RE00-07-76078	00-27658	1625596.442	1785499.045
C-00-041	RE00-07-76085	00-27658	1625596.442	1785499.045
C-00-041	RE00-07-76079	00-27659	1625519.77	1784904.745
C-00-041	RE00-07-76080	00-27659	1625519.77	1784904.745
C-00-041	RE00-07-76081	00-27660	1625463.868	1784822.389
C-00-041	RE00-07-76082	00-27660	1625463.868	1784822.389
C-00-041	RE00-07-76087	n/a	n/a	n/a
C-00-041	RE00-07-76088	n/a	n/a	n/a
C-00-041	RE00-07-76089	n/a	n/a	n/a
C-00-041	RE00-07-76090	n/a	n/a	n/a
C-00-041	RE00-07-76092	n/a	n/a	n/a
C-00-041	RE00-07-76093	n/a	n/a	n/a
C-00-041	RE00-07-76094	n/a	n/a	n/a
C-00-041	RE00-07-76272	n/a	n/a	n/a

*n/a = Not applicable.

Table 6.2-1
Field Screening Results for SWMU 00-011(a)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
00-27130	0.0–0.7	0.0	≤0.5	12/5/2006	≤0.5	12/6/2006	12/4/2006	n/a[b]
00-27130	2.0–3.0	0.0	≤0.5	12/5/2006	≤0.5	12/6/2006	12/4/2006	n/a
00-27131	0.0–0.7	0.0	≤0.5	12/5/2006	≤0.5	12/6/2006	12/4/2006	RE00-07-74093
00-27131	2.0–3.0	0.0	≤0.5	12/5/2006	≤0.5	12/6/2006	12/4/2006	n/a
00-27132	0.0–0.5	0.0	≤0.5	12/5/2006	≤0.5	12/6/2006	12/4/2006	n/a
00-27132	2.0–3.0	0.0	≤0.5	12/5/2006	≤0.5	12/6/2006	12/4/2006	n/a
00-27133	0.0–0.5	0.0	≤0.5	12/5/2006	≤0.5	12/6/2006	12/4/2006	n/a
00-27133	2.0–2.6	0.0	≤0.5	12/5/2006	≤0.5	12/7/2006	12/4/2006	n/a
00-27134	0.0–0.5	0.5	≤0.5	12/5/2006	≤0.5	12/7/2006	12/5/2006	n/a
00-27134	2.0–3.2	0.1	≤0.5	12/5/2006	≤0.5	12/7/2006	12/5/2006	RE00-07-74094
00-27135	0.0–0.5	0.2	≤0.5	12/7/2006	≤0.5	12/7/2006	12/5/2006	n/a
00-27135	2.0–2.5	0.0	≤0.5	12/7/2006	≤0.5	12/7/2006	12/5/2006	n/a
00-27136	0.0–0.5	0.2	≤0.5	12/7/2006	≤0.5	12/7/2006	12/6/2006	n/a
00-27136	2.0–3.0	0.0	≤0.5	12/7/2006	≤0.5	12/7/2006	12/6/2006	n/a

Table 6.2-1 (continued)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
00-27137	0.0–0.5	0.0	≤0.5	12/7/2006	≤0.5	12/7/2006	12/6/2006	n/a
00-27137	2.0–2.6	0.0	≤0.5	12/7/2006	≤0.5	12/7/2006	12/6/2006	RE00-07-74095
00-27138	0.0–0.5	0.3	≤0.5	12/7/2006	≤0.5	12/7/2006	12/6/2006	n/a
00-27138	2.0–3.0	0.0	≤0.5	12/7/2006	≤0.5	12/7/2006	12/6/2006	n/a
00-27139	0.0–0.5	0.0	≤0.5	12/7/2006	≤0.5	12/7/2006	12/7/2006	RE00-07-74096
00-27139	2.0–3.0	0.4	≤0.5	12/7/2006	≤0.5	12/7/2006	12/7/2006	n/a
00-27140	0.0–0.5	0.0	≤0.5	12/13/2006	≤0.5	12/13/2006	12/7/2006	n/a
00-27140	2.0–3.0	0.0	≤0.5	12/13/2006	≤0.5	12/13/2006	12/7/2006	RE00-07-74097
00-27141	0.0–0.5	0.0	≤0.5	12/13/2006	≤0.5	12/13/2006	12/7/2006	n/a
00-27141	2.0–3.0	0.0	≤0.5	12/13/2006	≤0.5	12/13/2006	12/7/2006	n/a
00-27142	0.0–0.5	0.0	≤0.5	12/13/2006	≤0.5	12/13/2006	12/8/2006	n/a
00-27142	2.0–3.0	0.0	≤0.5	12/13/2006	≤0.5	12/13/2006	12/8/2006	n/a
00-27143	0.0–0.5	0.0	≤0.5	12/13/2006	≤0.5	12/13/2006	12/11/2006	n/a
00-27143	2.0–3.0	0.0	≤0.5	12/13/2006	≤0.5	12/13/2006	12/11/2006	RE00-07-74098
00-27144	0.0–0.5	0.0	≤0.5	12/13/2006	≤0.5	12/13/2006	12/11/2006	n/a
00-27144	2.0–3.0	0.0	≤0.5	12/13/2006	≤0.5	12/13/2006	12/11/2006	n/a
00-27145	0.0–0.5	0.0	≤0.5	12/14/2006	≤0.5	12/13/2006	12/12/2006	n/a
00-27145	2.0–2.7	0.0	≤0.5	12/14/2006	≤0.5	12/13/2006	12/12/2006	RE00-07-74099
00-27146	0.0–0.5	0.0	≤0.5	12/14/2006	≤0.5	12/14/2006	12/12/2006	n/a
00-27146	2.0–2.9	0.0	≤0.5	12/14/2006	≤0.5	12/14/2006	12/12/2006	n/a
00-27147	0.0–0.5	0.1	≤0.5	12/15/2006	≤0.5	12/15/2006	12/14/2006	n/a
00-27147	2.0–3.0	0.2	≤0.5	12/15/2006	≤0.5	12/15/2006	12/14/2006	n/a
00-27148	0.1–0.5	0.0	≤0.5	12/15/2006	≤0.5	12/15/2006	12/14/2006	RE00-07-74100
00-27148	2.0–3.0	0.0	≤0.5	12/15/2006	≤0.5	12/15/2006	12/14/2006	n/a
00-27149	0.1–0.6	0.0	≤0.5	12/15/2006	≤0.5	12/15/2006	12/15/2006	n/a
00-27149	2.0–3.0	0.0	≤0.5	12/15/2006	≤0.5	12/15/2006	12/15/2006	n/a
00-27150	0.0–0.5	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/4/2007	n/a
00-27150	2.0–2.5	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/4/2007	n/a
00-27151	0.0–0.5	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/4/2007	n/a
00-27151	2.0–2.3	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/4/2007	n/a
00-27152	0.0–0.5	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/4/2007	RE00-07-74101
00-27152	2.0–3.0	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/4/2007	n/a
00-27153	0.0–0.5	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/4/2007	n/a
00-27153	2.0–2.9	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/4/2007	n/a
00-27154	0.0–0.5	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/8/2007	n/a
00-27154	2.0–3.0	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/8/2007	n/a

Table 6.2-1 (continued)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
00-27155	0.0–0.5	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/8/2007	RE00-07-74102
00-27155	2.0–3.0	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/8/2007	n/a
00-27156	0.0–0.5	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/8/2007	n/a
00-27156	2.0–3.0	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/8/2007	n/a
00-27157	0.0–0.5	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/8/2007	n/a
00-27157	2.0–3.0	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/8/2007	n/a
00-27158	0.0–0.5	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/8/2007	n/a
00-27158	2.0–3.0	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/8/2007	RE00-07-74103
00-27159	0.0–0.5	0.0	≤0.5	1/12/2007	≤0.5	1/12/2007	1/9/2007	RE00-07-74104
00-27159	2.3–3.0	0.0	≤0.5	1/12/2007	≤0.5	1/12/2007	1/9/2007	n/a
00-27160	0.0–0.5	0.0	≤0.5	1/12/2007	≤0.5	1/12/2007	1/11/2007	n/a
00-27160	2.0–3.0	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/11/2007	n/a
00-27161	0.0–0.5	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/16/2007	n/a
00-27161	2.0–3.0	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/16/2007	n/a
00-27162	0.0–0.5	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/17/2007	n/a
00-27162	2.0–3.0	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/17/2007	RE00-07-74106
00-27163	0.0–0.5	0.3	≤0.5	12/7/2006	≤0.5	12/7/2006	12/6/2006	RE00-07-74111
00-27163	2.0–3.0	0.0	≤0.5	12/7/2006	≤0.5	12/7/2006	12/6/2006	n/a
00-27164	0.1–0.6	0.4	≤0.5	12/13/2006	≤0.5	12/13/2006	12/12/2006	RE00-07-74112
00-27164	2.0–3.0	0.0	≤0.5	12/13/2006	≤0.5	12/13/2006	12/12/2006	n/a
00-27165	0.0–0.5	0.0	0.5≤1.5	12/14/2006	≤0.5	12/14/2006	12/13/2006	RE00-07-74113
00-27165	2.0–3.0	0.0	≤0.5	12/15/2006	≤0.5	12/15/2006	12/13/2006	n/a
00-27167	0.0–0.5	0.0	≤0.5	12/14/2006	≤0.5	12/14/2006	12/12/2006	RE00-07-74115
00-27167	2.0–3.0	0.0	≤0.5	12/14/2006	≤0.5	12/14/2006	12/12/2006	n/a
00-27168	0.0–0.5	0.0	≤0.5	12/14/2006	≤0.5	12/14/2006	12/12/2006	RE00-07-74116
00-27168	2.0–3.0	0.0	≤0.5	12/14/2006	≤0.5	12/14/2006	12/12/2006	n/a
00-27169	0.0–0.5	0.0	≤0.5	12/15/2006	≤0.5	12/15/2006	12/15/2006	RE00-07-74117
00-27169	2.0–3.0	0.0	≤0.5	12/15/2006	≤0.5	12/15/2006	12/15/2006	n/a
00-27170	0.0–0.5	0.0	≤0.5	12/15/2006	≤0.5	12/15/2006	12/14/2006	n/a
00-27170	2.0–3.0	0.0	≤0.5	12/15/2006	≤0.5	12/15/2006	12/14/2006	RE00-07-74118
00-27171	0.0–0.5	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/3/2007	n/a
00-27171	2.0–3.0	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/3/2007	RE00-07-74119
00-27172	0.0–0.5	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/3/2007	n/a
00-27172	2.0–3.0	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/3/2007	RE00-07-74120
00-27173	0.0–0.5	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/3/2007	RE00-07-74121
00-27173	1.7–2.2	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/3/2007	n/a

Table 6.2-1 (continued)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
00-27174	0.0–0.5	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/4/2007	n/a
00-27174	1.5–1.7	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/4/2007	RE00-07-74122
00-27175	0.0–0.5	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/8/2007	n/a
00-27175	2.0–3.0	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/8/2007	RE00-07-74123
00-27176	0.0–0.5	0.0	≤0.5	1/10/2007	1.5	1/10/2007	1/8/2007	RE00-07-74125
00-27176	2.0–3.0	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/8/2007	RE00-07-74124
00-27178	0.0–0.5	0.0	≤0.5	1/12/2007	≤0.5	1/12/2007	1/11/2007	n/a
00-27178	2.0–3.0	0.0	≤0.5	1/12/2007	≤0.5	1/12/2007	1/11/2007	RE00-07-74126
00-27179	0.0–0.5	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/16/2007	RE00-07-74127
00-27179	2.0–3.0	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/16/2007	n/a
00-27180	0.0–0.5	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/17/2007	n/a
00-27180	2.0–3.0	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/17/2007	RE00-07-74128
00-27181	0.0–0.5	0.0	≤0.5	1/24/2007	≤0.5	1/24/2007	1/23/2007	RE00-07-74129
00-27181	1.9–2.9	0.0	≤0.5	1/24/2007	≤0.5	1/24/2007	1/23/2007	n/a
00-27182	0.2–0.5	0.0	≤0.5	1/24/2007	≤0.5	1/24/2007	1/23/2007	n/a
00-27182	1.5–1.9	0.0	≤0.5	1/25/2007	≤0.5	1/25/2007	1/23/2007	RE00-07-74130
00-27183	0.0–0.5	0.0	≤0.5	1/25/2007	≤0.5	1/25/2007	1/24/2007	RE00-07-74131
00-27183	2.0–2.5	0.0	≤0.5	1/25/2007	≤0.5	1/25/2007	1/24/2007	n/a
00-27184	0.0–0.4	0.0	≤0.5	1/25/2007	≤0.5	1/25/2007	1/24/2007	n/a
00-27184	2.0–2.4	0.0	≤0.5	1/25/2007	≤0.5	1/25/2007	1/24/2007	RE00-07-74132
00-27185	0.0–0.7	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/25/2007	n/a
00-27185	2.1–3.0	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/25/2007	RE00-07-74133
00-27186	0.0–0.5	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/25/2007	n/a
00-27186	2.0–2.7	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/25/2007	RE00-07-74134
00-27187	0.0–0.5	0.0	≤0.5	1/31/2007	≤0.5	1/31/2007	1/29/2007	RE00-07-74135
00-27187	2.0–3.0	0.0	≤0.5	1/31/2007	≤0.5	1/31/2007	1/29/2007	n/a
00-27188	0.0–0.5	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/16/2007	n/a
00-27188	2.0–3.0	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/16/2007	n/a
00-27189	0.0–0.5	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/16/2007	RE00-07-74105
00-27189	2.0–3.0	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/16/2007	n/a
00-27190	0.0–0.5	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/18/2007	n/a
00-27190	2.0–3.0	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/18/2007	n/a
00-27191	0.0–0.5	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/18/2007	n/a
00-27191	1.9–3.0	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/18/2007	n/a
00-27192	0.0–0.5	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/18/2007	n/a
00-27192	2.0–3.0	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/18/2007	RE00-07-74109

Table 6.2-1 (continued)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
00-27193	0.0–0.5	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/18/2007	n/a
00-27193	2.0–3.0	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/18/2007	n/a
00-27194	0.0–0.5	0.0	≤0.5	1/23/2007	≤0.5	1/23/2007	1/22/2007	n/a
00-27194	2.3–3.0	0.0	≤0.5	1/23/2007	≤0.5	1/23/2007	1/22/2007	RE00-07-74182
00-27195	0.0–0.5	0.0	≤0.5	1/23/2007	≤0.5	1/23/2007	1/22/2007	n/a
00-27195	2.0–3.0	0.0	≤0.5	1/23/2007	≤0.5	1/23/2007	1/22/2007	n/a
00-27196	0.0–0.5	0.0	≤0.5	1/23/2007	≤0.5	1/23/2007	1/22/2007	RE00-07-74183
00-27196	2.0–3.0	0.0	≤0.5	1/23/2007	≤0.5	1/23/2007	1/22/2007	n/a
00-27197	0.0–0.5	0.0	≤0.5	1/23/2007	≤0.5	1/23/2007	1/22/2007	n/a
00-27197	2.0–3.0	0.0	≤0.5	1/23/2007	≤0.5	1/23/2007	1/22/2007	n/a
00-27198	0.0–0.5	0.0	≤0.5	1/23/2007	≤0.5	1/23/2007	1/22/2007	n/a
00-27198	2.0–3.0	0.0	≤0.5	1/23/2007	≤0.5	1/23/2007	1/22/2007	n/a
00-27199	0.0–0.5	0.0	≤0.5	1/23/2007	≤0.5	1/23/2007	1/22/2007	n/a
00-27199	2.0–3.0	0.0	≤0.5	1/23/2007	≤0.5	1/23/2007	1/22/2007	n/a
00-27200	0.0–0.5	0.0	≤0.5	1/23/2007	≤0.5	1/23/2007	1/22/2007	RE00-07-74184
00-27200	2.0–3.0	0.0	≤0.5	1/23/2007	≤0.5	1/23/2007	1/22/2007	n/a
00-27201	0.0–0.5	0.3	≤0.5	1/24/2007	≤0.5	1/24/2007	1/23/2007	RE00-07-74185
00-27201	2.0–3.0	0.0	≤0.5	1/24/2007	≤0.5	1/24/2007	1/23/2007	n/a
00-27202	0.0–0.5	0.0	≤0.5	1/24/2007	≤0.5	1/24/2007	1/23/2007	n/a
00-27202	2.0–3.0	0.7	≤0.5	1/24/2007	≤0.5	1/24/2007	1/23/2007	n/a
00-27203	0.0–0.5	0.0	≤0.5	1/25/2007	≤0.5	1/25/2007	1/24/2007	n/a
00-27203	1.9–3.0	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/24/2007	n/a
00-27204	0.0-0.3	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/25/2007	n/a
00-27205	0.0–0.5	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/25/2007	RE00-07-74186
00-27206	0.0–0.5	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/26/2007	n/a
00-27206	2.0–3.0	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/26/2007	RE00-07-74187
00-27207	0.0–0.5	1.2	≤0.5	1/30/2007	≤0.5	1/30/2007	1/26/2007	n/a
00-27207	2.0–3.0	0.3	≤0.5	1/30/2007	≤0.5	1/30/2007	1/26/2007	n/a
00-27208	0.0–0.5	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/29/2007	n/a
00-27208	2.0–3.0	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/29/2007	n/a
00-27209	0.0–0.5	0.0	≤0.5	2/2/2007	≤0.5	2/2/2007	1/30/2007	n/a
00-27209	2.0–3.0	0.0	≤0.5	1/31/2007	≤0.5	1/31/2007	1/30/2007	RE00-07-74188
00-27210	0.0–0.6	0.0	≤0.5	2/2/2007	≤0.5	2/2/2007	2/1/2007	n/a
00-27210	2.0–3.0	0.0	≤0.5	2/2/2007	≤0.5	2/2/2007	2/1/2007	n/a
00-27661	0.0–0.5	0.0	≤0.5	1/31/2007	≤0.5	1/31/2007	1/29/2007	RE00-07-76095
00-27661	2.0–3.0	0.0	≤0.5	1/31/2007	≤0.5	1/31/2007	1/29/2007	n/a

Table 6.2-1 (continued)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
S-100	0.0–0.4	0.0	≤0.5	1/25/2007	≤0.5	1/25/2007	1/24/2007	n/a
S-100	2.0–3.0	0.0	≤0.5	1/25/2007	≤0.5	1/25/2007	1/24/2007	n/a
S-101	0.0–0.5	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/26/2007	n/a
S-101	1.0–1.3	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/26/2007	n/a
S-102	0.0–0.5	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/26/2007	n/a
S-102	2.0–3.0	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/26/2007	n/a
S-104	0.0–0.5	0.0	≤0.5	1/25/2007	≤0.5	1/25/2007	1/24/2007	n/a
S-104	2.0–2.9	0.0	≤0.5	1/25/2007	≤0.5	1/25/2007	1/24/2007	n/a
S-108	0.0–0.5	0.0	≤0.5	1/31/2007	≤0.5	1/31/2007	1/29/2007	n/a
S-108	2.0–3.0	0.0	≤0.5	1/31/2007	≤0.5	1/31/2007	1/29/2007	n/a
S-110	0.0–0.5	0.0	≤0.5	1/12/2007	≤0.5	1/12/2007	1/11/2007	n/a
S-110	2.0–3.0	0.0	≤0.5	1/12/2007	≤0.5	1/12/2007	1/11/2007	n/a
S-112	0.0–0.5	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/25/2007	n/a
S-112	2.0–3.0	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/25/2007	n/a
S113	2.0–3.0	0.0	≤0.5	1/12/2007	≤0.5	1/12/2007	1/11/2007	n/a
S-113	0.0–0.5	0.0	≤0.5	1/12/2007	≤0.5	1/12/2007	1/11/2007	n/a
S-116	0.0–0.5	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/4/2007	n/a
S-116	1.8–2.5	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/4/2007	n/a
S-118	0.0–0.5	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/3/2007	n/a
S-118	2.0–2.7	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/3/2007	n/a
S-119	0.0–0.5	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/4/2007	n/a
S-119	2.0–2.5	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/4/2007	n/a
S-120	0.0–0.5	0.0	≤0.5	12/15/2006	≤0.5	12/15/2006	12/15/2006	n/a
S-120	1.7–2.0	0.0	≤0.5	12/15/2006	≤0.5	12/15/2006	12/15/2006	n/a
S-121	0.0–0.5	0.0	≤0.5	12/15/2006	≤0.5	12/15/2006	12/14/2006	n/a
S-121	2.0–3.0	0.0	≤0.5	12/15/2006	≤0.5	12/15/2006	12/14/2006	n/a
S-122	0.0–0.5	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/3/2007	n/a
S-122	1.4–1.5	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/3/2007	n/a
S-124	0.0–0.5	0.0	≤0.5	12/14/2006	≤0.5	12/13/2006	12/11/2006	n/a
S-124	2.0–3.0	0.0	≤0.5	12/14/2006	≤0.5	12/13/2006	12/11/2006	n/a
S-125	0.0–0.5	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/3/2007	n/a
S-125	2.0–2.6	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/3/2007	n/a
S-127	0.0–0.5	0.0	≤0.5	12/15/2006	≤0.5	12/15/2006	12/13/2006	n/a
S-127	2.0–3.0	0.0	≤0.5	12/15/2006	≤0.5	12/15/2006	12/13/2006	n/a
S-128	0.0–0.5	0.0	≤0.5	12/14/2006	≤0.5	12/13/2006	12/11/2006	n/a
S-128	2.0–3.0	0.0	≤0.5	12/14/2006	≤0.5	12/13/2006	12/11/2006	n/a

Table 6.2-1 (continued)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
S-130	0.0–0.5	0.0	≤0.5	12/13/2006	≤0.5	12/13/2006	12/12/2006	n/a
S-130	2.0–3.0	0.0	≤0.5	12/14/2006	≤0.5	12/14/2006	12/12/2006	n/a
S-132	0.0–0.5	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/3/2007	n/a
S-132	1.9–2.8	0.0	≤0.5	1/5/2007	≤0.5	1/5/2007	1/3/2007	n/a
S-135	0.0–0.5	0.0	≤0.5	1/24/2007	≤0.5	1/24/2007	1/23/2007	n/a
S-135	2.1–3.0	0.0	≤0.5	1/24/2007	≤0.5	1/24/2007	1/23/2007	n/a
S-138	0.0–0.5	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/25/2007	n/a
S-138	2.0–3.0	0.0	≤0.5	1/30/2007	≤0.5	1/30/2007	1/25/2007	n/a
S-140	0.0–0.5	0.0	≤0.5	12/13/2006	≤0.5	12/13/2006	12/11/2006	n/a
S-140	2.0–2.8	0.0	≤0.5	12/14/2006	≤0.5	12/13/2006	12/11/2006	n/a
S-142	0.0–0.5	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/8/2007	n/a
S-142	2.0–3.0	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/8/2007	n/a
S-143	0.0–0.5	0.0	≤0.5	1/24/2007	≤0.5	1/24/2007	1/23/2007	n/a
S-143	2.0–2.3	0.0	≤0.5	1/24/2007	≤0.5	1/24/2007	1/23/2007	n/a
S-144	0.0–0.5	0.0	≤0.5	12/14/2006	≤0.5	12/14/2006	12/13/2006	n/a
S-144	2.0–3.0	0.0	≤0.5	12/14/2006	≤0.5	12/14/2006	12/13/2006	n/a
S-145	0.0–0.5	0.0	≤0.5	12/14/2006	≤0.5	12/14/2006	12/13/2006	n/a
S-145	2.0–3.0	0.0	≤0.5	12/14/2006	≤0.5	12/14/2006	12/13/2006	n/a
S-147	0.0–0.5	0.0	≤0.5	12/7/2006	≤0.5	12/7/2006	12/7/2006	n/a
S-147	2.0–2.5	0.0	≤0.5	12/7/2006	≤0.5	12/7/2006	12/7/2006	n/a
S-148	0.0–0.5	0.0	≤0.5	12/14/2006	≤0.5	12/14/2006	12/13/2006	n/a
S-148	2.0–3.0	0.0	≤0.5	12/14/2006	≤0.5	12/14/2006	12/13/2006	n/a
S-149	0.0–0.5	0.0	≤0.5	2/2/2007	≤0.5	2/2/2007	2/1/2007	n/a
S-149	1.6–2.0	0.0	≤0.5	2/2/2007	≤0.5	2/2/2007	2/1/2007	n/a
S-151	0.0–0.5	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/9/2007	n/a
S-151	2.0–3.0	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/9/2007	n/a
S-153	0.0–0.5	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/9/2007	n/a
S-153	2.0–3.0	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/9/2007	n/a
S-155	0.0–0.5	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/18/2007	n/a
S-155	2.0–3.0	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/18/2007	n/a
S-156	0.0–0.5	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/18/2007	n/a
S-156	2.0–2.4	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/18/2007	n/a
S-157	0.0–0.5	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/18/2007	n/a
S-157	2.0–2.4	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/18/2007	n/a
S-158	0.0–0.5	0.0	≤0.5	1/10/2007	≤0.5	1/10/2007	1/9/2007	n/a
S-158	2.0–3.0	0.0	≤0.5	1/12/2007	≤0.5	1/12/2007	1/9/2007	n/a

Table 6.2-1 (continued)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
S-160	0.0–0.5	0.0	≤0.5	1/24/2007	≤0.5	1/24/2007	1/22/2007	n/a
S-160	2.0–2.8	0.0	≤0.5	1/24/2007	≤0.5	1/24/2007	1/22/2007	n/a
S-161	0.0–0.5	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/17/2007	n/a
S-161	2.0–2.5	0.0	≤0.5	1/19/2007	≤0.5	1/19/2007	1/17/2007	n/a

[a] D TECH kit results.

[b] n/a = Not applicable.

Table 6.2-2
Field Screening Results for SWMU 00-011(d)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
00-27211	0.0–0.5	0.0	≤0.5	2/2/2007	≤0.5	2/2/2007	2/1/2007	n/a[b]
00-27211	2.0–3.0	0.0	≤0.5	2/2/2007	≤0.5	2/2/2007	2/1/2007	n/a
00-27212	0.0–0.5	0.0	≤0.5	2/2/2007	≤0.5	2/2/2007	2/1/2007	n/a
00-27212	2.0–3.0	0.0	≤0.5	2/2/2007	≤0.5	2/2/2007	2/1/2007	n/a
00-27213	0.0–0.5	0.0	≤0.5	2/2/2007	≤0.5	2/2/2007	2/2/2007	n/a
00-27213	2.0–3.0	0.0	≤0.5	2/2/2007	≤0.5	2/2/2007	2/2/2007	RE00-07-74245
00-27214	0.0–0.5	0.0	≤0.5	2/2/2007	1.5	2/2/2007	2/2/2007	RE00-07-74244
00-27214	2.0–3.0	0.0	≤0.5	2/2/2007	≤0.5	2/2/2007	2/2/2007	n/a
00-27215	0.0–0.5	0.0	≤0.5	2/2/2007	≤0.5	2/2/2007	2/2/2007	n/a
00-27215	2.0–3.0	0.0	≤0.5	2/2/2007	≤0.5	2/2/2007	2/2/2007	n/a
00-27216	0.0–0.5	0.0	≤0.5	2/2/2007	≤0.5	2/2/2007	2/2/2007	n/a
00-27216	2.0–3.0	0.0	≤0.5	2/2/2007	≤0.5	2/2/2007	2/2/2007	n/a
00-27217	0.0–0.5	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/5/2007	RE00-07-74246
00-27217	2.0–3.0	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/5/2007	n/a
00-27218	0.0–0.5	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/5/2007	n/a
00-27218	2.0–3.0	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/5/2007	n/a
00-27219	0.0–0.5	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/5/2007	n/a
00-27219	2.0–3.0	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/5/2007	n/a
00-27220	0.0–0.5	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/5/2007	RE00-07-74247
00-27220	2.0–3.0	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/5/2007	n/a
00-27221	0.0–0.5	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/5/2007	n/a
00-27221	2.0–3.0	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/5/2007	n/a
00-27222	0.0–0.5	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/6/2007	n/a

Table 6.2-2 (continued)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
00-27222	2.0–3.0	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/6/2007	n/a
00-27223	0.0–0.5	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/6/2007	n/a
00-27223	2.0–2.9	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/6/2007	n/a
00-27224	0.0–0.5	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/6/2007	RE00-07-74248
00-27224	2.0–3.0	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/6/2007	n/a
00-27225	0.0–0.5	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/6/2007	n/a
00-27225	2.0–3.0	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/6/2007	n/a
00-27226	0.0–0.5	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/6/2007	n/a
00-27226	2.0–3.0	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/6/2007	n/a
00-27227	0.0–0.5	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/6/2007	RE00-07-74249
00-27227	2.0–3.0	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/6/2007	n/a
00-27228	0.0–0.5	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/7/2007	n/a
00-27228	2.0–3.0	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/7/2007	RE00-07-74250
00-27229	0.0–0.5	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/7/2007	n/a
00-27229	2.0–3.0	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/7/2007	RE00-07-74251
00-27230	0.0–0.5	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/7/2007	n/a
00-27230	2.0–3.0	0.0	≤0.5	2/8/2007	≤0.5	2/8/2007	2/7/2007	RE00-07-74252
00-27231	0.0–0.5	0.0	≤0.5	2/9/2007	≤0.5	2/9/2007	2/7/2007	n/a
00-27231	2.0–3.0	0.0	≤0.5	2/9/2007	≤0.5	2/9/2007	2/7/2007	n/a
00-27663	0.0–0.5	0.0	≤0.5	2/9/2007	≤0.5	2/9/2007	2/7/2007	n/a
00-27663	2.0–3.0	0.0	≤0.5	2/9/2007	≤0.5	2/9/2007	2/7/2007	n/a

[a] D TECH kit results.

[b] n/a = Not applicable.

Table 6.2-3
Field Screening Results for SWMU 00-011(e)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
00-27025	0.0–0.5	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/28/2007	n/a[b]
00-27025	2.0–3.0	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/28/2007	n/a
00-27026	0.0–0.5	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/28/2007	n/a
00-27026	2.0–2.8	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/28/2007	RE00-07-73888
00-27027	0.0–0.5	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/28/2007	n/a
00-27027	2.0–3.0	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/28/2007	n/a
00-27028	0.0–0.5	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a

Table 6.2-3 (continued)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
00-27028	2.0–3.0	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
00-27029	0.0–0.5	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
00-27029	2.0–3.0	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	RE00-07-73889
00-27030	0.0–0.5	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
00-27030	2.0–3.0	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
00-27031	0.0–0.5	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
00-27031	2.0–2.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/5/2007	RE00-07-73890
00-27032	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/5/2007	n/a
00-27032	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/5/2007	n/a
00-27033	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
00-27033	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
00-27034	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	RE00-07-73891
00-27034	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
00-27035	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
00-27035	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
00-27036	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
00-27036	1.6–1.9	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	RE00-07-73892
00-27037	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
00-27037	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
00-27038	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
00-27038	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
00-27039	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
00-27039	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
00-27040	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
00-27040	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	RE00-07-73893
00-27041	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
00-27041	2.0–2.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
00-27042	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	RE00-07-73894
00-27042	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
00-27043	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
00-27043	1.5–2.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
00-27044	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/8/2007	RE00-07-73895
00-27044	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/8/2007	n/a
00-27045	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/8/2007	n/a
00-27045	2.0–2.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	RE00-07-73896
00-27046	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
00-27046	2.0–3.0	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
00-27047	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/12/2007	n/a

Table 6.2-3 (continued)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
00-27047	2.0–3.0	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/12/2007	n/a
00-27048	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/12/2007	RE00-07-73897
00-27048	2.0–3.0	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/12/2007	n/a
00-27049	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/12/2007	n/a
00-27049	2.0–3.0	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/12/2007	n/a
00-27050	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
00-27050	2.0–3.0	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
00-27051	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
00-27051	2.0–3.0	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
00-27052	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
00-27052	2.0–3.0	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
00-27053	0.0–0.5	0.0	0.5 - 1.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	RE00-07-73898
00-27053	1.8–2.1	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	RE00-07-73899
00-27054	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	n/a
00-27054	2.0–3.0	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	n/a
00-27055	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	RE00-07-73900
00-27055	1.0–2.0	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	n/a
00-27056	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	n/a
00-27056	1.9–3.0	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	n/a
00-27057	0.0–0.5	0.0	1.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	RE00-07-73901
00-27058	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	n/a
00-27059	0.0–0.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
00-27059	2.0–3.0	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
00-27060	0.0–0.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
00-27060	2.0–3.0	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	RE00-07-73902
00-27061	0.0–0.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
00-27061	2.0–2.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
00-27062	0.0–0.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
00-27062	2.0–3.0	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
00-27063	0.0–0.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	RE00-07-73904
00-27063	2.0–3.0	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
00-27064	0.0–0.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
00-27065	0.0–0.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
00-27066	0.0–0.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
00-27066	2.0–3.0	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	RE00-07-73903
00-27067	0.0–0.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/20/2007	n/a
00-27067	2.0–3.0	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/20/2007	n/a
00-27068	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/20/2007	RE00-07-73905

Table 6.2-3 (continued)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
00-27068	2.0–3.0	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/20/2007	n/a
00-27069	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/20/2007	n/a
00-27069	2.0–3.0	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/20/2007	n/a
00-27070	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	n/a
00-27070	2.0–3.0	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	RE00-07-73906
00-27071	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	n/a
00-27071	1.7–2.0	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	n/a
00-27072	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	n/a
00-27072	2.0–3.0	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	n/a
00-27073	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	RE00-07-73907
00-27074	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	n/a
00-27075	0.0–0.5	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/28/2007	n/a
00-27075	2.0–3.0	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/28/2007	RE00-07-73917
00-27076	0.0–0.5	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/28/2007	RE00-07-73918
00-27076	2.0–3.0	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	2/28/2007	n/a
00-27077	0.0–0.5	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
00-27077	2.0–2.5	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	RE00-07-73919
00-27078	0.0–0.5	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	RE00-07-73920
00-27078	2.0–3.0	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
00-27079	0.0–0.5	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	RE00-07-73921
00-27079	2.0–3.0	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
00-27080	0.0–0.5	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
00-27080	1.2–1.7	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	RE00-07-73922
00-27081	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
00-27081	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	RE00-07-73923
00-27082	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
00-27082	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	RE00-07-73924
00-27083	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/5/2007	RE00-07-73925
00-27083	2.0–2.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/5/2007	n/a
00-27084	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/5/2007	n/a
00-27084	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/5/2007	RE00-07-73926
00-27085	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	RE00-07-73927
00-27085	1.5–2.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
00-27086	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
00-27086	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	RE00-07-73928
00-27087	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	RE00-07-73929
00-27087	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
00-27088	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a

Table 6.2-3 (continued)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
00-27088	2.0–2.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	RE00-07-73930
00-27089	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
00-27089	2.0–2.2	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	RE00-07-73931
00-27090	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	RE00-07-73932
00-27090	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
00-27091	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	RE00-07-73933
00-27092	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	RE00-07-73934
00-27092	2.0–3.0	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
00-27093	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
00-27093	2.0–2.3	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	RE00-07-73935
00-27094	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
00-27094	2.0–3.0	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	RE00-07-73936
00-27095	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/12/2007	n/a
00-27095	2.0–3.0	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/12/2007	RE00-07-73937
00-27096	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/12/2007	RE00-07-73938
00-27096	2.0–3.0	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/12/2007	n/a
00-27097	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	RE00-07-73939
00-27097	2.0–2.4	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
00-27098	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
00-27098	2.0–3.0	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	RE00-07-73940
00-27099	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
00-27099	2.0–2.7	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	RE00-07-73941
00-27100	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	RE00-07-73942
00-27100	2.0–3.0	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	n/a
00-27101	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	RE00-07-73943
00-27101	2.0–3.0	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	n/a
00-27102	0.0–0.5	0.0	≤0.5	3/16/2007	0.5–1.5	3/16/2007	3/15/2007	RE00-07-73944
00-27102	2.0–3.0	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	n/a
00-27103	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	n/a
00-27103	2.0–2.4	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	RE00-07-73945
00-27104	0.0–0.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
00-27104	2.0–3.0	0.0	≤0.5	3/23/2007	≤0.5	3/22/2007	3/19/2007	RE00-07-73946
00-27105	0.0–0.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
00-27105	2.0–3.0	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	RE00-07-73947
00-27106	0.0–0.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	RE00-07-73948
00-27106	2.0–2.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
00-27107	0.0–0.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
00-27107	2.0–3.0	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	RE00-07-73949

Table 6.2-3 (continued)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
00-27108	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/20/2007	n/a
00-27108	1.0–1.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/20/2007	RE00-07-73950
00-27109	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/20/2007	RE00-07-73951
00-27109	2.0–3.0	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/20/2007	n/a
00-27110	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/20/2007	n/a
00-27110	2.0–3.0	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/20/2007	RE00-07-73952
00-27111	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/20/2007	n/a
00-27111	2.0–3.0	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/20/2007	RE00-07-73953
00-27112	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	RE00-07-73954
00-27112	1.8–2.3	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	n/a
00-27113	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	RE00-07-73955
00-27114	0.0–0.5	0.0	≤0.5	3/28/2007	≤0.5	3/28/2007	3/27/2007	RE00-07-73956
00-27114	2.2–3.1	0.0	≤0.5	3/28/2007	≤0.5	3/28/2007	3/27/2007	n/a
00-27115	0.0–0.5	0.0	≤0.5	3/28/2007	≤0.5	3/28/2007	3/27/2007	RE00-07-73957
00-27116	0.0–0.5	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/27/2007	n/a
00-27116	1.2–2.0	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/27/2007	RE00-07-73885
00-27117	0.0–0.5	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/27/2007	n/a
00-27118	0.0–0.5	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/27/2007	RE00-07-73886
00-27119	0.0–0.5	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/27/2007	n/a
00-27119	2.0–3.0	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/27/2007	n/a
00-27120	0.0–0.5	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/27/2007	n/a
00-27120	2.0–3.0	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/27/2007	n/a
00-27121	0.0–0.5	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/27/2007	RE00-07-73887
00-27121	2.0–3.0	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/27/2007	n/a
00-27122	0.0–0.5	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/27/2007	n/a
00-27123	0.0–0.5	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/27/2007	n/a
00-27124	0.0–0.5	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/27/2007	n/a
00-27124	1.0–2.0	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/27/2007	n/a
00-27125	0.0–0.5	0.0	≤0.5	3/28/2007	≤0.5	3/28/2007	3/27/2007	n/a
00-27125	1.3-2.0	0.0	≤0.5	3/28/2007	≤0.5	3/28/2007	3/27/2007	n/a
00-27126	0.0–0.5	0.0	≤0.5	3/28/2007	≤0.5	3/28/2007	3/27/2007	n/a
00-27126	1.3–1.5	0.0	≤0.5	3/28/2007	≤0.5	3/28/2007	3/27/2007	n/a
00-27127	0.0–0.5	0.0	≤0.5	3/28/2007	≤0.5	3/28/2007	3/27/2007	n/a
00-27127	1.1–2.2	0.0	≤0.5	3/28/2007	≤0.5	3/28/2007	3/27/2007	RE00-07-73994
00-27128	0.0–0.3	0.0	≤0.5	3/28/2007	≤0.5	3/28/2007	3/27/2007	n/a
S-203	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	n/a
S-203	2.0–3.0	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	n/a
S-206	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/12/2007	n/a

Table 6.2-3 (continued)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
S-206	1.5–2.2	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/12/2007	n/a
S-207	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
S-207	1.0–1.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
S-208	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
S-208	2.0–2.8	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
S-210	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
S-210	2.0–3.0	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
S-213	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	n/a
S-213	2.0–2.8	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/15/2007	n/a
S-215	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-215	2.0–3.0	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-216	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/12/2007	n/a
S-216	2.0–2.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/12/2007	n/a
S-219	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
S-219	2.0–2.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
S-220	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
S-220	2.0–3.0	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
S-221	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-221	2.0–3.0	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-222	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-222	2.0–2.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-223	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
S-224	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
S-224	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
S-225	0.0–0.5	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
S-225	2.0–3.0	0.0	≤0.5	3/16/2007	≤0.5	3/16/2007	3/14/2007	n/a
S-227	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-227	2.0–3.0	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-229	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-229	2.0–3.0	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-230	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-230	2.0–3.0	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-231	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-231	2.0–3.0	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-233	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-233	2.0–3.0	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-235	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
S-235	2.0–2.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a

Table 6.2-3 (continued)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
S-237	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
S-237	1.0–1.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
S-239	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
S-239	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
S-241	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
S-241	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
S-242	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
S-242	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/7/2007	n/a
S-244	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
S-244	2.0–2.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
S-246	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
S-246	1.0–2.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
S-248	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/5/2007	n/a
S-248	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/5/2007	n/a
S-249	0.0–0.5	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
S-249	2.0–3.0	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
S-250	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/5/2007	n/a
S-250	1.2–2.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/5/2007	n/a
S-252	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/5/2007	n/a
S-252	2.0–3.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/5/2007	n/a
S-255	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
S-255	1.5–2.0	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
S-256	0.0–0.5	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
S-256	2.0-2.2	0.0	≤0.5	3/9/2007	≤0.5	3/9/2007	3/6/2007	n/a
S-258	0.0–0.5	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
S-258	2.0–3.0	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
S-259	0.0–0.5	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
S-259	2.0–3.0	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
S-260	0.0–0.5	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/28/2007	n/a
S-261	0.0–0.5	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/28/2007	n/a
S-261	2.0–3.0	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/28/2007	n/a
S-263	0.0–0.5	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
S-263	2.0–3.0	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
S-265	0.0–0.5	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
S-265	2.0–3.0	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
S-267	0.0–0.5	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/28/2007	n/a
S-267	2.0–3.0	0.0	≤0.5	3/1/2007	≤0.5	3/1/2007	2/28/2007	n/a
S-270	0.0–0.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a

Table 6.2-3 (continued)

Location ID	Depth (ft)	PID (ppm)	TNT[a] Screen Results (ppm)	Date TNT Screen Conducted	RDX[a] Screen Results (ppm)	Date RDX Screen Conducted	Date Soil Collected	Explosive Compound Sample ID
S-270	1.0–1.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
S-271	0.0–0.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
S-271	2.0–3.0	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
S-272	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/20/2007	n/a
S-273	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/20/2007	n/a
S-273	1.0–2.0	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/20/2007	n/a
S-276	0.0–0.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
S-276	2.0–3.0	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/19/2007	n/a
S-278	0.0–0.5	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/20/2007	n/a
S-278	2.0–3.0	0.0	≤0.5	3/22/2007	≤0.5	3/22/2007	3/20/2007	n/a
S-279	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	n/a
S-279	1.0–2.0	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	n/a
S-282	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/20/2007	n/a
S-282	2.0–3.0	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/20/2007	n/a
S-284	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	n/a
S-285	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	n/a
S-285	2.0–3.0	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	n/a
S-286	0.0–0.3	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	n/a
S-287	0.0–0.5	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	n/a
S-290	0.0–0.5	0.0	≤0.5	3/28/2007	≤0.5	3/28/2007	3/27/2007	n/a
S-290	2.0–3.0	0.0	≤0.5	3/28/2007	≤0.5	3/28/2007	3/27/2007	n/a
S-292	0.0–0.5	0.0	≤0.5	3/28/2007	≤0.5	3/28/2007	3/27/2007	n/a
S-295	0.0–0.5	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
S-295	2.0–3.0	0.0	≤0.5	3/7/2007	≤0.5	3/7/2007	3/5/2007	n/a
S-296	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-296	2.0–3.0	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-298	0.0–0.5	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-298	1.0–1.3	0.0	≤0.5	3/13/2007	≤0.5	3/13/2007	3/8/2007	n/a
S-300	0.0–0.5	0.0	≤0.5	3/28/2007	≤0.5	3/28/2007	3/27/2007	n/a
S-301	0.0–0.4	0.0	≤0.5	3/23/2007	≤0.5	3/23/2007	3/21/2007	n/a

[a] D TECH kit results.
[b] n/a = Not applicable.

Table 6.2-4
Field Screening Results for AOC C-00-041

Location ID	Sample ID	Depth (ft)	Date Collected	PID (ppm)
00-27644	RE00-07-76049	0.0–0.5	2/13/2007	0.0
00-27644	RE00-07-76050	2.2–3.2	2/13/2007	0.0
00-27645	RE00-07-76051	0.0–0.5	2/13/2007	0.0
00-27645	RE00-07-76052	2.0–3.0	2/13/2007	0.0
00-27646	RE00-07-76053	0.0–0.5	2/13/2007	0.0
00-27646	RE00-07-76054	2.0–2.8	2/13/2007	0.0
00-27647	RE00-07-76055	0.0–0.5	2/14/2007	0.0
00-27647	RE00-07-76056	2.0–3.0	2/14/2007	0.0
00-27648	RE00-07-76057	0.0–0.5	2/14/2007	0.0
00-27648	RE00-07-76058	2.0–3.0	2/14/2007	0.0
00-27649	RE00-07-76059	0.0–0.5	2/14/2007	0.0
00-27649	RE00-07-76060	2.0–3.0	2/14/2007	0.0
00-27650	RE00-07-76061	0.0–0.5	2/15/2007	0.0
00-27650	RE00-07-76062	2.0–3.0	2/15/2007	0.0
00-27651	RE00-07-76063	0.0–0.5	2/15/2007	0.0
00-27651	RE00-07-76064	2.0–3.0	2/15/2007	0.0
00-27652	RE00-07-76065	0.0–0.5	2/15/2007	0.0
00-27652	RE00-07-76066	3.1–4.1	2/15/2007	0.0
00-27653	RE00-07-76067	0.0–0.5	2/15/2007	0.0
00-27653	RE00-07-76068	2.0–3.0	2/15/2007	0.0
00-27654	RE00-07-76069	0.0–0.5	2/16/2007	0.0
00-27654	RE00-07-76070	2.0–3.0	2/16/2007	0.0
00-27655	RE00-07-76071	0.0–0.5	2/16/2007	0.0
00-27655	RE00-07-76072	2.0–3.0	2/16/2007	0.0
00-27656	RE00-07-76073	0.0–0.5	2/16/2007	0.0
00-27656	RE00-07-76074	2.0–3.0	2/16/2007	0.0
00-27657	RE00-07-76075	0.0–0.5	2/21/2007	0.0
00-27657	RE00-07-76076	1.0–1.6	2/21/2007	0.0
00-27658	RE00-07-76077	0.0–0.5	2/21/2007	0.0
00-27658	RE00-07-76078	2.0–3.0	2/21/2007	0.0
00-27659	RE00-07-76079	0.0–0.5	2/21/2007	0.0
00-27659	RE00-07-76080	2.0–3.0	2/21/2007	0.0
00-27660	RE00-07-76081	0.0–0.5	2/21/2007	0.0
00-27660	RE00-07-76082	2.0–3.0	2/21/2007	0.0

Table 6.3-1
Summary of Inorganic Chemicals Detected or above BVs at SWMU 00-011(a)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Barium	Cadmium	Calcium	Chromium	Cobalt	Iron	Lead	Magnesium	Manganese	Nickel	Perchlorate	Potassium	Selenium	Vanadium	Zinc
ALLH Background Value (mg/kg)[a]				**29200**	**295**	**0.4**	**6120**	**19.3**	**8.64**	**21500**	**22.3**	**4610**	**671**	**15.4**	**na[b]**	**3460**	**1.52**	**39.6**	**48.8**
Residential Soil Screening Level (mg/kg)[c]				**77800**	**15600**	**39**	**na**	**2100[d]**	**1520**	**23500**	**400**	**na**	**3590**	**1560**	**55[d]**	**na**	**391**	**78.2**	**23500**
RE00-07-74013	00-27130	0–0.7	ALLH	—[e]	—	0.566 (U)	—	—	—	—	—	—	—	—	0.0127 (J-)	—	—	—	—
RE00-07-74014	00-27130	2.0–3.0	ALLH	31900 (J+)	383 (J+)	2.88 (U)	8530 (J+)	21.2	—	26900	—	5580 (J+)	—	—	0.175 (J-)	4900 (J+)	8.63 (U)	—	60.3
RE00-07-74015	00-27131	0–0.7	ALLH	—	—	0.566 (U)	—	—	—	—	—	—	—	—	—	—	—	—	53.6
RE00-07-74016	00-27131	2.0–3.0	ALLH	—	—	0.596 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74017	00-27132	0–0.5	ALLH	—	—	0.563 (U)	—	—	—	—	22.8	—	—	—	—	—	1.61 (U)	—	49
RE00-07-74018	00-27132	2.0–3.0	ALLH	—	—	0.567 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74019	00-27133	0–0.5	ALLH	—	—	0.537 (U)	—	—	—	—	—	—	—	—	0.000621 (J-)	—	—	—	—
RE00-07-74020	00-27133	2.0–2.6	ALLH	—	—	0.505 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74021	00-27134	0–0.5	ALLH	—	—	0.528 (U)	—	—	—	—	—	—	—	—	—	—	1.58 (U)	—	—
RE00-07-74022	00-27134	2.0–3.2	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	1.6 (U)	—	—
RE00-07-74023	00-27135	0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	1.6 (U)	—	—
RE00-07-74025	00-27136	0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	1.63 (U)	—	—
RE00-07-74027	00-27137	0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	1.78 (U)	—	—
RE00-07-74028	00-27137	2.0–2.6	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	1.71 (U)	—	—
RE00-07-74029	00-27138	0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	1.62 (U)	—	—
RE00-07-74031	00-27139	0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	1.61 (U)	—	—
RE00-07-74032	00-27139	2.0–3.0	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68 (U)	—	—
RE00-07-74033	00-27140	0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	1.82 (U)	—	—
RE00-07-74034	00-27140	2.0–3.0	ALLH	—	—	—	—	—	15.9	—	—	—	1540	—	—	—	—	—	48.9
RE00-07-74036	00-27141	2.0–3.0	ALLH	—	—	—	—	—	—	—	—	—	—	—	0.000655 (J-)	—	—	—	—
RE00-07-74037	00-27142	0–0.5	ALLH	—	—	—	—	24.5	9.14	—	—	—	728	—	—	—	1.87 (U)	—	—
RE00-07-74038	00-27142	2.0–3.0	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	1.56 (U)	—	—
RE00-07-74039	00-27143	0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	1.61 (U)	—	—
RE00-07-74040	00-27143	2.0–3.0	ALLH	38000 (J+)	—	—	10800	25.5	—	22200	—	5960	—	—	0.000896 (J-)	4750	1.68 (U)	39.8	56
RE00-07-74042	00-27144	2.0–3.0	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	1.71 (U)	—	—
RE00-07-74043	00-27145	0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	0.00273 (J-)	—	1.66 (U)	—	—
RE00-07-74045	00-27146	0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	1.64 (U)	—	—
RE00-07-74046	00-27146	2.0–2.9	ALLH	—	—	—	—	—	—	—	—	—	—	—	0.000683 (J-)	—	1.58 (U)	—	—
RE00-07-74047	00-27147	0–0.5	ALLH	—	—	0.555 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74048	00-27147	2.0–3.0	ALLH	—	—	0.536 (U)	6370 (J+)	—	—	—	—	—	—	—	0.000751 (J)	—	—	—	—
RE00-07-74049	00-27148	0.1–0.5	ALLH	—	—	0.536 (U)	—	—	—	—	—	—	—	—	—	—	1.61 (U)	—	—
RE00-07-74050	00-27148	2.0–3.0	ALLH	38700 (J+)	—	2.71 (U)	7610 (J+)	25	15.6	24800	28.9	6520	1040	16	0.00154 (J)	4710	8.14 (U)	44.5	63.1
RE00-07-74051	00-27149	0.1–0.6	ALLH	—	—	0.559 (U)	—	—	—	—	—	—	—	—	0.000779 (J)	—	1.68 (U)	—	—

Table 6.3-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Barium	Cadmium	Calcium	Chromium	Cobalt	Iron	Lead	Magnesium	Manganese	Nickel	Perchlorate	Potassium	Selenium	Vanadium	Zinc
ALLH Background Value (mg/kg)[a]				**29200**	**295**	**0.4**	**6120**	**19.3**	**8.64**	**21500**	**22.3**	**4610**	**671**	**15.4**	**na[b]**	**3460**	**1.52**	**39.6**	**48.8**
Residential Soil Screening Level (mg/kg)[c]				**77800**	**15600**	**39**	**na**	**2100[d]**	**1520**	**23500**	**400**	**na**	**3590**	**1560**	**55[d]**	**na**	**391**	**78.2**	**23500**
RE00-07-74052	00-27149	2.0–3.0	ALLH	—	—	0.555 (U)	—	—	—	—	—	—	—	25.8	0.00192 (J)	—	—	—	—
RE00-07-74053	00-27150	0–0.5	ALLH	—	—	0.566 (U)	—	—	—	—	—	—	—	—	—	—	1.7 (U)	—	—
RE00-07-74054	00-27150	2.0–2.5	ALLH	—	—	0.538 (U)	—	—	—	—	—	—	—	—	0.00238	—	1.62 (U)	—	—
RE00-07-74055	00-27151	0–0.5	Soil	—	—	0.585 (U)	—	—	—	—	—	—	—	—	0.0011 (J)	4050 (J+)	—	—	50
RE00-07-74056	00-27151	2.0–2.3	Soil	—	—	0.527 (U)	40100 (J+)	—	—	—	—	—	—	—	0.00103 (J)	—	—	—	—
RE00-07-74057	00-27152	0–0.5	Soil	—	—	0.543 (U)	—	—	—	—	—	—	—	—	—	—	1.63 (U)	—	—
RE00-07-74058	00-27152	2.0–3.0	Soil	—	—	0.559 (U)	—	—	—	—	—	—	—	—	—	—	1.68 (U)	—	—
RE00-07-74059	00-27153	0–0.5	Soil	—	—	0.605 (U)	—	—	—	—	—	—	—	—	—	—	1.82 (U)	—	—
RE00-07-74060	00-27153	2.0–2.9	Soil	—	—	0.526 (U)	7590 (J+)	—	—	—	—	—	—	—	0.000675 (J)	—	—	—	—
RE00-07-74061	00-27154	0–0.5	Soil	—	—	0.541 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74062	00-27154	2.0–3.0	Soil	—	—	0.547 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74063	00-27155	0–0.5	Soil	—	—	0.575 (U)	—	—	—	—	—	—	—	—	0.00112 (J)	—	—	—	—
RE00-07-74064	00-27155	2.0–3.0	Soil	—	—	0.516 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74065	00-27156	0–0.5	Soil	—	—	—	—	—	—	—	—	—	748	—	0.00244	—	1.64 (J)	—	—
RE00-07-74066	00-27156	2.0–3.0	Soil	—	—	—	—	—	16.5	—	—	—	1120	—	0.00438	—	1.8	—	—
RE00-07-74067	00-27157	0–0.5	Soil	—	—	—	—	—	—	—	—	—	—	—	0.00176 (J)	—	—	—	—
RE00-07-74068	00-27157	2.0–3.0	Soil	—	—	0.521 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74069	00-27158	0–0.5	Soil	—	—	0.536 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74070	00-27158	2.0–3.0	Soil	—	—	0.536 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74071	00-27159	0–0.5	Soil	—	—	0.517 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74072	00-27159	2.3–3.0	Soil	—	—	0.513 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74073	00-27160	0–0.5	Soil	—	—	0.539 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74074	00-27160	2.0–3.0	Soil	—	—	0.566 (U)	—	—	—	—	—	—	—	—	0.00219 (J)	3890 (J+)	—	—	51.9
RE00-07-74075	00-27161	0–0.5	Soil	—	—	0.518 (U)	—	—	—	—	—	—	—	—	—	—	1.55 (U)	—	—
RE00-07-74076	00-27161	2.0–3.0	Soil	—	—	0.524 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74077	00-27162	0–0.5	Soil	—	—	0.525 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74078	00-27162	2.0–3.0	Soil	—	—	0.529 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-76426	00-27165	0–0.5	Soil	—	—	0.577 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-76425	00-27176	0–0.5	Soil	—	—	0.644 (U)	—	—	—	—	—	—	—	—	—	—	1.93 (U)	—	—
RE00-07-74136	00-27188	0–0.5	Soil	—	—	0.539 (U)	—	—	—	—	—	—	—	—	—	—	1.62 (U)	—	—
RE00-07-74137	00-27188	2.0–3.0	Soil	—	—	0.543 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74138	00-27189	0–0.5	Soil	—	—	0.553 (U)	—	—	—	—	—	—	—	—	—	—	1.66 (U)	—	—
RE00-07-74139	00-27189	2.0–3.0	Soil	—	—	0.536 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74140	00-27190	0–0.5	Soil	—	—	0.555 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—

Table 6.3-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Barium	Cadmium	Calcium	Chromium	Cobalt	Iron	Lead	Magnesium	Manganese	Nickel	Perchlorate	Potassium	Selenium	Vanadium	Zinc
ALLH Background Value (mg/kg)[a]				**29200**	**295**	**0.4**	**6120**	**19.3**	**8.64**	**21500**	**22.3**	**4610**	**671**	**15.4**	**na[b]**	**3460**	**1.52**	**39.6**	**48.8**
Residential Soil Screening Level (mg/kg)[c]				**77800**	**15600**	**39**	**na**	**2100[d]**	**1520**	**23500**	**400**	**na**	**3590**	**1560**	**55[d]**	**na**	**391**	**78.2**	**23500**
RE00-07-74141	00-27190	2.0–3.0	Soil	—	—	0.527 (U)	—	—	—	—	—	—	—	—	0.000575 (J)	—	—	—	—
RE00-07-74142	00-27191	0–0.5	Soil	—	—	0.525 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74143	00-27191	1.9–3.0	Soil	—	—	0.52 (U)	6360	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74144	00-27192	0–0.5	Soil	—	—	0.571 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74145	00-27192	2.0–3.0	Soil	—	—	0.541 (U)	—	—	10.1	—	—	—	989	—	—	—	—	—	—
RE00-07-74146	00-27193	0–0.5	Soil	—	—	0.523 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74147	00-27193	2.0–3.0	Soil	—	—	0.526 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74148	00-27194	0–0.5	Soil	—	—	0.558 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74149	00-27194	2.3–3.0	Soil	—	—	0.533 (U)	—	20.5	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74150	00-27195	0–0.5	Soil	—	—	0.54 (U)	—	—	—	—	—	—	—	—	—	—	1.62 (U)	—	—
RE00-07-74151	00-27195	2.0–3.0	Soil	—	—	0.539 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74152	00-27196	0–0.5	Soil	—	—	0.526 (U)	—	—	—	—	—	—	—	—	—	—	1.58 (U)	—	—
RE00-07-74153	00-27196	2.0–3.0	Soil	—	—	0.53 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74154	00-27197	0–0.5	Soil	—	—	0.589 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74155	00-27197	2.0–3.0	Soil	—	—	0.538 (U)	—	—	10.8	—	—	—	776	—	—	—	—	—	—
RE00-07-74156	00-27198	0–0.5	Soil	—	—	0.563 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74157	00-27198	2.0–3.0	Soil	—	—	0.542 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74158	00-27199	0–0.5	Soil	—	—	0.571 (U)	—	—	9.55	—	—	—	1010	—	—	—	—	—	—
RE00-07-74159	00-27199	2.0–3.0	Soil	—	—	0.503 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74160	00-27200	0–0.5	Soil	—	—	0.585 (U)	—	19.8	—	—	—	—	—	—	—	—	1.75 (U)	—	—
RE00-07-74161	00-27200	2.0–3.0	Soil	—	—	0.538 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74162	00-27201	0–0.5	Soil	—	—	0.552 (U)	—	—	—	—	—	—	—	—	0.00325	—	1.81	—	—
RE00-07-74163	00-27201	2.0–3.0	Soil	—	—	2.79 (U)	—	—	9.19	21700	—	—	—	—	0.00976	—	8.37 (U)	—	50.5
RE00-07-74164	00-27202	0–0.5	Soil	—	—	0.613 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74165	00-27202	2.0–3.0	Soil	—	—	0.544 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74166	00-27203	0–0.5	Soil	—	—	0.597 (U)	—	—	—	—	—	—	—	—	—	—	1.79 (U)	—	—
RE00-07-74167	00-27203	1.9–3.0	Soil	—	—	0.517 (U)	—	—	—	—	—	—	—	—	0.000577 (J)	—	—	—	—
RE00-07-74168	00-27204	0–0.3	Soil	—	—	0.648 (U)	—	26.3	—	—	—	—	—	—	0.000744 (J-)	—	—	—	51.1
RE00-07-74170	00-27205	0–0.5	Soil	—	—	0.624 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74172	00-27206	0–0.5	Soil	—	—	0.527 (U)	—	—	—	—	—	—	—	—	—	—	1.58 (U)	—	—
RE00-07-74173	00-27206	2.0–3.0	Soil	—	—	0.534 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74174	00-27207	0–0.5	Soil	—	—	0.564 (U)	—	—	—	—	—	—	—	—	—	—	1.69 (U)	—	—
RE00-07-74175	00-27207	2.0–3.0	Soil	—	—	0.527 (U)	—	—	—	—	—	—	—	—	0.000726 (J-)	—	—	—	—
RE00-07-74176	00-27208	0–0.5	Soil	—	—	0.574 (U)	—	—	—	—	—	—	—	—	0.000797 (J-)	—	—	—	—

Table 6.3-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Barium	Cadmium	Calcium	Chromium	Cobalt	Iron	Lead	Magnesium	Manganese	Nickel	Perchlorate	Potassium	Selenium	Vanadium	Zinc
ALLH Background Value (mg/kg)[a]				**29200**	**295**	**0.4**	**6120**	**19.3**	**8.64**	**21500**	**22.3**	**4610**	**671**	**15.4**	**na[b]**	**3460**	**1.52**	**39.6**	**48.8**
Residential Soil Screening Level (mg/kg)[c]				**77800**	**15600**	**39**	**na**	**2100[d]**	**1520**	**23500**	**400**	**na**	**3590**	**1560**	**55[d]**	**na**	**391**	**78.2**	**23500**
RE00-07-74177	00-27208	2.0–3.0	Soil	—	—	0.529 (U)	—	—	—	—	—	—	—	—	0.000649 (J-)	—	1.59 (U)	—	—
RE00-07-74178	00-27209	0–0.5	Soil	—	—	0.598 (U)	—	—	—	—	40.6	—	—	—	—	—	2.55	—	55.9
RE00-07-74179	00-27209	2.0–3.0	Soil	—	—	0.593 (U)	6730	—	—	—	—	—	—	—	0.000629 (J-)	—	—	—	55.6
RE00-07-74180	00-27210	0–0.6	Soil	—	—	0.642 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74181	00-27210	2.0–3.0	Soil	—	—	0.568 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—

[a] Background values are from LANL 1998, 059730.

[b] na = Not available.

[c] Soil Screening Levels from NMED 2006, 092513; unless otherwise noted.

[d] Value from EPA Region 6 (EPA 2007, 095866).

[e] — = Analyte not reported (detect or nondetect) above BV, or not detected.

Table 6.3-2
Summary of Inorganic Chemicals Detected or above BVs at SWMU 00-011(d)

Sample ID	Location ID	Depth (ft)	Media	Barium	Cadmium	Calcium	Chromium	Cobalt	Lead	Magnesium	Manganese	Perchlorate	Selenium	Zinc
ALLH Background Value (mg/kg)[a]				**295**	**0.4**	**6120**	**19.3**	**8.64**	**22.3**	**4610**	**671**	**na[b]**	**1.52**	**48.8**
QBT3 Background Value (mg/kg)[a]				**46**	**1.63**	**2200**	**7.14**	**3.14**	**11.2**	**1690**	**482**	**na**	**0.3**	**63.5**
Residential Soil Screening Level (mg/kg)[c]				**15600**	**39**	**na**	**2100[d]**	**1520**	**400**	**na**	**3590**	**55[d]**	**391**	**23500.0**
RE00-07-74202	00-27211	0–0.5	ALLH	—[e]	0.563 (U)	—	—	—	22.4	—	—	0.000664 (J-)	1.92	50.2
RE00-07-74203	00-27211	2.0–3.0	ALLH	—	0.574 (U)	—	—	—	—	—	—	0.00189 (J-)	—	—
RE00-07-74204	00-27212	0–0.5	ALLH	—	0.599 (U)	—	—	—	—	—	—	0.000713 (J-)	—	—
RE00-07-74205	00-27212	2.0–3.0	ALLH	—	0.566 (U)	—	—	—	—	—	—	0.0034 (J-)	—	—
RE00-07-74206	00-27213	0–0.5	ALLH	—	0.558 (U)	—	—	—	—	—	—	0.000733 (J)	1.67 (U)	—
RE00-07-74207	00-27213	2.0–3.0	ALLH	—	0.534 (U)	—	—	—	—	—	—	0.00067 (J)	1.6 (U)	—
RE00-07-74208	00-27214	0–0.5	ALLH	—	0.598 (U)	—	—	—	33	—	—	—	1.8 (U)	—
RE00-07-74209	00-27214	2.0–3.0	ALLH	—	0.555 (U)	—	—	—	—	—	—	—	—	—
RE00-07-74210	00-27215	0–0.5	ALLH	—	0.57 (U)	—	—	—	—	—	—	—	—	—
RE00-07-74211	00-27215	2.0–3.0	ALLH	—	0.528 (U)	—	—	—	—	—	—	—	1.58 (U)	—
RE00-07-74212	00-27216	0–0.5	ALLH	—	0.563 (U)	—	—	—	22.8	—	—	—	—	—
RE00-07-74213	00-27216	2.0–3.0	ALLH	—	0.553 (U)	—	—	—	—	—	—	—	—	—
RE00-07-74214	00-27217	0–0.5	ALLH	—	0.551 (U)	—	—	—	—	—	—	—	—	—
RE00-07-74215	00-27217	2.0–3.0	ALLH	—	0.55 (U)	—	—	—	—	—	—	—	—	—
RE00-07-74216	00-27218	0–0.5	ALLH	—	0.602 (U)	—	—	—	25.7	—	—	—	1.81 (U)	—
RE00-07-74217	00-27218	2.0–3.0	QBT3	—	—	—	—	—	—	—	—	—	1.1 (U)	—
RE00-07-74218	00-27219	0–0.5	ALLH	—	0.575 (U)	—	—	—	—	—	—	—	—	—
RE00-07-74219	00-27219	2.0–3.0	ALLH	—	0.559 (U)	—	—	—	—	—	—	—	—	—
RE00-07-74220	00-27220	0–0.5	ALLH	—	0.547 (U)	—	—	—	—	—	—	—	—	—

Table 6.3-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Barium	Cadmium	Calcium	Chromium	Cobalt	Lead	Magnesium	Manganese	Perchlorate	Selenium	Zinc
ALLH Background Value (mg/kg)[a]				**295**	**0.4**	**6120**	**19.3**	**8.64**	**22.3**	**4610**	**671**	**na[b]**	**1.52**	**48.8**
QBT3 Background Value (mg/kg)[a]				**46**	**1.63**	**2200**	**7.14**	**3.14**	**11.2**	**1690**	**482**	**na**	**0.3**	**63.5**
Residential Soil Screening Level (mg/kg)[c]				**15600**	**39**	**na**	**2100[d]**	**1520**	**400**	**na**	**3590**	**55[d]**	**391**	**23500.0**
RE00-07-74221	00-27220	2.0–3.0	ALLH	—	0.58 (U)	—	—	—	—	—	—	—	—	49.6
RE00-07-74222	00-27221	0–0.5	ALLH	—	0.546 (U)	—	—	—	25.6	—	—	—	—	—
RE00-07-74223	00-27221	2.0–3.0	QBT3	—	—	—	—	—	—	—	—	—	0.741 (U)	—
RE00-07-74224	00-27222	0–0.5	ALLH	—	0.607 (U)	—	27.9	—	—	—	—	—	—	—
RE00-07-74225	00-27222	2.0–3.0	ALLH	—	0.523 (U)	—	—	—	—	—	—	0.000696 (J)	1.57 (U)	—
RE00-07-74226	00-27223	0–0.5	ALLH	—	0.653 (U)	—	—	—	—	—	—	—	1.96 (U)	—
RE00-07-74227	00-27223	2.0–2.9	QBT3	—	—	—	—	—	—	—	—	—	0.751 (J)	—
RE00-07-74228	00-27224	0–0.5	ALLH	—	0.696 (U)	—	—	20.3	47.7	—	1650	—	—	—
RE00-07-74229	00-27224	2.0–3.0	ALLH	—	0.594 (U)	—	—	—	—	—	—	—	1.78 (U)	—
RE00-07-74230	00-27225	0–0.5	ALLH	—	0.633 (U)	—	—	—	—	—	—	—	—	49.3
RE00-07-74231	00-27225	2.0–3.0	QBT3	—	—	—	—	—	—	—	—	—	1.7 (U)	—
RE00-07-74232	00-27226	0–0.5	ALLH	—	0.632 (U)	—	—	—	—	—	—	—	1.9 (U)	—
RE00-07-74233	00-27226	2.0–3.0	QBT3	—	—	—	—	—	—	—	—	—	1.56 (U)	—
RE00-07-74234	00-27227	0–0.5	ALLH	—	0.603 (U)	—	—	—	—	—	—	—	—	—
RE00-07-74235	00-27227	2.0–3.0	QBT3	—	—	—	—	—	—	—	—	—	0.94 (J)	—
RE00-07-74236	00-27228	0–0.5	ALLH	—	0.623 (U)	—	—	—	25.7	—	—	0.000876 (J-)	—	—
RE00-07-74237	00-27228	2.0–3.0	ALLH	—	0.571 (U)	—	—	—	—	—	—	0.00115 (J-)	—	51.4
RE00-07-74238	00-27229	0–0.5	QBT3	—	—	—	—	—	—	—	—	—	1.65 (U)	—
RE00-07-74239	00-27229	2.0–3.0	QBT3	—	—	—	—	—	—	—	—	—	1.52 (U)	—
RE00-07-74240	00-27230	0–0.5	ALLH	—	0.602 (U)	—	—	—	—	—	—	—	1.81 (U)	—
RE00-07-74241	00-27230	2.0–3.0	QBT3	60.2	—	13400	—	—	—	2530	—	0.00163 (J)	1.65 (U)	—

Table 6.3-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Barium	Cadmium	Calcium	Chromium	Cobalt	Lead	Magnesium	Manganese	Perchlorate	Selenium	Zinc
ALLH Background Value (mg/kg)[a]				**295**	**0.4**	**6120**	**19.3**	**8.64**	**22.3**	**4610**	**671**	**na[b]**	**1.52**	**48.8**
QBT3 Background Value (mg/kg)[a]				**46**	**1.63**	**2200**	**7.14**	**3.14**	**11.2**	**1690**	**482**	**na**	**0.3**	**63.5**
Residential Soil Screening Level (mg/kg)[c]				**15600**	**39**	**na**	**2100[d]**	**1520**	**400**	**na**	**3590**	**55[d]**	**391**	**23500.0**
RE00-07-74242	00-27231	0–0.5	ALLH	—	0.593 (U)	—	—	—	—	—	—	—	1.78 (U)	—
RE00-07-74243	00-27231	2.0–3.0	QBT3	—	—	—	—	—	—	—	—	—	1.57 (U)	—

[a] Background values are from LANL 1998, 059730.

[b] na = Not available.

[c] Soil Screening Levels from NMED 2006, 092513, unless otherwise noted.

[d] Value from EPA Region 6 (EPA 2007, 095866)

[e] — = Analyte not reported (detect or nondetect) above BV or not detected.

Table 6.3-3
Summary of Inorganic Chemicals Detected or above BVs at SWMU 00-011(e)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Beryllium	Cadmium	Calcium	Chromium	Lead	Mercury	Nickel	Perchlorate	Selenium	Sodium	Thallium
ALLH Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na[b]**	**1.52**	**915**	**0.73**
QAL Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na**	**1.52**	**915**	**0.73**
QCT Background Value (mg/kg)[a]				**0.56**	**1.44**	**0.4**	**1900**	**2.60**	**13.5**	**0.1**	**2**	**na**	**0.3**	**4350**	**1.22**
Residential Soil Screening Level (mg/kg)[c]				**3.9**	**156**	**39**	**na**	**2100[d]**	**400**	**23[d]**	**1560**	**55[d]**	**391**	**na**	**5.16**
RE00-07-73765	00-27025	0–0.5	ALLH	—[e]	—	0.597 (U)	—	—	—	—	—	0.00087 (J)	1.79 (U)	—	—
RE00-07-73766	00-27025	2.0–3.0	ALLH	—	—	0.504 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73767	00-27026	0–0.5	ALLH	—	—	0.56 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73768	00-27026	2.0–2.8	ALLH	—	—	0.497 (U)	—	—	—	—	—	0.00146 (J)	—	—	—
RE00-07-73769	00-27027	0–0.5	ALLH	—	—	0.565 (U)	—	—	—	—	—	0.00147 (J)	—	—	—
RE00-07-73770	00-27027	2.0–3.0	ALLH	—	—	0.503 (U)	—	—	—	—	—	0.00101 (J)	—	—	—
RE00-07-73771	00-27028	0–0.5	ALLH	—	—	0.519 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73772	00-27028	2.0–3.0	ALLH	—	—	0.511 (U)	—	—	—	—	—	—	1.53 (U)	—	—
RE00-07-73773	00-27029	0–0.5	ALLH	—	—	0.56 (U)	—	—	—	—	—	—	1.68 (U)	—	—
RE00-07-73774	00-27029	2.0–3.0	ALLH	—	—	0.511 (U)	—	—	—	—	—	0.000531 (J-)	—	—	—
RE00-07-73775	00-27030	0–0.5	ALLH	—	—	0.601 (U)	—	—	—	—	—	—	1.8 (U)	—	—
RE00-07-73776	00-27030	2.0–3.0	ALLH	—	—	0.553 (U)	—	—	—	—	—	—	1.66 (U)	—	—
RE00-07-73777	00-27031	0–0.5	ALLH	—	—	0.583 (U)	—	—	330	—	—	—	1.75 (U)	—	—
RE00-07-73778	00-27031	2.0–2.5	ALLH	—	—	0.613 (U)	—	—	—	—	—	—	1.84 (U)	—	—
RE00-07-73779	00-27032	0–0.5	ALLH	—	—	0.565 (U)	—	—	—	—	—	—	1.7 (U)	—	—
RE00-07-73780	00-27032	2.0–3.0	ALLH	—	—	0.549 (U)	—	—	—	—	—	—	1.65 (U)	—	—
RE00-07-73781	00-27033	0–0.5	ALLH	—	—	0.524 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73782	00-27033	2.0–3.0	ALLH	—	—	0.502 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73783	00-27034	0–0.5	ALLH	—	—	0.523 (U)	—	—	—	—	—	—	1.57 (U)	—	—
RE00-07-73784	00-27034	2.0–3.0	ALLH	—	—	0.507 (U)	—	—	—	—	—	0.000629 (J)	—	—	—
RE00-07-73785	00-27035	0–0.5	ALLH	—	—	0.547 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73786	00-27035	2.0–3.0	ALLH	—	—	0.511 (U)	—	—	—	—	—	0.000656 (J)	1.53 (U)	—	—

Table 6.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Beryllium	Cadmium	Calcium	Chromium	Lead	Mercury	Nickel	Perchlorate	Selenium	Sodium	Thallium
ALLH Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na[b]**	**1.52**	**915**	**0.73**
QAL Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na**	**1.52**	**915**	**0.73**
QCT Background Value (mg/kg)[a]				**0.56**	**1.44**	**0.4**	**1900**	**2.60**	**13.5**	**0.1**	**2**	**na**	**0.3**	**4350**	**1.22**
Residential Soil Screening Level (mg/kg)[c]				**3.9**	**156**	**39**	**na**	**2100[d]**	**400**	**23[d]**	**1560**	**55[d]**	**391**	**na**	**5.16**
RE00-07-73787	00-27036	0–0.5	ALLH	—	—	0.549 (U)	—	—	—	—	—	—	1.65 (U)	—	—
RE00-07-73788	00-27036	1.6–1.9	ALLH	—	—	0.538 (U)	—	—	—	—	—	0.000708 (J)	1.61 (U)	—	—
RE00-07-73789	00-27037	0–0.5	ALLH	—	—	0.545 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73790	00-27037	2.0–3.0	ALLH	—	—	0.509 (U)	—	—	—	—	—	—	1.53 (U)	—	—
RE00-07-73791	00-27038	0–0.5	ALLH	—	—	0.522 (U)	—	—	—	—	—	—	1.56 (U)	—	—
RE00-07-73792	00-27038	2.0–3.0	ALLH	—	—	0.486 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73793	00-27039	0–0.5	ALLH	—	—	0.536 (U)	—	—	—	—	—	—	1.61 (U)	—	—
RE00-07-73794	00-27039	2.0–3.0	QAL	—	—	0.509 (U)	—	—	—	—	—	—	1.53 (U)	—	—
RE00-07-73795	00-27040	0–0.5	ALLH	—	—	0.529 (U)	—	—	—	—	—	—	1.59 (U)	—	—
RE00-07-73796	00-27040	2.0–3.0	ALLH	—	—	0.546 (U)	—	—	—	—	—	0.00083 (J-)	1.64 (U)	—	—
RE00-07-73797	00-27041	0–0.5	ALLH	—	—	0.592 (U)	—	—	—	—	—	0.000684 (J-)	1.78 (U)	—	—
RE00-07-73798	00-27041	2.0–2.5	QCT	0.709 (J)	—	0.588 (U)	—	—	—	—	3.86	—	1.76 (U)	—	—
RE00-07-73799	00-27042	0–0.5	ALLH	—	—	0.557 (U)	—	—	—	—	—	—	1.67 (U)	—	—
RE00-07-73800	00-27042	2.0–3.0	QAL	—	—	0.511 (U)	—	—	—	—	—	0.000763 (J-)	1.53 (U)	—	—
RE00-07-73801	00-27043	0–0.5	ALLH	—	—	0.542 (U)	—	—	—	—	—	—	1.63 (U)	—	—
RE00-07-73802	00-27043	1.5–2.0	ALLH	—	—	0.524 (U)	—	—	—	—	—	—	1.57 (U)	—	—
RE00-07-73803	00-27044	0–0.5	ALLH	—	—	0.524 (U)	—	—	—	—	—	—	1.57 (U)	—	—
RE00-07-73804	00-27044	2.0–3.0	QAL	—	—	0.491 (U)	—	—	—	—	—	0.00093 (J-)	—	—	—
RE00-07-73805	00-27045	0–0.5	ALLH	—	—	0.495 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73806	00-27045	2.0–2.5	QAL	—	—	0.505 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73807	00-27046	0–0.5	ALLH	—	—	0.528 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73808	00-27046	2.0–3.0	QAL	—	—	0.486 (U)	—	—	—	—	—	—	—	—	—

Table 6.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Beryllium	Cadmium	Calcium	Chromium	Lead	Mercury	Nickel	Perchlorate	Selenium	Sodium	Thallium
ALLH Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na[b]**	**1.52**	**915**	**0.73**
QAL Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na**	**1.52**	**915**	**0.73**
QCT Background Value (mg/kg)[a]				**0.56**	**1.44**	**0.4**	**1900**	**2.60**	**13.5**	**0.1**	**2**	**na**	**0.3**	**4350**	**1.22**
Residential Soil Screening Level (mg/kg)[c]				**3.9**	**156**	**39**	**na**	**2100[d]**	**400**	**23[d]**	**1560**	**55[d]**	**391**	**na**	**5.16**
RE00-07-73809	00-27047	0–0.5	ALLH	—	—	0.51 (U)	—	—	—	—	—	0.000957 (J-)	1.53 (U)	—	—
RE00-07-73810	00-27047	2.0–3.0	QAL	—	—	0.493 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73811	00-27048	0–0.5	ALLH	—	—	0.519 (U)	—	—	—	—	—	—	1.56 (U)	—	—
RE00-07-73812	00-27048	2.0–3.0	QAL	—	—	0.488 (U)	—	—	—	0.525	—	0.000548 (J-)	—	—	—
RE00-07-73813	00-27049	0–0.5	ALLH	—	—	0.52 (U)	—	—	—	—	—	—	1.56 (U)	—	—
RE00-07-73814	00-27049	2.0–3.0	QAL	—	—	0.512 (U)	—	—	—	—	—	—	1.53 (U)	—	—
RE00-07-73825	00-27050	0–0.5	ALLH	—	—	0.549 (U)	—	—	—	—	—	—	1.65 (U)	—	—
RE00-07-73826	00-27050	2.0–3.0	QAL	—	—	0.525 (U)	—	—	—	—	—	—	1.57 (U)	—	—
RE00-07-73827	00-27051	0–0.5	ALLH	—	—	0.552 (U)	—	—	—	—	—	—	1.65 (U)	—	—
RE00-07-73828	00-27051	2.0–3.0	QAL	—	—	0.514 (U)	—	—	—	—	—	—	1.54 (U)	—	—
RE00-07-73829	00-27052	0–0.5	ALLH	—	—	0.548 (U)	—	—	—	—	—	—	1.64 (U)	—	—
RE00-07-73830	00-27052	2.0–3.0	QAL	—	—	0.497 (U)	—	—	—	—	—	0.00102 (J-)	—	—	—
RE00-07-73831	00-27053	0–0.5	ALLH	—	—	0.514 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73832	00-27053	1.8–2.1	QAL	—	—	0.494 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73833	00-27054	0–0.5	ALLH	—	—	0.494 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73834	00-27054	2.0–3.0	QAL	—	—	0.493 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73835	00-27055	0–0.5	QAL	—	—	0.533 (U)	—	—	—	—	—	0.00126 (J)	—	—	—
RE00-07-73836	00-27055	1.0–2.0	QAL	—	—	0.499 (U)	—	—	—	—	—	0.00124 (J)	—	—	—
RE00-07-73837	00-27056	0–0.5	QAL	—	—	0.511 (U)	—	—	—	—	—	—	1.53 (U)	—	—
RE00-07-73838	00-27056	1.9–3.0	QAL	—	—	0.492 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73839	00-27057	0–0.5	ALLH	—	—	0.552 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73841	00-27058	0–0.5	ALLH	—	—	0.534 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73843	00-27059	0–0.5	ALLH	—	—	0.523 (U)	—	—	—	—	—	—	1.57 (U)	—	—

Table 6.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Beryllium	Cadmium	Calcium	Chromium	Lead	Mercury	Nickel	Perchlorate	Selenium	Sodium	Thallium
ALLH Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na[b]**	**1.52**	**915**	**0.73**
QAL Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na**	**1.52**	**915**	**0.73**
QCT Background Value (mg/kg)[a]				**0.56**	**1.44**	**0.4**	**1900**	**2.60**	**13.5**	**0.1**	**2**	**na**	**0.3**	**4350**	**1.22**
Residential Soil Screening Level (mg/kg)[c]				**3.9**	**156**	**39**	**na**	**2100[d]**	**400**	**23[d]**	**1560**	**55[d]**	**391**	**na**	**5.16**
RE00-07-73844	00-27059	2.0–3.0	QAL	—	—	0.482 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73845	00-27060	0–0.5	ALLH	—	—	0.5 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73846	00-27060	2.0–3.0	QAL	—	—	0.498 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73847	00-27061	0–0.5	ALLH	—	—	0.523 (U)	—	—	—	—	—	—	1.57 (U)	—	—
RE00-07-73848	00-27061	2.0–2.5	ALLH	—	—	0.523 (U)	—	—	—	—	—	—	1.57 (U)	—	—
RE00-07-73849	00-27062	0–0.5	ALLH	—	—	0.55 (U)	—	—	—	—	—	0.0011 (J)	1.65 (U)	—	—
RE00-07-73850	00-27062	2.0–3.0	QAL	—	—	0.503 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73851	00-27063	0–0.5	ALLH	—	—	0.535 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73852	00-27063	2.0–3.0	QAL	—	2.2	0.52 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73853	00-27064	0–0.5	ALLH	—	—	0.503 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73855	00-27065	0–0.5	ALLH	—	—	0.505 (U)	—	—	—	—	—	0.00106 (J)	—	—	—
RE00-07-73857	00-27066	0–0.5	ALLH	—	—	0.517 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73858	00-27066	2.0–3.0	ALLH	—	—	0.537 (U)	—	—	—	—	—	0.000931 (J)	1.61 (U)	—	—
RE00-07-73859	00-27067	0–0.5	ALLH	—	—	0.509 (U)	—	—	—	—	—	—	1.53 (U)	—	—
RE00-07-73860	00-27067	2.0–3.0	ALLH	—	—	0.514 (U)	16300	—	—	—	—	0.00295	1.54 (U)	1860	—
RE00-07-73861	00-27068	0–0.5	ALLH	—	—	0.524 (U)	—	—	—	—	—	—	1.57 (U)	—	—
RE00-07-73862	00-27068	2.0–3.0	QAL	—	—	0.507 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73863	00-27069	0–0.5	ALLH	—	—	0.515 (U)	—	—	—	—	—	—	1.55 (U)	—	—
RE00-07-73864	00-27069	2.0–3.0	QAL	—	—	0.516 (U)	—	—	—	—	—	—	1.55 (U)	—	—
RE00-07-73865	00-27070	0–0.5	ALLH	—	—	0.529 (U)	—	—	—	—	—	—	1.59 (U)	—	—
RE00-07-73866	00-27070	2.0–3.0	ALLH	—	—	0.517 (U)	—	—	—	—	—	0.000819 (J)	1.55 (U)	—	—
RE00-07-73867	00-27071	0–0.5	ALLH	—	—	0.543 (U)	—	—	—	—	—	—	1.63 (U)	—	—
RE00-07-73868	00-27071	1.7–2.0	ALLH	—	—	0.514 (U)	—	—	—	—	—	—	—	—	—

Table 6.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Beryllium	Cadmium	Calcium	Chromium	Lead	Mercury	Nickel	Perchlorate	Selenium	Sodium	Thallium
ALLH Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na[b]**	**1.52**	**915**	**0.73**
QAL Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na**	**1.52**	**915**	**0.73**
QCT Background Value (mg/kg)[a]				**0.56**	**1.44**	**0.4**	**1900**	**2.60**	**13.5**	**0.1**	**2**	**na**	**0.3**	**4350**	**1.22**
Residential Soil Screening Level (mg/kg)[c]				**3.9**	**156**	**39**	**na**	**2100[d]**	**400**	**23[d]**	**1560**	**55[d]**	**391**	**na**	**5.16**
RE00-07-73869	00-27072	0–0.5	ALLH	—	—	0.525 (U)	—	—	—	—	—	—	1.57 (U)	—	—
RE00-07-73870	00-27072	2.0–3.0	QAL	—	—	0.493 (U)	—	—	—	—	—	0.000735 (J)	—	—	—
RE00-07-73873	00-27074	0–0.5	ALLH	—	—	0.543 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73993	00-27102	0–0.5	ALLH	—	—	0.544 (U)	—	—	—	—	—	—	1.63 (U)	—	—
RE00-07-73958	00-27116	0–0.5	ALLH	—	—	0.536 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73959	00-27116	1.2–2.0	ALLH	—	—	0.565 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73960	00-27117	0–0.5	ALLH	—	—	0.627 (U)	—	—	—	—	—	—	1.88 (U)	—	—
RE00-07-73962	00-27118	0–0.5	ALLH	—	—	0.523 (U)	—	—	—	—	—	—	1.57 (U)	—	—
RE00-07-73964	00-27119	0–0.5	ALLH	—	—	0.569 (U)	—	—	—	—	—	—	1.71 (U)	—	—
RE00-07-73965	00-27119	2.0–3.0	ALLH	—	—	0.58 (U)	—	—	—	—	—	—	1.74 (U)	—	—
RE00-07-73966	00-27120	0–0.5	ALLH	—	—	0.615 (U)	—	—	—	—	—	0.00196 (J)	1.85 (U)	—	—
RE00-07-73967	00-27120	2.0–3.0	ALLH	—	—	0.551 (U)	—	—	—	—	—	0.00174 (J)	1.65 (U)	—	—
RE00-07-73968	00-27121	0–0.5	ALLH	—	—	0.587 (U)	—	—	—	—	—	—	1.76 (U)	—	—
RE00-07-73969	00-27121	2.0–3.0	ALLH	—	—	0.546 (U)	—	—	—	—	—	0.000618 (J)	1.64 (U)	—	—
RE00-07-73970	00-27122	0–0.5	ALLH	—	—	0.585 (U)	—	—	—	—	—	—	1.76 (U)	—	—
RE00-07-73972	00-27123	0–0.5	ALLH	—	—	0.521 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73974	00-27124	0–0.5	ALLH	—	—	0.535 (U)	—	—	—	—	—	—	1.6 (U)	—	—
RE00-07-73975	00-27124	1.0–2.0	ALLH	—	—	0.718 (U)	—	—	—	—	—	—	2.15 (U)	—	—
RE00-07-73976	00-27125	0–0.5	ALLH	—	—	0.573 (U)	—	—	—	—	—	—	—	—	0.866
RE00-07-73977	00-27125	1.3–2.0	ALLH	—	—	0.557 (U)	—	—	22.5 (J+)	—	—	—	1.67 (U)	—	0.791
RE00-07-73988	00-27126	0–0.5	ALLH	—	—	0.582 (U)	—	—	—	—	—	0.00143 (J)	—	—	—
RE00-07-73989	00-27126	1.3–1.5	ALLH	—	—	0.552 (U)	—	23.8	—	—	—	—	—	—	—
RE00-07-73990	00-27127	0–0.5	ALLH	—	—	0.551 (U)	—	—	—	—	—	—	—	—	—

Table 6.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Beryllium	Cadmium	Calcium	Chromium	Lead	Mercury	Nickel	Perchlorate	Selenium	Sodium	Thallium
ALLH Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na[b]**	**1.52**	**915**	**0.73**
QAL Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na**	**1.52**	**915**	**0.73**
QCT Background Value (mg/kg)[a]				**0.56**	**1.44**	**0.4**	**1900**	**2.60**	**13.5**	**0.1**	**2**	**na**	**0.3**	**4350**	**1.22**
Residential Soil Screening Level (mg/kg)[c]				**3.9**	**156**	**39**	**na**	**2100[d]**	**400**	**23[d]**	**1560**	**55[d]**	**391**	**na**	**5.16**
RE00-07-73991	00-27127	1.1–2.2	ALLH	—	—	0.554 (U)	10200	—	—	—	—	—	1.66 (U)	—	—
RE00-07-73992	00-27128	0–0.3	ALLH	—	—	0.506 (U)	—	—	—	—	—	—	—	—	—

[a] Background values are from LANL 1998, 059730.

[b] na = Not available.

[c] Soil Screening Levels from NMED 2006, 092513, unless otherwise noted.

[d] Value from EPA Region 6 (EPA 2007, 095866)

[e] —. = Analyte not reported (detect or nondetect) above BV or not detected.

Table 6.3-4
Summary of Inorganic Chemicals Detected or above BVs at AOC C-00-041

Sample ID	Location ID	Depth (ft)	Media	Alumi num	Beryllium	Cadmium	Iron	Lead	Nickel	Potassium	Selenium	Zinc
Soil Background Value (mg/kg)[a]				**29200**	**1.83**	**0.4**	**21500**	**22.3**	**15.4**	**3460**	**1.52**	**48.8**
Residential Soil Screening Level (mg/kg)[b]				**77800**	**156**	**39**	**na[c]**	**400**	**1560**	**na**	**391**	**23500**
RE00-07-76049	00-27644	0.00–0.50	ALLH	—[d]	—	0.548 (U)	—	—	—	—	4.09	—
RE00-07-76050	00-27644	2.20–3.20	ALLH	—	—	0.578 (U)	—	—	—	—	4.35	—
RE00-07-76051	00-27645	0.00–0.50	ALLH	—	—	0.532 (U)	—	—	—	—	3.45	—
RE00-07-76052	00-27645	2.00–3.00	ALLH	—	—	0.554 (U)	—	—	—	—	5.76	—
RE00-07-76053	00-27646	0.00–0.50	ALLH	—	—	0.513 (U)	—	—	—	—	3.33	—
RE00-07-76054	00-27646	2.00–2.80	ALLH	—	—	0.523 (U)	—	—	—	—	3.49	—
RE00-07-76055	00-27647	0.00–0.50	ALLH	—	—	0.842 (U)	—	—	—	—	3.73	—
RE00-07-76056	00-27647	2.00–3.00	ALLH	—	—	0.578 (U)	—	—	—	—	2.22	—
RE00-07-76057	00-27648	0.00–0.50	ALLH	—	—	0.607 (U)	—	—	—	—	2.91	—
RE00-07-76058	00-27648	2.00–3.00	ALLH	—	—	0.556 (U)	—	—	—	—	3.43	—
RE00-07-76059	00-27649	0.00–0.50	ALLH	—	—	0.605 (U)	—	—	—	—	3.2	—
RE00-07-76060	00-27649	2.00–3.00	ALLH	—	—	0.574 (U)	—	—	—	—	4.32	—
RE00-07-76061	00-27650	0.00–0.50	ALLH	—	—	—	—	33.9 (J)	—	—	3.95	60.8
RE00-07-76062	00-27650	2.00–3.00	ALLH	—	—	0.604 (U)	—	25	—	—	2.75	—
RE00-07-76063	00-27651	0.00–0.50	ALLH	—	—	0.645 (U)	—	30.3	—	—	3.78	60
RE00-07-76064	00-27651	2.00–3.00	ALLH	—	—	0.597 (U)	—	—	—	—	6.53	52.5
RE00-07-76065	00-27652	0.00–0.50	ALLH	—	—	0.537 (U)	—	—	—	—	1.99	—
RE00-07-76066	00-27652	3.10–4.10	ALLH	—	—	0.561 (U)	—	—	—	—	3.23	—
RE00-07-76067	00-27653	0.00–0.50	ALLH	—	—	0.637 (U)	—	—	—	—	3.07	—
RE00-07-76068	00-27653	2.00–3.00	ALLH	—	—	0.56 (U)	—	—	—	—	2.24	—
RE00-07-76069	00-27654	0.00–0.50	ALLH	—	—	0.542 (U)	—	—	—	—	2.74	—
RE00-07-76070	00-27654	2.00–3.00	ALLH	—	—	0.641 (U)	—	—	—	—	6.99	—

Table 6.3-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Alumi num	Beryllium	Cadmium	Iron	Lead	Nickel	Potassium	Selenium	Zinc
Soil Background Value (mg/kg)[a]				**29200**	**1.83**	**0.4**	**21500**	**22.3**	**15.4**	**3460**	**1.52**	**48.8**
Residential Soil Screening Level (mg/kg)[b]				**77800**	**156**	**39**	**na[c]**	**400**	**1560**	**na**	**391**	**23500**
RE00-07-76071	00-27655	0.00–0.50	ALLH	—	—	0.655 (U)	—	—	—	—	4.88	—
RE00-07-76072	00-27655	2.00–3.00	ALLH	34100 (J+)	2.41	0.626 (U)	23800	—	—	4510 (J+)	9.54	74
RE00-07-76073	00-27656	0.00–0.50	ALLH	—	—	0.7 (U)	—	—	17.9 (J+)	—	7.09	50.3
RE00-07-76074	00-27656	2.00–3.00	ALLH	—	—	0.63 (U)	—	—	—	—	4.24	—
RE00-07-76075	00-27657	0.00–0.50	ALLH	—	—	0.564 (U)	—	—	—	—	—	—
RE00-07-76076	00-27657	1.00–1.60	ALLH	—	—	0.54 (U)	—	—	—	—	1.66	—
RE00-07-76077	00-27658	0.00–0.50	ALLH	—	—	0.654 (U)	—	—	—	—	1.84 (J)	61.8 (J-)
RE00-07-76078	00-27658	2.00–3.00	ALLH	—	—	0.616 (U)	—	—	—	—	2.17	—
RE00-07-76079	00-27659	0.00–0.50	ALLH	—	—	0.609 (U)	—	—	—	—	1.93	—
RE00-07-76080	00-27659	2.00–3.00	ALLH	—	—	0.541 (U)	—	—	—	—	1.57 (J)	—
RE00-07-76081	00-27660	0.00–0.50	ALLH	—	—	0.572 (U)	—	—	—	—	—	—
RE00-07-76082	00-27660	2.00–3.00	ALLH	—	—	0.537 (U)	—	—	—	—	—	—

[a] Background values are from LANL 1998, 059730.

[b] Soil Screening Levels from NMED 2006, 092513.

[c] na = Not available.

[d] — = Analyte not reported (detect or nondetect) above BV or not detected.

Table 6.3-5
Organic Chemicals Detected at AOC C-00-041

Sample ID	Location ID	Depth (ft)	Media	Acenaphthene	Benzo(b)fluoranthene	Benzoic Acid	Chloroform	Chrysene	Dichlorobenzene[1,4-]	Dichloroethene[1,1-]	Fluoranthene	Phenanthrene	Pyrene	Toluene	TPH- DRO	TPH- GRO	Trimethylbenzene[1,2,4-]
Residential Soil Screening Level (mg/kg)[a]				**3730**	**6.21**	**240000[b]**	**4.00**	**615**	**39.5**	**206**	**2290**	**1830**	**2290**	**252**	**na[c]**	**na**	**58**
RE00-07-76049	00-27644	0.00–0.50	ALLH	—[d]	—	—	—	—	—	—	—	—	—	0.000445 (J)	—	—	0.000238 (J)
RE00-07-76050	00-27644	2.20–3.20	ALLH	—	—	—	0.00034 (J)	—	—	—	—	—	—	0.000749 (J)	27.5 (J)	—	—
RE00-07-76051	00-27645	0.00–0.50	ALLH	—	—	—	—	—	—	—	—	—	—	0.00057 (J)	17.9 (J)	0.107 (J)	0.000251 (J)
RE00-07-76052	00-27645	2.00–3.00	ALLH	—	—	—	—	—	—	—	—	—	—	0.000362 (J)	8.09 (J)	—	—
RE00-07-76053	00-27646	0.00–0.50	ALLH	—	—	—	—	—	—	—	0.0147 (J)	0.0178 (J)	—	—	112 (J)	—	—
RE00-07-76054	00-27646	2.00–2.80	ALLH	—	—	—	—	—	—	—	—	—	—	0.000333 (J)	11.2 (J)	—	—
RE00-07-76055	00-27647	0.00–0.50	ALLH	—	—	3.82 (J)	0.000352 (J)	—	0.000505 (J)	0.00125 (J)	—	—	—	—	319 (J)	—	—
RE00-07-76056	00-27647	2.00–3.00	ALLH	—	—	—	—	—	—	0.000402 (J)	—	—	—	—	7.51 (J)	—	—
RE00-07-76057	00-27648	0.00–0.50	ALLH	—	—	—	—	—	—	—	—	—	—	0.00138	6.54 (J)	—	0.000455 (J)
RE00-07-76058	00-27648	2.00–3.00	ALLH	—	—	—	—	—	—	—	—	—	—	0.000605 (J)	—	—	—
RE00-07-76059	00-27649	0.00–0.50	ALLH	—	—	0.734 (J)	0.000245 (J)	—	—	—	—	—	—	0.00139	56.4 (J)	—	0.000446 (J)
RE00-07-76060	00-27649	2.00–3.00	ALLH	—	—	—	—	—	—	—	—	—	—	0.00115	24.6 (J)	0.277 (J-)	—
RE00-07-76061	00-27650	0.00–0.50	ALLH	—	—	0.628 (J)	—	—	—	0.00193	—	—	—	—	18 (J)	—	—
RE00-07-76062	00-27650	2.00–3.00	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	0.0809 (J)	—
RE00-07-76063	00-27651	0.00–0.50	ALLH	—	—	—	—	—	—	0.000738 (J)	—	—	—	—	—	0.0349 (J-)	—
RE00-07-76065	00-27652	0.00–0.50	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	0.043 (J)	—
RE00-07-76066	00-27652	3.10–4.10	ALLH	—	—	—	—	—	—	0.000396 (J)	—	—	—	—	—	—	—
RE00-07-76067	00-27653	0.00–0.50	ALLH	0.461	—	—	0.000344 (J)	—	—	0.00145	—	—	—	0.000969 (J)	—	0.048 (J-)	—
RE00-07-76068	00-27653	2.00–3.00	ALLH	—	—	—	—	—	—	—	—	—	—	0.00393	7.94 (J)	0.23 (J-)	—
RE00-07-76069	00-27654	0.00–0.50	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	0.12	—
RE00-07-76070	00-27654	2.00–3.00	ALLH	—	—	—	—	—	—	0.000468 (J)	—	—	—	—	12.5 (J)	—	—
RE00-07-76071	00-27655	0.00–0.50	ALLH	—	—	—	0.000285 (J)	—	—	0.00105 (J)	0.0308 (J)	0.0329 (J)	0.0283 (J)	0.000605 (J)	—	0.0334 (J)	—
RE00-07-76072	00-27655	2.00–3.00	ALLH	—	—	—	—	—	—	—	—	—	—	0.000405 (J)	—	—	—
RE00-07-76073	00-27656	0.00–0.50	ALLH	—	0.0815 (J)	—	—	0.0172 (J)	—	0.000904 (J)	0.0382 (J)	0.0286 (J)	0.031 (J)	0.00084 (J)	—	—	—
RE00-07-76074	00-27656	2.00–3.00	ALLH	—	—	—	—	—	—	—	—	—	—	—	6.98 (J)	—	—
RE00-07-76075	00-27657	0.00–0.50	ALLH	—	—	—	—	—	—	—	—	—	—	0.00384	18.9 (J)	—	0.000279 (J)
RE00-07-76076	00-27657	1.00–1.60	ALLH	—	—	—	—	—	—	—	0.0261 (J)	—	0.0298 (J)	0.00506	11.9 (J)	0.0415 (J-)	—
RE00-07-76077	00-27658	0.00–0.50	ALLH	—	—	—	—	—	—	—	—	—	—	0.0024	—	—	—
RE00-07-76078	00-27658	2.00–3.00	ALLH	—	—	—	—	—	—	—	—	—	—	—	20.7 (J)	0.0345 (J-)	—
RE00-07-76079	00-27659	0.00–0.50	ALLH	—	—	—	—	—	—	—	—	—	—	—	56.9 (J)	0.103 (J-)	—

Table 6.3-5 (continued)

Sample ID	Location ID	Depth (ft)	Media	Acenaphthene	Benzo(b)fluoranthene	Benzoic Acid	Chloroform	Chrysene	Dichlorobenzene[1,4-]	Dichloroethene[1,1-]	Fluoranthene	Phenanthrene	Pyrene	Toluene	TPH- DRO	TPH- GRO	Trimethylbenzene[1,2,4-]
Residential Soil Screening Level (mg/kg)[a]				**3730**	**6.21**	**240000[b]**	**4.00**	**615**	**39.5**	**206**	**2290**	**1830**	**2290**	**252**	**na[c]**	**na**	**58**
RE00-07-76080	00-27659	2.00–3.00	ALLH	—	—	—	—	—	—	—	—	—	—	—	6.48 (J)	0.137 (J-)	—
RE00-07-76081	00-27660	0.00–0.50	ALLH	—	—	—	—	—	—	—	—	—	—	—	34 (J)	0.0354 (J-)	—
RE00-07-76082	00-27660	2.00–3.00	ALLH	—	—	—	—	—	—	—	—	—	—	—	8.61 (J)	0.105 (J-)	—

[a] Soil Screening Levels from NMED 2006, 092513; unless otherwise noted.

[b] Value from EPA Region 6 (EPA 2007, 095866)

[c] na = Not available.

[d] — = Analyte not detected.

Table 8.0-1
Summary of Investigations for SWMUs and AOCs in the Gauje/Barrancas/Rendija Canyons Aggregate Area

SWMU or AOC Number	Nature and Extent Determined?	Additional Activities Recommended?	Complete Without Controls	Complete With Controls
SWMU 00-011(a)	Yes	No	Yes	No
SWMU 00-011(c)	Yes	No	Yes	No
SWMU 00-011(d)	Yes	No	Yes	No
SWMU 00-011(e)	Yes	No	Yes	No
AOC C-00-020	Yes	No	Yes	No
AOC C-00-041	No	No	No	Yes

Appendix A

Acronyms and Abbreviations, Glossary
and Metric Conversion and Data Qualifier Definition Tables

A-1.0 ACRONYMS

AEC	Atomic Energy Commission
AES	atomic emission spectroscopy
AOC	area of concern
ATSDR	Agency for Toxic Substances and Disease Registry
BCA	bias-corrected accelerated bootstrap
bgs	below ground surface
BMP	best management practice
BV	background value
CCV	continuing calibration verification
COC	chain of custody
COPC	chemical of potential concern
COPEC	chemical of potential ecological concern
CRDL	contract-required detection limit
CST	Chemical Science and Technology (a Laboratory division)
CWDR	Chemical Waste Disposal Request
DGPS	differential global positioning system
DL	detection limit
DOE	Department of Energy [U.S.]
Eh	oxidation-reduction potential
EP	Environmental Programs [Directorate]
EPA	Environmental Protection Agency [U.S.]
EPC	exposure point concentration
EQL	estimated quantitation limit
ER	Environmental Restoration (Project)
ERDB	environmental restoration database
ERSS	Environmental Restoration and Support Services
ESL	ecological screening level
eV	electron-volt
GFAA	graphite furnace atomic absorption
GPS	global positioning system
GSA	General Services Administration
HE	high explosive[s]
HEAT	high explosive anti-tank

HEXP	high explosives
HI	hazard index
HQ	hazard quotient
HR	home range
HSWA	Hazardous and Solid Waste Amendments
HWB	Hazardous Waste Bureau [the New Mexico Environment Department]
IA	Information Architecture
ICPES	inductively coupled plasma emission spectroscopy
ICPMS	inductively coupled plasma mass spectroscopy
ICS	Inference check sample
ICV	initial-calibration verification
IDW	investigation-derived waste
IS	internal standard
KM	Kaplan-Meier method
K_{ow}	octanol/water partition coefficient
LAL	lower acceptance level
LANL	Los Alamos National Laboratory
LCS	laboratory control sample
LOAEL	lowest observed adverse effect level
MD	munitions debris
MDL	method detection limit
MEC	munitions and explosives of concern
MSDA	Material Safety Data Sheet
NFA	no further action
NMED	New Mexico Environment Department
NOAEL	no observed adverse effect level
OLASO	Office of Los Alamos Site Operations
OSHA	Occupational Safety and Health Administration
OU	operable unit
PAUF	population area-use factor
PCB	polychlorinated biphenyl
pH	potential of hydrogen
PID	photoionization detector
PPE	personal protective equipment
QA	quality assurance

QC	quality control
QP	quality procedure
RCRA	Resource Conservation and Recovery Act
RCT	radiological control technician
RDX	research department explosive (also hexahydro-1,3,5-trinitro-1,3,5-triazine)
RfD	reference dose
RFI	RCRA facility investigation
RPD	relative percent difference
SAA	Satellite accumulation area
SAFR	small-arms firing range
SCDM	Superfund Chemical Data Matrix
SCL	Sample collection log
SF	slope factor
SMO	Sample Management Office
SOP	standard operating procedure
SOW	statement of work
SSHASP	site-specific health and safety plan
SSL	soil screening level
SVOC	semivolatile organic compound
SWMU	solid waste management unit
T&E	threatened and endangered
TA	technical area
TAL	target analyte list
TCLP	toxicity characteristic leaching procedure
TNT	2,4,6-trinitrotoluene (dynamite)
TPH	total petroleum hydrocarbon
TPH-DRO	TPH-diesel range organic
TPH-GRO	TPH-gasoline range organic
TRV	toxicity reference value
TSDF	treatment, storage, and disposal facility
UAL	upper acceptance level
UCL	upper confidence limit
USFS	U.S. Forest Service
UTL	upper tolerance limit
UXO	unexploded ordnance

VCA	voluntary corrective action
VOC	volatile organic compound
WCSF	waste characterization strategy form
WPF	waste profile form

A-2.0 GLOSSARY

accuracy—A measure of the closeness of measurements to the true value of the parameter being measured.

administrative authority—For Los Alamos National Laboratory, one or more regulatory agencies, such as the New Mexico Environment Department, the U.S. Environmental Protection Agency, or the U.S. Department of Energy, as appropriate.

administrative controls—Nonphysical or nonengineered mechanisms for managing risks to human health and the environment.

aggregate—At the Los Alamos National Laboratory, an area within a watershed containing solid waste management units (SWMUs) and/or areas of concern (AOCs), and the media affected or potentially affected by releases from those SWMUs and/or AOCs. Aggregates are designated to promote efficient and effective corrective action activities.

analysis—A critical evaluation, usually made by breaking a subject (either material or intellectual) down into its constituent parts, then describing the parts and their relationship to the whole. Analyses may include physical analysis, chemical analysis, toxicological analysis, and knowledge-of-process determinations.

analyte—The element, nuclide, or ion a chemical analysis seeks to identify and/or quantify; the chemical constituent of interest.

analytical method—A procedure or technique for systematically performing an activity.

anthropogenic—Of, relating to, or resulting from, the influence of human beings.

aquifer—An underground geological formation (or group of formations) containing water that is the source of groundwater for wells and springs.

area of concern—(1) A release that may warrant investigation or remediation and is not a solid waste management unit (SWMU). (2) An area at Los Alamos National Laboratory that may have had a release of a hazardous waste or a hazardous constituent but is not a SWMU.

assessment—(1) The act of reviewing, inspecting, testing, checking, conducting surveillance, auditing, or otherwise determining and documenting whether items, processes, or services meet specified requirements. (2) An evaluation process used to measure the performance or effectiveness of a system and its elements. In this glossary, assessment is an all-inclusive term used to denote any one of the following: audit, performance evaluation, management system review, peer review, inspection, or surveillance.

assessment endpoint—In an ecological risk assessment, the expression of an environmental value to be protected (e.g., fish biomass or reproduction of avian populations).

background concentration—Naturally occurring concentrations of an inorganic chemical or radionuclide in soil, sediment, or tuff.

background data—Data that represent naturally occurring concentrations of inorganic and radionuclide constituents in a geologic medium. Los Alamos National Laboratory's (the Laboratory's) background data are derived from samples collected at locations that are either within, or adjacent to, the Laboratory. These locations (1) are representative of geological media found within Laboratory boundaries, and (2) have not been affected by Laboratory operations.

background value (BV)—A statistically derived concentration (i.e., the upper tolerance limit [UTL]) of a chemical used to represent the background data set. If a UTL cannot be derived, either the detection limit or maximum reported value in the background data set is used.

bias—The systematic deviation from a true value that remains constant over replicated measurements within the statistical precision of the measurement process.

blank—A sample that is expected to have a negligible or unmeasurable amount of an analyte. Results of blank sample analyses indicate whether field samples might have been contaminated during the sample collection, transport, storage, preparation, or analysis processes.

calibration—A process used to identify the relationship between the true analyte concentration or other variable and the response of a measurement instrument, chemical analysis method, or other measurement system.

canopy—The cover formed by the leafy upper branches of surrounding trees and shrubs.

canyon—A stream-cut chasm or gorge, the sides of which are composed of cliffs or a series of cliffs rising from the chasm's bed. Canyons are characteristic of arid or semiarid regions where downcutting by streams greatly exceeds weathering.

catchment—(1) A structure, such as a basin or reservoir, used for collecting or draining water. (2) The amount of water collected in such a structure. (3) A catching or collecting of water, especially rainwater.

chain of custody—An unbroken, documented trail of accountability that is designed to ensure the uncompromised physical integrity of samples, data, and records.

chemical—Any naturally occurring or human-made substance characterized by a definite molecular composition.

chemical analysis—A process used to measure one or more attributes of a sample in a clearly defined, controlled, and systematic manner. Chemical analysis often requires treating a sample chemically or physically before measurement.

chemical interference—A chemical or physical entity whose influence results in a decrease or increase in the response of an analytical method or other measurement system relative to the response obtained in the absence of the entity.

chemical of potential concern (COPC)—A detected chemical compound or element that has the potential to adversely affect human receptors as a result of its concentration, distribution, and toxicity.

chemical of potential ecological concern (COPEC)—A detected chemical compound or element that has the potential to adversely affect ecological receptors as a result of its concentration, distribution, and toxicity.

cleanup—A series of actions taken to deal with the release, or threat of a release, of a hazardous substance that could affect humans and/or the environment. The term cleanup is sometimes used interchangeably with the terms remedial action, removal action, or corrective action.

Code of Federal Regulations (CFR)—A document that codifies all rules of the executive departments and agencies of the federal government. The code is divided into 50 volumes, known as titles. Title 40 of the CFR (referenced as 40 CFR) covers environmental regulations.

cold vapor atomic absorption—An analytical technique used for measuring mercury that is described in U.S. Environmental Protection Agency Methods 7470A ("Mercury in Liquid Waste") and 7471A ("Mercury in Solid or Semisolid Waste"). The technique is based on the absorption of nonionizing radiation at 253.7 nanometers (nm) by mercury vapor. The mercury is reduced to the elemental state and aerated from solution in a closed system. The mercury vapor passes through a cell positioned in the light path of an atomic absorption spectrophotometer. Absorbance (peak height) is measured as a function of mercury concentration.

community—In ecology, an assemblage of populations of different species within a specified location in space and time. Sometimes, a particular subgrouping may be specified, such as the fish community in a lake or the soil arthropod community in a forest.

Compliance Order on Consent (Consent Order)—For the Environmental Remediation and Surveillance Program, an enforcement document signed by the New Mexico Environment Department, the U.S. Department of Energy, and the Regents of the University of California on March 1, 2005, which prescribes the requirements for corrective action at Los Alamos National Laboratory. The purposes of the Consent Order are (1) to define the nature and extent of releases of contaminants at, or from, the facility; (2) to identify and evaluate, where needed, alternatives for corrective measures to clean up contaminants in the environment and prevent or mitigate the migration of contaminants at, or from, the facility; and (3) to implement such corrective measures. The Consent Order supersedes the corrective action requirements previously specified in Module VIII of the Laboratory's Hazardous Waste Facility Permit.

conceptual model—See site conceptual model.

confluence—A place where two or more streams or canyons meet; the point where a tributary meets the main stream.

Consent Order—See Compliance Order on Consent.

contaminant—(1) Chemicals and radionuclides present in environmental media or on debris above background levels. (2) According to the March 1, 2005, Compliance Order on Consent (Consent Order), any hazardous waste listed or identified as characteristic in 40 Code of Federal Regulations (CFR) 261 (incorporated by 20.4.1.200 New Mexico Administrative Code [NMAC]); any hazardous constituent listed in 40 CFR 261 Appendix VIII (incorporated by 20.4.1.200 NMAC) or 40 CFR 264 Appendix IX (incorporated by 20.4.1.500 NMAC); any groundwater contaminant listed in the Water Quality Control Commission (WQCC) Regulations at 20.6.3.3103 NMAC; any toxic pollutant listed in the WQCC Regulations at 20.6.2.7 NMAC; explosive compounds; nitrate; and perchlorate. (Note: Under the Consent Order, the term "contaminant" does not include radionuclides or the radioactive portion of mixed waste.)

continuing calibration—A combination of calibration blank and check standards used to determine if an instrument's response to an analyte concentration is within acceptable bounds relative to its initial calibration. A continuing calibration is performed every 12 h of operation or every 10 injections, depending on the analytical test method, thus verifying the satisfactory performance of an instrument on a day-to-day basis. The continuing-calibration 12-h period assumes that the instrument has not been shut down since the initial calibration.

contract analytical laboratory—An analytical laboratory under contract to the University of California to analyze samples from work performed at Los Alamos National Laboratory.

corrective action—(1) In the Resource Conservation and Recovery Act, an action taken to rectify conditions potentially adverse to human health or the environment. (2) In the quality assurance field, the process of rectifying and preventing nonconformances.

daily calibration—The combination of a calibration blank and calibration standard used to determine if the instrument response to an analyte concentration is within acceptable bounds relative to the initial calibration. A daily calibration establishes the instrument response factors on which quantitations are based, thus verifying the satisfactory performance of an instrument on a day-to-day basis.

data package—The hard copy deliverable for each sample delivery group produced by a contract analytical laboratory in accordance with the statement of work for analytical services.

data-quality assessment—The statistical and/or scientific evaluation of a data set that establishes whether the data set is adequate for its intended use.

data validation—A systematic process that applies a defined set of performance-based criteria to a body of data and that may result in the qualification of the data. The data-validation process is performed independently of the analytical laboratory that generates the data set and occurs before conclusions are drawn from the data. The process may include a standardized data review (routine data validation) and/or a problem-specific data review (focused data validation).

data verification—The process of evaluating the completeness, correctness, consistency, and compliance of a laboratory data package against a specified standard or contract.

- Completeness: All required information is present—in both hard copy and electronic forms.
- Correctness: The reported results are based on properly documented and correctly applied algorithms.
- Consistency: The values are the same when they appear in different reports or are transcribed from one report to another.
- Compliance: The data pass numerical quality-control tests based on parameters or limits specified in a contract or in an auxiliary document.

decontamination—The removal of unwanted material from the surface of, or from within, another material.

deferred action—The postponement of the selection and implementation of a corrective measure.

detect (detection)—An analytical result, as reported by an analytical laboratory, that denotes a chemical or radionuclide to be present in a sample at a given concentration.

detection limit—The minimum concentration that can be determined by a single measurement of an instrument. A detection limit implies a specified statistical confidence that the analytical concentration is greater than zero.

discharge—The accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into, or on, any land or water.

disposal—The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into, or on, any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwaters.

duplicate analysis—An analysis performed on one member of a pair of identically prepared subsamples taken from the same sample.

duplicate measurement—An additional measurement performed on a prepared sample under identical conditions to evaluate any variance in measurement.

ecological screening levels—Soil, sediment, or water concentrations that are used to screen for potential ecological effects. The concentrations are based on a chemical's no-observed-adverse-effect level for a receptor, below which no risk is indicated.

environmental samples—Air, soil, water, or other media samples that have been collected from streams, wells, and soils, or other locations, and that are not expected to exhibit properties classified as hazardous by the U.S. Department of Transportation.

ephemeral—Pertaining to a stream or spring that flows only during, and immediately after, periods of rainfall or snowmelt.

equipment blank (rinsate blank)—A sample used to rinse sample-collection equipment and expected to have negligible or unmeasurable amounts of analytes. The equipment blank is collected after the equipment decontamination is completed but before the collection of another field sample.

ER data—Data derived from samples that have been collected and paid for through Environmental Remediation and Surveillance Program funding.

ER database (ERDB)—A database housing analytical and other programmatic information for the Environmental Remediation and Surveillance Program. The ERDB currently contains about 3 million analyses in 300 tables.

ER identification (ER ID) number—A unique identifier assigned by the Environmental Remediation and Surveillance Program's Records Processing Facility to each document when it is submitted as a final record.

estimated detection limit—A reporting limit required by a Los Alamos National Laboratory statement of work for analytical services.

estimated quantitation limit (EQL)—The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine analytical laboratory operating conditions. The low point on a calibration curve should reflect this quantitation limit. The EQL is not used to establish detection status. Sample EQLs are highly matrix dependent, and the specified EQLs might not always be achievable.

exposure pathway—Any path from the sources of contaminants to humans and other species or settings through air, soil, water, or food.

external standard calibration—A comparison of instrument responses from a sample to the responses from target compounds in the calibration standards. The sample's peak areas (or peak heights) are compared to the standards' peak areas (or peak heights).

facility—All contiguous land (and structures, other appurtenances, and improvements on the land) used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units. For the purpose of implementing a corrective action, a facility is all the contiguous property that is under the control of the owner or operator seeking a permit under Subtitle C of the Resource Conservation and Recovery Act.

fault—A fracture, or zone of fractures, in rock along which vertical or horizontal movement has taken place and adjacent rock layers or bodies have been displaced.

field blank (field reagent blank)—A blank sample prepared in the field or carried to the sampling site, exposed to sampling conditions (e.g., by removing bottle caps), and returned to a laboratory to be analyzed in the same manner in which environmental samples are being analyzed. Field blanks are used to identify the presence of any contamination that may have been added during the sampling and analysis process.

field duplicate (replicate) samples—Two separate, independent samples taken from the same source, which are collected as collocated samples (i.e., equally representative of a sample matrix at a given location and time).

field reagent blank—See field blank.

focused data validation—A technically based analyte-, sample-, and data-use-specific process that extends the qualification of data beyond the method or contractual compliance and provides a higher level of confidence that an analyte is present or absent. If an analyte is present, the quality of the quantitation may be obtained through focused validation.

ground cover—Natural or human-made materials (e.g., grasses, pine needles, asphalt, or concrete) which overlay soils.

groundwater—Interstitial water that occurs in saturated earth material and is capable of entering a well in sufficient amounts to be used as a water supply.

hazard index—The sum of hazard quotients for multiple contaminants to which a receptor may have been exposed.

Hazardous and Solid Waste Amendments (HSWA)—Public Law No. 98-616, 98 Stat. 3221, enacted in 1984, which amended the Resource Conservation and Recovery Act of 1976 (42 United States Code § 6901 et seq).

hazardous constituent (hazardous waste constituent)—According to the March 1, 2005, Compliance Order of Consent (Consent Order), any constituent identified in Appendix VIII of Part 261, Title 40 Code of Federal Regulations (CFR) (incorporated by 20.4.1.200 New Mexico Administrative Code [NMAC]) or any constituent identified in 40 CFR 264, Appendix IX (incorporated by 20.4.1.500 NMAC).

hazardous waste—(1) Solid waste that is listed as a hazardous waste, or exhibits any of the characteristics of hazardous waste (i.e., ignitability, corrosivity, reactivity, or toxicity, as provided in 40 CFR, Subpart C). (2) According to the March 1, 2005, Compliance Order of Consent (Consent Order), any solid waste or combination of solid wastes that, because of its quantity, concentration, or physical, chemical, or infectious characteristics, meets the description set forth in New Mexico Statutes Annotated 1978, § 74-4-3(K) and is listed as a hazardous waste or exhibits a hazardous waste characteristic under 40 CFR 261 (incorporated by 20.4.1.200 New Mexico Administrative Code).

Hazardous Waste Bureau—The New Mexico Environment Department bureau charged with providing regulatory oversight and technical guidance to New Mexico hazardous waste generators and to treatment, storage, and disposal facilities, as required by the New Mexico Hazardous Waste Act.

Hazardous Waste Facility Permit—The authorization issued to Los Alamos National Laboratory (the Laboratory) by the New Mexico Environment Department that allows the Laboratory to operate as a hazardous waste treatment, storage, and disposal facility.

hazard quotient (HQ)—The ratio of the estimated site-specific exposure concentration of a single chemical from a site to the estimated daily exposure level at which no adverse health effects are likely to occur.

high-explosive wastes—Any waste-containing material having an amount of stored chemical energy that could start a violent reaction when initiated by impact, spark, or heat. This violent reaction would be accompanied by a strong shock wave and the potential for high-velocity particles to be propelled.

holding time—The maximum elapsed time a sample can be stored without unacceptable changes in analyte concentrations. Holding times apply under prescribed conditions, and deviations from these conditions may affect the holding times. Extraction holding time refers to the time lapsed between sample collection and sample preparation. Analytical holding time refers to the time lapsed between sample preparation and analysis.

HSWA module—See Module VIII.

hydrogeology—The science dealing with the occurrence of surface water and groundwater, their uses, and their functions in modifying the earth, primarily by erosion and deposition.

inductively coupled plasma emission spectroscopy—A method that detects trace elements (including metals) in solutions by measuring characteristic emission spectra through optical spectrometry. Samples are nebulized, and the resulting aerosol is transported to a plasma torch. Element-specific emission spectra are produced by a radio-frequency, inductively coupled plasma. The spectra are dispersed by a grating spectrometer, and photosensitive devices are used to monitor the emission lines' intensities.

inductively coupled plasma mass spectrometry—A method that detects submicrogram/liter concentrations of a large number of elements in water samples and in waste extracts or digests. When dissolved constituents are required, samples must be filtered and acid-preserved before analysis. No digestion is required before analysis for dissolved elements in water samples. The method measures ions produced by a radio-frequency, inductively coupled plasma. Analyte species originating in a liquid are nebulized, and the resulting aerosol is transported by argon gas into a plasma torch. The ions produced in the plasma gas are introduced into a mass spectrometer by means of an interface. The ions produced in the plasma are sorted according to their mass-to-change ratios and quantified with a channel electron multiplier or Faraday cup.

industrial scenario—A land-use condition in which current Los Alamos National Laboratory operations or industrial/commercial operations within Los Alamos County are continued or planned. Any necessary remediation involves cleanup to standards designed to ensure a safe and healthy work environment for workers.

infiltration—(1) The penetration of water through the ground surface into subsurface soil. (2) The technique of applying large volumes of wastewater to land to penetrate the surface and percolate through the underlying soil.

initial calibration—The process used to establish the relationship between instrument response and analyte concentration at several analyte concentration values in order to demonstrate that an instrument is capable of acceptable analytical performance.

institutional controls—Controls that prohibit or limit access to contaminated media. Institutional controls may include use restrictions, permitting requirements, standard operating procedures, laboratory implementation requirements, laboratory implementation guidance, and laboratory performance requirements.

intermittent stream—A stream that flows only in certain reaches as a result of the channel bed's losing and gaining characteristics.

internal standards—Compounds added to a sample after the sample has been prepared for qualitative and quantitative instrument analysis. The compounds serve as a standard of retention time and response that is invariant from run to run.

investigation-derived waste—Solid waste or hazardous waste that was generated as a result of corrective action investigation or remediation field activities. Investigation-derived waste may include drilling muds, cuttings, and purge water from the installation of test pits or wells; purge water, soil, and other materials from the collection of samples; residues from the testing of treatment technologies and pump-and-treat systems; contaminated personal protective equipment; and solutions (aqueous or otherwise) used to decontaminate nondisposable protective clothing and equipment.

laboratory control sample (LCS)—A known matrix that has been spiked with compound(s) representative of target analytes. LCSs are used to document laboratory performance, and the acceptance criteria for LCSs are method-specific.

laboratory qualifier (laboratory flag)—Codes applied to data by a contract analytical laboratory to indicate, on a gross scale, a verifiable or potential data deficiency. These flags are applied according to the U.S. Environmental Protection Agency contract-laboratory program guidelines.

LANL (Los Alamos National Laboratory) data validation qualifiers—The Los Alamos National Laboratory data qualifiers which are defined by, and used, in the Environmental Remediation and Surveillance (ERS) Program validation process. The qualifiers describe the general usability (or quality) of data. For a complete list of data qualifiers applicable to any particular analytical suite, consult the appropriate ERS standard operating procedure.

LANL (Los Alamos National Laboratory) data validation reason codes—The Los Alamos National Laboratory designations applied to sample data by data validators who are independent of the contract laboratory that performed a given sample analysis. Reason codes provide an analysis-specific explanation for applying a qualifier, with some description of the qualifier's potential impact on data use. For a complete list of data qualifiers applicable to any particular analytical suite, consult the appropriate Environmental Remediation and Surveillance Program standard operating procedure.

log book—A notebook used to record tabulated data (e.g., the history of calibrations, sample tracking, numerical data, or other technical data).

Los Alamos unlimited release (LA-UR) number—A unique identification number required for all documents or presentations prepared for distribution outside Los Alamos National Laboratory (the Laboratory). LA-UR numbers are obtained by filling out a technical information release form (http://enterprise.lanl.gov/alpha.htm) and submitting the form together with 2 copies of the document to the Laboratory's Classification Group (S-7) for review.

lower acceptance limit (LAL)—The lowest limit that is acceptable according to quality control (QC) criteria for a specific QC sample and for a specific method. Any results lower than the LAL are qualified following the routine validation procedure.

matrix—Relatively fine material in which coarser fragments or crystals are embedded; also called "ground mass" in the case of igneous rocks.

matrix spike—An aliquot of a sample to which a known concentration of target analyte has been added. Matrix spike samples are used to measure the ability to recover prescribed analytes from a native sample matrix. The spiking typically occurs before sample preparation and analysis.

matrix spike duplicate—An intralaboratory duplicate sample to which a known amount of target analyte has been added. Spiking typically occurs before sample preparation and analysis.

medium (environmental)—Any material capable of absorbing or transporting constituents. Examples of media include tuffs, soils and sediments derived from these tuffs, surface water, soil water, groundwater, air, structural surfaces, and debris.

medium (geological)—The solid part of the hydrogeological system; may be unsaturated or saturated.

method blank—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 prepared and analyzed in the same manner as the corresponding environmental samples. The method blank is used to assess the potential for sample contamination during preparation and analysis.

method detection limit (MDL)—The minimum concentration of a substance that can be measured and reported with a known statistical confidence that the analyte concentration is greater than zero. After subjecting samples to the usual preparation, the MDL is determined by analyzing those samples of a given matrix type that contain the analyte. The MDL is used to establish detection status.

migration—The movement of inorganic and organic chemical species through unsaturated or saturated materials.

migration pathway—A route (e.g., a stream or subsurface flow path) for the potential movement of contaminants to environmental receptors (plants, humans, or other animals).

Module VIII—Module VIII of the Los Alamos National Laboratory (the Laboratory) Hazardous Waste Facility Permit. This permit allows the Laboratory to operate as a hazardous-waste treatment, storage, and disposal facility. From 1990 to 2005, Module VIII included requirements from the Hazardous and Solid Waste Amendments. These requirements have been superceded by the March 1, 2005, Compliance Order on Consent (Consent Order).

no further action—Under the Resource Conservation and Recovery Act, a corrective-action determination whereby, based on evidence or risk, no further investigation or remediation is warranted.

nondetect—A result that is less than the method detection limit.

notices of approval, of approval with modification, or of disapproval—Notices issued by the New Mexico Environment Department (NMED). Upon receipt of a work plan, schedule, report, or other deliverable document, NMED reviews the document and approves the document as submitted, modifies the document and approves it as modified, or disapproves the document. A notice of approval means that the document is approved as submitted. A notice of approval with modifications means that the document is approved but with modifications specified by NMED. A notice of disapproval means that the document is disapproved and it states the deficiencies and other reasons for disapproval.

operable units (OUs)—At Los Alamos National Laboratory, 24 areas originally established for administering the Environmental Remediation and Surveillance Program. Set up as groups of potential release sites, the OUs were aggregated according to geographic proximity for the purposes of planning and conducting Resource Conservation and Recovery Act (RCRA) facility assessments and RCRA facility investigations. As the project matured, it became apparent that there were too many areas to allow efficient communication and to ensure consistency in approach. In 1994, the 24 OUs were reduced to 6 administrative field units.

percent recovery (%R)—The amount of material detected in a sample (less any amount already in the sample) divided by the amount added to the sample, expressed as a percentage.

percolation—Gravity flow of soil water through the pore spaces in soil or rock below the ground surface.

perennial stream—Water in a channel or bed that flows continuously throughout the year.

permit—An authorization, license, or equivalent control document issued by the U.S. Environmental Protection Agency or an approved state agency to implement the requirements of an environmental regulation.

polychlorinated biphenyls (PCBs)—Any chemical substance limited to the biphenyl molecule that has been chlorinated to varying degrees, or any combination that contains such substances. PCBs are colorless, odorless compounds that are chemically, electrically, and thermally stable and have proven to be toxic to both humans and other animals.

population—(1) A group of interbreeding organisms occupying a particular space. (2) The number of humans or other living creatures in a designated area.

precision—The degree of mutual agreement among a series of individual measurements, values, or results.

quality assurance project plan—A formal document that describes, in comprehensive detail, the necessary quality assurance, quality control, and other technical activities that must be implemented to ensure that results of work performed will satisfy stated performance criteria.

quality assurance/quality control—A system of procedures, checks, audits, and corrective actions set up to ensure that all U.S. Environmental Protection Agency research design and performance, environmental monitoring and sampling, and other technical and reporting activities are of the highest achievable quality.

quality control—See quality assurance/quality control.

quality-control sample—A specimen that, upon analysis, is intended to provide information that is useful for adjusting, controlling, or verifying the continuing acceptability of sampling and/or analysis activities in progress.

quality procedure—A document that describes the process, method, and responsibilities for performing, controlling, and documenting any quality-affecting activity governed by a quality management plan.

Quaternary—The second period of the Cenozoic Era, following the Tertiary, and including the last two to three million years of earth history.

RCRA facility investigation (RFI)—A Resource Conservation and Recovery Act (RCRA) investigation that determines if a release has occurred and characterizes the nature and extent of contamination at a hazardous waste facility. The RFI is generally equivalent to the remedial investigation portion of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process.

receptor—A person, other animal, plant, or geographical location that is exposed to a chemical or physical agent released to the environment by human activities.

record—Any book, paper, map, photograph, machine-readable material, or other documentary material, regardless of physical form or characteristics.

recreational scenario—A land-use condition under which individuals may be exposed to contaminants for a limited amount of time as a result of outdoor activities such as hiking, camping, hunting, or fishing.

reference set—A hard-copy compilation of reference items cited in Environmental Remediation and Surveillance Program documents.

regional aquifer—Geologic material(s) or unit(s) of regional extent whose saturated portion yields significant quantities of water to wells, contains the regional zone of saturation, and is characterized by the regional water table or potentiometric surface.

relative percent difference (RPD)—The measure used to assess the precision between parent results and their associated duplicate results. The RPD is calculated as follows:

$$|RPD| = \frac{S - R}{\left(\frac{S + R}{2}\right)100} \quad ,$$

where RPD = relative percent difference,
S = parent sample result, and
R = duplicate sample result.

The Environmental Remediation and Surveillance Program criteria for the RPD are less than 20% for aqueous samples and less than 35% for soil samples when the sample concentrations are greater than, or equal to, five times the method detection limit (MDL). For samples with concentrations less than five times the MDL, but greater than the MDL, the control is +/-MDL. No precision criterion applies to samples with concentrations less than the MDL.

release—Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing of hazardous waste or hazardous constituents into the environment.

remediation—(1) The process of reducing the concentration of a contaminant (or contaminants) in air, water, or soil media to a level that poses an acceptable risk to human health and the environment. (2) The act of restoring a contaminated area to a usable condition based on specified standards.

request number—An identifying number assigned by the Environmental Remediation and Surveillance Program to a group of samples submitted for analysis.

residential scenario—The land use condition under which individuals may be exposed to contaminants as a result of living on or near contaminated sites.

Resource Conservation and Recovery Act—The Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (Public Law [PL] 94-580, as amended by PL 95-609 and PL 96-482, United States Code 6901 et seq.).

rinsate blank—See equipment blank.

risk—A measure of the probability that damage to life, health, property, and/or the environment will occur as a result of a given hazard.

risk assessment—See baseline risk assessment.

routine analysis—The analysis categories of inorganic compounds, organic compounds, metals, radiochemistry, and high explosives, as defined in a contract laboratory's statement of work.

routine data—Data generated using analytical methods that are identified as routine methods in the current Environmental Remediation and Surveillance Program statement of work for analytical services.

routine data validation—The process of reviewing analytical data relative to quantitative routine acceptance criteria. The objective of routine data validation is two-fold—

- to estimate the technical quality of the data relative to minimum national standards adopted by the Environmental Remediation and Surveillance Program, and
- to indicate to data users the technical data quality at a gross level by assigning laboratory qualifiers to environmental data whose quality indicators do not meet acceptance criteria.

runoff—The portion of the precipitation on a drainage area that is discharged from the area.

run-on—Surface water that flows onto an area as a result of runoff occurring higher up on a slope.

sample—A portion of a material (e.g., rock, soil, water, or air), which, alone or in combination with other portions, is expected to be representative of the material or area from which it is taken. Samples are typically either sent to a laboratory for analysis or inspection or are analyzed in the field. When referring to samples of environmental media, the term field sample may be used.

sample matrix—In chemical analysis, that portion of a sample that is exclusive of the analytes of interest. Together, the matrix and the analytes of interest form the sample.

screening risk assessment—A risk assessment that is performed with few data and many assumptions in order to identify exposures that should be evaluated more carefully for potential risk.

sensitivity—An indication of the lowest analyte concentration that can be measured with a specified degree of confidence.

serial dilution sample—A requirement of the U.S. Environmental Protection Agency (EPA) Method 6010B (Inductively Coupled Plasma-Atomic Emission Spectroscopy). Serial dilutions are made by performing a series of dilutions on an aliquot taken from a stock solution for a target analyte. The first dilution of the original stock solution serves as the stock solution for the second dilution, and the second dilution serves as the stock solution for the third dilution, and so on. To meet the requirement of EPA Method 6010B, one serial dilution analysis must be performed for each matrix in every sample batch, with a minimum of 1 serial dilution sample per 20 samples.

site characterization—Defining the pathways and methods of migration of hazardous waste or constituents, including the media affected; the extent, direction and speed of the contaminants; complicating factors influencing movement; or concentration profiles.

site conceptual model—A qualitative or quantitative description of sources of contamination, environmental transport pathways for contamination, and receptors that may be impacted by contamination and whose relationships describe qualitatively or quantitatively the release of contamination from the sources, the movement of contamination along the pathways to the exposure points, and the uptake of contaminants by the receptors.

site-specific health and safety plan (SSHASP)—A health and safety plan that has been tailored to a site or to an Environmental Remediation and Surveillance (ERS) Program field activity and that has been approved by an ERS health and safety representative. A SSHASP contains information specific to the project, including the scope of work, relevant history, descriptions of hazards from activity associated with the project site(s), and techniques for exposure mitigation (e.g., personal protective equipment and hazard mitigation).

slope—A ratio of units of elevation change to units of horizontal change, usually expressed in degrees.

soil—(1) A material that overlies bedrock and has been subject to soil-forming processes. (2) A sample media group that includes naturally occurring and artificial fill materials.

soil moisture—The water contained in the pore space of the unsaturated zone.

soil screening level (SSL)—The concentration of a chemical (inorganic or organic) below which no potential for unacceptable risk to human health exists. The derivation of an SSL is based on conservative exposure and land-use assumptions, and on target levels of either a hazard quotient of 1.0 for a noncarcinogenic chemical or a cancer risk of 10^{-5} for a carcinogenic chemical.

solid waste—Any garbage, refuse, or sludge from a waste treatment plant, water-supply treatment plant, or air-pollution control facility, and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations and from community activities. Solid waste does not include solid or dissolved materials in domestic sewage; solid or dissolved materials in irrigation return flows; industrial discharges that are point sources subject to permits under section 402 of the Federal Water Pollution Control Act, as amended; or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended.

solid waste management unit (SWMU)—(1) Any discernible site at which solid wastes have been placed at any time, whether or not the site use was intended to be the management of solid or hazardous waste. SWMUs include any site at a facility at which solid wastes have been routinely and systematically released. This definition includes regulated sites (i.e., landfills, surface impoundments, waste piles, and land treatment sites), but does not include passive leakage or one-time spills from production areas and sites in which wastes have not been managed (e.g., product storage areas). (2) According to the March 1, 2005, Compliance Order on Consent (Consent Order), any discernible site at which solid waste has been placed at any time, and from which the New Mexico Environment Department determines there may be a risk of a release of hazardous waste or hazardous waste constituents (hazardous constituents), whether or not the site use was intended to be the management of solid or hazardous waste. Such sites include any area in Los Alamos National Laboratory at which solid wastes have been routinely and systematically released; they do not include one-time spills.

spring—Groundwater seeping out of the earth where the water table intersects the ground surface.

standard operating procedure—A document that details the officially approved method(s) for an operation, analysis, or action, with thoroughly prescribed techniques and steps.

stratigraphy—The study of the formation, composition, and sequence of sediments, whether consolidated or not.

Superfund—Another term for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The two terms are used interchangeably.

surface sample—A sample taken at a collection depth that is (or was) representative of the medium’s surface during the period of investigative interest. A typical depth interval for a surface sample is 0 to 6 in. for mesa-top locations, but may be up to several feet in sediment-deposition areas within canyons.

surrogate (surrogate compound)—An organic compound used in the analyses of organic target analytes that is similar in composition and behavior to the target analytes but is not normally found in field samples. Surrogates are added to every blank and spike sample to evaluate the efficiency with which analytes are being recovered during extraction and analysis.

target analyte—A chemical or parameter, the concentration, mass, or magnitude of which is designed to be quantified by a particular test method.

technical area (TA)—At Los Alamos National Laboratory, an administrative unit of operational organization (e.g., TA-21).

topography—The physical or natural features of an object or entity and their structural relationships.

transport (transportation)—(1) The movement of a hazardous waste by air, rail, highway, or water. (2) The movement of a contaminant from a source through a medium to a receptor.

treatment, storage, and disposal facility—An interim-status or permitted facility in which hazardous waste is treated, stored, or disposed.

trip blank—A sample of analyte-free medium taken from a sampling site and returned to an analytical laboratory unopened, along with samples taken in the field; used to monitor cross contamination of samples during handling and storage both in the field and in the analytical laboratory.

tuff—Consolidated volcanic ash, composed largely of fragments produced by volcanic eruptions.

upper acceptance limit (UAL)—The highest limit that is acceptable, based on the quality control (QC) criteria for a specific QC sample for a specific method. Any results greater than the UAL are qualified.

upper confidence limit—The statistic that represents the upper bound of the arithmetic mean (usually 95%) of the measured data and that is used in a risk assessment as the reasonable maximum exposure point concentration.

U.S. Department of Energy—The federal agency that sponsors energy research and regulates nuclear materials for weapons production.

U.S. Environmental Protection Agency (EPA)—The federal agency responsible for enforcing environmental laws. Although state regulatory agencies may be authorized to administer some of this responsibility, EPA retains oversight authority to ensure the protection of human health and the environment.

vadose zone—The zone between the land surface and the water table within which the moisture content is less than saturation (except in the capillary fringe) and pressure is less than atmospheric. Soil pore space also typically contains air or other gases. The capillary fringe is included in the vadose zone.

watershed—A region or basin drained by, or contributing waters to, a river, stream, lake, or other body of water and separated from adjacent drainage areas by a divide, such as a mesa, ridge, or other geologic feature.

water table—The top of the regional saturated zone; the piezometric surface associated with an unconfined aquifer.

welded tuff—A volcanic deposit hardened by the action of heat, pressures from overlying material, and hot gases.

work plan—A document that specifies the activities to be performed when implementing an investigation or remedy. At a minimum, the work plan should identify the scope of the work to be performed, specify the procedures to be used to perform the work, and present a schedule for performing the work. The work plan may also present the technical basis for performing the work.

A-3.0 METRIC CONVERSION TABLE

Multiply SI (Metric) Unit	by	To Obtain US 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-4.0 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 for the 2007 investigation of the Guaje/Barrancas/Rendija Canyons Aggregate Area. Table B-1.0-1 provides general method information, and the following sections provide more detailed descriptions of field methods used. All activities were conducted in accordance with the applicable Environmental Programs Directorate standard operating procedures (SOPs) and quality procedures (QPs) (Table B-1.0-1).

B-2.0 EXPLORATORY DRILLING

No exploratory drilling was conducted during the 2006–2007 investigation activities. All sampling was conducted using hand augers.

B-3.0 FIELD-SCREENING METHODS

Samples collected during investigation activities were field screened for organic vapors using a photoionization detector (PID). Each sample was screened for VOCs using a MiniRAE 2000 PID with an 11.7 electron-volt (eV) lamp. The PID was calibrated at least daily during field activities, and the PID is calibrated yearly by the vendor. Daily calibration was performed using a standard source of 100 parts per million (ppm) isobutylene. The rated detection limit for the MiniRAE 2000 is 0.2 ppm.

Samples were screened for explosive compounds TNT (2,4,6-trinitrotoluene) and RDX (research department explosives or hexahydro-1,3,5-trinitro-1,3,5-triazine) using D TECH TNT explosives test kits and D TECH RDX explosives test kits. Soil samples were prepared for testing using the D TECH TNT/RDX Soil Extraction Pac. Both the sample preparation and testing were performed according to vendor specifications. Each sample's location, depth, date, and time collected were recorded, along with the date, time, and result of each test (TNT and RDX). Samples were extracted and tested in a field laboratory trailer with climate control to maintain a relatively constant temperature during testing. If TNT or RDX were detected using the test kit, the corresponding sample was submitted to an off-site contract laboratory for analysis of explosive compounds.

Screening results are presented in Tables 6.2-1, 6.2-2, 6.2-3, and 6.2-4 of the investigation report.

B-4.0 SURFACE AND NEAR-SURFACE SAMPLING

This section summarizes the methods used for collecting surface and near-surface samples for laboratory analysis.

B-4.1 Surface Sampling Methods

Surface soil and fill samples were collected in accordance with SOP-06.10, "Hand Auger and Thin-Wall Tube Sampler." A hand auger was used to collect material in approximately 6-in. increments. A stainless-steel scoop and bowl were used to homogenize the samples, which were then transferred to sterile sample collection jars or bags for transport to the Sample Management Office (SMO). The sample collection tools were decontaminated immediately prior to collection of each sample in accordance with SOP-01.08, "Field Decontamination of Drilling and Sampling Equipment".

B-4.2 Quality Assurance/Quality Control Samples

Quality assurance (QA)/quality control (QC) samples for soil and tuff were collected in accordance with SOP-01.05, "Field Quality Control Samples." Field duplicate samples were collected at a frequency of at least 1 duplicate sample for every 10 samples (10%). Field rinsate samples were collected from sampling equipment at a frequency of at least 1 rinsate sample for every 10 samples. Field trip blanks also were collected at a frequency of 1 per 10 samples where samples were collected for analysis of VOCs.

B-4.3 Sample Documentation and Handling

Field personnel completed a sample collection log (SCL) and associated chain-of-custody (COC) form for each sample. Sample containers were sealed with signed COC seals and placed in coolers at approximately 4°C. Samples were packaged with preservatives, if necessary, and handled and shipped in accordance with ENV-DO-207, "Handling, Packaging, and Shipping of Samples," and ENV-DO-206, "Containers and Preservation of Samples."

Samples were transported to the SMO in sealed coolers before they were shipped to the analytical laboratory. The SMO personnel reviewed and approved the SCLs and COC forms before taking custody of the samples.

B-4.4 Decontamination of Sampling Equipment

All sampling equipment that made (or could have made) contact with sample material was decontaminated immediately before each sample was collected to avoid cross-contamination of samples. Decontamination included wiping the equipment with Fantastik and clean paper towels. Decontamination activities, including collection of rinsate blank samples, were performed in accordance with SOP-01.08, "Field Decontamination of Drilling and Sampling Equipment," and SOP-01.05, "Field Quality Control Samples."

B-5.0 GEODETIC SURVEYING

Geodetic surveys of all sampled 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 borehole and sample locations were surveyed according to SOP-03.11, "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.

B-6.0 DEVIATIONS FROM INVESTIGATION WORK PLAN

Several minor deviations from the approved work plan were required because of site conditions encountered during sampling activities.

The approved work plan (LANL 2005, 089657; NMED 2006, 091532) required collecting samples from two depths at each location. At Solid Waste Management Unit (SWMU) 00-011(a), two sample locations (00-27165 and 00-27176) were each sampled at only one depth. These locations were in the drainage channel, and only one depth interval was sampled because tuff was encountered.

At SWMU 00-011(a), steep topography prevented performing the geophysical survey or collecting samples on some areas in the northern portion of the site. In other areas at SWMU 00-011(a), the density of standing trees reduced the ability to obtain GPS coverage for the geophysical survey. In those limited areas, a continuous survey was not completed, but specific grid locations were screened before sampling to ensure no munitions debris (MD) or munitions and explosives of concern (MEC) were present. Some grid locations at SWMU 00-011(a) were densely covered by fallen trees, making the soil surface inaccessible. These locations were not surveyed or sampled.

For SWMU 00-011(d), the approved work plan (LANL 2005, 089657, p. 23) stated that the "former bazooka impact area will be sampled from three locations at one sample depth because of the nearly vertical surface topography." The actual topography was less steep than expected, so these locations were sampled from two depth intervals.

At SWMU 00-011(e), one grid location (S-202) was not screened or sampled because of its close proximity to archaeological artifacts. Location S-288 was not screened or sampled because the planned location was on a cliff, and moving the location would have encroached upon other planned locations. Location S-302 was not screened or sampled because it was located on a cliff.

At several locations on the western side of SWMU 00-011(e) (locations 00-27073, 00-27074, 00-27128, S-284, S-286, S-287, S-291, S-292, S-293, S-300, and S-301), dacite outcrop was encountered. At those locations, samples could not be collected at two depth intervals because the dacite was too hard to auger through. At three other locations (00-27064, 00-27065, and S-272) samples could not be collected at the second depth interval because hard welded tuff was encountered and the auger could not penetrate.

The approved work plan (LANL 2005, 089657; p. 23; NMED 2006, 091532) required sampling at all locations where MD and MEC were detected by the geophysical survey. One 37-mm projectile fragment was located at SWMU 00-011(e) during the survey, but it was located on top of a boulder and had likely been placed there by hand at some time after site operations ceased. The location was not sampled because it was believed that the fragment was not in its original location. In addition, no material was available to sample immediately under the fragment.

These deviations did not significantly alter the results of the investigation. Sufficient samples remained at these SWMUs to define the nature and extent of contamination and to perform risk screening assessments.

B-7.0 REFERENCES

The following list includes all documents cited in this appendix. Parenthetical information following each reference provides the author(s), publication date, and ER ID number. This information is also included in text citations. ER ID numbers are assigned by the Environmental Programs Directorate's Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.

Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau; the U.S. Department of Energy–Los Alamos Site Office; the U.S. Environmental Protection Agency, Region 6; and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.

LANL (Los Alamos National Laboratory), July 2005. "Investigation Work Plan for Guaje/Barrancas/Rendija Canyons Aggregate Area at Technical Area 00," Los Alamos National Laboratory document LA-UR-05-3869, Los Alamos, New Mexico. (LANL 2005, 089657)

NMED (New Mexico Environment Department), January 5, 2006. "Approval with Modifications for the Investigation Work Plan for Guaje/Barrancas/Rendija Canyons Aggregate Area, at Technical Area (TA) 00," 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, 091532)

Table B-1.0-1
Brief Descriptions of Field Investigation Methods

Method	SOP Number	Summary	Deviations from SOP
Hand-Auger Sampling	6.10	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 to collect samples of weathered or nonwelded tuff. The method involves hand-turning a stainless-steel bucket auger (typically 3–4-in.-inside diameter), creating a vertical hole that can be advanced to the desired sample depth. When the desired depth is reached, the auger is decontaminated before advancing the hole through the sample depth. The sample material is transferred from the auger bucket to a stainless-steel sampling bowl before filling the various required sample containers.	None
Handling, Packaging, and Shipping of Samples	ENV-DO-207	Field team members seal and label samples before packing, and they ensure that the sample containers and the containers used for transport are free of external contamination. Field team members package all samples to minimize the possibility of breakage during transportation. After all environmental samples are collected, packaged, and preserved, a field team member transports them either to the SMO or an SMO-approved radiation screening laboratory under chain-of-custody. The SMO arranges for shipping of samples to analytical laboratories. The field team member must inform the SMO and/or the radiation screening laboratory coordinator when levels of radioactivity are in the action-level or limited-quantity ranges.	None
Sample Control and Field Documentation	1.04	The collection, screening, and transport of samples are documented on standard forms generated by the SMO. These forms include SCLs, COC forms, and sample container labels. Collection logs are completed at the time of sample collection and are signed by the sampler and a reviewer who verifies the logs for completeness and accuracy. Corresponding labels are initialed and applied to each sample container, and custody seals are placed around container lids or openings. Chain-of-custody forms are completed and assigned to verify that the samples are not left unattended.	None
Field Quality Control Samples	1.05	Field quality control samples are collected as directed in the March 1, 2005, Compliance Order on Consent and SOP-01.05 as follows: • *Field duplicates*: at a frequency of 10%; collected at the same time as a regular sample and submitted for the same analyses. • *Equipment rinsate blanks*: at a frequency of 10%; collected by rinsing sampling equipment with deionized water which is collected in a sample container and submitted for laboratory analysis. • *Trip blanks*: required for all field events that include the collection of samples for volatile organic compound (VOC) analysis. Trip blank containers of certified clean sand are opened and kept with the other sample containers during the sampling process.	None

Table B-1.0-1 (continued)

Method	SOP Number	Summary	Deviations from SOP
Field Decontamination of Drilling and Sampling Equipment	1.08	Dry decontamination is the preferred method to minimize the generation of liquid waste. Dry decontamination may include the use of a wire brush or other tool for removal of soil or other material adhering to the sampling equipment, followed by use of a commercial cleaning agent (a nonacid, waxless cleaner) and paper wipes. Dry decontamination may be followed by wet decontamination, if necessary. Wet decontamination may include washing with a nonphosphate detergent and water, followed by a water rinse and a second rinse with deionized water. Alternatively, steam cleaning may be used.	None
Containers and Preservation of Samples	ENV-DO-206	Specific requirements/processes for sample containers, preservation techniques, and holding times are based on U.S. Environmental Protection Agency guidance for environmental sampling, preservation, and quality assurance. Specific requirements for each sample are printed on the sample collection logs provided by the SMO: size and type of container (i.e. glass, amber glass, polyethylene), preservative, etc. All samples are preserved by placing them in insulated containers with ice to maintain a temperature of 4°C. Other requirements such as nitric acid or other preservatives may apply to different media or analytical requests.	None
Management of Environmental Restoration Project Waste, Waste Characterization	1.06, 1.10	Investigation-derived waste (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 shall be adequate to comply with on-site or off-site waste acceptance criteria. All stored IDW will be marked with appropriate signage and labels. Drummed IDW will be stored on pallets to prevent deterioration of containers. Generators are required to reduce the volume of waste generated by as much as is technically and economically feasible. The means to store, control, and transport each potential waste type and its classification shall be determined before the start of field operations that generate waste. A waste storage area shall be established before waste is generated. Waste storage areas located in controlled areas of the laboratory shall be controlled as needed to prevent inadvertent addition or management of wastes by unauthorized personnel. Each container of waste generated shall be individually labeled with waste classification, item identification number, and radioactivity (if applicable), immediately following containerization. All waste shall be segregated by classification and compatibility to prevent cross-contamination. Management of IDW is presented in Appendix H.	None

Table B-1.0-1 (continued)

Method	SOP Number	Summary	Deviations from SOP
Coordinating and Evaluating Geodetic Surveys	3.11	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 (IA) 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 are expressed as SPCS 83, NM Central, U.S. feet coordinates. All elevation data are reported relative to the National Geodetic Vertical Datum of 1983.	None

Appendix C

Data Quality

C-1.0 INTRODUCTION

Quality assurance (QA), quality control (QC), and data validation procedures were implemented in accordance with the requirements of the Quality Assurance Project Plan Requirements for Sampling and Analysis (LANL 1996, 054609), and the Los Alamos National Laboratory (LANL or the Laboratory) analytical services statement of work (SOW) for contract laboratories (LANL 2000, 071233). The results of the QA/QC activities were used to estimate accuracy, bias, and precision of the analytical measurements. QC samples included method blanks, blank spikes, matrix spikes, and laboratory control samples (LCSs) to assess accuracy and bias. Internal standards, external standards, surrogates, and tracers were also used to assess accuracy. The type and frequency of QC analyses are described in the analytical services SOW (LANL 2000, 071233). Other QC factors such as sample preservation and holding times were also assessed. Evaluating these QC indicators allows estimates to be made of the accuracy, bias, and precision of the analytical suites. A focused data validation was also performed for all the data packages (also referred to as request numbers). The focused validation followed the same procedure described above and included a more detailed review of the raw data results generated by the analytical laboratory.

A number of analytical results were rejected for various reasons and are not usable for the purposes of this report. The rejected results for each site are discussed in sections C-2.2-13 and C-3.2-11. The remaining data, including qualified data, are usable for evaluation and interpretive purposes.

Summaries of the analytical methods for inorganic and organic chemicals are provided in the following sections.

C-2.0 INORGANIC CHEMICAL ANALYSIS METHODS

A total of 304 samples, plus 30 field duplicates and 29 field rinsate samples, from the Guaje/Barrancas/Rendija Canyons Aggregate Area were analyzed for inorganic chemicals. All 302 samples were analyzed for target analyte list (TAL) metals, and 268 of the 304 samples were also analyzed for perchlorate.

Metals were analyzed using U.S. Environmental Protection Agency (EPA) Methods SW-846:6020, SW-846:6010B, or SW846:7471A. Perchlorate was analyzed using method SW-846:6850. The analytical methods used for inorganic chemicals are listed in Table C-2.0-1.

C-2.1 Inorganic Chemical QA/QC Samples

The use of QA/QC samples is designed to produce quantitative measures of the reliability of specific parts of an analytical procedure. 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. The methods for validating inorganic chemical sample results on the basis of the various QA/QC sample types are specified in the standard operating procedure (SOP) for the validation of inorganic chemicals (SOP-15.05). The validation of inorganic chemical data can result in the rejection of the data or the assignment of qualifiers to individual sample results (see section A-4.0 in Appendix A for definitions of the qualifiers used).

LCSs, method blanks, matrix spike samples, field duplicate samples, interference check samples, and serial dilution samples were analyzed to assess accuracy and precision of inorganic chemical analyses. Each of these QA/QC sample types is defined in the analytical services SOW (LANL 2000, 071233) and described briefly in the sections below.

The LCS serves as a monitor of the overall performance of each step during the analysis, including sample digestion. The analytical results for the samples were qualified according to National Functional Guidelines (EPA 1994, 048639) if the individual LCS recovery indicated an unacceptable bias in the measurement of individual analytes. LCS recoveries should fall into the control limits of 75–125% (LANL 2000, 071233).

Method blanks are used as a measurement of bias and potential cross-contamination. All target analytes should be below the contract-required detection limit (CRDL) in the preparation blank. The blank results for inorganic chemical analyses were within acceptable limits for all the analyses.

The accuracy of inorganic chemical analyses is also assessed using matrix spike samples. A matrix spike sample is designed to provide information about the effect of each sample matrix on the sample preparation procedures and analytical technique. The spike sample recoveries should be within the acceptance range of 75–125%.

Field duplicate sample results are used to assess the precision of inorganic chemical analyses. All relative percent differences between the sample and field duplicate should be ±35% (LANL 2000, 071233).

C-2.2 Data Quality Results for Inorganic Chemicals

C-2.2.1 Maintenance of Chain of Custody

Chain of custody forms were maintained properly for all samples analyzed for inorganic chemicals (see Appendix D on DVD included with this document).

C-2.2.2 Sample Documentation

All samples analyzed for inorganic chemicals were properly documented on the sample collection logs in the field (see Appendix D).

C-2.2.3 Sample Dilutions

Some samples were diluted for inorganic chemical analyses. No qualifiers were applied to any inorganic chemical sample results because of dilutions.

C-2.2.4 Sample Preservation

Preservation criteria were met for all samples analyzed for inorganic chemicals.

C-2.2.5 Holding Times

Holding time criteria were met for all samples analyzed for inorganic chemicals.

C-2.2.6 Initial and Continuing Calibration Verifications

Eight perchlorate results were qualified as estimated and biased low (J-) because the associated initial calibration verification (ICV) or continuing calibration verification (CCV) was recovered below the lower warning limit but greater than the lower acceptance limit (LAL).

Forty-five perchlorate results were qualified as estimated not detected (UJ) because the associated ICV or CCV was recovered below the lower warning limit but greater than the LAL.

C-2.2.7 Interference Check Sample and/or Serial Dilutions

Eighteen perchlorate results were qualified as estimated and biased low (J-) because the associated interference check sample (ICS) was recovered below the lower warning limit but greater than or equal to the LAL.

Thirty-nine perchlorate results were qualified as estimated not detected (UJ) because the associated ICS was recovered below the lower warning limit but greater than the LAL.

Eight TAL metal results were qualified as estimated (J) because the serial dilution sample relative percent difference (RPD) was greater than 10% and the sample result was greater than 50 times the method detection limit (MDL).

C-2.2.8 Laboratory Duplicates

A total of 188 TAL metal results were qualified as estimated (J) because both the sample and duplicate sample results were greater than or equal to 5 times the reporting limit (RL) and the duplicate RPD was greater than 35%.

Fifteen TAL metal results were qualified as estimated (J) because either the sample or duplicate sample results or both were greater than or equal to 5 times the RL, and the difference between the samples is greater than 2 times the RL.

One TAL metal result was qualified as estimated not detected (UJ) because either the sample or duplicate sample results or both were greater than or equal to 5 times the RL, and the difference between the samples was greater than 2 times the RL.

C-2.2.9 Method or Preparation Blanks

Forty-one TAL metal results were qualified as undetected (U) because the results were less than 5 times the amount in the method blank.

C-2.2.10 Matrix Spikes

Sixty-four TAL metal results were qualified as estimated and biased low (J-) because the analyte was recovered below the LAL but greater than 30% in the associated spike sample.

A total of 128 TAL metal results were qualified as estimated and biased high (J+) because the analyte was recovered above 150% in the associated spike sample.

A total of 276 TAL metal results were qualified as estimated and biased high (J+) because the analyte was recovered above the upper acceptable limit (UAL) but less than 150% of the associated spike sample.

A total of 165 TAL metal results were qualified as estimated not detected (UJ) because the analyte was recovered below the LAL but greater than 30% in the associated matrix spike sample.

C-2.2.11 Laboratory Control Sample Recoveries

A total of 208 TAL metal results were qualified as estimated and biased high (J+) because the associated LCS was recovered above the upper warning limit.

C-2.2.12 Quantization Limits and Method Detection Limits

A total of 711 TAL metal results were qualified as estimated (J) because the results were between the estimated detection limit and the MDL.

Thirty-three perchlorate results were qualified as estimated (J) because the results were between the estimated detection limit and the MDL.

C-2.2.13 Rejected Results

Thirty-four antimony results and four nickel results from soil samples at SWMU 00-011(a) were rejected because the associated spike sample recoveries were less than 30%. All of the rejected antimony results were initially qualified as nondetects by the analytical laboratories. Seventy-eight valid results for antimony remained for evaluation of chemicals of potential concern (COPCs). A total of 108 valid results for nickel remained after the 4 nickel results were rejected. The rejected results were not included in the data discussion, and they did not adversely affect the evaluation of COPCs.

Four antimony results from soil samples at SWMU 00-011(d) were rejected because the associated spike sample recoveries were less than 30%. All of the rejected results of antimony were initially qualified as nondetects by the analytical laboratories. Thirty-eight valid antimony results remained for COPC evaluation. The rejected results were not included in the data discussion, and they did not adversely affect the COPC evaluation.

C-3.0 ORGANIC CHEMICAL ANALYSIS METHODS

A total of 154 samples, plus 16 field duplicates and 5 field trip blank samples, from the Guaje/Barrancas/Rendija Canyons Aggregate Area were analyzed for organic chemicals. Samples were analyzed for one or more of the following organic chemical suites: volatile organic compounds (VOCs); semivolatile organic compounds (SVOCs); explosives compounds; total petroleum hydrocarbons (TPH) diesel range organics (DRO); and TPH-gasoline range organics (GRO). The analytical methods used for organic chemicals are listed in Table C-3.0-1. All QC procedures were followed as required in the analytical services SOW (LANL 2000, 071233).

C-3.1 Organic Chemical QA/QC Samples

The use of QA/QC samples is designed to produce quantitative measures of the reliability of specific parts of an analytical procedure. 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. The methods for validating organic chemical sample results on the basis of the various QA/QC sample types are specified in SOPs for SVOCs, VOCs, and explosive compounds (SOPs 15.01, 15.02, and 15.04, respectively). The validation of organic chemical data may result in the rejection of the data or the assignment of various qualifiers to individual sample results (see section A-4.0 of Appendix A for definitions of the qualifiers used).

Calibration verifications, instrument-performance checks, LCSs, method blanks, matrix spike samples, surrogates, and internal standards were analyzed to assess the accuracy and precision of organic chemical analyses. Each of these QA/QC sample types is defined in the analytical services SOW (LANL 2000, 071233) 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 it 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 analytical results for the samples were qualified according to National Functional Guidelines (EPA 1999, 066649) if the individual LCS recoveries were not within method-specific acceptance criteria. The LCS recoveries should fall within the control limits of 75–125% (LANL 2000, 071233).

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 CRDL in the method blank (LANL 2000, 071233).

The accuracy of organic chemical analyses is also assessed using matrix spike samples which are aliquots of the submitted samples spiked with a known concentration of the target analyte(s). Matrix spike samples are used to measure the ability to recover prescribed analytes from a native sample matrix. Spiking typically occurs before sample preparation and analysis. The spike sample recoveries should be within the acceptance range of 75–125% (LANL 2000, 071233).

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 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.

Internal standards 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 percent recovery for internal standards should be within the range of 50% to 200%.

C-3.2 Data Quality Results for Organic Chemicals

C-3.2.1 Maintenance of Chain of Custody

Chain of custody forms were maintained properly for all samples analyzed for organic chemicals (see Appendix D).

C-3.2.2 Sample Documentation

All samples analyzed for organic chemicals were properly documented on the sample collection logs in the field (see Appendix D).

C-3.2.3 Sample Dilutions

Some samples were diluted for organic chemical analyses. No qualifiers were applied to any organic chemical sample results because of dilutions.

C-3.2.4 Sample Preservation

Preservation criteria were met for all samples analyzed for organic chemicals.

C-3.2.5 Holding Times

A total of 114 explosive compounds results were qualified as estimated not detected (UJ) because the extraction holding time was exceeded by more than 2 times the published holding time.

C-3.2.6 Initial and Continuing Calibration Verifications

A total of 199 explosive compounds results and 202 SVOC results were qualified as estimated not detected (UJ) because the percent relative standard deviation (%RSD) or percent difference (%D) exceeded the criteria in the initial or continuing calibration standards.

Thirty-five VOC results were qualified as estimated not detected (UJ) because the percent relative standard deviation (%RSD) or percent difference (%D) exceeded the criteria in the initial or continuing calibration standards.

C-3.2.7 Surrogate Recoveries and Internal Standard Responses

One SVOC result and one VOC result were qualified as estimated (J) because the associated internal standard (IS) area counts were less than 50% but greater than 10% recovery when compared to the area counts in the applicable continuing calibration standard.

Ninety-nine SVOC results were qualified as estimated not detected (UJ) because the associated IS area counts were less than 50% but greater than 10% recovery when compared to the area counts in the applicable continuing calibration standard.

Ten TPH-GRO results were qualified as estimated and potentially biased low (J-) because the sample surrogate recovery was less than the LAL but greater than 10%.

Twelve TPH-GRO results were qualified as estimated not detected (UJ) because the sample surrogate recovery was less than the LAL but greater than or equal to 10%.

C-3.2.8 Method Blanks

Twenty-one TPH-DRO results were qualified as estimated (J) because the associated sample concentration was less than 5 or 10 times the amount in the method blank.

Seven TPH-DRO results and three VOC results were qualified as not detected (U) because the associated sample concentration was less than 5 or 10 times the amount in the method blank.

C-3.2.9 Laboratory and Field Duplicates

Laboratory and field duplicates collected for organic chemical analyses indicated acceptable precision for all samples.

C-3.2.10 Laboratory Control Sample Recoveries

Eighteen explosive compounds results were qualified as estimated not detected (UJ) because the associated LCS recovery was less than the lower acceptable limit (LAL) but greater than or equal to 10%.

C-3.2.11 Rejected Results

Twenty-two tetryl results from soil samples at SWMU 00-011(a) were rejected because the surrogate recovery was <10%. All of the rejected results of tetryl were initially qualified as nondetects by the analytical laboratories. Twenty-four valid tetryl results remained for evaluation of COPCs. The rejected results were not included in the data discussion, and they did not adversely affect the COPC evaluation.

C-4.0 REFERENCES

The following list includes all documents cited in this appendix. Parenthetical information following each reference provides the author(s), publication date, and ER ID number. This information is also included in text citations. ER ID numbers are assigned by the Environmental Programs Directorate's Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.

Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau; the U.S. Department of Energy–Los Alamos Site Office; the U.S. Environmental Protection Agency, Region 6; and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.

EPA (U.S. Environmental Protection Agency), February 1994. "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," EPA-540/R-94/013, Office of Emergency and Remedial Response, Washington, D.C. (EPA 1994, 048639)

EPA (U.S. Environmental Protection Agency), October 1999. "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," EPA540/R-99/008, Office of Emergency and Remedial Response, Washington, D.C. (EPA 1999, 066649)

LANL (Los Alamos National Laboratory), March 1996. "Quality Assurance Project Plan Requirements for Sampling and Analysis," Los Alamos National Laboratory document LA-UR-96-441, Los Alamos, New Mexico. (LANL 1996, 054609)

LANL (Los Alamos National Laboratory), December 2000. "University of California, Los Alamos National Laboratory (LANL), I8980SOW0-8S, Statement of Work for Analytical Laboratories," Rev. 1, Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2000, 071233)

Table C-2.0-1
Analytical Methods for Inorganic Chemical Analyses

Analytical Method	Analytical Description	Analytical Suite
EPA SW-846:6010B	ICPES—atomic emission spectroscopy (AES)	Aluminum, antimony, arsenic, barium, beryllium, boron, calcium, cadmium, cobalt, chromium, copper, iron, lead, lithium, magnesium, manganese, mercury, nickel, potassium, selenium, silicon, sodium, silver, thallium, titanium, uranium, vanadium, and zinc (TAL metals)
EPA SW-846:6020	Inductively coupled plasma mass spectroscopy (ICPMS)	Aluminum, antimony, arsenic, barium, beryllium, boron, calcium, cadmium, cobalt, chromium, copper, iron, lead, magnesium, manganese, nickel, potassium, selenium, sodium, silicon, silver, thallium, titanium, vanadium, and zinc (TAL metals)
EPA SW-846:7471A	Graphite furnace atomic absorption (GFAA)	Mercury (TAL metal)
SW-846:6850	High-performance liquid chromatography/mass spectrometry	Perchlorate

Table C-3.0-1
Analytical Methods for Organic Chemical Analyses

Analytical Method	Analytical Description	Target Compound List
EPA SW-846:8321A_MOD	Explosive compounds	HEXP
EPA SW-846:8270C	SVOCs	See analytical services SOW (LANL 2000, 071233)
EPA SW-846:8260B - Analysis	VOCs	
EPA SW-846:8015M_EXTRACTABLE	TPH-DRO	
EPA SW-846:8015M_PURGEABLE	TPH-GRO	

Appendix D

Analytical Suites and Results,
Chain-of-Custody Forms, and Sample-Collection Logs
(on DVD included with this document)

Appendix E

Data Review

E-1.0 OVERVIEW OF DATA

Data discussed in this appendix are the results from samples collected during the investigation of the solid waste management units (SWMUs) and areas of concern (AOCs) in the Guaja/Barrancas/Rendija Canyons Aggregate Area in 2006 and 2007. These samples were shipped through the Sample Management Office (SMO) to off-site contract laboratories for analysis and were accompanied by full chain-of-custody and quality documentation. The resulting data are decision-level data, used in determining nature and extent, in calculating 95% UCLs, and in risk screening assessments.

E-1.1 Overview of Sampling Activities

The approved work plan (LANL 2005, 089657; NMED 2006, 091532) specified the locations ("sampling locations") from which samples were collected to submit to off-site laboratories for analysis. At other locations ("screening locations"), samples were collected initially only for field screening of volatile organic compounds (VOCs), TNT (2,4,6-trinitrotoluene) and RDX (research department explosives or hexahydro-1,3,5-trinitro-1,3,5-triazine). If the field-screening results were positive, those samples were submitted for analyses at off-site laboratories. A minimum of 20% of screening samples were submitted for analyses at off-site laboratories, regardless of screening results. All screening locations were originally designated as location S-xxx. If a screening sample was submitted for explosive compound analysis at a fixed analytical laboratory, then the location was renamed 00-27xxx, and its location coordinates were entered into the Environmental Restoration Database.

E-1.2 Overview of COPC Identification

The purpose of the data review is to identify chemicals of potential concern (COPCs) for each site (SWMU or AOC) in the Guaja/Barrancas/Rendija Canyons Aggregate Area. Inorganic COPCs are identified through background comparison. Organic chemicals are identified as COPCs if they are detected because they have no background values (BVs). Samples were not analyzed for radionuclides at these sites.

For inorganic chemicals, data are evaluated by sample media to facilitate the comparison with media-specific background data. Sample media encountered in this investigation include soil (all soil horizons, designated by the media code ALLH); quaternary alluvium (media code QAL); and Bandelier Tuff (media codes Qbt 3 and Qct). Background data are available for soil and tuff (LANL 1998, 059730). The QAL samples are evaluated based on soil BVs. A BV may be a calculated value for the background data set (upper tolerance limit or the 95% upper confidence bound on the 95th quantile) or a detection limit (DL). To identify inorganic COPCs, the first step is to compare the reported value with the BV and the maximum background concentration, if either or both are available. Generally, a constituent is identified as a COPC if the reported value is above the BV or the maximum background concentration, whichever is greater. Further evaluation is performed when a constituent is detected above the BV in only one sample across the site, or when a constituent is not detected across the site but has DLs above the BV. When a BV is not available, a constituent is identified as a COPC if it is detected.

Two inorganic chemicals, calcium and sodium, receive additional consideration when they are detected above their BVs. Calcium and sodium are essential nutrients that are common in soils of the region. For this reason, calcium and sodium are sometimes eliminated as COPCs when they are detected infrequently above background or do not greatly exceed the range of background concentrations, particularly if they are not likely to have been associated with historical Laboratory activities at the site.

Chemicals are considered COPCs for the site if they are identified as a COPC for any medium. The media-specific identification of COPCs for each site is discussed in the following sections.

E-2.0 SWMU 00-011(a)

Only soil samples were collected and were analyzed for target analyte list (TAL) metals and perchlorate, or explosive compounds. No tuff samples were collected. Table E-2.0-1 summarizes the samples collected and the analyses requested at SWMU 00-011(a).

E-2.1 Inorganic Chemicals at SWMU 00-011(a)

One hundred twelve samples from 58 locations were analyzed for TAL metals and perchlorate (Table E-2.0-1). Table E-2.1-1 summarizes the inorganic chemicals detected without BVs (perchlorate) and the inorganic chemicals above BVs at SWMU 00-011(a).

Aluminum, barium, cadmium, calcium, chromium, cobalt, iron, lead, magnesium, manganese, nickel, perchlorate, potassium, selenium, vanadium, and zinc were detected above their BVs, had DLs above the BVs, or were detected but have no BV.

- Calcium was detected above its BV in 8 of 110 samples. Only one sample concentration (40,100 mg/kg) exceeded the maximum background concentration of calcium in soil (14,000 mg/kg). Calcium is an essential nutrient and was detected above background in only one sample. Therefore calcium is not retained as a COPC.
- Aluminum, barium, chromium, iron, magnesium, nickel, potassium, vanadium, and zinc were detected above their BVs but below the maximum background concentrations. Aluminum, barium, chromium, iron, magnesium, nickel, potassium, vanadium, and zinc are not retained as COPCs.
- Cadmium was not detected. The DLs were above its BV and three DLs were above the maximum background concentration (2.6 mg/kg). Cadmium is retained as a COPC.
- Cobalt, lead, manganese, and selenium were detected above their BVs and above the maximum background concentrations. Selenium also had DLs above the maximum background concentration. Cobalt, lead, manganese, and selenium are retained as COPCs.
- Perchlorate was detected and has no BV; it is retained as a COPC.

E-2.2 Summary of Inorganic COPCs at SWMU 00-011(a)

The inorganic COPCs identified at SWMU 00-011(a) are cadmium, cobalt, lead, manganese, perchlorate, and selenium.

E-2.3 Explosive Compounds at SWMU 00-011(a)

Forty-seven samples from 46 locations were analyzed for explosive compounds. Table E-2.0-1 summarizes the soil samples collected and the explosive chemical analyses requested.

No explosives were detected.

E-3.0 SWMU 00-011(d)

Samples were analyzed for TAL metals and perchlorate or explosive compounds. Table E-3.0-1 summarizes the samples collected and the analyses requested at SWMU 00-011(d).

E-3.1 Inorganic Chemicals in Soil at SWMU 00-011(d)

Thirty-two soil samples from 20 locations were analyzed for TAL metals and perchlorate (Table E-3.0-1). Table E-3.1-1 summarizes the inorganic chemicals detected without BVs (perchlorate) and the inorganic chemicals above BVs at SWMU 00-011(d).

Cadmium, chromium, cobalt, lead, manganese, perchlorate, selenium, and zinc were detected above their BVs, had DLs above the BVs, or were detected but have no BV.

- Cadmium was not detected and had DLs above its BV but below the maximum background concentration. Cadmium is not retained as a COPC in soil.
- Chromium and zinc were detected above their BVs but below their maximum background concentrations. Chromium and zinc are not retained as COPCs in soil.
- Cobalt was detected in only one sample at a concentration of 20.3 mg/kg, which is above the BV and the maximum background concentration (9.5 mg/kg). Cobalt is retained as a COPC in soil.
- Lead and selenium were detected above their BVs and above their maximum background concentrations. Selenium also had DLs above the maximum background concentration. Lead and selenium are retained as COPCs in soil.
- Manganese was detected in only one sample at a concentration of 1650 mg/kg, which is above the BV and the maximum background concentration (1100 mg/kg). Manganese is retained as a COPC in soil.
- Perchlorate was detected and has no BV; it is retained as a COPC in soil.

E-3.2 Inorganic Chemicals in Tuff at SWMU 00-011(d)

Ten tuff samples from 9 locations were analyzed for TAL metals and perchlorate (Table E-3.0-1). Table E-3.1-1 summarizes the inorganic chemicals detected without BVs (perchlorate) and the inorganic chemicals above BVs at SWMU 00-011(d).

Barium, calcium, magnesium, perchlorate, and selenium were detected above their BVs, had DLs above the BVs, or were detected but have no BV.

- Calcium was detected above its BV in one tuff sample, and exceeded the maximum background concentration for calcium in tuff. Calcium is an essential nutrient, and was infrequently detected above background. Calcium is not retained as a COPC.
- Barium was detected in only one sample at a concentration of 60.2 mg/kg, which is above the BV (46.0 mg/kg) and above the maximum background concentration (51.6 mg/kg). Barium is retained as a COPC in tuff.
- Magnesium was detected above its BV in one tuff sample but was less than the maximum background concentration. Magnesium is not retained as a COPC in tuff.

- Perchlorate was detected and has no BV; it is retained as a COPC in tuff.
- Selenium was detected above the BV. It also had DLs above the BV. Selenium is retained as a COPC in tuff.

E-3.3 Inorganic COPC Summary at SWMU 00-011(d)

The inorganic COPCs identified at SWMU 00-011(d) are barium, cobalt, lead, manganese, perchlorate, and selenium.

E-3.4 Explosive Compounds at SWMU 00-011(d)

Seven soil samples collected from 1 location each (7 locations) were analyzed for explosive compounds. Two tuff samples from 1 location each (2 locations) were analyzed for explosive compounds. Table E-3.0-1 summarizes the samples collected and the explosive compound analyses requested.

No explosive chemicals were detected.

E-4.0 SWMU 00-011(e)

Samples were analyzed for TAL metals and perchlorate, or explosive compounds. Table E-4.0-1 summarizes the samples collected and the analyses requested at SWMU 00-011(e).

E-4.1 Inorganic Chemicals in Soil and Quaternary Alluvium at SWMU 00-011(e)

Ninety-one soil samples from 62 locations were analyzed for TAL metals and perchlorate and 24 QAL samples from 22 locations were analyzed for TAL metals and perchlorate (Table E-4.0-1). Inorganic chemicals detected in QAL were compared to soil background data. Table E-4.1-1 summarizes the inorganic chemicals detected without BVs (perchlorate) and the inorganic chemicals above BVs at SWMU 00-011(e).

Beryllium, cadmium, calcium, chromium, lead, mercury, perchlorate, selenium, sodium, and thallium were detected above their BVs, had DLs above the BVs, or were detected but have no BV.

- Calcium was detected above its BV in two of 91 soil samples. One sample concentration (16,300 mg/kg) exceeded the maximum background concentration (14,000 mg/kg). Calcium is an essential nutrient and was detected infrequently above background. Calcium is not retained as a COPC.
- Beryllium was detected above the soil BV in QAL but below the maximum soil background concentration. Beryllium is not retained as a COPC.
- Cadmium was not detected in either soil or QAL and had DLs above its BV but below the maximum soil background concentration. Cadmium is not retained as a COPC.
- Chromium and thallium were detected in soil at concentrations above their BVs but below their maximum soil background concentrations. Chromium and thallium are not retained as COPCs.
- Lead was detected in soil at concentrations above the BV and above the maximum soil background concentration. Lead is retained as a COPC.
- Mercury was detected above the BV (0.1 mg/kg) in only one sample (QAL) at a concentration of 0.525 mg/kg. Mercury is retained as a COPC.
- Perchlorate was detected in soil and QAL and has no BV. Perchlorate is retained as a COPC.

- Selenium was not detected above the BV in soil or in QAL but had DLs above the BV and above the maximum soil background concentration in multiple samples. Therefore, selenium is retained as a COPC.
- Sodium was detected above its BV in only one soil sample at a concentration of 1860 mg/kg, which exceeded the maximum soil background concentration (1800 mg/kg). Sodium is an essential nutrient and was detected infrequently above background. Therefore, sodium is not retained as a COPC.

E-4.2 Inorganic Chemicals in Tuff at SWMU 00-011(e)

One tuff sample was analyzed for TAL metals and perchlorate (Table E-4.0-1). Table E-4.1-1 Summarizes the inorganic chemicals detected without BVs (perchlorate) and the inorganic chemicals above BVs at SWMU 00-011(e).

Arsenic and nickel were detected above BVs.

- Arsenic was detected in one tuff sample (Qct) at a concentration of 0.709 mg/kg, which is above the BV (0.56 mg/kg), but equivalent to the maximum tuff background concentration (0.7 mg/kg). Arsenic is not retained as a COPC.
- Nickel was detected in one tuff sample (Qct) at a concentration of 3.86 mg/kg, which is above the BV (2 mg/kg) and above the maximum tuff background concentration (2.8 mg/kg). Nickel is retained as a COPC.

E-4.3 Summary of Inorganic COPCs at SWMU 00-011(e)

The inorganic chemical COPCs identified at SWMU 00-011(e) are lead, mercury, nickel, perchlorate, and selenium.

E-4.4 Explosive Compounds at SWMU 00-011(e)

Forty-seven soil samples collected from 1 location each (47 locations) were analyzed for explosive compounds. Seventeen QAL samples collected from 1 location each (17 locations) were analyzed for explosive compounds. One tuff sample was analyzed for explosive compounds. Table E-4.0-1 summarizes the samples collected and the explosive chemical analyses requested.

No explosive compounds were detected.

E-5.0 AOC C-00-041

Soil samples were analyzed for inorganic and organic chemicals. No tuff samples were collected at AOC C-00-041. Table E-5.0-1 summarizes the samples collected and the analyses requested at this AOC.

E-5.1 Inorganic Chemicals at AOC C-00-041

Thirty-four soil samples collected from 17 locations were analyzed for TAL metals (Table E-5.0-1). Table E-5.1-1 summarizes the inorganic chemicals above BVs at AOC C-00-041.

Aluminum, beryllium, cadmium, iron, lead, nickel, potassium, selenium, and zinc were either detected above their BVs or had DLs above the BVs.

- Potassium was detected above its BV but below the maximum soil background concentration in one sample. Potassium is not retained as a COPC.
- Aluminum, beryllium, iron, nickel, and zinc were detected above their BVs but below their maximum soil background concentrations. Aluminum, beryllium, iron, nickel, and zinc are not retained as COPCs.
- Cadmium was not detected above its BV and had DLs above its BV but below the maximum soil background concentration. Cadmium is not retained as a COPC.
- Lead and selenium were detected in soil at concentrations above their BVs and above their maximum soil background concentrations. Lead and selenium are retained as COPCs.

E-5.2 Inorganic COPC Summary at AOC C-00-041

The inorganic COPCs identified at AOC C-00-041 are lead and selenium.

E-5.3 Organic Chemicals at AOC C-00-041

Thirty-four soil samples collected from 17 locations were analyzed for semivolatile organic compounds, total petroleum hydrocarbons (TPH)–diesel range organics (DRO), TPH–gasoline range organics (TPH-GRO), and volatile organic compounds. Table E-5.0-1 summarizes the soil samples collected and the organic chemical analyses requested. Table E-5.3-1 presents the concentrations of the detected organic chemicals for individual samples at AOC C-00-041.

Acenaphthene; benzo(b)fluoranthene; benzoic acid; chloroform; chrysene; 1,4-dichlorobenzene; 1,1-dichloroethene; fluoranthene; phenanthrene; pyrene; toluene; TPH-DRO; TPH-GRO; and 1,2,4-trimethylbenzene were detected and are retained as COPCs.

E-5.4 Organic COPC Summary at AOC C-00-041

The organic COPCs identified at AOC C-00-041 are acenaphthene; benzo(b)fluoranthene; benzoic acid; chloroform; chrysene; 1,4-dichlorobenzene; 1,1-dichloroethene; fluoranthene; phenanthrene; pyrene; toluene; TPH-DRO; TPH-GRO; and 1,2,4-trimethylbenzene.

E-6.0 NATURE AND EXTENT OF CONTAMINATION

E-6.1 SWMU 00-011(a)

E-6.1.1 Inorganic Chemicals

Six inorganic chemicals (cadmium, cobalt, lead, manganese, perchlorate, and selenium) were identified as COPCs. Sample depths ranged from 0 to 3.2 ft below ground surface (bgs) (Table E-2.0-1). Inorganic chemicals were detected at concentrations greater than BVs infrequently across the site, and extent is defined vertically and laterally (Figure E-6.1-1).

Cadmium was not detected throughout the site. Although it had multiple DLs above the soil BV (0.4 mg/kg), the nondetected concentrations do not indicate a release. The extent of cadmium is defined.

Cobalt was detected above the soil BV (8.64 mg/kg) at concentrations ranging from 9.14 to 16.5 mg/kg at eight locations (00-27140, 00-27142, 00-27148, 00-27156, 00-27192, 00-27197, 00-27199, and

00-27201), among which six had detections above the maximum soil background concentration (9.5 mg/kg). At two locations, cobalt concentrations decreased with depth, while at the other six locations cobalt was not detected above background in the surface soil sample. The maximum detected concentration of cobalt (16.5 mg/kg from deeper sample 2.0 to 3.0 ft at location 00-27156) is less than twice the BV and the maximum soil background concentration (9.5 mg/kg). The infrequent detection of cobalt above BV only at depth (2 to 3 ft) but not in surface soil and the low detected concentrations above the BV (either less than the maximum background concentration or less than twice the maximum) likely reflect the natural variability of the soil and are not indicative of a release from SWMU 00-011(a). The extent of cobalt is defined.

Lead was detected above the soil BV (22.3 mg/kg) at concentrations ranging from 22.8 to 40.6 mg/kg at three locations (00-27132, 00-27148, and 00-27209). Lead concentrations decreased with depth at two locations and the remaining concentration (28.9 mg/kg) is at the maximum soil background concentration (28 mg/kg). The extent of lead is defined.

Manganese was detected above the soil BV (671 mg/kg) at concentrations ranging from 728 to 1540 mg/kg at seven locations (00-27140, 00-27142, 00-27148, 00-27156, 00-27192, 00-27197, and 00-27199). At five of these locations (00-27142, 00-27148, 00-27192, 00-27197, and 00-27199), the manganese concentration is less than the maximum soil background concentration (1100 mg/kg). At location 00-27156, the manganese concentration increased with depth to slightly above the maximum soil background concentration (1120 mg/kg compared to 1100 mg/kg). The manganese concentration at location 00-27140 is 1540 mg/kg at 2 to 3 ft but is not detected above background in the surface sample. The infrequent detection of manganese above BV only at depth (2 to 3 ft), but not in surface soil, and the low detected concentrations above the BV (either less than the maximum background concentration or less than twice the maximum) probably reflect the natural variability of the soil and are not indicative of a release from SWMU 00-011(a). The extent of manganese is defined.

Perchlorate was detected at low concentrations (less than 0.005 mg/kg) throughout the site, except at locations 00-27130 and 00-27201 where perchlorate was detected at slightly higher concentrations (0.00976 mg/kg to 0.175 mg/kg). Perchlorate concentrations were reported primarily at depth (2 to 3 ft) and often without being reported as detected in the surface soil. In addition, the detected concentrations were either slightly above the estimated DLs (less than twice) or less than the estimated DLs (0.0021 to 0.0026 mg/kg), except for the locations mentioned above. The perchlorate concentrations at locations 00-27130 and 00-27201 decreased laterally. The extent of perchlorate is defined.

Selenium was detected above the soil BV (1.52 mg/kg) at concentrations ranging from 1.64 to 2.55 mg/kg in four samples from three locations (00-27156, 00-27201, and 00-27209). The maximum detected selenium concentration (2.55 mg/kg from 0.0 to 0.5 ft at location 00-27209) is less than twice the BV (1.7 mg/kg), and selenium was not detected above its BV in the deeper sample. The other selenium concentrations are below or slightly above the maximum soil background concentration (1.7 mg/kg). The infrequent detection of selenium above BV and the low detected concentrations above the BV (either less than the maximum background concentration or less than twice the maximum) likely reflect the natural variability of the soil and are not indicative of a release from SWMU 00-011(a). The extent of selenium is defined.

The nature and extent of inorganic chemicals are defined at SWMU 00-011(a).

E-6.1.2 Explosive Compounds

No explosive compounds were detected at SWMU 00-011(a).

E-6.2 SWMU 00-011(d)

E-6.2.1 Inorganic Chemicals

Inorganic chemicals were detected at concentrations greater than BVs infrequently across the site, and extent is defined vertically and laterally (Figure E-6.2-1). Six inorganic chemicals (barium, cobalt, lead, manganese, perchlorate, and selenium) were identified as COPCs. Sample depths ranged from 0 to 3 ft bgs (Table E-3.0-1).

Barium was detected above the Qbt 3 BV (46 mg/kg) and the maximum background concentration (51.6 mg/kg) in only one sample at a concentration of 60.2 mg/kg (location 00-27230). Barium was not detected in any of the downslope samples; therefore, the extent of barium is defined.

Cobalt was detected above the BV in only one sample, at a concentration of 20.3 mg/kg, at location 00-27224. It was not detected in the deeper sample at this location. The extent of cobalt is defined.

Lead was detected above the soil BV (22.3 mg/kg) at concentrations ranging from 22.4 to 47.7 mg/kg at seven locations (00-27211, 00-27214, 00-27216, 00-27218, 00-27221, 00-27224, and 00-27228). At two locations, lead was detected above the maximum soil background concentration of 28 mg/kg (47.7 mg/kg from 0.0 to 0.5 ft at location 00-27224 and 33 mg/kg from 0.0 to 0.5 ft at location 00-27214) but was not detected above background in the deeper samples. The extent of lead is defined.

Manganese was detected above the BV in only one sample, at a concentration of 1650 mg/kg, at location 00-27224. It was not detected in the deeper sample at this location. The extent of manganese is defined.

Perchlorate was detected at several locations at low concentrations (less than 0.0035 mg/kg). Concentrations were slightly above (less than twice) or less than DLs (0.0021 mg/kg to 0.0029 mg/kg). Perchlorate was not detected in the drainage samples, indicating it is not migrating off site. The extent of perchlorate is defined.

Selenium was detected above the BVs of associated media at two locations (00-27211 and 00-27227). At location 00-27211, selenium was detected at a concentration of 1.92 mg/kg at 0.0 to 0.5 ft, but it was not detected above the soil BV in the deeper sample. Selenium was detected above the tuff BV at location 00-27227 (0.94 mg/kg at 2.0 to 3.0 ft) but was not detected in the surface sample or in the downgradient or down-drainage samples. The extent of selenium is defined.

The nature and extent of inorganic chemicals are defined at SWMU 00-011(d).

E-6.2.2 Explosive Compounds

No explosive compounds were detected at SWMU 00-011(d).

E-6.3 SWMU 00-011(e)

E-6.3.1 Inorganic Chemicals

Inorganic chemicals were detected at concentrations greater than BVs infrequently across the site, and extent is defined vertically and laterally (Figure E-6.3-1). Five inorganic chemicals (lead, mercury, nickel, selenium, and perchlorate) were identified as COPCs. The sampling depths ranged from 0 to 3 ft bgs (Table E-4.0-1).

Lead was detected above the soil BV (22.3 mg/kg) at concentrations of 22.5 and 330 mg/kg in one sample each at location 00-27031 and location 00-27125, respectively. At location 00-27125, the concentration of lead (22.5 mg/kg) is less than the maximum soil background concentration (28 mg/kg).

At location 00-27031, lead was detected at a concentration of 330 mg/kg (0.0 to 0.5 ft) but was not detected above the BV in the deeper sample. The extent of lead is defined.

Mercury was detected above the soil BV (0.1 mg/kg) at a concentration of 0.525 mg/kg (2 to 3 ft at location 00-27048). Mercury was not detected above BV in the surface sample or in any surrounding samples. The extent of mercury is defined.

Nickel was detected above the Qct BV (2 mg/kg) at a concentration of 3.86 mg/kg (2 to 3 ft at location 00-27041). Nickel was not detected above BV in the surface sample or in any surrounding samples. The extent of nickel is defined.

Selenium was not detected throughout the site. Although it had multiple DLs above the soil and QAL BV (1.52 mg/kg) and had one DL above the Qct BV (0.3 mg/kg), the nondetected concentrations do not indicate a release. The extent of selenium is defined.

Perchlorate was detected at several locations at low concentrations (less than 0.003 mg/kg). Concentrations were either slightly above the DLs (less than twice) or less than the DLs (0.0021 mg/kg to 0.0026 mg/kg). Perchlorate was detected primarily in the deeper samples at a location and not in the surface samples. If detected in the surface sample, concentrations decreased slightly with depth. Perchlorate was not detected in the drainage samples, indicating it is not migrating off-site. The extent of perchlorate is defined.

The nature and extent of inorganic chemicals are defined at SWMU 00-011(e).

E-6.3.2 Explosive Compounds

No explosive compounds were detected at SWMU 00-011(e).

E-6.4 AOC C-00-041

E-6.4.1 Inorganic Chemicals

Inorganic chemicals were detected at concentrations above BVs infrequently across the site, except for selenium (Figure E-6.4-1). Two inorganic chemicals (lead and selenium) were identified as COPCs. The sampling depths ranged from 0 to 4.1 ft bgs (Table E-5.0-1).

Lead was detected above the soil BV (22.3 mg/kg) at a concentration of 33.9 mg/kg (0.0 to 0.5 ft) and 25 mg/kg (2.0 to 3.0 ft) at location 00-27650. The deeper sample result is less than the maximum soil background concentration (28 mg/kg). Lead was detected at a concentration of 30.3 mg/kg (0 to 0.5 ft) at location 00-27651 but was not detected above background in the deeper sample. The extent of lead is defined.

Selenium was detected above the soil BV (1.52 mg/kg) at 16 of 17 sampling locations. There is no consistent trend of selenium with depth, with concentrations remaining essentially the same in both sampling intervals at several locations. Selenium concentrations generally decreased down channel with the lowest concentration (1.66 mg/kg) detected at the most downstream location (00-27657). Selenium is present above BV upgradient of the asphalt batch plant and does not appear to be related to site activities at AOC C-00-041. The extent of selenium is defined.

E-6.4.2 Organic Chemicals

Fourteen organic chemicals were detected and are retained as COPCs at AOC C-00-041: acenaphthene; benzo(b)fluoranthene; benzoic acid; chloroform; chrysene; 1,4-dichlorobenzene; 1,1 dichloroethene;

fluoranthene; phenanthrene; pyrene; toluene; TPH-DRO; TPH-GRO; and 1,2,4 trimethylbenzne were detected and are shown in Figure E-6.4-2.

Acenaphthene, benzo(b)fluoranthene, chrysene, and 1,4-dichlorobenzene were detected in one sample each. All were detected in a surface sample but were not detected in the deeper sample at the same location. The extent of acenaphthene, benzo(b)fluoranthene, chrysene, and 1,4-dichlorobenzene is defined.

Benzoic acid, phenanthrene, and pyrene were detected at three locations. Benzoic acid and phenanthrene were detected in surface samples but were not detected in the deeper samples at the same locations. At two locations, pyrene was detected in the surface sample but was not detected in the deeper sample. Pyrene was detected at a concentration of 0.03 mg/kg (1.0 to 1.6 ft) at location 00-27657, which is less than the estimated quantitation limit (EQL) of 0.048 mg/kg, and was not detected in the surface sample. The extent of benzoic acid, phenanthrene, and pyrene is defined.

Fluoranthene was detected at four locations. It was detected in the surface samples but not in the deeper samples collected at three locations (00-27646, 00-27655, and 00-27656). Fluoranthene was detected at a concentration of 0.0261 mg/kg (1.0 to 1.6 ft) at location 00-27657, which is less than the EQL of 0.037 mg/kg and was not detected in the surface sample. The extent of fluoranthene is defined.

Chloroform; 1,1-dichloroethene; toluene; TPH-DRO; TPH-GRO; and 1,2,4-trimethylbenzene were detected at five or more locations at low concentrations. Chloroform concentrations decreased with depth in four of the five locations at which it was detected and was detected below the EQL (0.0012 mg/kg) at depth (2 to 3 ft) at the other location. Concentrations of 1,1-dichloroethene either decreased with depth or were less than the EQLs (0.0011 mg/kg to 0.0017 mg/kg) at all locations. Toluene concentrations decreased slightly or were generally unchanged with depth at seven locations and increased slightly with depth at three other locations. All concentrations were slightly above or less than the EQLs (0.0011 mg/kg to 0.0017 mg/kg). Concentrations of 1,2,4-trimethylbenzene were less than the EQLs (0.0011 mg/kg to 0.0017 mg/kg) and decreased with depth at all locations. The extent of chloroform, 1,1-dichloroethene, toluene, and 1,2,4-trimethylbenzene is defined.

TPH-DRO was generally detected at concentrations ranging from 6.5 mg/kg to 34 mg/kg but was detected at higher concentrations (56.4 mg/kg and 319 mg/kg) in samples in the vicinity of the former asphalt batch plant. Concentrations decreased with depth at nine locations. Perimeter locations (00-27659 and 00-27660) are located upgradient of the former asphalt batch plant. It is unlikely that the concentrations of TPH-DRO in the samples at these locations are from the former asphalt batch plant. The concentrations of TPH-DRO decrease from 319 mg/kg (downgradient of the former asphalt batch plant) to less than 20 mg/kg downgradient and downstream. The extent of TPH-DRO is defined.

TPH-GRO was detected at several locations at low concentrations (less than 0.3 mg/kg). Concentrations decreased slightly with depth (0.1 mg/kg or less) at five locations and increased slightly with depth (0.3 mg/kg or less) at the other locations. Concentrations did not show any spatial trends laterally but were either less than the EQLs (0.11 mg/kg to 0.17 mg/kg) or approximately a factor of 2 above the EQLs. The extent of TPH-GRO is defined.

E-7.0 REFERENCE

The following list includes all documents cited in this appendix. Parenthetical information following each reference provides the author(s), publication date, and ER ID number. This information is also included in text citations. ER ID numbers are assigned by the Environmental Programs Directorate's Records

Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.

Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau; the U.S. Department of Energy–Los Alamos Site Office; the U.S. Environmental Protection Agency, Region 6; and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.

EPA (U.S. Environmental Protection Agency), May 4, 2007. "EPA Region 6 Human Health Medium-Specific Screening Levels," U.S. EPA Region 6, Dallas, Texas. (EPA 2007, 095866)

LANL (Los Alamos National Laboratory), September 22, 1998. "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory," Los Alamos National Laboratory document LA-UR-98-4847, Los Alamos, New Mexico. (LANL 1998, 059730)

LANL (Los Alamos National Laboratory), July 2005. "Investigation Work Plan for Guaje/Barrancas/Rendija Canyons Aggregate Area at Technical Area 00," Los Alamos National Laboratory document LA-UR-05-3869, Los Alamos, New Mexico. (LANL 2005, 089657)

NMED (New Mexico Environment Department), January 5, 2006. "Approval with Modifications for the Investigation Work Plan for Guaje/Barrancas/Rendija Canyons Aggregate Area, at Technical Area (TA) 00," 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, 091532)

NMED (New Mexico Environment Department), June 2006. "Technical Background Document for Development of Soil Screening Levels, Revision 4.0, Volume 1, Tier 1: Soil Screening Guidance Technical Background Document," New Mexico Environment Department, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program, Santa Fe, New Mexico. (NMED 2006, 092513)

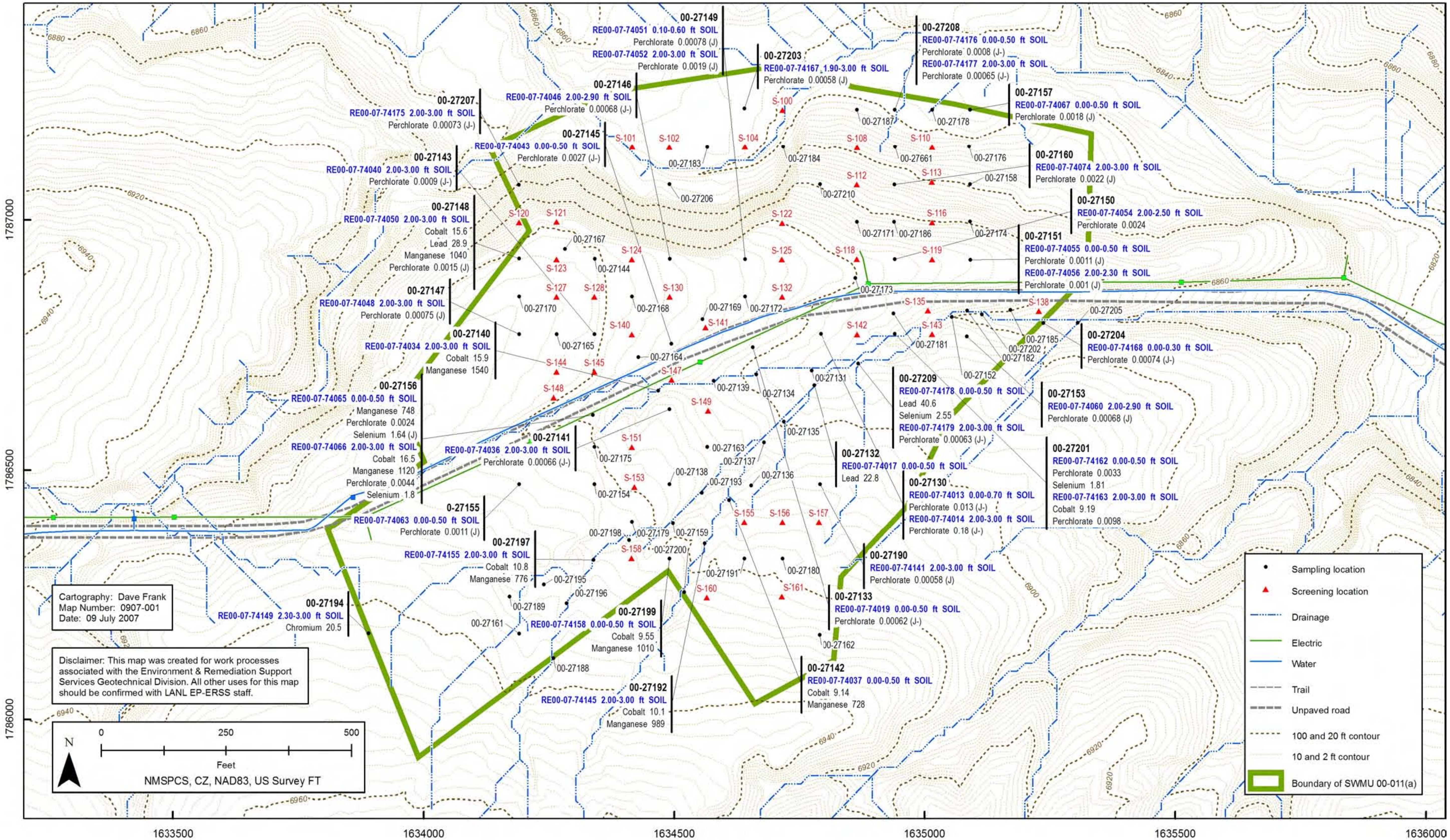

Figure E-6.1-1 SWMU 00-011(a) sampling locations with inorganic COPCs detected or detected above background in all media

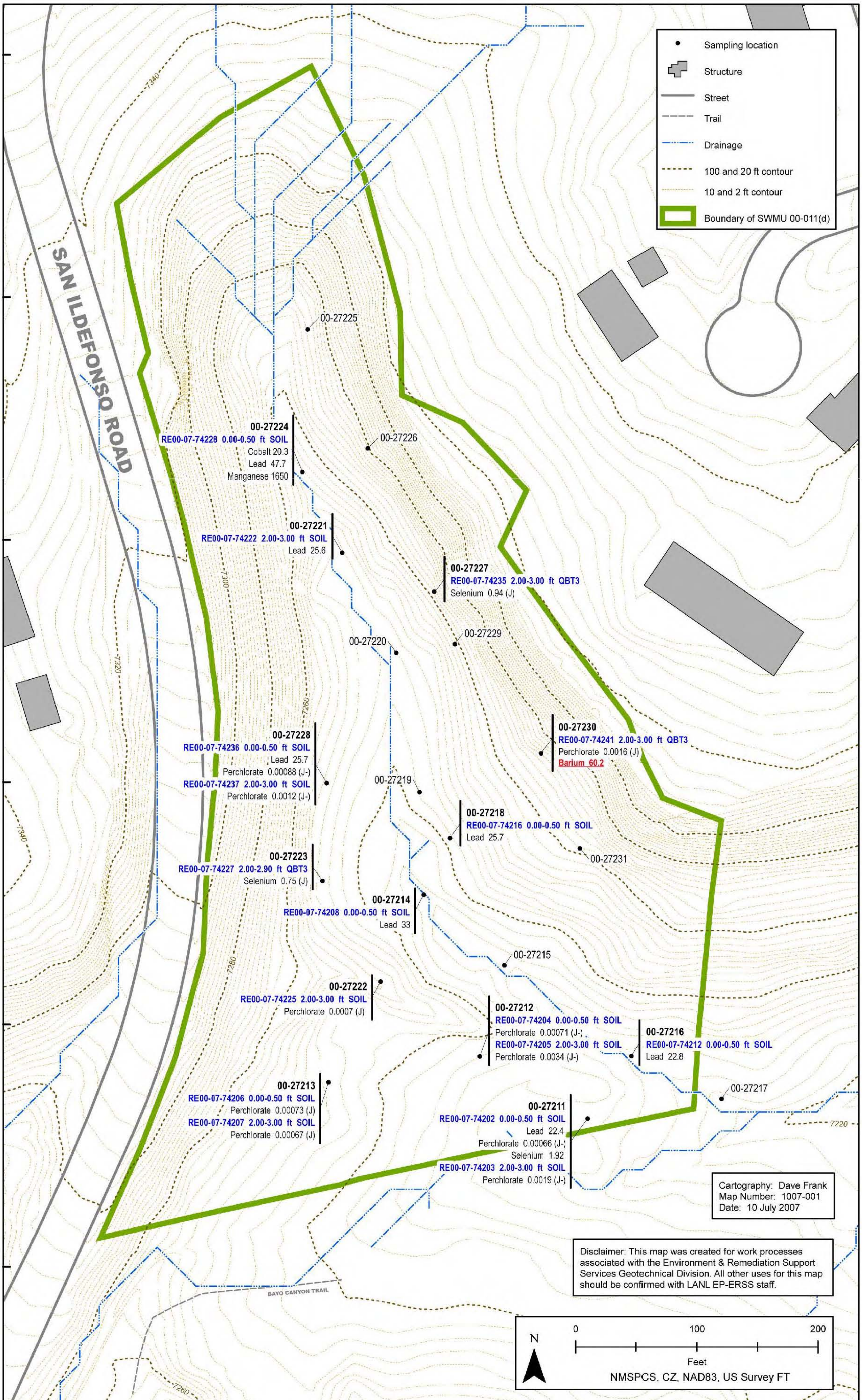

Figure E-6.2-1 SWMU 00-011(d) sampling locations with inorganic COPCs detected or detected above background in all media

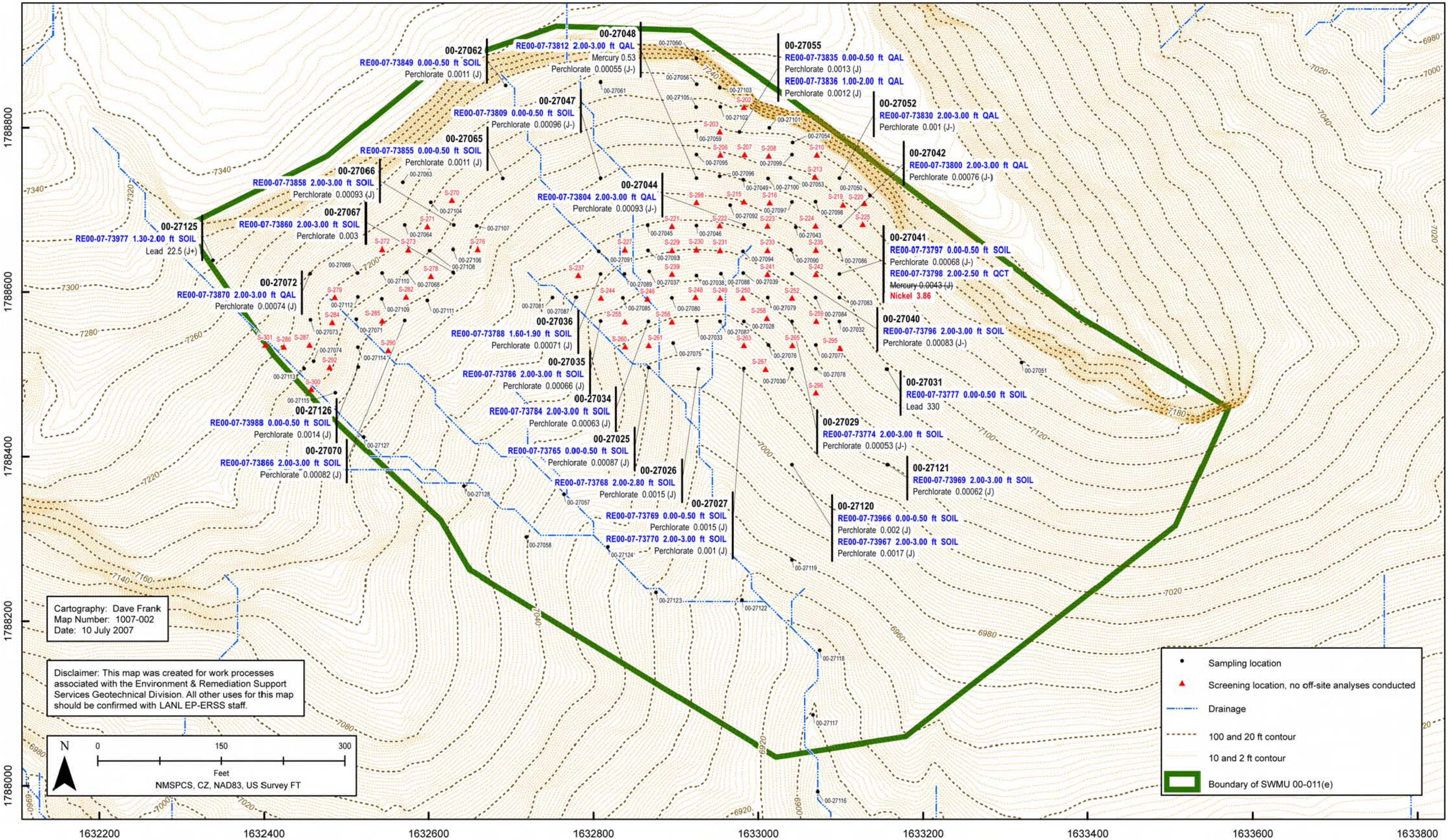

Figure E-6.3-1 SWMU 00-011(e) sampling locations with inorganic COPCs detected or detected above background in all media

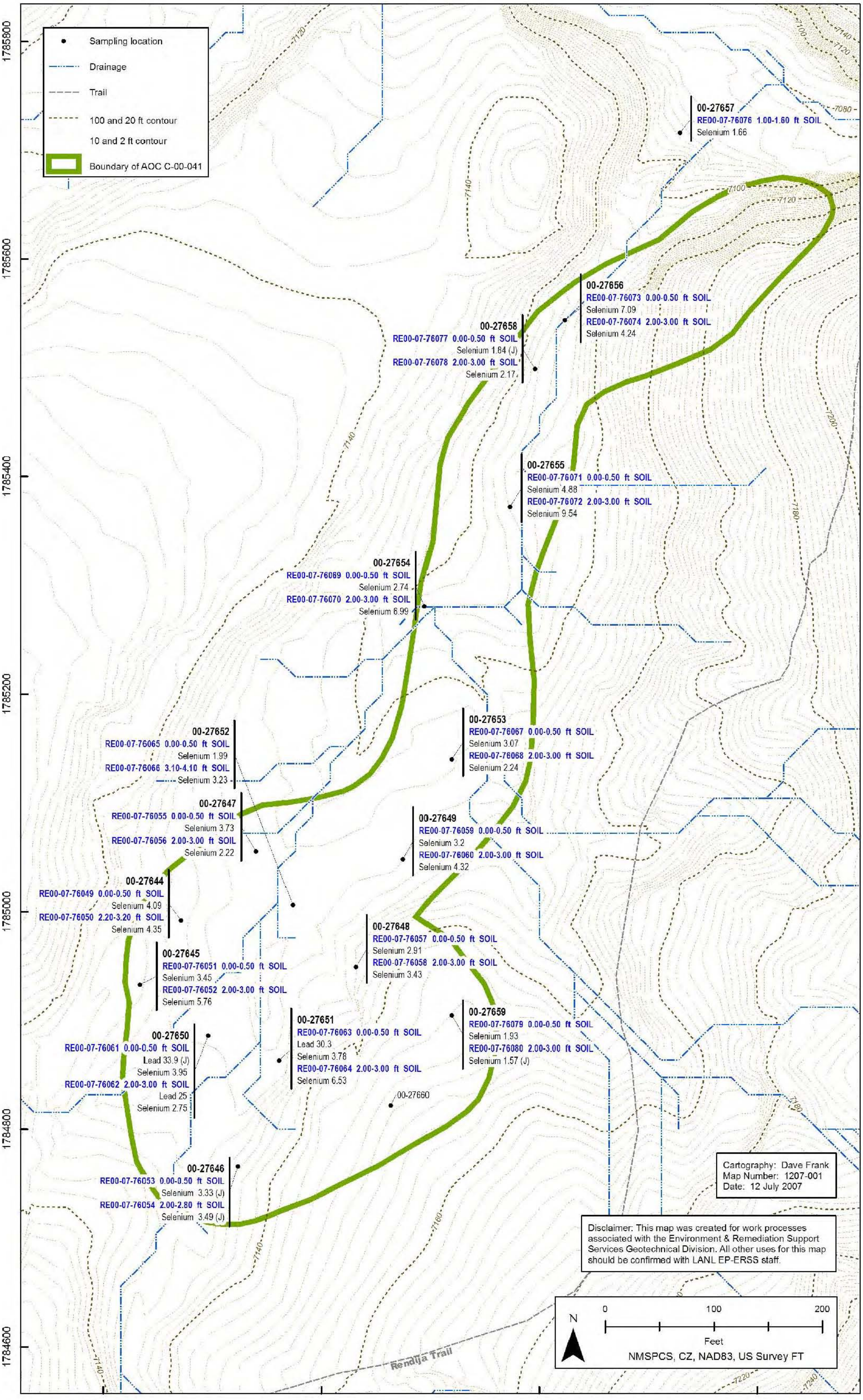

Figure E-6.4-1 AOC C-00-041 sampling locations with inorganic COPCs detected or detected above background in all media

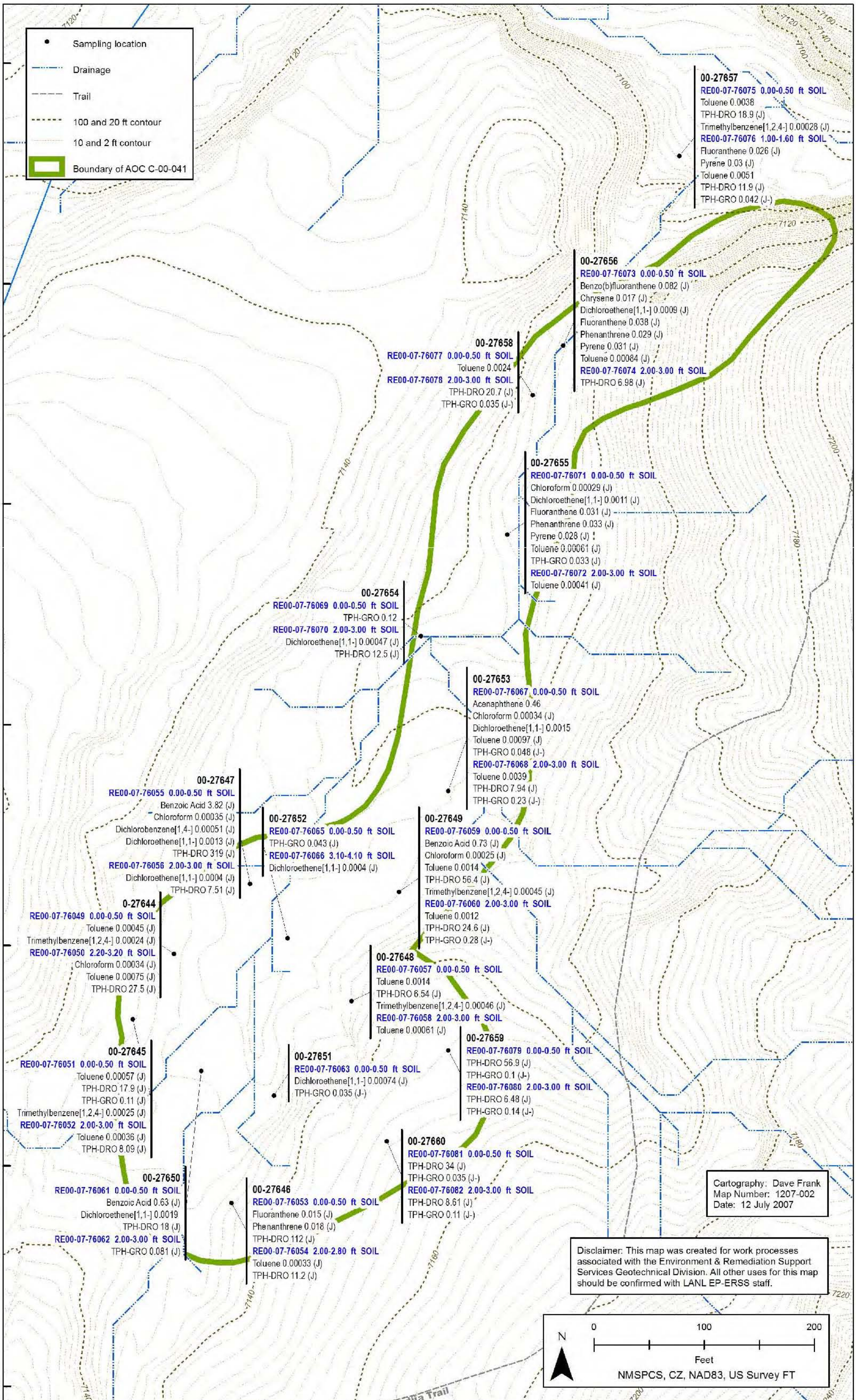

Figure E-6.4-2 AOC C-00-041 sampling locations with organic COPCs detected in all media

Table E-2.0-1
Summary of Samples Collected at SWMU 00-011(a)

Sample ID	Location ID	Depth (ft)	Media	Metals	Perchlorate	HEXP
RE00-07-74013	00-27130	0–0.7	ALLH	6515S[a]	6515S	—[b]
RE00-07-74014	00-27130	2.0–3.0	ALLH	6515S	6515S	—
RE00-07-74015	00-27131	0–0.7	ALLH	6515S	6515S	—
RE00-07-74093	00-27131	0–0.7	ALLH	—	—	6517S
RE00-07-74016	00-27131	2.0–3.0	ALLH	6515S	6515S	—
RE00-07-74017	00-27132	0–0.5	ALLH	6515S	6515S	—
RE00-07-74018	00-27132	2.0–3.0	ALLH	6515S	6515S	—
RE00-07-74019	00-27133	0–0.5	ALLH	6515S	6515S	—
RE00-07-74020	00-27133	2.0–2.6	ALLH	6515S	6515S	—
RE00-07-74021	00-27134	0–0.5	ALLH	6516S	6516S	—
RE00-07-74022	00-27134	2.0–3.2	ALLH	6516S	6516S	—
RE00-07-74094	00-27134	2.0–3.2	ALLH	—	—	6517S
RE00-07-74023	00-27135	0–0.5	ALLH	6516S	6516S	—
RE00-07-74024	00-27135	2.0–2.5	ALLH	6516S	6516S	—
RE00-07-74025	00-27136	0–0.5	ALLH	6530S	6530S	—
RE00-07-74026	00-27136	2.0–3.0	ALLH	6530S	6530S	—
RE00-07-74027	00-27137	0–0.5	ALLH	6530S	6530S	—
RE00-07-74028	00-27137	2.0–2.6	ALLH	6530S	6530S	—
RE00-07-74095	00-27137	2.0–2.6	ALLH	—	—	6532S
RE00-07-74029	00-27138	0–0.5	ALLH	6530S	6530S	—
RE00-07-74030	00-27138	2.0–3.0	ALLH	6530S	6530S	—
RE00-07-74031	00-27139	0–0.5	ALLH	6531S	6531S	—
RE00-07-74096	00-27139	0–0.5	ALLH	—	—	6532S
RE00-07-74032	00-27139	2.0–3.0	ALLH	6531S	6531S	—
RE00-07-74033	00-27140	0–0.5	ALLH	6531S	6531S	—
RE00-07-74034	00-27140	2.0–3.0	ALLH	6531S	6531S	—
RE00-07-74097	00-27140	2.0–3.0	ALLH	—	—	6553S
RE00-07-74035	00-27141	0–0.5	ALLH	6531S	6531S	—
RE00-07-74036	00-27141	2.0–3.0	ALLH	6531S	6531S	—
RE00-07-74037	00-27142	0–0.5	ALLH	6533S	6533S	—
RE00-07-74038	00-27142	2.0–3.0	ALLH	6533S	6533S	—
RE00-07-74039	00-27143	0–0.5	ALLH	6536S	6536S	—
RE00-07-74040	00-27143	2.0–3.0	ALLH	6536S	6536S	—
RE00-07-74098	00-27143	2.0–3.0	ALLH	—	—	6553S
RE00-07-74041	00-27144	0–0.5	ALLH	6536S	6536S	—
RE00-07-74042	00-27144	2.0–3.0	ALLH	6536S	6536S	—
RE00-07-74043	00-27145	0–0.5	ALLH	6542S	6542S	—
RE00-07-74044	00-27145	2.0–2.7	ALLH	6542S	6542S	—

Table E-2.0-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Metals	Perchlorate	HEXP
RE00-07-74099	00-27145	2.0–2.7	ALLH	—	—	6555S
RE00-07-74045	00-27146	0–0.5	ALLH	6542S	6542S	—
RE00-07-74046	00-27146	2.0–2.9	ALLH	6542S	6542S	—
RE00-07-74047	00-27147	0–0.5	ALLH	6554S	6554S	—
RE00-07-74048	00-27147	2.0–3.0	ALLH	6554S	6554S	—
RE00-07-74049	00-27148	0.1–0.5	ALLH	6554S	6554S	—
RE00-07-74100	00-27148	0.1–0.5	ALLH	—	—	6556S
RE00-07-74050	00-27148	2.0–3.0	ALLH	6554S	6554S	—
RE00-07-74051	00-27149	0.1–0.6	ALLH	6557S	6557S	—
RE00-07-74052	00-27149	2.0–3.0	ALLH	6557S	6557S	—
RE00-07-74053	00-27150	0–0.5	ALLH	6589S	6589S	—
RE00-07-74054	00-27150	2.0–2.5	ALLH	6589S	6589S	—
RE00-07-74055	00-27151	0–0.5	ALLH	6589S	6589S	—
RE00-07-74056	00-27151	2.0–2.3	ALLH	6589S	6589S	—
RE00-07-74057	00-27152	0–0.5	ALLH	6589S	6589S	—
RE00-07-74101	00-27152	0–0.5	ALLH	—	—	6592S
RE00-07-74058	00-27152	2.0–3.0	ALLH	6589S	6589S	—
RE00-07-74059	00-27153	0–0.5	ALLH	6589S	6589S	—
RE00-07-74060	00-27153	2.0–2.9	ALLH	6589S	6589S	—
RE00-07-74061	00-27154	0–0.5	ALLH	6596S	6596S	—
RE00-07-74062	00-27154	2.0–3.0	ALLH	6596S	6596S	—
RE00-07-74063	00-27155	0–0.5	ALLH	6596S	6596S	—
RE00-07-74102	00-27155	0–0.5	ALLH	—	—	6598S
RE00-07-74064	00-27155	2.0–3.0	ALLH	6596S	6596S	—
RE00-07-74065	00-27156	0–0.5	ALLH	6596S	6596S	—
RE00-07-74066	00-27156	2.0–3.0	ALLH	6596S	6596S	—
RE00-07-74067	00-27157	0–0.5	ALLH	6596S	6596S	—
RE00-07-74068	00-27157	2.0–3.0	ALLH	6596S	6596S	—
RE00-07-74069	00-27158	0–0.5	ALLH	6596S	6596S	—
RE00-07-74070	00-27158	2.0–3.0	ALLH	6596S	6596S	—
RE00-07-74103	00-27158	2.0–3.0	ALLH	—	—	6598S
RE00-07-74071	00-27159	0–0.5	ALLH	6597S	6597S	—
RE00-07-74104	00-27159	0–0.5	ALLH	—	—	6600S
RE00-07-74072	00-27159	2.3–3.0	ALLH	6597S	6597S	—
RE00-07-74073	00-27160	0–0.5	ALLH	6599S	6599S	—
RE00-07-74074	00-27160	2.0–3.0	ALLH	6599S	6599S	—
RE00-07-74075	00-27161	0–0.5	ALLH	6607S	6607S	—
RE00-07-74076	00-27161	2.0–3.0	ALLH	6607S	6607S	—
RE00-07-74077	00-27162	0–0.5	ALLH	6611S	6611S	—

Table E-2.0-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Metals	Perchlorate	HEXP
RE00-07-74078	00-27162	2.0–3.0	ALLH	6611S	6611S	—
RE00-07-74106	00-27162	2.0–3.0	ALLH	—	—	6613S
RE00-07-74111	00-27163	0–0.5	ALLH	—	—	6532S
RE00-07-74112	00-27164	0.1–0.6	ALLH	—	—	6553S
RE00-07-74113	00-27165	0–0.5	ALLH	—	—	6555S
RE00-07-76426	00-27165	0–0.5	ALLH	6862S	6862S	—
RE00-07-74115	00-27167	0–0.5	ALLH	—	—	6555S
RE00-07-74116	00-27168	0–0.5	ALLH	—	—	6555S
RE00-07-74117	00-27169	0–0.5	ALLH	—	—	6556S
RE00-07-74118	00-27170	2.0–3.0	ALLH	—	—	6556S
RE00-07-74119	00-27171	2.0–3.0	ALLH	—	—	6592S
RE00-07-74120	00-27172	2.0–3.0	ALLH	—	—	6592S
RE00-07-74121	00-27173	0–0.5	ALLH	—	—	6592S
RE00-07-74122	00-27174	1.5–1.7	ALLH	—	—	6592S
RE00-07-74123	00-27175	2.0–3.0	ALLH	—	—	6598S
RE00-07-74125	00-27176	0–0.5	ALLH	—	—	6598S
RE00-07-76425	00-27176	0–0.5	ALLH	6862S	6862S	—
RE00-07-74124	00-27176	2.0–3.0	ALLH	—	—	6598S
RE00-07-74126	00-27178	2.0–3.0	ALLH	—	—	6600S
RE00-07-74127	00-27179	0–0.5	ALLH	—	—	6613S
RE00-07-74128	00-27180	2.0–3.0	ALLH	—	—	6613S
RE00-07-74129	00-27181	0–0.5	ALLH	—	—	6623S
RE00-07-74130	00-27182	1.5–1.9	ALLH	—	—	6623S
RE00-07-74131	00-27183	0–0.5	ALLH	—	—	6627S
RE00-07-74132	00-27184	2.0–2.4	ALLH	—	—	6627S
RE00-07-74133	00-27185	2.1–3.0	ALLH	—	—	6638S
RE00-07-74134	00-27186	2.0–2.7	ALLH	—	—	6638S
RE00-07-74135	00-27187	0–0.5	ALLH	—	—	6644S
RE00-07-74136	00-27188	0–0.5	ALLH	6608S	6608S	—
RE00-07-74137	00-27188	2.0–3.0	ALLH	6608S	6608S	—
RE00-07-74105	00-27189	0–0.5	ALLH	—	—	6613S
RE00-07-74138	00-27189	0–0.5	ALLH	6608S	6608S	—
RE00-07-74139	00-27189	2.0–3.0	ALLH	6608S	6608S	—
RE00-07-74140	00-27190	0–0.5	ALLH	6612S	6612S	—
RE00-07-74141	00-27190	2.0–3.0	ALLH	6612S	6612S	—
RE00-07-74142	00-27191	0–0.5	ALLH	6612S	6612S	—
RE00-07-74143	00-27191	1.9–3.0	ALLH	6612S	6612S	—
RE00-07-74144	00-27192	0–0.5	ALLH	6612S	6612S	—
RE00-07-74145	00-27192	2.0–3.0	ALLH	6612S	6612S	—

Table E-2.0-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Metals	Perchlorate	HEXP
RE00-07-74109	00-27192	2.0–3.0	ALLH	—	—	6613S
RE00-07-74146	00-27193	0–0.5	ALLH	6612S	6612S	—
RE00-07-74147	00-27193	2.0–3.0	ALLH	6612S	6612S	—
RE00-07-74148	00-27194	0–0.5	ALLH	6614S	6614S	—
RE00-07-74149	00-27194	2.3-3.0	ALLH	6614S	6614S	—
RE00-07-74182	00-27194	2.3-3.0	ALLH	—	—	6619S
RE00-07-74150	00-27195	0–0.5	ALLH	6614S	6614S	—
RE00-07-74151	00-27195	2.0–3.0	ALLH	6614S	6614S	—
RE00-07-74152	00-27196	0–0.5	ALLH	6614S	6614S	—
RE00-07-74183	00-27196	0–0.5	ALLH	—	—	6619S
RE00-07-74153	00-27196	2.0–3.0	ALLH	6614S	6614S	—
RE00-07-74154	00-27197	0–0.5	ALLH	6614S	6614S	—
RE00-07-74155	00-27197	2.0–3.0	ALLH	6614S	6614S	—
RE00-07-74156	00-27198	0–0.5	ALLH	6614S	6614S	—
RE00-07-74157	00-27198	2.0–3.0	ALLH	6614S	6614S	—
RE00-07-74158	00-27199	0–0.5	ALLH	6614S	6614S	—
RE00-07-74159	00-27199	2.0–3.0	ALLH	6614S	6614S	—
RE00-07-74160	00-27200	0–0.5	ALLH	6614S	6614S	—
RE00-07-74184	00-27200	0–0.5	ALLH	—	—	6619S
RE00-07-74161	00-27200	2.0–3.0	ALLH	6614S	6614S	—
RE00-07-74162	00-27201	0–0.5	ALLH	6620S	6620S	—
RE00-07-74185	00-27201	0–0.5	ALLH	—	—	6621S
RE00-07-74163	00-27201	2.0–3.0	ALLH	6620S	6620S	—
RE00-07-74164	00-27202	0–0.5	ALLH	6620S	6620S	—
RE00-07-74165	00-27202	2.0–3.0	ALLH	6620S	6620S	—
RE00-07-74166	00-27203	0–0.5	ALLH	6622S	6622S	—
RE00-07-74167	00-27203	1.9–3.0	ALLH	6622S	6622S	—
RE00-07-74168	00-27204	0-0.3	ALLH	6628S	6628S	—
RE00-07-74170	00-27205	0–0.5	ALLH	6628S	6628S	—
RE00-07-74186	00-27205	0–0.5	ALLH	—	—	6640S
RE00-07-74172	00-27206	0–0.5	ALLH	6635S	6635S	—
RE00-07-74173	00-27206	2.0–3.0	ALLH	6635S	6635S	—
RE00-07-74187	00-27206	2.0–3.0	ALLH	—	—	6640S
RE00-07-74174	00-27207	0–0.5	ALLH	6635S	6635S	—
RE00-07-74175	00-27207	2.0–3.0	ALLH	6635S	6635S	—
RE00-07-74176	00-27208	0–0.5	ALLH	6637S	6637S	—
RE00-07-74177	00-27208	2.0–3.0	ALLH	6637S	6637S	—
RE00-07-74178	00-27209	0–0.5	ALLH	6641S	6641S	—
RE00-07-74179	00-27209	2.0–3.0	ALLH	6641S	6641S	—

Table E-2.0-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Metals	Perchlorate	HEXP
RE00-07-74188	00-27209	2.0–3.0	ALLH	—	—	6643S
RE00-07-74180	00-27210	0–0.6	ALLH	6646S	6646S	—
RE00-07-74181	00-27210	2.0–3.0	ALLH	6646S	6646S	—
RE00-07-76095	00-27661	0–0.5	ALLH	—	—	6642S

[a] Analytical request number.

[b] — = Analysis not requested.

Table E-2.1-1
Summary of Inorganic Chemicals Detected or above BVs at SWMU 00-011(a)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Barium	Cadmium	Calcium	Chromium	Cobalt	Iron	Lead	Magnesium	Manganese	Nickel	Perchlorate	Potassium	Selenium	Vanadium	Zinc
ALLH Background Value (mg/kg)[a]				**29200**	**295**	**0.4**	**6120**	**19.3**	**8.64**	**21500**	**22.3**	**4610**	**671**	**15.4**	**na[b]**	**3460**	**1.52**	**39.6**	**48.8**
Residential Soil Screening Level (mg/kg)[c]				**77800**	**15600**	**39**	**na**	**2100[d]**	**1520**	**23500**	**400**	**na**	**3590**	**1560**	**55**	**na**	**391**	**78.2**	**23500**
RE00-07-74013	00-27130	0–0.7	Soil	—[e]	—	0.566 (U)	—	—	—	—	—	—	—	—	0.0127 (J-)	—	—	—	—
RE00-07-74014	00-27130	2.0–3.0	Soil	31900 (J+)	383 (J+)	2.88 (U)	8530 (J+)	21.2	—	26900	—	5580 (J+)	—	—	0.175 (J-)	4900 (J+)	8.63 (U)	—	60.3
RE00-07-74015	00-27131	0–0.7	Soil	—	—	0.566 (U)	—	—	—	—	—	—	—	—	—	—	—	—	53.6
RE00-07-74016	00-27131	2.0–3.0	Soil	—	—	0.596 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74017	00-27132	0–0.5	Soil	—	—	0.563 (U)	—	—	—	—	22.8	—	—	—	—	—	1.61 (U)	—	49
RE00-07-74018	00-27132	2.0–3.0	Soil	—	—	0.567 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74019	00-27133	0–0.5	Soil	—	—	0.537 (U)	—	—	—	—	—	—	—	—	0.000621 (J-)	—	—	—	—
RE00-07-74020	00-27133	2.0–2.6	Soil	—	—	0.505 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74021	00-27134	0–0.5	Soil	—	—	0.528 (U)	—	—	—	—	—	—	—	—	—	—	1.58 (U)	—	—
RE00-07-74022	00-27134	2.0–3.2	Soil	—	—	—	—	—	—	—	—	—	—	—	—	—	1.6 (U)	—	—
RE00-07-74023	00-27135	0–0.5	Soil	—	—	—	—	—	—	—	—	—	—	—	—	—	1.6 (U)	—	—
RE00-07-74025	00-27136	0–0.5	Soil	—	—	—	—	—	—	—	—	—	—	—	—	—	1.63 (U)	—	—
RE00-07-74027	00-27137	0–0.5	Soil	—	—	—	—	—	—	—	—	—	—	—	—	—	1.78 (U)	—	—
RE00-07-74028	00-27137	2.0–2.6	Soil	—	—	—	—	—	—	—	—	—	—	—	—	—	1.71 (U)	—	—
RE00-07-74029	00-27138	0–0.5	Soil	—	—	—	—	—	—	—	—	—	—	—	—	—	1.62 (U)	—	—
RE00-07-74031	00-27139	0–0.5	Soil	—	—	—	—	—	—	—	—	—	—	—	—	—	1.61 (U)	—	—
RE00-07-74032	00-27139	2.0–3.0	Soil	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68 (U)	—	—
RE00-07-74033	00-27140	0–0.5	Soil	—	—	—	—	—	—	—	—	—	—	—	—	—	1.82 (U)	—	—
RE00-07-74034	00-27140	2.0–3.0	Soil	—	—	—	—	—	15.9	—	—	—	1540	—	—	—	—	—	48.9
RE00-07-74036	00-27141	2.0–3.0	Soil	—	—	—	—	—	—	—	—	—	—	—	0.000655 (J-)	—	—	—	—
RE00-07-74037	00-27142	0–0.5	Soil	—	—	—	—	24.5	9.14	—	—	—	728	—	—	—	1.87 (U)	—	—
RE00-07-74038	00-27142	2.0–3.0	Soil	—	—	—	—	—	—	—	—	—	—	—	—	—	1.56 (U)	—	—
RE00-07-74039	00-27143	0–0.5	Soil	—	—	—	—	—	—	—	—	—	—	—	—	—	1.61 (U)	—	—
RE00-07-74040	00-27143	2.0–3.0	Soil	38000 (J+)	—	—	10800	25.5	—	22200	—	5960	—	—	0.000896 (J-)	4750	1.68 (U)	39.8	56
RE00-07-74042	00-27144	2.0–3.0	Soil	—	—	—	—	—	—	—	—	—	—	—	—	—	1.71 (U)	—	—
RE00-07-74043	00-27145	0–0.5	Soil	—	—	—	—	—	—	—	—	—	—	—	0.00273 (J-)	—	1.66 (U)	—	—
RE00-07-74045	00-27146	0–0.5	Soil	—	—	—	—	—	—	—	—	—	—	—	—	—	1.64 (U)	—	—
RE00-07-74046	00-27146	2.0–2.9	Soil	—	—	—	—	—	—	—	—	—	—	—	0.000683 (J-)	—	1.58 (U)	—	—
RE00-07-74047	00-27147	0–0.5	Soil	—	—	0.555 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74048	00-27147	2.0–3.0	Soil	—	—	0.536 (U)	6370 (J+)	—	—	—	—	—	—	—	0.000751 (J)	—	—	—	—
RE00-07-74049	00-27148	0.1–0.5	Soil	—	—	0.536 (U)	—	—	—	—	—	—	—	—	—	—	1.61 (U)	—	—
RE00-07-74050	00-27148	2.0–3.0	Soil	38700 (J+)	—	2.71 (U)	7610 (J+)	25	15.6	24800	28.9	6520	1040	16	0.00154 (J)	4710	8.14 (U)	44.5	63.1
RE00-07-74051	00-27149	0.1–0.6	Soil	—	—	0.559 (U)	—	—	—	—	—	—	—	—	0.000779 (J)	—	1.68 (U)	—	—

Table E-2.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Barium	Cadmium	Calcium	Chromium	Cobalt	Iron	Lead	Magnesium	Manganese	Nickel	Perchlorate	Potassium	Selenium	Vanadium	Zinc
ALLH Background Value (mg/kg)[a]				**29200**	**295**	**0.4**	**6120**	**19.3**	**8.64**	**21500**	**22.3**	**4610**	**671**	**15.4**	**na[b]**	**3460**	**1.52**	**39.6**	**48.8**
Residential Soil Screening Level (mg/kg)[c]				**77800**	**15600**	**39**	**na**	**2100[d]**	**1520**	**23500**	**400**	**na**	**3590**	**1560**	**55**	**na**	**391**	**78.2**	**23500**
RE00-07-74052	00-27149	2.0–3.0	Soil	—	—	0.555 (U)	—	—	—	—	—	—	—	25.8	0.00192 (J)	—	—	—	—
RE00-07-74053	00-27150	0–0.5	Soil	—	—	0.566 (U)	—	—	—	—	—	—	—	—	—	—	1.7 (U)	—	—
RE00-07-74054	00-27150	2.0–2.5	Soil	—	—	0.538 (U)	—	—	—	—	—	—	—	—	0.00238	—	1.62 (U)	—	—
RE00-07-74055	00-27151	0–0.5	Soil	—	—	0.585 (U)	—	—	—	—	—	—	—	—	0.0011 (J)	4050 (J+)	—	—	50
RE00-07-74056	00-27151	2.0–2.3	Soil	—	—	0.527 (U)	40100 (J+)	—	—	—	—	—	—	—	0.00103 (J)	—	—	—	—
RE00-07-74057	00-27152	0–0.5	Soil	—	—	0.543 (U)	—	—	—	—	—	—	—	—	—	—	1.63 (U)	—	—
RE00-07-74058	00-27152	2.0–3.0	Soil	—	—	0.559 (U)	—	—	—	—	—	—	—	—	—	—	1.68 (U)	—	—
RE00-07-74059	00-27153	0–0.5	Soil	—	—	0.605 (U)	—	—	—	—	—	—	—	—	—	—	1.82 (U)	—	—
RE00-07-74060	00-27153	2.0–2.9	Soil	—	—	0.526 (U)	7590 (J+)	—	—	—	—	—	—	—	0.000675 (J)	—	—	—	—
RE00-07-74061	00-27154	0–0.5	Soil	—	—	0.541 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74062	00-27154	2.0–3.0	Soil	—	—	0.547 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74063	00-27155	0–0.5	Soil	—	—	0.575 (U)	—	—	—	—	—	—	—	—	0.00112 (J)	—	—	—	—
RE00-07-74064	00-27155	2.0–3.0	Soil	—	—	0.516 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74065	00-27156	0–0.5	Soil	—	—	—	—	—	—	—	—	—	748	—	0.00244	—	1.64 (J)	—	—
RE00-07-74066	00-27156	2.0–3.0	Soil	—	—	—	—	—	16.5	—	—	—	1120	—	0.00438	—	1.8	—	—
RE00-07-74067	00-27157	0–0.5	Soil	—	—	—	—	—	—	—	—	—	—	—	0.00176 (J)	—	—	—	—
RE00-07-74068	00-27157	2.0–3.0	Soil	—	—	0.521 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74069	00-27158	0–0.5	Soil	—	—	0.536 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74070	00-27158	2.0–3.0	Soil	—	—	0.536 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74071	00-27159	0–0.5	Soil	—	—	0.517 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74072	00-27159	2.3–3.0	Soil	—	—	0.513 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74073	00-27160	0–0.5	Soil	—	—	0.539 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74074	00-27160	2.0–3.0	Soil	—	—	0.566 (U)	—	—	—	—	—	—	—	—	0.00219 (J)	3890 (J+)	—	—	51.9
RE00-07-74075	00-27161	0–0.5	Soil	—	—	0.518 (U)	—	—	—	—	—	—	—	—	—	—	1.55 (U)	—	—
RE00-07-74076	00-27161	2.0–3.0	Soil	—	—	0.524 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74077	00-27162	0–0.5	Soil	—	—	0.525 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74078	00-27162	2.0–3.0	Soil	—	—	0.529 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-76426	00-27165	0–0.5	Soil	—	—	0.577 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-76425	00-27176	0–0.5	Soil	—	—	0.644 (U)	—	—	—	—	—	—	—	—	—	—	1.93 (U)	—	—
RE00-07-74136	00-27188	0–0.5	Soil	—	—	0.539 (U)	—	—	—	—	—	—	—	—	—	—	1.62 (U)	—	—
RE00-07-74137	00-27188	2.0–3.0	Soil	—	—	0.543 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74138	00-27189	0–0.5	Soil	—	—	0.553 (U)	—	—	—	—	—	—	—	—	—	—	1.66 (U)	—	—
RE00-07-74139	00-27189	2.0–3.0	Soil	—	—	0.536 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74140	00-27190	0–0.5	Soil	—	—	0.555 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—

Table E-2.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Barium	Cadmium	Calcium	Chromium	Cobalt	Iron	Lead	Magnesium	Manganese	Nickel	Perchlorate	Potassium	Selenium	Vanadium	Zinc
ALLH Background Value (mg/kg)[a]				**29200**	**295**	**0.4**	**6120**	**19.3**	**8.64**	**21500**	**22.3**	**4610**	**671**	**15.4**	**na[b]**	**3460**	**1.52**	**39.6**	**48.8**
Residential Soil Screening Level (mg/kg)[c]				**77800**	**15600**	**39**	**na**	**2100[d]**	**1520**	**23500**	**400**	**na**	**3590**	**1560**	**55**	**na**	**391**	**78.2**	**23500**
RE00-07-74141	00-27190	2.0–3.0	Soil	—	—	0.527 (U)	—	—	—	—	—	—	—	—	0.000575 (J)	—	—	—	—
RE00-07-74142	00-27191	0–0.5	Soil	—	—	0.525 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74143	00-27191	1.9–3.0	Soil	—	—	0.52 (U)	6360	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74144	00-27192	0–0.5	Soil	—	—	0.571 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74145	00-27192	2.0–3.0	Soil	—	—	0.541 (U)	—	—	10.1	—	—	—	989	—	—	—	—	—	—
RE00-07-74146	00-27193	0–0.5	Soil	—	—	0.523 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74147	00-27193	2.0–3.0	Soil	—	—	0.526 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74148	00-27194	0–0.5	Soil	—	—	0.558 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74149	00-27194	2.3–3.0	Soil	—	—	0.533 (U)	—	20.5	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74150	00-27195	0–0.5	Soil	—	—	0.54 (U)	—	—	—	—	—	—	—	—	—	—	1.62 (U)	—	—
RE00-07-74151	00-27195	2.0–3.0	Soil	—	—	0.539 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74152	00-27196	0–0.5	Soil	—	—	0.526 (U)	—	—	—	—	—	—	—	—	—	—	1.58 (U)	—	—
RE00-07-74153	00-27196	2.0–3.0	Soil	—	—	0.53 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74154	00-27197	0–0.5	Soil	—	—	0.589 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74155	00-27197	2.0–3.0	Soil	—	—	0.538 (U)	—	—	10.8	—	—	—	776	—	—	—	—	—	—
RE00-07-74156	00-27198	0–0.5	Soil	—	—	0.563 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74157	00-27198	2.0–3.0	Soil	—	—	0.542 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74158	00-27199	0–0.5	Soil	—	—	0.571 (U)	—	—	9.55	—	—	—	1010	—	—	—	—	—	—
RE00-07-74159	00-27199	2.0–3.0	Soil	—	—	0.503 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74160	00-27200	0–0.5	Soil	—	—	0.585 (U)	—	19.8	—	—	—	—	—	—	—	—	1.75 (U)	—	—
RE00-07-74161	00-27200	2.0–3.0	Soil	—	—	0.538 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74162	00-27201	0–0.5	Soil	—	—	0.552 (U)	—	—	—	—	—	—	—	—	0.00325	—	1.81	—	—
RE00-07-74163	00-27201	2.0–3.0	Soil	—	—	2.79 (U)	—	—	9.19	21700	—	—	—	—	0.00976	—	8.37 (U)	—	50.5
RE00-07-74164	00-27202	0–0.5	Soil	—	—	0.613 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74165	00-27202	2.0–3.0	Soil	—	—	0.544 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74166	00-27203	0–0.5	Soil	—	—	0.597 (U)	—	—	—	—	—	—	—	—	—	—	1.79 (U)	—	—
RE00-07-74167	00-27203	1.9–3.0	Soil	—	—	0.517 (U)	—	—	—	—	—	—	—	—	0.000577 (J)	—	—	—	—
RE00-07-74168	00-27204	0–0.3	Soil	—	—	0.648 (U)	—	26.3	—	—	—	—	—	—	0.000744 (J-)	—	—	—	51.1
RE00-07-74170	00-27205	0–0.5	Soil	—	—	0.624 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74172	00-27206	0–0.5	Soil	—	—	0.527 (U)	—	—	—	—	—	—	—	—	—	—	1.58 (U)	—	—
RE00-07-74173	00-27206	2.0–3.0	Soil	—	—	0.534 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74174	00-27207	0–0.5	Soil	—	—	0.564 (U)	—	—	—	—	—	—	—	—	—	—	1.69 (U)	—	—
RE00-07-74175	00-27207	2.0–3.0	Soil	—	—	0.527 (U)	—	—	—	—	—	—	—	—	0.000726 (J-)	—	—	—	—
RE00-07-74176	00-27208	0–0.5	Soil	—	—	0.574 (U)	—	—	—	—	—	—	—	—	0.000797 (J-)	—	—	—	—

Table E-2.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Barium	Cadmium	Calcium	Chromium	Cobalt	Iron	Lead	Magnesium	Manganese	Nickel	Perchlorate	Potassium	Selenium	Vanadium	Zinc
ALLH Background Value (mg/kg)[a]				**29200**	**295**	**0.4**	**6120**	**19.3**	**8.64**	**21500**	**22.3**	**4610**	**671**	**15.4**	**na[b]**	**3460**	**1.52**	**39.6**	**48.8**
Residential Soil Screening Level (mg/kg)[c]				**77800**	**15600**	**39**	**na**	**2100[d]**	**1520**	**23500**	**400**	**na**	**3590**	**1560**	**55**	**na**	**391**	**78.2**	**23500**
RE00-07-74177	00-27208	2.0–3.0	Soil	—	—	0.529 (U)	—	—	—	—	—	—	—	—	0.000649 (J-)	—	1.59 (U)	—	—
RE00-07-74178	00-27209	0–0.5	Soil	—	—	0.598 (U)	—	—	—	—	40.6	—	—	—	—	—	2.55	—	55.9
RE00-07-74179	00-27209	2.0–3.0	Soil	—	—	0.593 (U)	6730	—	—	—	—	—	—	—	0.000629 (J-)	—	—	—	55.6
RE00-07-74180	00-27210	0–0.6	Soil	—	—	0.642 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
RE00-07-74181	00-27210	2.0–3.0	Soil	—	—	0.568 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—

[a] BVs are from LANL 1998, 059730.

[b] na = Not available.

[c] SSLs are from NMED 2006, 092513, unless otherwise noted.

[d] Value is from EPA Region 6 (EPA 2007, 095866).

[e] — = Analyte not reported (detect or nondetect) above BV or not detected.

Table E-3.0-1
Summary of Samples Collected at SWMU 00-011(d)

Sample ID	Location ID	Depth (ft)	Media	Metals	Perchlorate	HEXP
RE00-07-74202	00-27211	0-–0.5	ALLH	6645S[a]	6645S	—[b]
RE00-07-74203	00-27211	2.0–3.0	ALLH	6645S	6645S	—
RE00-07-74204	00-27212	0-–0.5	ALLH	6645S	6645S	—
RE00-07-74205	00-27212	2.0–3.0	ALLH	6645S	6645S	—
RE00-07-74206	00-27213	0-–0.5	ALLH	6647S	6647S	—
RE00-07-74207	00-27213	2.0–3.0	ALLH	6647S	6647S	—
RE00-07-74245	00-27213	2.0–3.0	ALLH	—	—	6648S
RE00-07-74208	00-27214	0-–0.5	ALLH	6647S	6647S	—
RE00-07-74244	00-27214	0-–0.5	ALLH	—	—	6648S
RE00-07-74209	00-27214	2.0–3.0	ALLH	6647S	6647S	—
RE00-07-74210	00-27215	0-–0.5	ALLH	6647S	6647S	—
RE00-07-74211	00-27215	2.0–3.0	ALLH	6647S	6647S	—
RE00-07-74212	00-27216	0-–0.5	ALLH	6647S	6647S	—
RE00-07-74213	00-27216	2.0–3.0	ALLH	6647S	6647S	—
RE00-07-74214	00-27217	0-–0.5	ALLH	6652S	6652S	—
RE00-07-74246	00-27217	0-–0.5	ALLH	—	—	6656S
RE00-07-74215	00-27217	2.0–3.0	ALLH	6652S	6652S	—
RE00-07-74216	00-27218	0-–0.5	ALLH	6652S	6652S	—
RE00-07-74217	00-27218	2.0–3.0	QBT3	6652S	6652S	—
RE00-07-74218	00-27219	0-–0.5	ALLH	6652S	6652S	—
RE00-07-74219	00-27219	2.0–3.0	ALLH	6652S	6652S	—
RE00-07-74220	00-27220	0-–0.5	ALLH	6652S	6652S	—
RE00-07-74247	00-27220	0-–0.5	ALLH	—	—	6656S
RE00-07-74221	00-27220	2.0–3.0	ALLH	6652S	6652S	—
RE00-07-74222	00-27221	0-–0.5	ALLH	6652S	6652S	—
RE00-07-74223	00-27221	2.0–3.0	QBT3	6652S	6652S	—
RE00-07-74224	00-27222	0-–0.5	ALLH	6653S	6653S	—
RE00-07-74225	00-27222	2.0–3.0	ALLH	6653S	6653S	—
RE00-07-74226	00-27223	0-–0.5	ALLH	6653S	6653S	—
RE00-07-74227	00-27223	2.0–2.9	QBT3	6653S	6653S	—
RE00-07-74228	00-27224	0-–0.5	ALLH	6653S	6653S	—
RE00-07-74248	00-27224	0-–0.5	ALLH	—	—	6656S
RE00-07-74229	00-27224	2.0–3.0	ALLH	6653S	6653S	—
RE00-07-74230	00-27225	0-–0.5	ALLH	6653S	6653S	—
RE00-07-74231	00-27225	2.0–3.0	QBT3	6653S	6653S	—
RE00-07-74232	00-27226	0-–0.5	ALLH	6653S	6653S	—
RE00-07-74233	00-27226	2.0–3.0	QBT3	6653S	6653S	—

Table E-3.0-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Metals	Perchlorate	HEXP
RE00-07-74234	00-27227	0—0.5	ALLH	6653S	6653S	—
RE00-07-74249	00-27227	0—0.5	ALLH	—	—	6656S
RE00-07-74235	00-27227	2.0–3.0	QBT3	6653S	6653S	—
RE00-07-74236	00-27228	0--0.5	ALLH	6654S	6654S	—
RE00-07-74237	00-27228	2.0–3.0	ALLH	6654S	6654S	—
RE00-07-74250	00-27228	2.0–3.0	ALLH	—	—	6656S
RE00-07-74238	00-27229	0--0.5	QBT3	6654S	6654S	—
RE00-07-74239	00-27229	2.0–3.0	QBT3	6654S	6654S	—
RE00-07-74251	00-27229	2.0–3.0	QBT3	—	—	6656S
RE00-07-74240	00-27230	0--0.5	ALLH	6654S	6654S	—
RE00-07-74241	00-27230	2.0–3.0	QBT3	6654S	6654S	—
RE00-07-74252	00-27230	2.0–3.0	QBT3	—	—	6656S
RE00-07-74242	00-27231	0--0.5	ALLH	6654S	6654S	—
RE00-07-74243	00-27231	2.0–3.0	QBT3	6654S	6654S	—

[a] Analytical request number.

[b] — = Analysis not requested.

Table E-3.1-1
Summary of Inorganic Chemicals Detected or above BVs at SWMU 00-011(d)

Sample Id	Location Id	Depth (ft)	Media	Barium	Cadmium	Calcium	Chromium	Cobalt	Lead	Magnesium	Manganese	Perchlorate	Selenium	Zinc
ALLH Background Value (mg/kg)[a]				**295**	**0.4**	**6120**	**19.3**	**8.64**	**22.3**	**4610**	**671**	**na[b]**	**1.52**	**48.8**
QBT3 Background Value (mg/kg)[a]				**46**	**1.63**	**2200**	**7.14**	**3.14**	**11.2**	**1690**	**482**	**na**	**0.3**	**63.5**
Residential Soil Screening Level (mg/kg)[c]				**15600**	**39**	**na**	**2100[d]**	**1520**	**400**	**na**	**3590**	**55[d]**	**391**	**23500**
RE00-07-74202	00-27211	0–0.5	ALLH	—[e]	0.563 (U)	—	—	—	22.4	—	—	0.000664 (J-)	1.92	50.2
RE00-07-74203	00-27211	2.0–3.0	ALLH	—	0.574 (U)	—	—	—	—	—	—	0.00189 (J-)	—	—
RE00-07-74204	00-27212	0–0.5	ALLH	—	0.599 (U)	—	—	—	—	—	—	0.000713 (J-)	—	—
RE00-07-74205	00-27212	2.0–3.0	ALLH	—	0.566 (U)	—	—	—	—	—	—	0.0034 (J-)	—	—
RE00-07-74206	00-27213	0–0.5	ALLH	—	0.558 (U)	—	—	—	—	—	—	0.000733 (J)	1.67 (U)	—
RE00-07-74207	00-27213	2.0–3.0	ALLH	—	0.534 (U)	—	—	—	—	—	—	0.00067 (J)	1.6 (U)	—
RE00-07-74208	00-27214	0–0.5	ALLH	—	0.598 (U)	—	—	—	33	—	—	—	1.8 (U)	—
RE00-07-74209	00-27214	2.0–3.0	ALLH	—	0.555 (U)	—	—	—	—	—	—	—	—	—
RE00-07-74210	00-27215	0–0.5	ALLH	—	0.57 (U)	—	—	—	—	—	—	—	—	—
RE00-07-74211	00-27215	2.0–3.0	ALLH	—	0.528 (U)	—	—	—	—	—	—	—	1.58 (U)	—
RE00-07-74212	00-27216	0–0.5	ALLH	—	0.563 (U)	—	—	—	22.8	—	—	—	—	—
RE00-07-74213	00-27216	2.0–3.0	ALLH	—	0.553 (U)	—	—	—	—	—	—	—	—	—
RE00-07-74214	00-27217	0–0.5	ALLH	—	0.551 (U)	—	—	—	—	—	—	—	—	—
RE00-07-74215	00-27217	2.0–3.0	ALLH	—	0.55 (U)	—	—	—	—	—	—	—	—	—
RE00-07-74216	00-27218	0–0.5	ALLH	—	0.602 (U)	—	—	—	25.7	—	—	—	1.81 (U)	—
RE00-07-74217	00-27218	2.0–3.0	QBT3	—	—	—	—	—	—	—	—	—	1.1 (U)	—
RE00-07-74218	00-27219	0–0.5	ALLH	—	0.575 (U)	—	—	—	—	—	—	—	—	—
RE00-07-74219	00-27219	2.0–3.0	ALLH	—	0.559 (U)	—	—	—	—	—	—	—	—	—
RE00-07-74220	00-27220	0–0.5	ALLH	—	0.547 (U)	—	—	—	—	—	—	—	—	—
RE00-07-74221	00-27220	2.0–3.0	ALLH	—	0.58 (U)	—	—	—	—	—	—	—	—	49.6
RE00-07-74222	00-27221	0–0.5	ALLH	—	0.546 (U)	—	—	—	25.6	—	—	—	—	—
RE00-07-74223	00-27221	2.0–3.0	QBT3	—	—	—	—	—	—	—	—	—	0.741 (U)	—
RE00-07-74224	00-27222	0–0.5	ALLH	—	0.607 (U)	—	27.9	—	—	—	—	—	—	—

Table E-3.1-1 (continued)

Sample Id	Location Id	Depth (ft)	Media	Barium	Cadmium	Calcium	Chromium	Cobalt	Lead	Magnesium	Manganese	Perchlorate	Selenium	Zinc
ALLH Background Value (mg/kg)[a]				**295**	**0.4**	**6120**	**19.3**	**8.64**	**22.3**	**4610**	**671**	**na[b]**	**1.52**	**48.8**
QBT3 Background Value (mg/kg)[a]				**46**	**1.63**	**2200**	**7.14**	**3.14**	**11.2**	**1690**	**482**	**na**	**0.3**	**63.5**
Residential Soil Screening Level (mg/kg)[c]				**15600**	**39**	**na**	**2100[d]**	**1520**	**400**	**na**	**3590**	**55[d]**	**391**	**23500**
RE00-07-74225	00-27222	2.0–3.0	ALLH	—	0.523 (U)	—	—	—	—	—	—	0.000696 (J)	1.57 (U)	—
RE00-07-74226	00-27223	0–0.5	ALLH	—	0.653 (U)	—	—	—	—	—	—	—	1.96 (U)	—
RE00-07-74227	00-27223	2.0–2.9	QBT3	—	—	—	—	—	—	—	—	—	0.751 (J)	—
RE00-07-74228	00-27224	0–0.5	ALLH	—	0.696 (U)	—	—	20.3	47.7	—	1650	—	—	—
RE00-07-74229	00-27224	2.0–3.0	ALLH	—	0.594 (U)	—	—	—	—	—	—	—	1.78 (U)	—
RE00-07-74230	00-27225	0–0.5	ALLH	—	0.633 (U)	—	—	—	—	—	—	—	—	49.3
RE00-07-74231	00-27225	2.0–3.0	QBT3	—	—	—	—	—	—	—	—	—	1.7 (U)	—
RE00-07-74232	00-27226	0–0.5	ALLH	—	0.632 (U)	—	—	—	—	—	—	—	1.9 (U)	—
RE00-07-74233	00-27226	2.0–3.0	QBT3	—	—	—	—	—	—	—	—	—	1.56 (U)	—
RE00-07-74234	00-27227	0–0.5	ALLH	—	0.603 (U)	—	—	—	—	—	—	—	—	—
RE00-07-74235	00-27227	2.0–3.0	QBT3	—	—	—	—	—	—	—	—	—	0.94 (J)	—
RE00-07-74236	00-27228	0–0.5	ALLH	—	0.623 (U)	—	—	—	25.7	—	—	0.000876 (J-)	—	—
RE00-07-74237	00-27228	2.0–3.0	ALLH	—	0.571 (U)	—	—	—	—	—	—	0.00115 (J-)	—	51.4
RE00-07-74238	00-27229	0–0.5	QBT3	—	—	—	—	—	—	—	—	—	1.65 (U)	—
RE00-07-74239	00-27229	2.0–3.0	QBT3	—	—	—	—	—	—	—	—	—	1.52 (U)	—
RE00-07-74240	00-27230	0–0.5	ALLH	—	0.602 (U)	—	—	—	—	—	—	—	1.81 (U)	—
RE00-07-74241	00-27230	2.0–3.0	QBT3	60.2	—	13400	—	—	—	2530	—	0.00163 (J)	1.65 (U)	—
RE00-07-74242	00-27231	0–0.5	ALLH	—	0.593 (U)	—	—	—	—	—	—	—	1.78 (U)	—
RE00-07-74243	00-27231	2.0–3.0	QBT3	—	—	—	—	—	—	—	—	—	1.57 (U)	—

[a] BVs are from LANL 1998, 059730.

[b] na = Not available.

[c] SSLs are from NMED 2006, 092513, unless otherwise noted.

[d] Value is from EPA Region 6 (EPA 2007, 095866).

[e] — = Analyte not reported (detect or nondetect) above BV or not detected.

Table E-4.0-1
Summary of Samples Collected at SWMU 00-011(e)

Sample ID	Location ID	Depth (ft)	Media	Metals	Perchlorate	HEXP
RE00-07-73765	00-27025	0–0.5	ALLH	6783S[a]	6783S	—[b]
RE00-07-73766	00-27025	2.0–3.0	ALLH	6783S	6783S	—
RE00-07-73767	00-27026	0–0.5	ALLH	6783S	6783S	—
RE00-07-73768	00-27026	2.0–2.8	ALLH	6783S	6783S	—
RE00-07-73888	00-27026	2.0–2.8	ALLH	—	—	6791S
RE00-07-73769	00-27027	0–0.5	ALLH	6783S	6783S	—
RE00-07-73770	00-27027	2.0–3.0	ALLH	6783S	6783S	—
RE00-07-73771	00-27028	0–0.5	ALLH	6803S	6803S	—
RE00-07-73772	00-27028	2.0–3.0	ALLH	6803S	6803S	—
RE00-07-73773	00-27029	0–0.5	ALLH	6803S	6803S	—
RE00-07-73774	00-27029	2.0–3.0	ALLH	6803S	6803S	—
RE00-07-73889	00-27029	2.0–3.0	ALLH	—	—	6811S
RE00-07-73775	00-27030	0–0.5	ALLH	6803S	6803S	—
RE00-07-73776	00-27030	2.0–3.0	ALLH	6803S	6803S	—
RE00-07-73777	00-27031	0–0.5	ALLH	6803S	6803S	—
RE00-07-73778	00-27031	2.0–2.5	ALLH	6803S	6803S	—
RE00-07-73890	00-27031	2.0–2.5	ALLH	—	—	6818S
RE00-07-73779	00-27032	0–0.5	ALLH	6803S	6803S	—
RE00-07-73780	00-27032	2.0–3.0	ALLH	6803S	6803S	—
RE00-07-73781	00-27033	0–0.5	ALLH	6807S	6807S	—
RE00-07-73782	00-27033	2.0–3.0	ALLH	6807S	6807S	—
RE00-07-73783	00-27034	0–0.5	ALLH	6807S	6807S	—
RE00-07-73891	00-27034	0–0.5	ALLH	—	—	6818S
RE00-07-73784	00-27034	2.0–3.0	ALLH	6807S	6807S	—
RE00-07-73785	00-27035	0–0.5	ALLH	6807S	6807S	—
RE00-07-73786	00-27035	2.0–3.0	ALLH	6807S	6807S	—
RE00-07-73787	00-27036	0–0.5	ALLH	6807S	6807S	—
RE00-07-73788	00-27036	1.6–1.9	ALLH	6807S	6807S	—
RE00-07-73892	00-27036	1.6–1.9	ALLH	—	—	6818S
RE00-07-73789	00-27037	0–0.5	ALLH	6807S	6807S	—
RE00-07-73790	00-27037	2.0–3.0	ALLH	6807S	6807S	—
RE00-07-73791	00-27038	0–0.5	ALLH	6812S	6812S	—
RE00-07-73792	00-27038	2.0-3.0	ALLH	6812S	6812S	—
RE00-07-73793	00-27039	0–0.5	ALLH	6812S	6812S	—
RE00-07-73794	00-27039	2.0–3.0	QAL	6812S	6812S	—
RE00-07-73795	00-27040	0–0.5	ALLH	6812S	6812S	—
RE00-07-73796	00-27040	2.0–3.0	ALLH	6812S	6812S	—
RE00-07-73893	00-27040	2.0–3.0	ALLH	—	—	6818S

Table E-4.0-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Metals	Perchlorate	HEXP
RE00-07-73797	00-27041	0–0.5	ALLH	6812S	6812S	—
RE00-07-73798	00-27041	2.0–2.5	QCT	6812S	6812S	—
RE00-07-73799	00-27042	0–0.5	ALLH	6812S	6812S	—
RE00-07-73894	00-27042	0–0.5	ALLH	—	—	6818S
RE00-07-73800	00-27042	2.0–3.0	QAL	6812S	6812S	—
RE00-07-73801	00-27043	0–0.5	ALLH	6812S	6812S	—
RE00-07-73802	00-27043	1.5–2.0	ALLH	6812S	6812S	—
RE00-07-73803	00-27044	0–0.5	ALLH	6815S	6815S	—
RE00-07-73895	00-27044	0–0.5	ALLH	—	—	6818S
RE00-07-73804	00-27044	2.0–3.0	QAL	6815S	6815S	—
RE00-07-73805	00-27045	0–0.5	ALLH	6815S	6815S	—
RE00-07-73806	00-27045	2.0–2.5	QAL	6815S	6815S	—
RE00-07-73896	00-27045	2.0–2.5	QAL	—	—	6827S
RE00-07-73807	00-27046	0–0.5	ALLH	6815S	6815S	—
RE00-07-73808	00-27046	2.0–3.0	QAL	6815S	6815S	—
RE00-07-73809	00-27047	0–0.5	ALLH	6826S	6826S	—
RE00-07-73810	00-27047	2.0–3.0	QAL	6826S	6826S	—
RE00-07-73811	00-27048	0–0.5	ALLH	6826S	6826S	—
RE00-07-73897	00-27048	0–0.5	ALLH	—	—	6827S
RE00-07-73812	00-27048	2.0–3.0	QAL	6826S	6826S	—
RE00-07-73813	00-27049	0–0.5	ALLH	6826S	6826S	—
RE00-07-73814	00-27049	2.0–3.0	QAL	6826S	6826S	—
RE00-07-73825	00-27050	0–0.5	ALLH	6830S	6830S	—
RE00-07-73826	00-27050	2.0–3.0	QAL	6830S	6830S	—
RE00-07-73827	00-27051	0–0.5	ALLH	6830S	6830S	—
RE00-07-73828	00-27051	2.0–3.0	QAL	6830S	6830S	—
RE00-07-73829	00-27052	0–0.5	ALLH	6830S	6830S	—
RE00-07-73830	00-27052	2.0–3.0	QAL	6830S	6830S	—
RE00-07-73831	00-27053	0–0.5	ALLH	6836S	6836S	—
RE00-07-73898	00-27053	0–0.5	ALLH	—	—	6837S
RE00-07-73832	00-27053	1.8–2.1	QAL	6836S	6836S	—
RE00-07-73899	00-27053	1.8–2.1	QAL	—	—	6837S
RE00-07-73833	00-27054	0–0.5	ALLH	6836S	6836S	—
RE00-07-73834	00-27054	2.0–3.0	QAL	6836S	6836S	—
RE00-07-73835	00-27055	0–0.5	QAL	6836S	6836S	—
RE00-07-73900	00-27055	0–0.5	QAL	—	—	6837S
RE00-07-73836	00-27055	1.0–2.0	QAL	6836S	6836S	—
RE00-07-73837	00-27056	0–0.5	QAL	6836S	6836S	—
RE00-07-73838	00-27056	1.9–3.0	QAL	6836S	6836S	—

Table E-4.0-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Metals	Perchlorate	HEXP
RE00-07-73839	00-27057	0–0.5	ALLH	6836S	6836S	—
RE00-07-73901	00-27057	0–0.5	ALLH	—	—	6837S
RE00-07-73841	00-27058	0–0.5	ALLH	6836S	6836S	—
RE00-07-73843	00-27059	0–0.5	ALLH	6841S	6841S	—
RE00-07-73844	00-27059	2.0–3.0	QAL	6841S	6841S	—
RE00-07-73845	00-27060	0–0.5	ALLH	6841S	6841S	—
RE00-07-73846	00-27060	2.0–3.0	QAL	6841S	6841S	—
RE00-07-73902	00-27060	2.0–3.0	QAL	—	—	6857S
RE00-07-73847	00-27061	0–0.5	ALLH	6841S	6841S	—
RE00-07-73848	00-27061	2.0–2.5	ALLH	6841S	6841S	—
RE00-07-73849	00-27062	0–0.5	ALLH	6841S	6841S	—
RE00-07-73850	00-27062	2.0–3.0	QAL	6841S	6841S	—
RE00-07-73851	00-27063	0–0.5	ALLH	6841S	6841S	—
RE00-07-73904	00-27063	0–0.5	ALLH	—	—	6857S
RE00-07-73852	00-27063	2.0–3.0	QAL	6841S	6841S	—
RE00-07-73853	00-27064	0–0.5	ALLH	6841S	6841S	—
RE00-07-73855	00-27065	0–0.5	ALLH	6841S	6841S	—
RE00-07-73857	00-27066	0–0.5	ALLH	6841S	6841S	—
RE00-07-73858	00-27066	2.0–3.0	ALLH	6841S	6841S	—
RE00-07-73903	00-27066	2.0–3.0	ALLH	—	—	6857S
RE00-07-73859	00-27067	0–0.5	ALLH	6842S	6842S	—
RE00-07-73860	00-27067	2.0–3.0	ALLH	6842S	6842S	—
RE00-07-73861	00-27068	0–0.5	ALLH	6842S	6842S	—
RE00-07-73905	00-27068	0–0.5	ALLH	—	—	6858S
RE00-07-73862	00-27068	2.0–3.0	QAL	6842S	6842S	—
RE00-07-73863	00-27069	0–0.5	ALLH	6842S	6842S	—
RE00-07-73864	00-27069	2.0–3.0	QAL	6842S	6842S	—
RE00-07-73865	00-27070	0–0.5	ALLH	6851S	6851S	—
RE00-07-73866	00-27070	2.0–3.0	ALLH	6851S	6851S	—
RE00-07-73906	00-27070	2.0–3.0	ALLH	—	—	6858S
RE00-07-73867	00-27071	0–0.5	ALLH	6851S	6851S	—
RE00-07-73868	00-27071	1.7–2.0	ALLH	6851S	6851S	—
RE00-07-73869	00-27072	0–0.5	ALLH	6851S	6851S	—
RE00-07-73870	00-27072	2.0–3.0	QAL	6851S	6851S	—
RE00-07-73871	00-27073	0–0.5	ALLH	6851S	6851S	—
RE00-07-73907	00-27073	0–0.5	ALLH	—	—	6858S
RE00-07-73873	00-27074	0–0.5	ALLH	6851S	6851S	—
RE00-07-73917	00-27075	2.0–3.0	ALLH	—	—	6791S
RE00-07-73918	00-27076	0–0.5	ALLH	—	—	6791S

Table E-4.0-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Metals	Perchlorate	HEXP
RE00-07-73919	00-27077	2.0–2.5	ALLH	—	—	6811S
RE00-07-73920	00-27078	0–0.5	ALLH	—	—	6811S
RE00-07-73921	00-27079	0–0.5	ALLH	—	—	6811S
RE00-07-73922	00-27080	1.2–1.7	QAL	—	—	6811S
RE00-07-73923	00-27081	2.0–3.0	QCT	—	—	6818S
RE00-07-73924	00-27082	2.0–3.0	QAL	—	—	6818S
RE00-07-73925	00-27083	0–0.5	ALLH	—	—	6818S
RE00-07-73926	00-27084	2.0–3.0	ALLH	—	—	6818S
RE00-07-73927	00-27085	0–0.5	ALLH	—	—	6818S
RE00-07-73928	00-27086	2.0–3.0	ALLH	—	—	6818S
RE00-07-73929	00-27087	0–0.5	ALLH	—	—	6818S
RE00-07-73930	00-27088	2.0–2.5	ALLH	—	—	6818S
RE00-07-73931	00-27089	2.0–2.2	ALLH	—	—	6818S
RE00-07-73932	00-27090	0–0.5	ALLH	—	—	6818S
RE00-07-73933	00-27091	0–0.5	ALLH	—	—	6818S
RE00-07-73934	00-27092	0–0.5	ALLH	—	—	6827S
RE00-07-73935	00-27093	2.0–2.3	QAL	—	—	6827S
RE00-07-73936	00-27094	2.0–3.0	ALLH	—	—	6827S
RE00-07-73937	00-27095	2.0–3.0	QAL	—	—	6827S
RE00-07-73938	00-27096	0–0.5	ALLH	—	—	6827S
RE00-07-73939	00-27097	0–0.5	ALLH	—	—	6837S
RE00-07-73940	00-27098	2.0–3.0	QAL	—	—	6837S
RE00-07-73941	00-27099	2.0–2.7	QAL	—	—	6837S
RE00-07-73942	00-27100	0–0.5	ALLH	—	—	6837S
RE00-07-73943	00-27101	0–0.5	ALLH	—	—	6837S
RE00-07-73944	00-27102	0–0.5	ALLH	—	—	6837S
RE00-07-73993	00-27102	0–0.5	ALLH	6863S	6863S	—
RE00-07-73945	00-27103	2.0–2.4	QAL	—	—	6837S
RE00-07-73946	00-27104	2.0–3.0	QAL	—	—	6857S
RE00-07-73947	00-27105	2.0–3.0	QAL	—	—	6857S
RE00-07-73948	00-27106	0–0.5	ALLH	—	—	6857S
RE00-07-73949	00-27107	2.0–3.0	QAL	—	—	6857S
RE00-07-73950	00-27108	1.0–1.5	QAL	—	—	6858S
RE00-07-73951	00-27109	0–0.5	ALLH	—	—	6858S
RE00-07-73952	00-27110	2.0–3.0	QAL	—	—	6858S
RE00-07-73953	00-27111	2.0–3.0	QAL	—	—	6858S
RE00-07-73954	00-27112	0–0.5	ALLH	—	—	6858S
RE00-07-73955	00-27113	0–0.5	ALLH	—	—	6858S
RE00-07-73956	00-27114	0–0.5	ALLH	—	—	6865S

Table E-4.0-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Metals	Perchlorate	HEXP
RE00-07-73957	00-27115	0–0.5	ALLH	—	—	6865S
RE00-07-73958	00-27116	0–0.5	ALLH	6781S	6781S	—
RE00-07-73885	00-27116	1.2–2.0	ALLH	—	—	6791S
RE00-07-73959	00-27116	1.2–2.0	ALLH	6781S	6781S	—
RE00-07-73960	00-27117	0–0.5	ALLH	6781S	6781S	—
RE00-07-73886	00-27118	0–0.5	ALLH	—	—	6791S
RE00-07-73962	00-27118	0–0.5	ALLH	6781S	6781S	—
RE00-07-73964	00-27119	0–0.5	ALLH	6781S	6781S	—
RE00-07-73965	00-27119	2.0–3.0	ALLH	6781S	6781S	—
RE00-07-73966	00-27120	0–0.5	ALLH	6781S	6781S	—
RE00-07-73967	00-27120	2.0–3.0	ALLH	6781S	6781S	—
RE00-07-73887	00-27121	0–0.5	ALLH	—	—	6791S
RE00-07-73968	00-27121	0–0.5	ALLH	6781S	6781S	—
RE00-07-73969	00-27121	2.0–3.0	ALLH	6781S	6781S	—
RE00-07-73970	00-27122	0–0.5	ALLH	6781S	6781S	—
RE00-07-73972	00-27123	0–0.5	ALLH	6781S	6781S	—
RE00-07-73974	00-27124	0–0.5	ALLH	6781S	6781S	—
RE00-07-73975	00-27124	1.0–2.0	ALLH	6781S	6781S	—
RE00-07-73976	00-27125	0–0.5	ALLH	6863S	6863S	—
RE00-07-73977	00-27125	1.3–2.0	ALLH	6863S	6863S	—
RE00-07-73988	00-27126	0–0.5	ALLH	6863S	6863S	—
RE00-07-73989	00-27126	1.3–1.5	ALLH	6863S	6863S	—
RE00-07-73990	00-27127	0–0.5	ALLH	6863S	6863S	—
RE00-07-73991	00-27127	1.1–2.2	ALLH	6863S	6863S	—
RE00-07-73994	00-27127	1.1–2.2	ALLH	—	—	6864S
RE00-07-73992	00-27128	0–0.3	ALLH	6863S	6863S	—

[a] Analytical request number.

[b] — = Analysis not requested.

Table E-4.1-1
Summary of Inorganic Chemicals Detected or above BVs at SWMU 00-011(e)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Beryllium	Cadmium	Calcium	Chromium	Lead	Mercury	Nickel	Perchlorate	Selenium	Sodium	Thallium
ALLH Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na[b]**	**1.52**	**915**	**0.73**
QAL Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na**	**1.52**	**915**	**0.73**
QCT Background Value (mg/kg)[a]				**0.56**	**1.44**	**0.4**	**1900**	**2.60**	**13.5**	**0.1**	**2**	**na**	**0.3**	**4350**	**1.22**
Residential Soil Screening Level (mg/kg)[c]				**3.9**	**156**	**39**	**na**	**2100[d]**	**400**	**23[d]**	**1560**	**55[d]**	**391**	**na**	**5.16**
RE00-07-73765	00-27025	0–0.5	ALLH	—[e]	—	0.597 (U)	—	—	—	—	—	0.00087 (J)	1.79 (U)	—	—
RE00-07-73766	00-27025	2.0–3.0	ALLH	—	—	0.504 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73767	00-27026	0–0.5	ALLH	—	—	0.56 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73768	00-27026	2.0–2.8	ALLH	—	—	0.497 (U)	—	—	—	—	—	0.00146 (J)	—	—	—
RE00-07-73769	00-27027	0–0.5	ALLH	—	—	0.565 (U)	—	—	—	—	—	0.00147 (J)	—	—	—
RE00-07-73770	00-27027	2.0–3.0	ALLH	—	—	0.503 (U)	—	—	—	—	—	0.00101 (J)	—	—	—
RE00-07-73771	00-27028	0–0.5	ALLH	—	—	0.519 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73772	00-27028	2.0–3.0	ALLH	—	—	0.511 (U)	—	—	—	—	—	—	1.53 (U)	—	—
RE00-07-73773	00-27029	0–0.5	ALLH	—	—	0.56 (U)	—	—	—	—	—	—	1.68 (U)	—	—
RE00-07-73774	00-27029	2.0–3.0	ALLH	—	—	0.511 (U)	—	—	—	—	—	0.000531 (J-)	—	—	—
RE00-07-73775	00-27030	0–0.5	ALLH	—	—	0.601 (U)	—	—	—	—	—	—	1.8 (U)	—	—
RE00-07-73776	00-27030	2.0–3.0	ALLH	—	—	0.553 (U)	—	—	—	—	—	—	1.66 (U)	—	—
RE00-07-73777	00-27031	0–0.5	ALLH	—	—	0.583 (U)	—	—	330	—	—	—	1.75 (U)	—	—
RE00-07-73778	00-27031	2.0–2.5	ALLH	—	—	0.613 (U)	—	—	—	—	—	—	1.84 (U)	—	—
RE00-07-73779	00-27032	0–0.5	ALLH	—	—	0.565 (U)	—	—	—	—	—	—	1.7 (U)	—	—
RE00-07-73780	00-27032	2.0–3.0	ALLH	—	—	0.549 (U)	—	—	—	—	—	—	1.65 (U)	—	—
RE00-07-73781	00-27033	0–0.5	ALLH	—	—	0.524 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73782	00-27033	2.0–3.0	ALLH	—	—	0.502 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73783	00-27034	0–0.5	ALLH	—	—	0.523 (U)	—	—	—	—	—	—	1.57 (U)	—	—
RE00-07-73784	00-27034	2.0–3.0	ALLH	—	—	0.507 (U)	—	—	—	—	—	0.000629 (J)	—	—	—

Table E-4.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Beryllium	Cadmium	Calcium	Chromium	Lead	Mercury	Nickel	Perchlorate	Selenium	Sodium	Thallium
ALLH Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na[b]**	**1.52**	**915**	**0.73**
QAL Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na**	**1.52**	**915**	**0.73**
QCT Background Value (mg/kg)[a]				**0.56**	**1.44**	**0.4**	**1900**	**2.60**	**13.5**	**0.1**	**2**	**na**	**0.3**	**4350**	**1.22**
Residential Soil Screening Level (mg/kg)[c]				**3.9**	**156**	**39**	**na**	**2100[d]**	**400**	**23[d]**	**1560**	**55[d]**	**391**	**na**	**5.16**
RE00-07-73785	00-27035	0–0.5	ALLH	—	—	0.547 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73786	00-27035	2.0–3.0	ALLH	—	—	0.511 (U)	—	—	—	—	—	0.000656 (J)	1.53 (U)	—	—
RE00-07-73787	00-27036	0–0.5	ALLH	—	—	0.549 (U)	—	—	—	—	—	—	1.65 (U)	—	—
RE00-07-73788	00-27036	1.6–1.9	ALLH	—	—	0.538 (U)	—	—	—	—	—	0.000708 (J)	1.61 (U)	—	—
RE00-07-73789	00-27037	0–0.5	ALLH	—	—	0.545 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73790	00-27037	2.0–3.0	ALLH	—	—	0.509 (U)	—	—	—	—	—	—	1.53 (U)	—	—
RE00-07-73791	00-27038	0–0.5	ALLH	—	—	0.522 (U)	—	—	—	—	—	—	1.56 (U)	—	—
RE00-07-73792	00-27038	2.0–3.0	ALLH	—	—	0.486 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73793	00-27039	0–0.5	ALLH	—	—	0.536 (U)	—	—	—	—	—	—	1.61 (U)	—	—
RE00-07-73794	00-27039	2.0–3.0	QAL	—	—	0.509 (U)	—	—	—	—	—	—	1.53 (U)	—	—
RE00-07-73795	00-27040	0–0.5	ALLH	—	—	0.529 (U)	—	—	—	—	—	—	1.59 (U)	—	—
RE00-07-73796	00-27040	2.0–3.0	ALLH	—	—	0.546 (U)	—	—	—	—	—	0.00083 (J-)	1.64 (U)	—	—
RE00-07-73797	00-27041	0–0.5	ALLH	—	—	0.592 (U)	—	—	—	—	—	0.000684 (J-)	1.78 (U)	—	—
RE00-07-73798	00-27041	2.0–2.5	QCT	0.709 (J)	—	0.588 (U)	—	—	—	—	3.86	—	1.76 (U)	—	—
RE00-07-73799	00-27042	0–0.5	ALLH	—	—	0.557 (U)	—	—	—	—	—	—	1.67 (U)	—	—
RE00-07-73800	00-27042	2.0–3.0	QAL	—	—	0.511 (U)	—	—	—	—	—	0.000763 (J-)	1.53 (U)	—	—
RE00-07-73801	00-27043	0–0.5	ALLH	—	—	0.542 (U)	—	—	—	—	—	—	1.63 (U)	—	—
RE00-07-73802	00-27043	1.5–2.0	ALLH	—	—	0.524 (U)	—	—	—	—	—	—	1.57 (U)	—	—
RE00-07-73803	00-27044	0–0.5	ALLH	—	—	0.524 (U)	—	—	—	—	—	—	1.57 (U)	—	—
RE00-07-73804	00-27044	2.0–3.0	QAL	—	—	0.491 (U)	—	—	—	—	—	0.00093 (J-)	—	—	—
RE00-07-73805	00-27045	0–0.5	ALLH	—	—	0.495 (U)	—	—	—	—	—	—	—	—	—

Table E-4.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Beryllium	Cadmium	Calcium	Chromium	Lead	Mercury	Nickel	Perchlorate	Selenium	Sodium	Thallium
ALLH Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na[b]**	**1.52**	**915**	**0.73**
QAL Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na**	**1.52**	**915**	**0.73**
QCT Background Value (mg/kg)[a]				**0.56**	**1.44**	**0.4**	**1900**	**2.60**	**13.5**	**0.1**	**2**	**na**	**0.3**	**4350**	**1.22**
Residential Soil Screening Level (mg/kg)[c]				**3.9**	**156**	**39**	**na**	**2100[d]**	**400**	**23[d]**	**1560**	**55[d]**	**391**	**na**	**5.16**
RE00-07-73806	00-27045	2.0–2.5	QAL	—	—	0.505 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73807	00-27046	0–0.5	ALLH	—	—	0.528 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73808	00-27046	2.0–3.0	QAL	—	—	0.486 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73809	00-27047	0–0.5	ALLH	—	—	0.51 (U)	—	—	—	—	—	0.000957 (J-)	1.53 (U)	—	—
RE00-07-73810	00-27047	2.0–3.0	QAL	—	—	0.493 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73811	00-27048	0–0.5	ALLH	—	—	0.519 (U)	—	—	—	—	—	—	1.56 (U)	—	—
RE00-07-73812	00-27048	2.0–3.0	QAL	—	—	0.488 (U)	—	—	—	0.525	—	0.000548 (J-)	—	—	—
RE00-07-73813	00-27049	0–0.5	ALLH	—	—	0.52 (U)	—	—	—	—	—	—	1.56 (U)	—	—
RE00-07-73814	00-27049	2.0–3.0	QAL	—	—	0.512 (U)	—	—	—	—	—	—	1.53 (U)	—	—
RE00-07-73825	00-27050	0–0.5	ALLH	—	—	0.549 (U)	—	—	—	—	—	—	1.65 (U)	—	—
RE00-07-73826	00-27050	2.0–3.0	QAL	—	—	0.525 (U)	—	—	—	—	—	—	1.57 (U)	—	—
RE00-07-73827	00-27051	0–0.5	ALLH	—	—	0.552 (U)	—	—	—	—	—	—	1.65 (U)	—	—
RE00-07-73828	00-27051	2.0–3.0	QAL	—	—	0.514 (U)	—	—	—	—	—	—	1.54 (U)	—	—
RE00-07-73829	00-27052	0–0.5	ALLH	—	—	0.548 (U)	—	—	—	—	—	—	1.64 (U)	—	—
RE00-07-73830	00-27052	2.0–3.0	QAL	—	—	0.497 (U)	—	—	—	—	—	0.00102 (J-)	—	—	—
RE00-07-73831	00-27053	0–0.5	ALLH	—	—	0.514 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73832	00-27053	1.8–2.1	QAL	—	—	0.494 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73833	00-27054	0–0.5	ALLH	—	—	0.494 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73834	00-27054	2.0–3.0	QAL	—	—	0.493 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73835	00-27055	0–0.5	QAL	—	—	0.533 (U)	—	—	—	—	—	0.00126 (J)	—	—	—
RE00-07-73836	00-27055	1.0–2.0	QAL	—	—	0.499 (U)	—	—	—	—	—	0.00124 (J)	—	—	—

Table E-4.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Beryllium	Cadmium	Calcium	Chromium	Lead	Mercury	Nickel	Perchlorate	Selenium	Sodium	Thallium
ALLH Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na[b]**	**1.52**	**915**	**0.73**
QAL Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na**	**1.52**	**915**	**0.73**
QCT Background Value (mg/kg)[a]				**0.56**	**1.44**	**0.4**	**1900**	**2.60**	**13.5**	**0.1**	**2**	**na**	**0.3**	**4350**	**1.22**
Residential Soil Screening Level (mg/kg)[c]				**3.9**	**156**	**39**	**na**	**2100[d]**	**400**	**23[d]**	**1560**	**55[d]**	**391**	**na**	**5.16**
RE00-07-73837	00-27056	0–0.5	QAL	—	—	0.511 (U)	—	—	—	—	—	—	1.53 (U)	—	—
RE00-07-73838	00-27056	1.9–3.0	QAL	—	—	0.492 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73839	00-27057	0–0.5	ALLH	—	—	0.552 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73841	00-27058	0–0.5	ALLH	—	—	0.534 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73843	00-27059	0–0.5	ALLH	—	—	0.523 (U)	—	—	—	—	—	—	1.57 (U)	—	—
RE00-07-73844	00-27059	2.0–3.0	QAL	—	—	0.482 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73845	00-27060	0–0.5	ALLH	—	—	0.5 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73846	00-27060	2.0–3.0	QAL	—	—	0.498 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73847	00-27061	0–0.5	ALLH	—	—	0.523 (U)	—	—	—	—	—	—	1.57 (U)	—	—
RE00-07-73848	00-27061	2.0–2.5	ALLH	—	—	0.523 (U)	—	—	—	—	—	—	1.57 (U)	—	—
RE00-07-73849	00-27062	0–0.5	ALLH	—	—	0.55 (U)	—	—	—	—	—	0.0011 (J)	1.65 (U)	—	—
RE00-07-73850	00-27062	2.0–3.0	QAL	—	—	0.503 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73851	00-27063	0–0.5	ALLH	—	—	0.535 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73852	00-27063	2.0–3.0	QAL	—	2.2	0.52 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73853	00-27064	0–0.5	ALLH	—	—	0.503 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73855	00-27065	0–0.5	ALLH	—	—	0.505 (U)	—	—	—	—	—	0.00106 (J)	—	—	—
RE00-07-73857	00-27066	0–0.5	ALLH	—	—	0.517 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73858	00-27066	2.0–3.0	ALLH	—	—	0.537 (U)	—	—	—	—	—	0.000931 (J)	1.61 (U)	—	—
RE00-07-73859	00-27067	0–0.5	ALLH	—	—	0.509 (U)	—	—	—	—	—	—	1.53 (U)	—	—
RE00-07-73860	00-27067	2.0–3.0	ALLH	—	—	0.514 (U)	16300	—	—	—	—	0.00295	1.54 (U)	1860	—
RE00-07-73861	00-27068	0–0.5	ALLH	—	—	0.524 (U)	—	—	—	—	—	—	1.57 (U)	—	—

Table E-4.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Beryllium	Cadmium	Calcium	Chromium	Lead	Mercury	Nickel	Perchlorate	Selenium	Sodium	Thallium
ALLH Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na[b]**	**1.52**	**915**	**0.73**
QAL Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na**	**1.52**	**915**	**0.73**
QCT Background Value (mg/kg)[a]				**0.56**	**1.44**	**0.4**	**1900**	**2.60**	**13.5**	**0.1**	**2**	**na**	**0.3**	**4350**	**1.22**
Residential Soil Screening Level (mg/kg)[c]				**3.9**	**156**	**39**	**na**	**2100[d]**	**400**	**23[d]**	**1560**	**55[d]**	**391**	**na**	**5.16**
RE00-07-73862	00-27068	2.0–3.0	QAL	—	—	0.507 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73863	00-27069	0–0.5	ALLH	—	—	0.515 (U)	—	—	—	—	—	—	1.55 (U)	—	—
RE00-07-73864	00-27069	2.0–3.0	QAL	—	—	0.516 (U)	—	—	—	—	—	—	1.55 (U)	—	—
RE00-07-73865	00-27070	0–0.5	ALLH	—	—	0.529 (U)	—	—	—	—	—	—	1.59 (U)	—	—
RE00-07-73866	00-27070	2.0–3.0	ALLH	—	—	0.517 (U)	—	—	—	—	—	0.000819 (J)	1.55 (U)	—	—
RE00-07-73867	00-27071	0–0.5	ALLH	—	—	0.543 (U)	—	—	—	—	—	—	1.63 (U)	—	—
RE00-07-73868	00-27071	1.7–2.0	ALLH	—	—	0.514 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73869	00-27072	0–0.5	ALLH	—	—	0.525 (U)	—	—	—	—	—	—	1.57 (U)	—	—
RE00-07-73870	00-27072	2.0–3.0	QAL	—	—	0.493 (U)	—	—	—	—	—	0.000735 (J)	—	—	—
RE00-07-73873	00-27074	0–0.5	ALLH	—	—	0.543 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73993	00-27102	0–0.5	ALLH	—	—	0.544 (U)	—	—	—	—	—	—	1.63 (U)	—	—
RE00-07-73958	00-27116	0–0.5	ALLH	—	—	0.536 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73959	00-27116	1.2–2.0	ALLH	—	—	0.565 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73960	00-27117	0–0.5	ALLH	—	—	0.627 (U)	—	—	—	—	—	—	1.88 (U)	—	—
RE00-07-73962	00-27118	0–0.5	ALLH	—	—	0.523 (U)	—	—	—	—	—	—	1.57 (U)	—	—
RE00-07-73964	00-27119	0–0.5	ALLH	—	—	0.569 (U)	—	—	—	—	—	—	1.71 (U)	—	—
RE00-07-73965	00-27119	2.0–3.0	ALLH	—	—	0.58 (U)	—	—	—	—	—	—	1.74 (U)	—	—
RE00-07-73966	00-27120	0–0.5	ALLH	—	—	0.615 (U)	—	—	—	—	—	0.00196 (J)	1.85 (U)	—	—
RE00-07-73967	00-27120	2.0–3.0	ALLH	—	—	0.551 (U)	—	—	—	—	—	0.00174 (J)	1.65 (U)	—	—
RE00-07-73968	00-27121	0–0.5	ALLH	—	—	0.587 (U)	—	—	—	—	—	—	1.76 (U)	—	—
RE00-07-73969	00-27121	2.0–3.0	ALLH	—	—	0.546 (U)	—	—	—	—	—	0.000618 (J)	1.64 (U)	—	—

Table E-4.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Beryllium	Cadmium	Calcium	Chromium	Lead	Mercury	Nickel	Perchlorate	Selenium	Sodium	Thallium
ALLH Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na[b]**	**1.52**	**915**	**0.73**
QAL Background Value (mg/kg)[a]				**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**15.4**	**na**	**1.52**	**915**	**0.73**
QCT Background Value (mg/kg)[a]				**0.56**	**1.44**	**0.4**	**1900**	**2.60**	**13.5**	**0.1**	**2**	**na**	**0.3**	**4350**	**1.22**
Residential Soil Screening Level (mg/kg)[c]				**3.9**	**156**	**39**	**na**	**2100[d]**	**400**	**23[d]**	**1560**	**55[d]**	**391**	**na**	**5.16**
RE00-07-73970	00-27122	0–0.5	ALLH	—	—	0.585 (U)	—	—	—	—	—	—	1.76 (U)	—	—
RE00-07-73972	00-27123	0–0.5	ALLH	—	—	0.521 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73974	00-27124	0–0.5	ALLH	—	—	0.535 (U)	—	—	—	—	—	—	1.6 (U)	—	—
RE00-07-73975	00-27124	1.0–2.0	ALLH	—	—	0.718 (U)	—	—	—	—	—	—	2.15 (U)	—	—
RE00-07-73976	00-27125	0–0.5	ALLH	—	—	0.573 (U)	—	—	—	—	—	—	—	—	0.866
RE00-07-73977	00-27125	1.3–2.0	ALLH	—	—	0.557 (U)	—	—	22.5 (J+)	—	—	—	1.67 (U)	—	0.791
RE00-07-73988	00-27126	0–0.5	ALLH	—	—	0.582 (U)	—	—	—	—	—	0.00143 (J)	—	—	—
RE00-07-73989	00-27126	1.3–1.5	ALLH	—	—	0.552 (U)	—	23.8	—	—	—	—	—	—	—
RE00-07-73990	00-27127	0–0.5	ALLH	—	—	0.551 (U)	—	—	—	—	—	—	—	—	—
RE00-07-73991	00-27127	1.1–2.2	ALLH	—	—	0.554 (U)	10200	—	—	—	—	—	1.66 (U)	—	—
RE00-07-73992	00-27128	0–0.3	ALLH	—	—	0.506 (U)	—	—	—	—	—	—	—	—	—

[a] BVs are from LANL 1998, 059730.

[b] na = Not available.

[c] SSLs are from NMED 2006, 092513, unless otherwise noted.

[d] Value is from EPA Region 6 (EPA 2007, 095866).

[e] — = Analyte not reported (detect or nondetect) above BV or not detected.

Table E-5.0-1
Summary of Samples Collected at AOC C-00-041

Sample ID	Location ID	Depth (ft)	Media	Metals	SVOCs	TPH DRO	TPH GRO	VOCs
RE00-07-76049	00-27644	0–0.5	ALLH	6682S*	6682S	6682S	6682S	6682S
RE00-07-76050	00-27644	2.2–3.2	ALLH	6682S	6682S	6682S	6682S	6682S
RE00-07-76051	00-27645	0–0.5	ALLH	6682S	6682S	6682S	6682S	6682S
RE00-07-76052	00-27645	2–3	ALLH	6682S	6682S	6682S	6682S	6682S
RE00-07-76053	00-27646	0–0.5	ALLH	6682S	6682S	6682S	6682S	6682S
RE00-07-76054	00-27646	2–2.8	ALLH	6682S	6682S	6682S	6682S	6682S
RE00-07-76055	00-27647	0–0.5	ALLH	6690S	6690S	6690S	6690S	6690S
RE00-07-76056	00-27647	2–3	ALLH	6690S	6690S	6690S	6690S	6690S
RE00-07-76057	00-27648	0–0.5	ALLH	6690S	6690S	6690S	6690S	6690S
RE00-07-76058	00-27648	2–3	ALLH	6690S	6690S	6690S	6690S	6690S
RE00-07-76059	00-27649	0–0.5	ALLH	6690S	6690S	6690S	6690S	6690S
RE00-07-76060	00-27649	2–3	ALLH	6690S	6690S	6690S	6690S	6690S
RE00-07-76061	00-27650	0–0.5	ALLH	6708S	6708S	6708S	6708S	6708S
RE00-07-76062	00-27650	2–3	ALLH	6708S	6708S	6708S	6708S	6708S
RE00-07-76063	00-27651	0–0.5	ALLH	6708S	6708S	6708S	6708S	6708S
RE00-07-76064	00-27651	2–3	ALLH	6708S	6708S	6708S	6708S	6708S
RE00-07-76065	00-27652	0–0.5	ALLH	6708S	6708S	6708S	6708S	6708S
RE00-07-76066	00-27652	3.1–4.1	ALLH	6708S	6708S	6708S	6708S	6708S
RE00-07-76067	00-27653	0–0.5	ALLH	6708S	6708S	6708S	6708S	6708S
RE00-07-76068	00-27653	2–3	ALLH	6708S	6708S	6708S	6708S	6708S
RE00-07-76069	00-27654	0–0.5	ALLH	6709S	6709S	6709S	6709S	6709S
RE00-07-76070	00-27654	2–3	ALLH	6709S	6709S	6709S	6709S	6709S
RE00-07-76071	00-27655	0–0.5	ALLH	6709S	6709S	6709S	6709S	6709S
RE00-07-76072	00-27655	2–3	ALLH	6709S	6709S	6709S	6709S	6709S
RE00-07-76073	00-27656	0–0.5	ALLH	6709S	6709S	6709S	6709S	6709S
RE00-07-76074	00-27656	2–3	ALLH	6709S	6709S	6709S	6709S	6709S
RE00-07-76075	00-27657	0–0.5	ALLH	6733S	6733S	6733S	6733S	6733S
RE00-07-76076	00-27657	1–1.6	ALLH	6733S	6733S	6733S	6733S	6733S
RE00-07-76077	00-27658	0–0.5	ALLH	6733S	6733S	6733S	6733S	6733S
RE00-07-76078	00-27658	2–3	ALLH	6733S	6733S	6733S	6733S	6733S
RE00-07-76079	00-27659	0–0.5	ALLH	6733S	6733S	6733S	6733S	6733S
RE00-07-76080	00-27659	2–3	ALLH	6733S	6733S	6733S	6733S	6733S
RE00-07-76081	00-27660	0–0.5	ALLH	6733S	6733S	6733S	6733S	6733S
RE00-07-76082	00-27660	2–3	ALLH	6733S	6733S	6733S	6733S	6733S

*Analytical request number.

Table E-5.1-1
Summary of Inorganic Chemicals Detected or above BVs at AOC C-00-041

Sample ID	Location ID	Depth (ft)	Media	Alumi num	Beryllium	Cadmium	Iron	Lead	Nickel	Potassium	Selenium	Zinc
Soil Background Value (mg/kg)[a]				**29200**	**1.83**	**0.4**	**21500**	**22.3**	**15.4**	**3460**	**1.52**	**48.8**
Residential Soil Screening Level (mg/kg)[b]				**77800**	**156**	**39**	**na[c]**	**400**	**1560**	**na**	**391**	**23500**
RE00-07-76049	00-27644	0.0–0.5	ALLH	—[d]	—	0.548 (U)	—	—	—	—	4.09	—
RE00-07-76050	00-27644	2.2–3.2	ALLH	—	—	0.578 (U)	—	—	—	—	4.35	—
RE00-07-76051	00-27645	0.0–0.5	ALLH	—	—	0.532 (U)	—	—	—	—	3.45	—
RE00-07-76052	00-27645	2.0–3.0	ALLH	—	—	0.554 (U)	—	—	—	—	5.76	—
RE00-07-76053	00-27646	0.0–0.5	ALLH	—	—	0.513 (U)	—	—	—	—	3.33	—
RE00-07-76054	00-27646	2.0–2.8	ALLH	—	—	0.523 (U)	—	—	—	—	3.49	—
RE00-07-76055	00-27647	0.0–0.5	ALLH	—	—	0.842 (U)	—	—	—	—	3.73	—
RE00-07-76056	00-27647	2.0–3.0	ALLH	—	—	0.578 (U)	—	—	—	—	2.22	—
RE00-07-76057	00-27648	0.0–0.5	ALLH	—	—	0.607 (U)	—	—	—	—	2.91	—
RE00-07-76058	00-27648	2.0–3.0	ALLH	—	—	0.556 (U)	—	—	—	—	3.43	—
RE00-07-76059	00-27649	0.0–0.5	ALLH	—	—	0.605 (U)	—	—	—	—	3.2	—
RE00-07-76060	00-27649	2.0–3.0	ALLH	—	—	0.574 (U)	—	—	—	—	4.32	—
RE00-07-76061	00-27650	0.0–0.5	ALLH	—	—	—	—	33.9 (J)	—	—	3.95	60.8
RE00-07-76062	00-27650	2.0–3.0	ALLH	—	—	0.604 (U)	—	25	—	—	2.75	—
RE00-07-76063	00-27651	0.0–0.5	ALLH	—	—	0.645 (U)	—	30.3	—	—	3.78	60
RE00-07-76064	00-27651	2.0–3.0	ALLH	—	—	0.597 (U)	—	—	—	—	6.53	52.5
RE00-07-76065	00-27652	0.0–0.5	ALLH	—	—	0.537 (U)	—	—	—	—	1.99	—
RE00-07-76066	00-27652	3.1–4.1	ALLH	—	—	0.561 (U)	—	—	—	—	3.23	—
RE00-07-76067	00-27653	0.0–0.5	ALLH	—	—	0.637 (U)	—	—	—	—	3.07	—
RE00-07-76068	00-27653	2.0–3.0	ALLH	—	—	0.56 (U)	—	—	—	—	2.24	—
RE00-07-76069	00-27654	0.0–0.5	ALLH	—	—	0.542 (U)	—	—	—	—	2.74	—
RE00-07-76070	00-27654	2.0–3.0	ALLH	—	—	0.641 (U)	—	—	—	—	6.99	—

Table E-5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Alumi num	Beryllium	Cadmium	Iron	Lead	Nickel	Potassium	Selenium	Zinc
Soil Background Value (mg/kg)[a]				**29200**	**1.83**	**0.4**	**21500**	**22.3**	**15.4**	**3460**	**1.52**	**48.8**
Residential Soil Screening Level (mg/kg)[b]				**77800**	**156**	**39**	**na**[c]	**400**	**1560**	**na**	**391**	**23500**
RE00-07-76071	00-27655	0.0–0.5	ALLH	—	—	0.655 (U)	—	—	—	—	4.88	—
RE00-07-76072	00-27655	2.0–3.0	ALLH	34100 (J+)	2.41	0.626 (U)	23800	—	—	4510 (J+)	9.54	74
RE00-07-76073	00-27656	0.0–0.5	ALLH	—	—	0.7 (U)	—	—	17.9 (J+)	—	7.09	50.3
RE00-07-76074	00-27656	2.0–3.0	ALLH	—	—	0.63 (U)	—	—	—	—	4.24	—
RE00-07-76075	00-27657	0.0–0.5	ALLH	—	—	0.564 (U)	—	—	—	—	—	—
RE00-07-76076	00-27657	1.0–1.6	ALLH	—	—	0.54 (U)	—	—	—	—	1.66	—
RE00-07-76077	00-27658	0.0–0.5	ALLH	—	—	0.654 (U)	—	—	—	—	1.84 (J)	61.8 (J-)
RE00-07-76078	00-27658	2.0–3.0	ALLH	—	—	0.616 (U)	—	—	—	—	2.17	—
RE00-07-76079	00-27659	0.0–0.5	ALLH	—	—	0.609 (U)	—	—	—	—	1.93	—
RE00-07-76080	00-27659	2.0–3.0	ALLH	—	—	0.541 (U)	—	—	—	—	1.57 (J)	—
RE00-07-76081	00-27660	0.0–0.5	ALLH	—	—	0.572 (U)	—	—	—	—	—	—
RE00-07-76082	00-27660	2.0–3.0	ALLH	—	—	0.537 (U)	—	—	—	—	—	—

[a] BVs are from LANL 1998, 059730.

[b] SSLs are from NMED 2006, 092513.

[c] na = Not available.

[d] — = Analyte not reported (detect or nondetect) above BV or not detected.

Table E-5.3-1
Organic Chemicals Detected at AOC C-00-041

Sample ID	Location ID	Depth (ft)	Media	Acenaphthene	Benzo(b)fluoranthene	Benzoic Acid	Chloroform	Chrysene	Dichlorobenzene[1,4-]	Dichloroethene[1,1-]	Fluoranthene	Phenanthrene	Pyrene	Toluene	TPH- DRO	TPH- GRO	Trimethylbenzene[1,2,4-]
Residential Soil Screening Level (mg/kg)[a]				**3730**	**6.21**	**240000[b]**	**4.00**	**615**	**39.5**	**206**	**2290**	**1830**	**2290**	**252**	**na[c]**	**na**	**58**
RE00-07-76049	00-27644	0.0–0.5	ALLH	—[d]	—	—	—	—	—	—	—	—	—	0.000445 (J)	—	—	0.000238 (J)
RE00-07-76050	00-27644	2.2–3.2	ALLH	—	—	—	0.00034 (J)	—	—	—	—	—	—	0.000749 (J)	27.5 (J)	—	—
RE00-07-76051	00-27645	0.0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	0.00057 (J)	17.9 (J)	0.107 (J)	0.000251 (J)
RE00-07-76052	00-27645	2.0–3.0	ALLH	—	—	—	—	—	—	—	—	—	—	0.000362 (J)	8.09 (J)	—	—
RE00-07-76053	00-27646	0.0–0.5	ALLH	—	—	—	—	—	—	—	0.0147 (J)	0.0178 (J)	—	—	112 (J)	—	—
RE00-07-76054	00-27646	2.0–2.8	ALLH	—	—	—	—	—	—	—	—	—	—	0.000333 (J)	11.2 (J)	—	—
RE00-07-76055	00-27647	0.0–0.5	ALLH	—	—	3.82 (J)	0.000352 (J)	—	0.000505 (J)	0.00125 (J)	—	—	—	—	319 (J)	—	—
RE00-07-76056	00-27647	2.0–3.0	ALLH	—	—	—	—	—	—	0.000402 (J)	—	—	—	—	7.51 (J)	—	—
RE00-07-76057	00-27648	0.0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	0.00138	6.54 (J)	—	0.000455 (J)
RE00-07-76058	00-27648	2.0–3.0	ALLH	—	—	—	—	—	—	—	—	—	—	0.000605 (J)	—	—	—
RE00-07-76059	00-27649	0.0–0.5	ALLH	—	—	0.734 (J)	0.000245 (J)	—	—	—	—	—	—	0.00139	56.4 (J)	—	0.000446 (J)
RE00-07-76060	00-27649	2.0–3.0	ALLH	—	—	—	—	—	—	—	—	—	—	0.00115	24.6 (J)	0.277 (J-)	—
RE00-07-76061	00-27650	0.0–0.5	ALLH	—	—	0.628 (J)	—	—	—	0.00193	—	—	—	—	18 (J)	—	—
RE00-07-76062	00-27650	2.0–3.0	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	0.0809 (J)	—
RE00-07-76063	00-27651	0.0–0.5	ALLH	—	—	—	—	—	—	0.000738 (J)	—	—	—	—	—	0.0349 (J-)	—
RE00-07-76065	00-27652	0.0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	0.043 (J)	—
RE00-07-76066	00-27652	3.1–4.1	ALLH	—	—	—	—	—	—	0.000396 (J)	—	—	—	—	—	—	—
RE00-07-76067	00-27653	0.0–0.5	ALLH	0.461	—	—	0.000344 (J)	—	—	0.00145	—	—	—	0.000969 (J)	—	0.048 (J-)	—
RE00-07-76068	00-27653	2.0–3.0	ALLH	—	—	—	—	—	—	—	—	—	—	0.00393	7.94 (J)	0.23 (J-)	—
RE00-07-76069	00-27654	0.0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	0.12	—
RE00-07-76070	00-27654	2.0–3.0	ALLH	—	—	—	—	—	—	0.000468 (J)	—	—	—	—	12.5 (J)	—	—
RE00-07-76071	00-27655	0.0–0.5	ALLH	—	—	—	0.000285 (J)	—	—	0.00105 (J)	0.0308 (J)	0.0329 (J)	0.0283 (J)	0.000605 (J)	—	0.0334 (J)	—
RE00-07-76072	00-27655	2.0–3.0	ALLH	—	—	—	—	—	—	—	—	—	—	0.000405 (J)	—	—	—
RE00-07-76073	00-27656	0.0–0.5	ALLH	—	0.0815 (J)	—	—	0.0172 (J)	—	0.000904 (J)	0.0382 (J)	0.0286 (J)	0.031 (J)	0.00084 (J)	—	—	—
RE00-07-76074	00-27656	2.0–3.0	ALLH	—	—	—	—	—	—	—	—	—	—	—	6.98 (J)	—	—
RE00-07-76075	00-27657	0.0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	0.00384	18.9 (J)	—	0.000279 (J)
RE00-07-76076	00-27657	1.0–1.6	ALLH	—	—	—	—	—	—	—	0.0261 (J)	—	0.0298 (J)	0.00506	11.9 (J)	0.0415 (J-)	—
RE00-07-76077	00-27658	0.0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	0.0024	—	—	—
RE00-07-76078	00-27658	2.0–3.0	ALLH	—	—	—	—	—	—	—	—	—	—	—	20.7 (J)	0.0345 (J-)	—
RE00-07-76079	00-27659	0.0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	56.9 (J)	0.103 (J-)	—

Table E-5.3-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Acenaphthene	Benzo(b)fluoranthene	Benzoic Acid	Chloroform	Chrysene	Dichlorobenzene[1,4-]	Dichloroethene[1,1-]	Fluoranthene	Phenanthrene	Pyrene	Toluene	TPH- DRO	TPH- GRO	Trimethylbenzene[1,2,4-]
Residential Soil Screening Level (mg/kg)[a]				**3730**	**6.21**	**240000[b]**	**4.00**	**615**	**39.5**	**206**	**2290**	**1830**	**2290**	**252**	**na[c]**	**na**	**58**
RE00-07-76080	00-27659	2.0–3.0	ALLH	—	—	—	—	—	—	—	—	—	—	—	6.48 (J)	0.137 (J-)	—
RE00-07-76081	00-27660	0.0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	34 (J)	0.0354 (J-)	—
RE00-07-76082	00-27660	2.0–3.0	ALLH	—	—	—	—	—	—	—	—	—	—	—	8.61 (J)	0.105 (J-)	—

[a] SSLs are from NMED 2006, 092513, unless otherwise noted.

[b] Value is from EPA Region 6 (EPA 2007, 095866).

[c] na = Not available.

[d] — = Analyte not detected.

Appendix F

Risk Assessment

CONTENTS

Figures

Tables

F-1.0 INTRODUCTION

This appendix presents the results of the human health and ecological risk screening assessments conducted during the investigation of an aggregate of solid waste management units (SWMUs) and area of concern (AOCs) in Technical Area (TA) 00 (Figure 1.0-1 of the investigation report) at Los Alamos National Laboratory (LANL or the Laboratory). The SWMUs and AOC addressed in the report make up a large portion of the Guaje/Barrancas/Rendija Canyons Aggregate Area (Figure 1.0-2 in the report).

F-2.0 BACKGROUND

The SWMUs and AOC addressed in this risk appendix were formerly part of Operable Unit (OU) 1071 within TA-00. The Laboratory began operations at TA-00 in 1943 and had largely ceased using this area by 1986. TA-00 is located in the northern portion of the Laboratory, north of Rendija Road and generally north of the Los Alamos townsite. The current use of the sites is recreational, but in the future, land use may change to either commercial or residential uses.

F-2.1 Site Descriptions and Operational History

F-2.1.1 SWMU 00-011(a)

SWMU 00-011(a) is a 28.5-acre former mortar impact area located on U.S. Forest Service (USFS) land about 0.4 mi east of the Sportsmen's Club firing range (AOC 00-015) in Rendija Canyon (Figure 1.0-2). The site was used as a mortar-impact area in the mid-1940s, and operations ceased in the late 1940s (LANL 1990, 007511).

SWMU 00-011(a), which lies at elevations between 6835 ft and 6950 ft above sea level, is bounded by Rendija Canyon to the north and Barranca Mesa to the south (LANL 1992, 007666). A dirt road bisects SWMU 00-011(a) east to west. There are no structures within SWMU 00-011(a).

The area is used for recreational purposes, although it is fenced and signed for no trespassing. The area is being used as a shooting range and as a motocross park. Numerous bullets and casings were found throughout the site. Several areas were set up for target practice. The users of the motocross course have dug into the soil to create ramps and jumps and bermed areas for the course.

F-2.1.2 SWMU 00-011(d)

SWMU 00-011(d) (Figure 1.0-2) is a bazooka firing area largely on Los Alamos County land, except for a small section on private property. The area is in a small north-trending tributary of Bayo Canyon northeast of the intersection of San Ildefonso Road and Diamond Drive. The area is approximately 5 acres and was used as a target area for 2.36-in. bazooka rounds in the mid-1940s; operations ceased in the late 1940s (LANL 1990, 007511).

SWMU 00-011(d) lies at elevations between 7220 ft to 7275 ft above sea level. There are no structures within SWMU 00 011(d). The area is used for recreational purposes.

F-2.1.3 SWMU 00-011(e)

SWMU 00-011(e) (Figure 1.0-2) is a former ammunition impact area located on USFS land in a tributary of Rendija Canyon north-northeast of the Sportsmen's Club (AOC 00-015). The area extends north along the tributary to the top of a cliff face. The area is roughly rectangular and is approximately 14 acres and was used as an ammunition impact area in the mid-1940s. Operations ceased in the late 1940s (LANL 1990, 007511).

SWMU 00-011(e), which lies at elevations between 6880 and 7280 ft above sea level, is bounded by Rendija Canyon to the south and to the north, east, and west by a natural amphitheater structure. The area is fenced and posted with “No Trespassing” signs.

F-2.1.4 AOC C-00-041

AOC C-00-041 is the site of a former asphalt batch plant in a 50- by 600-ft portion of a side-slope and drainage channel that flows into Rendija Canyon on USFS land (Figure 1.0-2). Aerial photographs indicated evidence of asphalt plant operations from the late 1940s to 1958 (LANL 1996, 054925, p. 1). In 1969, the land was transferred from the Atomic Energy Commission to the USFS to manage as public land after the plant was removed (LANL 1996, 054925, p.1).

AOC C-00-041, which lies at an elevation between 7090 and 7150 ft above sea level, straddles a drainage channel that flows into Rendija Canyon. Currently, the site is undeveloped and is used for recreational purposes. A hiking trail, Rendija Trail, is located to the west of AOC C-00-041.

F-2.2 Investigation Sampling and Determination of Chemicals of Potential Concern

Historical investigation and sampling at SWMU 00-011(a), SWMU 00-011(d), SWMU 00-011(e), and AOC C-00-041 fall into one of two categories: (1) historical Resource and Conservation and Recovery Act (RCRA) facility investigation (RFI) activities conducted between 1993 and 1995 and (2) recent activities conducted between October 2006 and May 2007. The inorganic chemical samples from 1993 were analyzed by the Laboratory’s Chemical Sciences and Technology (CST) Group. The quality assurance/quality control (QA/QC) data for validation of the CST data is incomplete; therefore, the inorganic chemical data cannot be used to quantitatively determine the nature and extent of contamination.

Table F-2.2-1 summarizes the chemicals of potential concern (COPCs) evaluated in the risk screening assessments for each SWMU or AOC. Appendix E summarizes the COPC selection process and provides a complete data summary. The residential scenario and the ecological assessment typically use data from samples collected from 0–10 ft and 0–5 ft depths, respectively. In the risk screening assessments for the SWMUs and AOC in this aggregate area, the maximum sample depth is less than 5 ft; therefore, the exposure point concentrations (EPCs) for both the residential scenario and the ecological assessment are the same.

F-3.0 CONCEPTUAL SITE MODEL

The conceptual site model for human receptors at SWMU 00-011(a), SWMU 00-011(d), SWMU 00-011(e), and AOC C-00-041 is described in the approved investigation work plan (LANL 2005, 089657; NMED 2006, 091532) and is shown in Figure F-3.0-1. The primary exposure media for human receptors is surface soil and subsurface soil/tuff that may be brought to the surface through activities at the site. Human receptors may be exposed through direct contact with soil or suspended particulates by ingestion, inhalation, and dermal contact. Based on the current and reasonably foreseeable future land use of the site, these exposure pathways apply to the residential scenario, which is evaluated for decision-making purposes. Surface water was not evaluated in the human health screening assessments because no perennial surface water exists at the sites.

The conceptual site model for ecological receptors is shown in Figure F-3.0-1. Several exposure pathways apply to the exposure of ecological receptors. Plants may be exposed through root uptake. Dermal contact is an exposure pathway for invertebrates but less so for wildlife, which is protected by fur and feathers. Dietary exposures include soil ingestion and food-web transport and are the primary pathways for wildlife. Current potential transport mechanisms that may lead to exposure of potential receptors include dissolution and/or particulate transport of surface contaminants during precipitation and runoff events.

F-3.1 Environmental Fate and Transport

The evaluation of environmental fate addresses the chemical processes affecting the persistence of a chemical in the environment, and the evaluation of transport addresses the physical processes affecting mobility along a migration pathway. Transport through soil and tuff depends on soil pH, stormwater runoff or snowmelt, soil moisture, and soil hydraulic properties. Chemical and physical properties of COPCs are presented in Tables F-3.1-1 and F-3.1-2, and are from Table B-1 of the NMED guidance (NMED 2006, 091532), U.S. Environmental Protection Agency (EPA) Region 6 guidance (EPA 2007, 095866), or the EPA Superfund Chemical Matrix (http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm).

Seepage into soil and tuff depends on the rate of precipitation or snowmelt, antecedent soil moisture status, depth of soil, and soil hydraulic properties. Seepage into the tuff also depends on the unsaturated flow properties of the tuff. Joints and fractures in the tuff may provide additional pathways for moisture to enter the subsurface regime.

The primary factor that is important 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 can occur through the vadose zone to groundwater.

Nature and extent of contamination are addressed in Appendix E. No sources continue to release contamination at SWMU 00-011(a), SWMU 00-011(d), and SWMU 00-011(e). A thin layer of asphalt remains 3 to 4 ft below the surface at AOC C-00-041. Vertical and lateral extent is defined for the SWMUs/AOC within the Guaje/Barrancas/Rendija Canyons Aggregate Area, and no migration to groundwater is present. The limited extent of contamination is related to the absence of the key factors that facilitate migration, as presented in the previous paragraph. Given how long the contamination has been present in the subsurface, the low concentrations and infrequent detection, the information presented related to soil/tuff partitioning, water solubility, vapor pressure, the lack of a source for continued releases into the subsurface, and the absence of saturated conditions (low percent moisture), the potential for contaminant migration to groundwater is very low.

This section includes all of the COPCs identified by the data review in Appendix E for the Guaje/Barrancas/Rendija Canyons Aggregate Area SWMUs and AOC (Table F-2.2-1). COPCs for each SWMU and AOC include inorganic chemicals and organic chemicals and are discussed below.

F-3.1.1 Inorganic Chemicals

The physical and chemical factors that determine the distribution of inorganic COPCs within the soil and tuff at SWMU 00-011(a), SWMU 00-011(d), SWMU 00-011(e), and AOC C-00-041 are the soil-water partition coefficient (K_d) of the inorganic chemicals, the pH of the soil, soil characteristics (such as sand or clay content), and redox potential. The interaction of these factors is complex, but the K_d values can provide a general assessment of the potential for migration through the subsurface; chemicals with higher K_d values are less likely to be mobile that those with lower ones. Table F-3.1-1 presents the K_d values for the inorganic COPCs at SWMU 00-011(a), SWMU 00-011(d), SWMU 00-011(e), and AOC C-00-041 (NMED 2006, 092513); these values match the K_d values recommended by the EPA for the default pH of 6.8 for evaluation of Superfund sites (EPA 1996, 059902) and represent conservative values applicable to a wide range of sites. Chemicals with K_d values greater than 40 are very unlikely to migrate through soil towards the water table (Kincaid et al. 1998, 093270). Based on this K_d criterion, barium, cadmium, cobalt, lead, manganese, mercury, and nickel have a very low potential for migration to groundwater (Table F-3.1-1).

Besides the K_d values, other factors, such as speciation in soil and oxidation/reduction potential (Eh), also play a role in the likelihood that inorganic chemicals will migrate. 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). The information for these inorganic chemicals is also available from the ATSDR website at http://www.atsdr.cdc.gov/toxprofiles.

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. Samples collected in the vicinity of AOC C-00-041 and SWMU 00-011(e) had pH measurements in the range of 5.41 to 6.77 (Appendix D). In addition, the Los Alamos County soil survey data indicate that soil similar to the study area is expected to have a pH range of 5.6 to 7.8 (Nyhan et al. 1978, 005702). Therefore, selenium is not likely to be mobile.

Perchlorate is highly soluble in water and may migrate with water molecules in saturated soil. However, subsurface soil has low moisture content, which causes perchlorate to be relatively immobile. In addition, vertical extent of perchlorate is defined at all sites investigated within the aggregate area and detected concentrations are low (at or near the estimated detection limit). Because historical activities that may have contributed to the release of perchlorate ceased 40 to 60 yr ago, there is no continuing source of contamination. Without sufficient moisture and a source, there is little or no potential migration of perchlorate to groundwater.

F-3.1.2 Organic Chemicals

Table F-3.2-1 presents the physical and chemical properties (organic carbon-water partition coefficient [K_{oc}], octanol/water partition coefficient [K_{ow}], and solubility) of the organic COPCs. The physical and chemical properties of organic chemicals are important when evaluating the fate and transport. Information in the following paragraphs about the physiochemical properties of site organic COPCs is presented to illustrate some aspects of the fate and transport tendencies of the COPCs. The information is summarized from Ney (1995, 058210).

Water solubility is perhaps 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. Benzoic acid, chloroform, and 1,1-dichloroethene have water solubilities greater than 1000 mg/L.

The lower the water solubility of a chemical (especially lower than 10 mg/L), the more likely it will be immobilized by adsorption. Chemicals with lower water solubilities are likely to accumulate or bioaccumulate and persist in the environment, to be slightly prone to biodegradation, and may be metabolized in plants and animals. Acenaphthene, benzo(b)fluoranthene, 1,4 dichlorobenzene, chrysene, fluoranthene, phenanthrene, pyrene, and 1,2,4-trimethylbenzene have water solubilities less than 10 mg/L.

Vapor pressure is a chemical 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 their 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. Chloroform, 1,1 dichloroethene, and toluene 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. Organic COPCs with vapor pressures less than 0.000001 mmHg are benzo(b)fluoranthene, chrysene, fluoranthene, and pyrene. The vapor pressure of acenaphthene (4.93×10^{-6} mmHg) is not much greater than 0.000001 mmHg, and this chemical tends to be immobile.

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} value above 1000, the greater the affinity the chemical has for bioaccumulation/bioconcentration in the food chain, the greater its potential for sorption in the soil, and the lower its mobility (Ney 1995, 058210). Table F-3.2-1 provides the K_{ow} values for organic COPCs. All organic COPCs, except benzoic acid, chloroform, 1,1-dichloroethene, toluene, and 1,2,4-trimethylbenzene have a K_{ow} above 1000, indicating they are not likely to sorb to soil and are relatively mobile.

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 (NMED 2006, 092513). Table F-3.2-1 provides the K_{oc} values for organic COPCs. All but three organic COPCs have K_{oc} values above 500 cm^3/g, indicating a very low potential to migrate toward groundwater. The organic COPCs with K_{oc} values less than 500 cm^3/g are chloroform, 1,1-dichloroethene, and toluene and are volatile.

F-3.1.3 Summary

Saturation is the primary factor in determining the potential for COPCs to migrate to groundwater. Saturated conditions are not present within SWMU 00-011(a), SWMU 00-011(d), SWMU 00-011(e), and AOC C-00-041. The lack of saturated conditions and hydrostatic pressure, severely limits the movement of contamination toward groundwater at these sites. Without sufficient moisture, little or no potential migration of materials occurs through the vadose zone to groundwater. As a result, the potential for COPC migration to groundwater is very low, based on the site conditions, the physical/chemical properties of the COPCs, and the distance to the regional aquifer below the site (approximately 1200 ft bgs).

F-3.2 Exposure Point Concentrations

For each COPC, the maximum detected concentration, the 95% upper confidence limit (UCL) of the arithmetic mean, and the distribution upon which the UCL was calculated are provided in Table F-2.2-1. An EPC, either a 95% UCL or maximum detected concentration, was calculated for each COPC for the residential scenario and for the ecological assessment (Table F-2.2-1).

Calculation of the 95% UCLs is based on EPA guidance (EPA 2002, 085640), which is also the basis for the EPA software ProUCL 4.0 (EPA 2007, 096530). The choice of UCL calculation method is based on the distribution of the data (Table F-2.2-1). Environmental data may have a normal, lognormal, or gamma distribution but are most often nonparametric (no definable shape to the distribution).

The 95% UCLs were calculated using all available decision-quality data within the depth range of interest. ProUCL identified the type of distribution of each COPC. Distributions included normal, gamma, and nonparametric. Based on the identified distribution, ProUCL calculated 95% UCLs using several specific methods. If the calculated 95% UCL was greater than the maximum reported value or if only one value was detected with the rest all nondetects and ProUCL 4.0 could not perform statistical tests, the maximum detected concentration was used as the EPC.

Because all samples collected in this investigation were less than 5 ft, the EPCs are identical for the ecological assessments and residential scenario.

F-4.0 SCREENING LEVELS

A human health risk screening assessment was conducted to determine whether COPC concentrations in soil and tuff at SWMU 00-011(a), SWMU 00-011(d), SWMU 00-011(e), and AOC C-00-041 might pose a potential unacceptable risk to human receptors. The assessments assume a residential scenario to support decisions at SWMU 00-011(a), SWMU 00-011(d), SWMU 00-011(e), and AOC C-00-041.

F-4.1 Soil Screening Levels

Soil screening levels (SSLs) from NMED guidance (NMED 2006, 092513) and NMED total petroleum hydrocarbons (TPH) screening guidelines (NMED 2006, 094614) were used for human health SSLs (Tables F-4.1-1 and F-4.1-2). The NMED SSLs are based on a target hazard quotient (HQ) of 1.0 and a target cancer risk level of 1×10^{-5} (NMED 2006, 092513). For COPCs for which no NMED value is available, EPA Region 6 screening levels (EPA 2007, 095866) were used and adjusted to the 1×10^{-5} target level. Exposure parameters used to calculate the residential SSLs are presented in Table F-4.1-3.

Ecological screening levels (ESLs) were obtained from the ECORISK Database, Version 2.2 (LANL 2005, 090032), as presented in Table F-4.1-4. The ESLs are based on similar species and are derived from experimentally determined no-observed-adverse-effect levels (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 toxicity reference values, is presented in the ECORISK Database, Version 2.2 (LANL 2005, 090032).

F-4.1.1 SWMU 00-011(a)

Carcinogenic chemicals were not detected within 0–3.2 ft bgs. Based on a residential scenario, the hazard index (HI) is 0.2, which is less than the NMED target level of 1.0 (Table F-4.1-5). The screening assessment indicates no potential for unacceptable risk to human health at SWMU 00-011(a) under a residential scenario.

F-4.1.2 SWMU 00-011(d)

Carcinogenic chemicals were not detected within 0–3 ft bgs. Based on a residential scenario, the HI (0.06) is less than NMED's target level of 1.0 (Table F-4.1-6). The screening assessment indicates no potential for unacceptable risk to human health at SWMU 00-011(d) under a residential scenario.

F-4.1.3 SWMU 00-011(e)

Carcinogenic chemicals were not detected within 0–3 ft bgs. Based on a residential scenario, the HI (0.04) is less than NMED's target level of 1.0 (Table F-4.1-7).Therefore, the screening assessment indicates no potential for unacceptable risk to human health exists at SWMU 00-011(e) under a residential scenario.

F-4.1.4 AOC C-00-041

Based on a residential scenario, the HI (0.05) is less than NMED's target level of 1.0 (Table F-4.1-8), and the total excess cancer risk (1 x 10^{-7}) is less than the NMED target level of 1 x 10^{-5} (Table F-4.1-9).

TPH-diesel research organics (DRO) was screened using NMED TPH screening guidelines (NMED 2006, 094614, Table 2a). The 95% UCL for TPH-DRO is 68.9 mg/kg and the maximum concentration is 319 mg/kg. TPH-DRO was screened with the screening guideline for unknown oil with a residential direct exposure value of 200 mg/kg. The 95% UCL of TPH-gasoline range organics (GRO) is 0.096 mg/kg and the maximum concentration is 0.277 mg/kg. TPH-GRO has no screening value, but it was detected at low concentrations across the AOC.

The screening assessment indicates no potential for unacceptable risk to human health at AOC C-00-041 under a residential scenario.

F-4.2 Uncertainty Analysis

The analyses in the human health screening assessments are subject to varying degrees and types of uncertainty. Aspects of data evaluation and COPC identification, exposure assessment, toxicity assessment, and the additive approach all contribute to uncertainties in the risk assessment process. Each or all these uncertainties may affect the assessment results.

F-4.2.1 Data Evaluation and COPC Identification Process

A primary uncertainty associated with the COPC identification process is the possibility that a chemical may be inappropriately identified as a COPC when it is actually not a COPC, or that a chemical may not be identified as a COPC when it actually should be identified as a COPC. Organic chemicals were appropriately identified as COPCs because all detected organic chemicals were retained for analysis.

Uncertainties associated with the inorganic and organic chemicals may include errors in sampling, laboratory analysis, and data analysis. Because concentrations used in this risk screening assessment were less than estimated quantitation limits, data evaluation uncertainties are expected to have little effect on the assessment results. The J (estimated) qualification of detected concentrations of some organic COPCs does not affect the assessment.

F-4.2.2 Exposure Assessment

Three main uncertainties were identified in the exposure assessment process: the activity patterns of a resident, upper-bound values used in exposure assumptions, and the use of the 95% UCL or maximum detected concentration as the EPC.

1. *Identification of Receptors*. The current and proposed future land use is recreational. A residential scenario was used as the exposure scenario and does not represent actual conditions at the sites. Assumptions for the residential SSLs are that the potentially exposed individual is a

resident who is at home on the site for 350 d/yr for 30 yr (EPA 1997, 066598). It is unlikely that the resident will build a house and remain on-site for 350 d/yr for 30 yr; therefore, the screening assessment overestimates the exposure and potential risk.

2. *Exposure Pathways*. A number of assumptions are made relative to exposure pathways, including input parameters, whether or not a given pathway is complete, 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 2006, 092513). When several upper-bound values (as are found in NMED guidance [2006, 092513]) are combined to estimate exposure for any one pathway, the resulting risk estimate may exceed the 99th percentile; and therefore, may exceed the reasonably expected range of risk.

3. *Derivation of EPCs*. Some uncertainty is introduced in the aggregation of data for estimating the EPCs at the site. Risk from a single location or area with relatively high COPC concentrations may be underestimated by using a representative, SWMU- or AOC-wide value. However, the use of the 95% UCL is intended to provide a protective, upper-bound (i.e., conservative) COPC concentration at the site. This approach may lead to an overestimation of the concentration representative of average exposure to a COPC across the entire site. Use of the maximum detected concentration for the EPC also overestimates the exposure to contamination because receptors are not consistently exposed to the maximum concentration across the site.

F-4.2.3 Toxicity Assessment

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 assessment (NMED 2006, 092513). Uncertainties were identified in five areas with respect to the toxicity values: extrapolation from animals to humans; extrapolation from one route of exposure to another route of exposure; individual variability in the human population, the derivation of RfDs and SFs; and the chemical form of the COPC.

1. *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.

2. *Extrapolation from One Route of Exposure to Another Route of Exposure*. The SFs and RfDs often contain extrapolations from one exposure route to another that result in additional conservatism in the risk calculations. The extrapolation from the oral route to the inhalation and/or the dermal route is used in the derivation of some screening values (NMED 2006, 092513). Differences between the two exposure pathways contribute to the uncertainty in the estimation of potential risk at this site.

3. *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 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 assessment; this factor of 10 is generally considered to result in a conservative estimate of risk to noncarcinogenic COPCs.

4. *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.

5. *Chemical Form of the COPC*. COPCs may be bound to the environment matrix and not available for absorption into the human body. However, it is assumed that the COPCs are bioavailable. This assumption can lead to an overestimation of the total risk.

F-4.2.4 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 and on different target organs but are addressed additively.

F-4.3 Results of Human Health Screening Analysis

F-4.3.1 SWMU 00-011(a)

The HI is less than NMED's target level of 1.0 (NMED 2006, 092513), and no carcinogenic COPCs were detected. The screening assessment indicates no potential unacceptable risk to human health at SWMU 00-011(a) under a residential scenario.

F-4.3.2 SWMU 00-011(d)

The HI is less than NMED's target level of 1.0 (NMED 2006, 092513), and no carcinogenic COPCs were detected. The screening assessment indicates no potential unacceptable risk to human health at SWMU 00-011(d) under a residential scenario.

F-4.3.3 SWMU 00-011(e)

The HI is less than NMED's target level of 1.0 (NMED 2006, 092513), and no carcinogenic COPCs were detected. The screening assessment indicates no potential unacceptable risk to human health at SWMU 00-011(e) under a residential scenario.

F-4.3.4 AOC C-00-041

The HI and total excess cancer risk are less than NMED's target levels of 1.0 and 1×10^{-5} (NMED 2006, 092513) and the TPH-DRO EPC is below the TPH residential screening guideline for unknown oil (NMED 2006, 094614, Table 2a). The screening assessment indicates no potential unacceptable risk to human health at AOC C-00-041 under a residential scenario.

F-5.0 ECOLOGICAL RISK SCREENING ASSESSMENTS

F-5.1 Introduction

The approach for conducting ecological assessments is described in the “Screening Level Ecological Risk Assessment Methods, Revision 2” (LANL 2004, 087630). The assessment consists of four parts: a scoping evaluation, a screening evaluation, an uncertainty analysis, and an interpretation of the results.

F-5.2 Scoping Evaluation

The scoping evaluation establishes the breadth and focus of the screening assessment. The ecological scoping checklists for each site (including SWMU 00-011(c) and AOC C-00-020), which are included in Attachment F-1, 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 site conceptual model for SWMU 00-011(a), SWMU 00-011(d), SWMU 00-011(e), and AOC C-00-041.

Figure F-5.2-1 shows the ecological vegetation communities of the SWMU 00-011(a), SWMU 00-011(d), SWMU 00-011(e), and AOC C-00-041. Observed and expected wildlife receptors are discussed in the ecological scoping checklists in Attachment F-1 to this appendix.

Transport to groundwater is unlikely because of the depth of the regional aquifer (approximately 1200 ft bgs), and the semiarid environment of this region provides minimal hydrologic head. The potential contact with contaminants is by root uptake, food-web transport, and soil ingestion.

F-5.2.1 SWMU 00-011(a)

SWMU 00-011(a) is located in an undeveloped area, and the cover consists primarily of ponderosa pine, juniper, and piñon trees. Areas also contain native and nonnative grasses, forbs, trees, and shrubs.

Some areas contribute to stormwater runoff into the canyon to the north. To the north, surface water transport terminates within the Rendija Canyon stream channel. Within the SWMU boundaries on the south side of the road, run-off flows into an arroyo that joins the Rendija Canyon stream channel. No potential for exposure to aquatic receptors exists because no persistent aquatic habitat is present at the site.

F-5.2.2 SWMU 00-011(d)

SWMU 00-011(d) is located in a ponderosa pine forest with piñon/juniper. Grassland is located on the south section of the site and a rock cliff is located on the east section of the site.

Some areas contribute to stormwater runoff into the drainage channel to the south and east of the site. No potential for exposure to aquatic receptors exists because no persistent aquatic habitat is present at the site.

F-5.2.3 SWMU 00-011(e)

SWMU 00-011(e) is located in a ponderosa pine and piñon/juniper area, with the upper slope of the site predominantly piñon/juniper and the lower area predominantly ponderosa pine. A cliff face occupies the north and northeastern edge of the SWMU. Bare rock and rock boulders are located within most of the SWMU.

Some areas contribute to stormwater runoff into the drainage channel to the south and east of the site. No potential for exposure to aquatic receptors exists because no persistent aquatic habitat is present at the site.

F-5.2.4 AOC C-00-041

AOC C-00-041 is located in a ponderosa pine habitat. Grasses grow in the stream channel area. Some areas contribute to stormwater runoff into the drainage channel to the north of the site. No potential for exposure to aquatic receptors exists because no persistent aquatic habitat is present at the site.

The scoping portion of the assessment indicated that terrestrial receptors were appropriate for evaluating the concentrations of contaminants in soil. Aquatic receptors were not evaluated because no aquatic communities are present at any of the sites. This process evaluated eight terrestrial receptors representing several trophic levels. These receptors include the following:

- a plant
- soil-dwelling invertebrates (represented by the earthworm)
- the deer mouse (mammalian omnivore)
- the montane shrew (mammalian insectivore)
- desert cottontail (mammalian herbivore)
- red fox (mammalian carnivore)
- American robin (avian insectivore, avian omnivore, and avian herbivore)
- American kestrel (avian invertebrate and avian carnivore [surrogate for threatened and endangered (T&E) species])

The rationale for these receptors is presented in “Screening Level Ecological Risk Assessment Methods” (LANL 2004, 087630). The ESLs are derived for each of these receptors where information was available. The ESLs are based on similar species and derived from experimentally determined NOAELs, LOAELs, or doses lethal to 50% of the population. Relevant information necessary to calculate ESLs, including concentration equations, dose equations, bioconcentration factors, transfer factors, and toxicity reference values (TRVs), is presented in the ECORISK Database, Version 2.2 (LANL 2005, 090032).

F-5.3 Assessment Endpoints

An assessment endpoint is an explicit expression of the environmental value to be protected. These 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 assessment, assessment endpoints are any adverse effects on ecological receptors, where receptors are populations and communities (EPA 1997, 059370).

The ecological screening assessment is designed to protect populations and communities of biota rather than individual organisms, except for listed or candidate T&E species or treaty-protected species (EPA 1999, 070086). The protection of individuals within these designated protected species could also be protected at the population level; the populations of these species tend to be small, and the loss of an individual adversely affects the species.

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 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.

F-5.4 Screening Evaluation

The purpose of the ecological screening evaluation is to identify chemicals of potential ecological concern (COPECs) for SWMU 00-011(a), SWMU 00-011(d), SWMU 00-011(e), and AOC C-00-041. The evaluation involves the calculation of HQs for all COPCs and all screening receptors (LANL 2004, 087630). The HQs are the ratios of the EPCs (95% UCLs or maximum detected concentrations) to the ESLs. The COPCs with HQs greater than 0.3 are identified as COPECs and are evaluated further. The HI is the sum of HQs. An HI greater than 1.0 is an indication of potential adverse impacts. The ESLs for terrestrial receptors were obtained from the ECORISK Database, Version 2.2 (LANL 2005, 090032) and are presented in Table F-4.1-4.

F-5.4.1 SWMU 00-011(a)

The EPCs are determined from samples collected between 0–3.2 ft bgs (LANL 2004, 087630) from SWMU 00-011(a) (Table F-2.2-1).

The results of the comparison of the EPCs with the final (minimum) ESL for SWMU 00-011(a) are shown in Table F-5.4-1. Cadmium, cobalt, lead, manganese, and selenium had HQs greater than 0.3 and are retained as COPECs.

There are no ESLs for perchlorate. As a result, perchlorate is retained as a COPEC and discussed in the uncertainty section.

The COPECs were evaluated further in Table F-5.4-2. The HQ for each COPEC/receptor combination as well as the HIs for each receptor was calculated. The HI is the sum of HQs for chemicals with common toxicological endpoints for a given receptor. For the purposes of ecological screening, it is assumed that nonradionuclides have common toxicological effects. The HI analysis provides a clearer picture of potential adverse impacts by determining how many receptors may be affected and provides information on T&E species.

According to Table F-5.4-2, the robin, shrew, deer mouse, and plant have HIs greater than 1.0. The red fox, kestrel, cottontail, and earthworm have HIs less than 1.0, indicating that these receptors are not potentially affected by the COPECs.

F-5.4.2 SWMU 00-011(d)

The EPCs are determined from samples collected between 0–3.0 ft bgs (LANL 2004, 087630) from SWMU 00-011(d) (Table F-2.2-1). The tuff was included in the screening assessment because some of it may be crushed tuff, which is easier to burrow into than welded tuff. In addition, some plant roots are able to extend into the tuff, and their root system will break up small sections of it, thereby gradually allowing easier access for ecological receptors.

Results of the comparison of the EPCs with the final soil ESLs for SWMU 00-011(d) are presented in Table F-5.4-3. Barium, cobalt, lead, manganese, and selenium are retained as inorganic COPECs.

There are no ESLs for perchlorate. As a result, perchlorate is retained as a COPEC and discussed in the uncertainty section.

The COPECs were evaluated further in Table F-5.4-4. The HQ for each COPEC/receptor combination as well as the HIs for each receptor was calculated. The HI is the sum of HQs for chemicals with common toxicological endpoints for a given receptor. For the purposes of ecological screening, it is assumed that nonradionuclides have common toxicological effects. The HI analysis provides a clearer picture of potential adverse impacts by determining how many receptors may be affected and provides information on T&E species.

According to Table F-5.4-4, the robin, shrew, deer mouse, and plant have HIs greater than 1.0. The red fox, kestrel, cottontail, and earthworm have HIs less than 1.0, indicating these receptors are not potentially affected by the COPECs.

F-5.4.3 SWMU 00-011(e)

The EPCs are determined from samples collected between 0–3.0 ft bgs (LANL 2004, 087630) from SWMU 00-011(e) (Table F-2.2-1). The tuff was included in the screening assessment because some of it is crushed tuff, which is easier to burrow into than welded tuff. In addition, some plant roots are able to extend into the tuff, and their root system will break up small sections of it, thereby gradually allowing easier access for ecological receptors.

Results of the comparison of the EPCs with the final soil ESLs for SWMU 00-011(e) are presented in Table F-5.4-5. Lead, mercury, and selenium are retained as inorganic COPECs.

There are no ESLs for perchlorate. Therefore, perchlorate is retained as a COPEC and discussed in the uncertainty section.

The COPECs were evaluated further in Table F-5.4-6. The HQ for each COPEC/receptor combination and the HIs for each receptor was calculated. The HI is the sum of HQs for chemicals with common toxicological endpoints for a given receptor. For the purposes of ecological screening, it is assumed that nonradionuclides have common toxicological effects. The HI analysis provides a clearer picture of potential adverse impacts by determining how many receptors may be affected and provides information on T&E species.

According to Table F-5.4-6, the shrew, plant, omnivorous robin, herbivorous robin, and insectivorous robin have HIs greater than 1.0. The red fox, kestrel, cottontail, deer mouse, and earthworm have HIs less than or equivalent to 1.0, indicating that these receptors are not potentially affected by the COPECs.

F-5.4.4 AOC C-00-041

The EPCs are determined from samples collected between 0–4.1 ft bgs (LANL 2004, 087630) from AOC C-00-041 (Table F-2.2-1).

Results of the comparison of the EPCs with the final soil ESLs for AOC C-00-041 are presented in Table F-5.4-7. Lead and selenium are retained as inorganic COPECs and acenaphthene and benzoic acid are retained as organic COPECs.

There are no ESLs for TPH-DRO, TPH-GRO, and 1,2,4-trimethylbenzene. As a result, these COPCs are retained as COPECs and discussed in the uncertainty section.

The COPECs were evaluated further in Table F-5.4-8. The HQ for each COPEC/receptor combination as well as the HIs for each receptor was calculated. The HI is the sum of HQs for chemicals with common toxicological endpoints for a given receptor. For the purposes of ecological screening, it is assumed that nonradionuclides have common toxicological effects. The HI analysis provides a clearer picture of potential adverse impacts by determining how many receptors may be affected and provides information on T&E species.

According to Table F-5.4-8, the robin, cottontail, shrew, deer mouse, and plant have HIs greater than 1.0. The red fox, kestrel, cottontail, and earthworm have HIs less than or equivalent to 1.0, indicating that these receptors are not potentially affected by the COPECs.

F-5.5 Uncertainty Analysis

The uncertainty analysis describes the key sources of uncertainty related to the screening assessments. This analysis may result in either adding or removing chemicals from the list of COPECs for SWMU 00-011(a), SWMU 00-011(d), SWMU 00-011(e), and AOC C-00-041. This discussion contains a qualitative uncertainty analysis of the issues relevant to evaluating the potential ecological risk at SWMU 00-011(a), SWMU 00-011(d), SWMU 00-011(e), and AOC C-00-041.

F-5.5.1 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, which is not likely found in the environment. The inorganic and organic COPECs are generally not 100% bioavailable to receptors in the natural environment because of the adsorption of chemical constituents to matrix surfaces (e.g., soils) 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 2004, 087630) and the values were biased toward overestimating the potential risk to receptors.

F-5.5.2 Exposure Pathways

The representative concentrations used in the calculations of HQs were the 95% UCLs or the maximum detected concentration in the soil to a depth of 3.2 ft for SWMU 00-011(a), to a depth of 3.0 ft for SWMU 00-011(d) and SWMU 00-011(e), and to a depth of 4.1 ft for AOC C-00-041, thereby conservatively estimating the EPCs of 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. This results in an overestimation of the potential exposure and risk because COPECs varied across the site and were infrequently detected.

F-5.5.3 Background Concentrations

SWMU 00-011(a)

The ecological risk screening assessment is based on the exposure of ecological receptors to contamination at a depth of 3.2 ft bgs. Table F-5.5-1 shows the range of soil background concentrations for inorganic COPECs (LANL 1998, 059730). Based on a comparison of the 95% UCL and the range of background concentrations, cadmium, cobalt, lead, manganese, and selenium EPCs are similar to background and are eliminated as COPECs.

SWMU 00-011(d)

The ecological screening assessment is based on the exposure of ecological receptors to contamination to a depth of 3.0 ft bgs. Table F-5.5-2 shows the range of soil and tuff background concentrations for inorganic COPECs (LANL 1998, 059730). Based on a comparison of the representative concentrations and the range of background concentrations, barium, cobalt, lead, manganese, and selenium EPCs are similar to background and are eliminated as COPECs.

SWMU 00-011(e)

The ecological screening assessment is based on the exposure of ecological receptors to contamination to a depth of 3.0 ft bgs. Table F-5.5-3 shows the range of soil and tuff background concentrations for inorganic COPECs (LANL 1998, 059730). Based on a comparison of the representative concentrations and the range of background concentrations, lead, mercury, and selenium EPCs are similar to background concentrations and are eliminated as COPECs.

AOC C-00-041

The ecological screening assessment is based on the exposure of ecological receptors to contamination to a depth of 4.1 ft bgs. Table F-5.5-4 shows the range of soil background values for inorganic COPECs (LANL 1998, 059730). Based on a comparison of the representative concentration and the range of background concentrations, the lead EPC is similar to background concentrations and is eliminated as a COPEC.

F-5.5.4 Population Area Use Factors for AOC C-00-041

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 AOC C-00-041 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 home range (HR) and its dispersal distance (Bowman et al. 2002, 073475). 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 $(3.6\sqrt{HR})^2$ or approximately 40HR.

The area of AOC C-00-041 is approximately 1.68 ha. The population area use factors (PAUFs) are estimated by dividing the AOC area by the population area of each receptor population (Table F-5.4-5). The resulting factor is multiplied by the receptor HI to determine if a potential impact on the population exists (Table F-5.4-6).

The HIs are recalculated minus lead, which was eliminated based on similarity to background, and adjusted by the PAUFs (Table F-5.5-6). The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs. Based on the reassessment, the adjusted HIs for AOC C-00-041 are <0.01 for the red fox and kestrel; 0.3 for the herbivorous and omnivorous robin; 0.4 for the insectivorous robin; 0.02 for the cottontail; 0.6 for the shrew; and 2 for the deer mouse (Table F-5.5 6). The adjusted HIs for the red fox, the kestrel, the robin, the cottontail, the shrew, and the earthworm are less than 1.0; therefore, these receptors are not adversely affected by the COPECs.

F-5.5.5 COPECs Contributing to HIs Greater Than 1.0 at AOC C-00-041

Use of the PAUF does not take into account a few high concentrations at some of the sampling locations, but assumes that the COPECs are uniformly distributed across the site. COPECs detected once or only in a few locations are unlikely to impact receptor populations.

Benzoic Acid. Benzoic acid was detected in 3 of 34 samples with a 95% UCL of 0.929 mg/kg. The PAUF adjusted-HI (0.7) is less than 1.0. In addition, the 95% UCL is less than the concentrations reported in the Mortandad Canyon investigation report (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (LANL 2005, 091818). The maximum benzoic acid concentration from these investigations was 5.7 mg/kg (LANL 2006, 094161). Field studies on small mammals were conducted, and no differences in abundance and reproductive status were noted. The results of the small mammal studies indicated no adverse ecological effects from contaminants (including benzoic acid) in Mortandad Canyon (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from benzoic acid to small mammals are likely at AOC C-00-041. Because of the infrequent detection, low HI, and the results of field studies in other canyons, benzoic acid is eliminated as a COPEC.

Selenium. Selenium was detected in all 34 samples. The plant HI (42) is the result of a plant ESL, which is less than background, and may not be a good indicator of potential risk. Because the vegetation at the site is abundant, typical of this area, and does not appear stressed, the plant ESL overestimates the potential risk to the vegetative community at AOC C-00-041.

In addition, Dourson and Stara (1983, 073474) conducted a study of uncertainty factors incorporated in calculating ESLs for ecological receptors. Based on their study, the LOAEL to NOAEL adjustment indicates that HIs up to 10 may not adversely affect ecological receptors. To maintain conservatism, they state that HIs less than 3 do not adversely affect ecological receptors. Therefore, the selenium PAUF-adjusted HI of 2 for the deer mouse does not indicate a potential risk, and this COPEC is not retained at AOC C-00-041.

F-5.5.6 Chemicals without ESLs

There are no ESLs for perchlorate, trimethylbenzene[1,2,4-], TPH-DRO, and TPH-GRO, and they cannot be assessed quantitatively for potential ecological risk. The COPEC concentrations are compared to residential SSLs if ESLs or surrogate chemicals with ESLs are not available. The comparison provides an estimate of the potential for effects when other information is not available, and it is used as a line of evidence to indicate the likelihood that ecological receptors are potentially impacted. The inference that humans and animals are similar, on average, in intrinsic susceptibility to chemicals and that in many cases data from animals may be used as surrogates for data from humans is the basic premise of modern toxicology (EPA 1989, 008021). The toxicity values derived for the calculation of human health SSLs are also 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). The 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). The COPEC concentrations compared to 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 that the differences in toxicity would not be more than an order of magnitude for a given chemical. The relative difference between values provides a weight of evidence that the potential toxicity of the COPEC is likely to be low or very low to the receptor(s).

SWMU 00-011(a)

Perchlorate was detected in 29 of 112 samples with a maximum detected concentration of 0.175 mg/kg. The EPA Region 6 residential SSL is 55 mg/kg, which is 2 orders of magnitude above the maximum detected concentration and indicates relatively low potential toxicity to receptors. Therefore, perchlorate is not retained as a COPEC at SWMU 00-011(a).

SWMU 00-011(d)

Perchlorate was detected in 10 of 42 samples with a maximum detected concentration of 0.0034 mg/kg. The EPA Region 6 residential SSL is 55 mg/kg, which is 3 orders of magnitude above the maximum detected concentration and indicates relatively low potential toxicity to receptors. Therefore, perchlorate is not retained as a COPEC at SWMU 00-011(d).

SWMU 00-011(e)

Perchlorate was detected in 27 of 116 samples with a maximum detected concentration of 0.003 mg/kg. The EPA Region 6 residential SSL is 55 mg/kg, which is 4 orders of magnitude above the maximum detected concentration and indicates relatively low potential toxicity to receptors. Therefore, perchlorate is not retained as a COPEC at SWMU 00-011(e).

AOC C-00-041

There are no ESLs for TPH-DRO, and this chemical cannot be assessed quantitatively for potential ecological risk. TPH-DRO was detected in 21 of 34 samples and the 95% UCL is 68.9 mg/kg. The residential NMED screening guideline for TPH is 200 mg/kg. Therefore, TPH-DRO is not retained as a COPEC.

There are no ESLs for TPH-GRO, and this chemical cannot be assessed quantitatively for potential ecological risk. TPH-GRO was detected in 15 of 34 samples and the 95% UCL is 0.096 mg/kg. No NMED screening guideline for gasoline related TPH is available. Because TPH-GRO was detected at low levels across the site, it is not retained as a COPEC.

There are no ESLs for trimethylbenzene[1,2,4-], and this chemical cannot be assessed quantitatively for potential ecological risk. Trimethylbenzene[1,2,4-] was detected in 5 of 34 samples with a maximum detected concentration of 0.00045 mg/kg. If benzene is used as a surrogate, the maximum HQ is <0.01. Therefore, trimethylbenzene[1,2,4-] does not pose a potential ecological risk to receptors and is not retained as a COPEC at AOC C-00-041.

F-5.6 Interpretation

F-5.6.1 SWMU 00-011(a)

Based on the ecological screening assessment for SWMU 00-011(a), five inorganic COPECs (including one COPEC without ESLs) were identified. All of the COPECs were eliminated in the uncertainty analysis because the EPCs were comparable to background concentrations and therefore exposure across the site was similar to background.

F-5.6.2 SWMU 00-011(d)

Based on the ecological screening assessment for SWMU 00-011(d), three inorganic COPECs (including one COPEC without ESLs) were identified. All of these COPECs were eliminated in the uncertainty analysis because the EPCs were comparable to background concentrations and therefore exposure across the site was similar to background.

F-5.6.3 SWMU 00-011(e)

Based on the ecological screening assessment for SWMU 00-011(e), three inorganic COPECs (including one COPEC without ESLs) were identified. All of these COPECs were eliminated in the uncertainty analysis because the EPCs were comparable to background concentrations and therefore exposure across the site was similar to background.

F-5.6.4 AOC C-00-041

Based on the ecological screening assessment for AOC C-00-041, seven COPECs (including three COPECs without ESLs) were identified. Most of the COPECs were eliminated in the uncertainty analysis by considering a number of factors including background concentrations, the analysis for potential effects to populations (individuals for T&E species), the relative toxicity of related compounds, and/or the infrequency of detected concentrations. The remaining COPECs do not present a potential ecological risk to receptors.

F-6.0 CONCLUSIONS AND RECOMMENDATIONS

Table F-6.0-1 presents a summary of human health risk screening results for the SWMUs and AOC evaluated within the aggregate area. Based on the human health risk screening assessments, SWMU 00-011(a), SWMU 00-011(d), SWMU 00-011(e), and AOC C-00-041 do not pose a potential unacceptable risk to human health under a residential scenario.

The ecological risk screening assessments did not retain any COPECs that could potentially impact receptor populations or the Mexican spotted owl. Therefore, no potential risks to ecological receptors exist at the SWMUs and AOC.

F-7.0 REFERENCES

The following list includes all documents cited in this appendix. Parenthetical information following each reference provides the author(s), publication date, and ER ID number. This information is also included in text citations. ER ID numbers are assigned by the Environmental Programs Directorate's Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.

Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau; the U.S. Department of Energy–Los Alamos Site Office; the U.S. Environmental Protection Agency, Region 6; and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.

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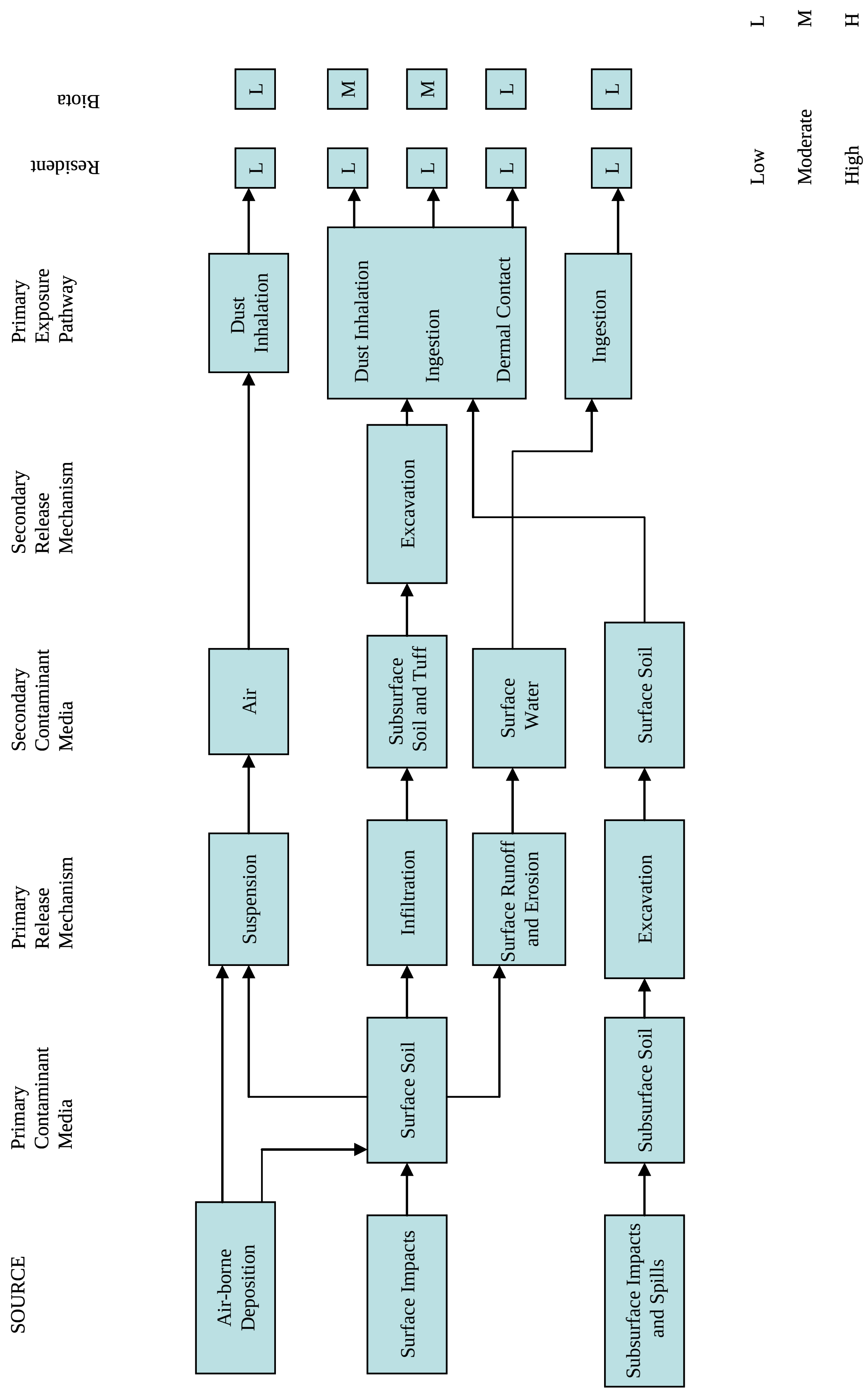


Figure F-3.1-1 Conceptual site model for Guaje/Barrancas/Rendija Canyons Aggregate Area

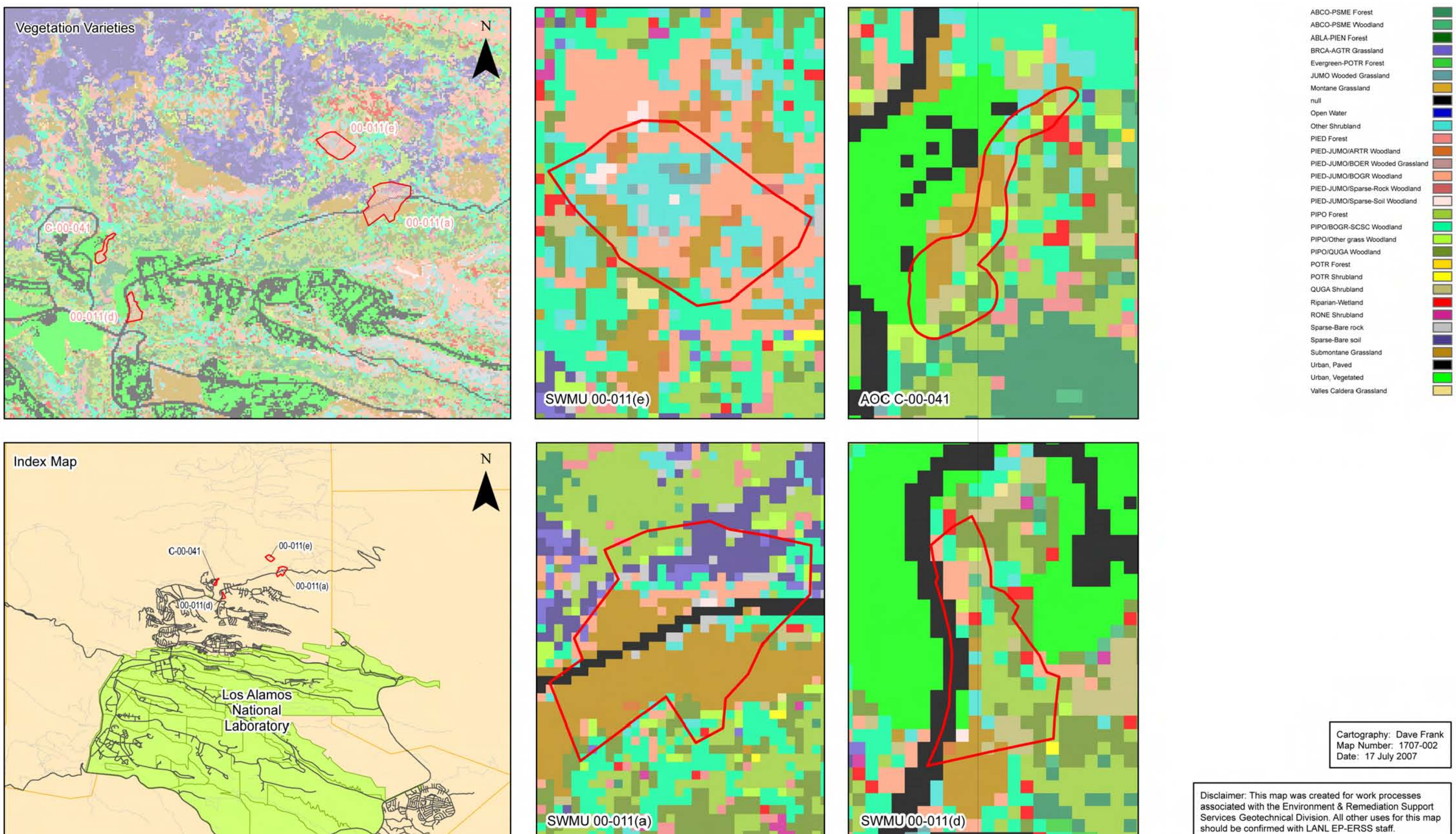


Figure F-5.2-1 Ecological vegetation communities of the Guaje/Barrancas/Rendija Canyons Aggregate Area

Table F-2.2-1
Exposure Point Concentrations for the Residential Scenario and Ecological Assessment

Analyte	Number of Samples	Number of Detects	Maximum Detected Value (mg/kg)	Distribution	EPC (mg/kg)	EPC Method
SWMU 00-011(a)						
Cadmium	110	28	0.338	Nonparametric	0.228	95% Kaplan-Meier (t)
Cobalt	110	110	16.5	Nonparametric	6.36	95% Modified-t[a]
Lead	110	110	40.6	Nonparametric	14.3	95% Modified-t
Manganese	110	110	1540	Nonparametric	485	95% Modified-t
Perchlorate	110	29	0.175	Nonparametric	0.006	95% KM (BCA)[b]
Selenium	110	64	2.55	Nonparametric	1.09	95% KM (t)[c]
SWMU 00-011(d)						
Barium	42	42	261	Gamma	72.86	95% Approximate UCL
Cobalt	42	39	20.3	Nonparametric	4.49	95% KM (Chebyshev)[d]
Lead	42	42	47.7	Nonparametric	19.4	95% Chebyshev (Mean, Sd)
Manganese	42	42	1650	Nonparametric	3.98	95% Modified-t
Perchlorate	42	10	0.0034	Nonparametric	0.0013	95% KM (t)
Selenium	42	16	1.92	Nonparametric	1.08	95% KM (t)
SWMU 00-011(e)						
Lead	116	111	330	Nonparametric	13.3	95% KM (Chebyshev)
Mercury	116	99	0.525	Nonparametric	0.0222	95% KM (BCA)
Nickel	116	111	10.9	Nonparametric	2.26	95% KM (BCA)
Perchlorate	116	27	0.00295	Nonparametric	0.0011	95% KM (t)
Selenium	116	32	1.21	Nonparametric	0.859	95% KM (t)
AOC C-00-041						
Lead	34	34	33.9	Nonparametric	14.3	95% Modified-t
Selenium	34	34	9.54	Gamma	4.12	95% Approximate Gamma
Acenaphthene	34	1	0.461	n/a[e]	0.461	Maximum detect
Benzo(b)fluoranthene	34	1	0.0815	n/a	0.0815	Maximum detect
Benzoic Acid	34	3	3.82	Nonparametric	0.929	95% KM (t)
Chloroform	34	5	0.000352	Nonparametric	0.00035	95% KM (t)
Chrysene	34	1	0.0172	n/a	0.0172	Maximum detect
Dichlorobenzene[1,4-]	34	1	0.000505	n/a	0.00051	Maximum detect
Dichloroethene[1,4-]	34	9	0.00193	Nonparametric	0.00091	95% KM (t)
Fluoranthene	34	4	0.0382	Nonparametric	0.0322	95% KM (t)
Phenanthrene	34	3	0.0329	n/a	0.0329	Maximum detect
Pyrene	34	3	0.031	n/a	0.031	Maximum detect
Toluene	34	17	0.00506	Nonparametric	0.0014	95% KM (t)
TPH-DRO	34	21	319	Nonparametric	68.9	95% KM (Chebyshev)

Table F-2.2-1 (continued)

Analyte	Number of Samples	Number of Detects	Maximum Detected Value (mg/kg)	Distribution	EPC (mg/kg)	EPC Method
TPH-GRO	34	15	0.277	Nonparametric	0.0961	95% KM (t)
Trimethylbenzene[1,2,4-]	34	5	0.000455	Nonparametric	0.00042	95% KM (t)

[a] UCL based on modified-t statistic (adjusted for skew).

[b] UCL based upon bias-corrected accelerated (BCA) bootstrap.

[c] KM(t) is UCL based on Kaplan-Meier estimates using the Student's t-distribution cutoff value.

[d] ChebyshevMethod using Kaplan-Meier estimates.

[e] n/a = Not applicable.

Table F-3.1-1
K_d Values for Inorganic COPCs at SWMU 00-011(a), SWMU 00-011(d), SWMU 00-011(e), and AOC C-00-041

COPC	K_d[a] (cm/g)
Barium	4.10E+01
Cadmium	7.50E+01
Cobalt	4.50E+01
Lead	9.00E+02
Manganese	6.50E+01
Mercury	5.20E+01
Nickel	6.50E+01
Perchlorate	2.87E-07[b]
Selenium	5.00E+00

[a] Kd values from NMED 2006, 092513.

[b] Kd values from Superfund Chemical Data Matrix, p. A-271, http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm.

Table F-3.2-1
Physiochemical Properties for Organic Chemicals

Organic Chemical	Water Solubility (mg/L)[a]	Vapor Pressure (mmHg)[b] at 25°C	K_{ow}[b,c]	K_{oc}[a,d]
Acenaphthene	4.24E+00	2.15E-03	8.32E+03	4.90E+03
Benzoic acid	3.50E+03[e]	7.0E-04[e]	2.70E-01[e]	No data
Benzo(b)fluoranthene	1.50E-03	1.06E-10	1.59E+06	1.23E+06
Chloroform	7.92E+03	2.69E-01	8.90E+01	3.98E+01
Chrysene	1.60E-03	1.03E-11	5.48E+05	3.98E+05
Dichlorobenzene[1,4-]	7.38E+01	1.39E-03	2.58E+03	6.16E+02
Dichloroethene[1,1-]	2.30E+03	7.88E-01	1.32E+02	6.50E+01
Fluoranthene	2.06E-01	1.07E-08	1.21E+05	1.07E+05
Phenanthrene	1.15E+00	1.35E-03	3.55E+04	1.40E+04
Pyrene	1.35E-01	5.59E-09	1.00E+05	6.80E+04
Toluene	5.26E+02	3.71E-02	4.65E+02	1.82E+02
Trimethylbenzene[1,2,4-][d]	2.60E-01	2.1E+00[e]	5.77E-01[e]	3.70E+03

[a] Values from NMED 2006, 092513, unless otherwise noted.

[b] Denotes reference information from http://www.epa.gov/earth1r6/6pd/rcra_c/pd-o/appd1a.pdf.

[c] K_{ow} = Octanol water partition coefficient.

[d] K_{oc} = Adsorption coefficient.

[e] Denotes reference information from http://www.toxnet.nlm.nih.gov.

Table F-4.1-1
Noncarcinogenic SSLs

COPC	Residential SSL[a] (mg/kg)
Barium	15600
Cadmium	39
Cobalt	1520
Lead	400
Manganese	3590
Mercury	23[b]
Nickel	1560
Perchlorate	55[b]
Selenium	391
Acenaphthene	3730
Benzoic acid	1,000,000[c]
Dichloroethene[1,1-]	206
Fluoranthene	2290
Phenanthrene	1830
Pyrene	2290
Toluene	252[c]
Trimethylbenzene[1,2,4-]	58.1

[a] Values from NMED 2006, 092513.

[b] Values from EPA Region 6 (EPA 2007, 095866).

[c] Maximum value or saturated value.

Table F-4.1-2
Carcinogenic SSLs

COPC	Residential SSL* (mg/kg)
Benzo(b)fluoranthene	6.21
Chloroform	4.0
Chrysene	615
Dichlorobenzene[1,4-]	39.5

*Values from NMED 2006, 092513.

Table F-4.1-3
Parameters Used to Calculate Chemical SSLs

Parameter	Residential Values
Target hazard quotient	1
Target cancer risk	10^{-5}
Averaging time (carcinogen)	70 yr x 365 days
Averaging time (noncarcinogen)	ED x 365 days
Skin absorption factor	Semivolatile organic compounds = 0.1
	Chemical-specific
Adherence factor–child	0.2 mg/cm^2
Body weight–child	15 kg (0–6 yr of age)
Cancer slope factor–oral (chemical-specific)	(mg/kg-day)$^{-1}$
Cancer slope factor–inhalation (chemical-specific)	(mg/kg-day)$^{-1}$
Exposure frequency	350 day/yr
Exposure duration–child	6 yr (0–6 yr of age)
Age-adjusted ingestion factor	114 mg-yr/kg-day
Age-adjusted inhalation factor	11 m^3-yr/kg-day
Inhalation rate–child	10 m^3/day
Soil ingestion rate–child	200 mg/day
Particulate emission factor	6.61 x 10^9 m^3/kg
Reference dose–oral (chemical-specific)	(mg/kg-day)
Reference dose–inhalation (chemical-specific)	(mg/kg-day)
Exposed surface area–child	2800 cm^2/day (head, hands, forearms, lower legs, feet)
Age-adjusted skin contact factor for carcinogens	361 mg-yr/kg-day
Volatilization factor for soil (chemical-specific)	(m^3/kg)
Body weight–adult	70 kg
Exposure duration	30 yr*
Adherence factor–adult	0.07 mg/cm^2
Soil ingestion rate–adult	100 mg/day
Exposed surface area–adult	5700 cm^2/day (head, hands, forearms, lower legs)
Inhalation rate–adult	20 m^3/day

* Exposure duration for lifetime resident is 30 yr. For carcinogens, the exposures are combined for child (6 yr) and adult (24 yr).

Table F-4.1-4
Ecological Screening Levels

Analyte	Red Fox	Carnivorous Kestral	Omnivorous Kestral	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Barium	4.10E+04	3.70E+04	1.10E+04	820	930	1.00E+03	3.30E+03	1.30E+03	1.80E+03	330	110
Cadmium	510	580	2	4.4	0.54	0.29	9.9	0.27	0.51	140	32
Cobalt	5.40E+03	3.50E+03	930	1.70E+02	120	96	1.80E+03	160	400	—*	13.00
Lead	3.70E+03	810	120	21	16	14	370	72	120	1700	120
Manganese	3.50E+04	2.90E+05	1.10E+05	4.60E+03	6.40E+03	1.00E+04	1.70E+03	1.30E+03	1.20E+03	—	50
Mercury	46	0.28	8.20E-02	0.07	2.20E-02	1.30E-02	22	1.7	3	0.05	34
Nickel	3.10E+04	9.50E+03	530	530	120	70	1.20E+04	250	530	100	20
Selenium	110	140	8.5	1.5	1.3	1.1	3	0.92	1.1	7.70	0.1
Acenaphthene	6.20E+03	—	—	—	—	—	490	120	160	—	0.25
Benzo(b)fluoranthene	250	—	—	—	—	—	130	38	52	—	18.00
Benzoic Acid	350	—	—	—	—	—	4.2	1.0	1.3	—	—
Chloroform	4.4E+03	—	—	—	—	—	17	8.2	8.0	—	—
Chrysene	46	—	—	—	—	—	6.5	2.4	3.1	—	—
Dichlorobenzene[1,4-]	72	—	—	—	—	—	11	0.88	1.5	1.2	—
Dichloroethene[1,1-]	2.90E+03	—	—	—	—	—	40	11	14	—	—
Fluoranthene	360	—	—	—	—	—	260	22	38	38	—
Phenanthrene	290	—	—	—	—	—	59	10	15	34	—
Pyrene	360	—	—	—	—	—	110	22	32	18	—
Toluene	3.10E+03	—	—	—	—	—	61	23	25	—	200

Notes: Units are mg/kg for chemicals. Values from ECORISK Database, Version 2.2 (LANL 2005, 090032).
* — = ESL not available.

Table F-4.1-5
Screening Evaluation for SWMU 00-011(a), Noncarcinogenic COPCs

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Cadmium	0.228	39	5.85E-03
Cobalt	6.36	1520	4.18E-03
Lead	14.3	400	3.58E-02
Manganese	485	3590	1.35E-01
Perchlorate	0.006	55[b]	1.09E-04
Selenium	1.09	391	2.79E-03
		HI	**0.2**

[a] Values from NMED–residential (NMED 2006, 092513).

[b] Values from EPA Region 6 (EPA 2007, 095866).

Table F-4.1-6
Screening Evaluation for SWMU 00-011(d), Noncarcinogenic COPCs

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Barium	72.86	1.56E+04	4.67E-03
Cobalt	4.49	1520	2.95E-03
Lead	19.4	400	4.85E-02
Manganese	3.98	3590	1.11E-03
Perchlorate	0.0013	55[b]	2.42E-05
Selenium	1.08	391	2.76E-03
		HI	**0.06**

[a] Values from NMED–residential (NMED 2006, 092513).

[b] Values from EPA Region 6 (EPA 2007, 095866).

Table F-4.1-7
Screening Evaluation for SWMU 00-011(e), Noncarcinogenic COPCs

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Lead	13.3	400	3.33E-02
Mercury	0.02	23[b]	9.65E-04
Nickel	2.26	1560	4.45E-03
Perchlorate	0.0011	55[b]	2.07E-05
Selenium	8.559E-01	391	2.20E-03
		HI	**0.04**

[a] Values from NMED–residential (NMED 2006, 092513).

[b] Values from EPA Region 6 (EPA 2007, 095866).

Table F-4.1-8
Screening Evaluation for AOC C-00-041, Noncarcinogenic COPCs

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	HQ
Lead	14.3	400	3.58E-02
Selenium	4.12	391	1.05E-02
Acenaphthalene	0.46[b]	3730	1.24E-04
Benzoic Acid	0.93	100000	9.29E-06
Dichloroethene[1,1-]	0.00091	206	4.43E-06
Fluoranthene	0.03	2290	1.41E-05
Phenanthrene	0.033[b]	1830	1.80E-05
Pyrene	0.031[b]	2290	1.35E-05
Toluene	0.0014	252[c]	5.48E-06
Trimethylbenzene[1,2,4-]	0.00042	58	7.16E-06
		HI	**0.05**

[a] Values from NMED–residential (NMED 2006, 092513).
[b] Maximum detected concentration.
[c] Saturation value.

Table F-4.1-9
Screening Evaluation for AOC C-00-041, Carcinogenic COPCs

COPC	EPC (mg/kg)	Residential SSL[a] (mg/kg)	Cancer Risk
Benzo(b)fluoranthene	0.08[b]	6.21	1.31E-07
Chloroform	0.00035	4	8.70E-10
Chrysene	0.02[b]	615	2.80E-10
Dichlorobenzene[1,4-]	0.00051[c]	39.5	1.28E-10
		Total Excess Cancer Risk	**1E-07**

[a] Values from NMED–residential (NMED 2006, 092513).
[b] Maximum detected concentration.

Table F-5.4-1
Final ESL Comparison for SWMU 00-011(a)

COPC	EPC (mg/kg)	Final ESL	Receptor	HQ	COPEC
Cadmium	0.23	0.27	Shrew	**0.84**	Yes
Cobalt	6.36	13	Plant	**0.49**	Yes
Lead	14.3	14	Robin	**1.02**	Yes
Manganese	485	50	Plant	**9.70**	Yes
Selenium	1.09	0.1	Plant	**10.90**	Yes

Note: Bolded values indicate HQ greater than 0.3.

Table F-5.4-2
HI Analysis for SWMU 00-011(a)

Analyte	EPC (mg/kg)	Red Fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Cadmium	0.23	<0.01	<0.01	0.11	0.05	0.42	0.79	0.02	0.84	0.45	<0.01	**0.01**
Cobalt	6.36	<0.01	<0.01	0.01	0.04	0.05	0.07	<0.01	0.04	0.02	na*	**0.49**
Lead	14.3	<0.01	0.02	0.12	**0.68**	**0.89**	**1.02**	0.04	0.20	0.12	0.01	0.12
Manganese	485	0.01	<0.01	<0.01	0.11	0.08	0.05	0.29	**0.37**	**0.40**	na	**9.70**
Selenium	1.2	0.01	0.01	0.14	**0.80**	**0.92**	**1.09**	**0.40**	**1.30**	**1.09**	0.16	**12.00**
	HI	**0.03**	**0.03**	**0.4**	**2**	**2**	**3**	**0.7**	**3**	**2**	**0.2**	**22**

Note: Bolded values indicate HQ greater than 0.3.
*na = Not available.

Table F-5.4-3
Final ESLs for SWMU 00-011(d)

Analyte	EPC (mg/kg)	Final ESL	Receptor	HQ	COPEC
Barium	72.86	110	Plant	**0.66**	Yes
Cobalt	4.49	13	Plant	**0.35**	Yes
Lead	19.4	14	Robin	**1.39**	Yes
Manganese	398	50	Plant	**7.96**	Yes
Selenium	1.08	0.1	Plant	**10.80**	Yes

Note: Bolded values indicate HQ greater than 0.3.

Table F-5.4-4
HI Analysis for SWMU 00-011(d)

Analyte	EPC (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Barium	72.86	<0.01	<0.01	0.01	0.09	0.08	0.07	0.02	0.06	0.04	0.22	**0.66**
Cobalt	4.49	<0.01	<0.01	<0.01	0.03	0.04	0.05	<0.01	0.03	0.01	na*	**0.35**
Lead	19.4	0.01	0.02	0.16	**0.92**	**1.21**	**1.39**	0.05	0.27	0.16	0.01	0.16
Manganese	398	0.01	<0.01	<0.01	0.09	0.06	0.04	0.23	**0.31**	**0.33**	na	**7.96**
Selenium	1.08	0.01	0.01	0.13	**0.72**	**0.83**	**0.98**	**0.36**	**1.17**	**0.98**	0.14	**10.80**
	HI	**0.03**	**0.03**	**0.3**	**2**	**2**	**3**	**0.7**	**2**	**2**	**0.4**	**20**

Note: Bolded values indicate HQ greater than 0.3.
*na = Not available.

Table F-5.4-5
Final ESL Comparison for SWMU 00-011(e)

Analyte	EPC (mg/kg)	Final ESL	Receptor	HQ	COPEC
Lead	13.3	14	Robin	**0.95**	Yes
Nickel	2.26	20	Plant	0.11	No
Mercury	0.02	0.013	Robin	**1.71**	Yes
Selenium	0.86	0.1	Plant	**8.59**	Yes

Note: Bolded values indicate HQ greater than 0.3.

Table F-5.4-6
HI Analysis for SWMU 00-011(e)

Analyte	EPC (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Lead	13.30	<0.01	0.02	0.11	**0.63**	**0.83**	**0.95**	0.04	0.18	0.11	0.01	0.11
Mercury	0.02	<0.01	0.08	0.27	**0.32**	**1.01**	**1.71**	<0.01	0.01	0.01	**0.44**	<0.01
Selenium	0.86	0.01	0.01	0.10	**0.57**	**0.66**	**0.78**	0.29	**0.93**	**0.78**	0.11	**8.59**
	HI	**0.01**	**0.1**	**0.5**	**2**	**2**	**3**	**0.3**	**1**	**0.9**	**0.6**	**9**

Note: Bolded values indicate HQ greater than 0.3.

Table F-5.4-7
Final ESL Comparison for AOC C-00-041

Analyte	EPC (mg/kg)	Final ESL (mg/kg)	Receptor	Hazard Quotient	COPEC
Organic Chemicals					
Acenaphthene	0.46	0.25	Plant	**1.84**	Yes
Benzo(b)fluoranthene	0.08	18	Plant	0.004	No
Benzoic Acid	0.93	1	Deer mouse	**0.93**	Yes
Chloroform	0.00035	8	Deer mouse	0.00004	No
Chrysene	0.02	2.4	Shrew	0.01	No
Dichlorbenzene[1,4-]	0.00051	0.88	Shrew	0.0006	No
Dichloroethene(1,1-)	0.00091	11	Shrew	0.00008	No
Fluoranthene	0.03	22	Shrew	0.002	No
Phenanthrene	0.03	10	Shrew	0.003	No
Pyrene	0.03	18	Earthworm	0.002	No
Toluene	0.0014	23	Shrew	0.00006	No
Inorganic Chemicals					
Lead	14.3	14	Robin	**1.02**	Yes
Selenium	4.12	0.1	Plant	**41.2**	Yes

Note: Bolded values indicate HQ greater than 0.3.

Table F-5.4-8
HI Analysis for AOC C-00-041

Analyte	EPC (mg/kg)	Red Fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Lead	14.3	<0.01	0.02	0.12	**0.68**	**0.89**	**1.02**	0.04	0.20	0.12	0.01	0.12
Selenium	4.12	0.04	0.03	**0.48**	**2.75**	**3.17**	**3.75**	**1.37**	**4.48**	**3.75**	**0.54**	**41.20**
Acenaphthene	0.46	<0.01	na*	na	na	na	na	<0.01	<0.01	<0.01	na	**1.84**
Benzoic Acid	0.93	<0.01	na	na	na	na	na	0.22	**0.93**	**0.71**	na	na
	HI	**0.04**	**0.05**	**0.6**	**3**	**4**	**5**	**2**	**6**	**5**	**0.5**	**43**

Note: Bolded values indicate HQ greater than 0.3.
*na = Not available.

Table F-5.5-1
Comparison of EPC to Background Concentrations for SWMU 00-011(a)

Inorganic Chemicals	EPC (mg/kg)	Soil Background Range (mg/kg)
Cadmium	0.23	0.2–2.6
Cobalt	6.36	1–9.5
Lead	14.3	2–28
Manganese	485	76–1100
Selenium	1.09	0.1–1.7

Table F-5.5-2
Comparison of EPC to Background Concentrations for SWMU 00-011(d)

Inorganic Chemicals	EPC (mg/kg)	Soil Background Concentrations (mg/kg)	Tuff Background Concentrations (mg/kg)
Barium	72.86	21–410	1.4–51.6
Cobalt	4.49	1–9.5	—*
Lead	19.4	2–28	1.6–15.5
Manganese	398	76–1100	22–752
Selenium	1.08	0.1–1.7	0.1–0.105

*— = No background data set.

Table F-5.5-3
Comparison of EPC to Background Concentrations for SWMU 00-011(e)

Inorganic Chemicals	EPC (mg/kg)	Soil Background Concentrations (mg/kg)	Tuff Background Concentrations (mg/kg)
Lead	13.3	0.2–28	2–20
Mercury	0.0222	0.05–0.1	—*
Selenium	0.86	0.1–1.7	—

*— = No background data set.

Table F-5.5-4
Comparison of EPC to Background Concentrations for AOC C-00-041

Inorganic Chemicals	EPC (mg/kg)	Soil Background Concentrations (mg/kg)
Lead	14.3	0.2–28
Selenium	4.12	0.1–1.7

Table F-5.5-5
Population Area Use Factors for AOC C-00-041

Receptor	Home Range (ha)	Assessment Population Area (40*HR) (ha)	PAUF for 1.68-ha AOC C-00-041
American kestrel	106	4240	0.000396
American robin	0.42	16.8	0.10
Deer mouse	0.077	3.08	0.55
Vagrant shrew	0.39	15.6	0.11
Desert cottontail	3.1	124	0.014
Red fox	1038	41520	0.0000405

Table F-5.5-6
HI Analysis for AOC C-00-041, PAUF

Analyte	EPC (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Selenium	4.12	0.04	0.03	**0.48**	**2.75**	**3.17**	**3.75**	**1.37**	**4.48**	**3.75**	**0.54**	**41.20**
Acenaphthene	0.46	<0.01	na[a]	na	na	na	na	<0.01	<0.01	<0.01	na	**1.84**
Benzoic Acid	0.93	<0.01	na	na	na	na	na	0.22	**0.93**	**0.71**	na	na
	HI	**0.04**	**0.03**	**0.5**	**3**	**3**	**4**	**2**	**5**	**4**	**0.5**	**43**
HI adjusted by PAUF		**<0.01**	**<0.01**	**<0.01**	**0.3**	**0.3**	**0.4**	**0.02**	**0.6**	**2**	**n/a[b]**	**n/a**

Note: Bolded values indicate HQ greater than 0.3.

[a] na = Not available.

[b] n/a = Not applicable.

Table F-6.0-1
Summary of Human Health Risk under a Residential Scenario

SWMU/AOC	HI	Cancer Risk
SWMU 00-011(a)	0.2	n/a*
SWMU 00-011(d)	0.06	n/a
SWMU 00-011(e)	0.04	n/a
AOC C-00-041	0.05	1×10^{-7}

*n/a = Not applicable: no carcinogenic COPCs were detected.

Attachment F-1

Ecological Scoping Checklists

F1-1.0 SWMU 00-011(a) ECOLOGICAL SCOPING CHECKLIST

Part A—Scoping Meeting Documentation

Site ID	SWMU 00-011(a)
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.	SWMU 00-011(a) is a former mortar impact area used as the target area for 60-mm and 81-mm rounds from the mid-1940s until the late-1940s. The potential areas of release would be the surface and shallow subsurface soil.
List of Primary Impacted Media **(Indicate all that apply.)**	**Surface soil –** Applicable **Surface water/sediment–** N/A **Subsurface** – Applicable **Groundwater –** N/A **Other, explain** – N/A
FIMAD vegetation class based on Arcview vegetation coverage **(Indicate all that apply.)**	**Water –** Ephemeral stream **Bare Ground/Unvegetated –** Applicable **Spruce/fir/aspen/mixed conifer –** N/A **Ponderosa pine –** Applicable **Piñon juniper/juniper savannah –** Applicable **Grassland/shrubland –** Applicable **Developed –** Paved road
Is T&E Habitat Present? **If applicable, list species known or suspected to use the site for breeding or foraging.**	No
Provide list of Neighboring/ Contiguous/ Up-gradient 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.)**	There are no up-gradient sites from SWMU 00-011(a).
Surface Water Erosion Potential Information **Summarize information from SOP 2.01, including the run-off subscore (maximum of 46); terminal point of surface water transport; slope; and surface water runon sources.**	The run-on score for the Surface Water Assessment was 0.0, the run-off score was 6.9. The surface water site assessment indicated that the area was too large to perform an assessment, and slope of the land and ground cover were not assessed. The actual slope of the land varies across the site, but for the most part has a gradual slope and medium ground cover. Terminal point of surface water transport is Rendija Canyon.

Part B—Site Visit Documentation

Site ID	SWMU 00-011(a)
Date of Site Visit	11/07/2006
Site Visit Conducted by	Tracy L. McFarland, Jon Roberson, and Dave Frank

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) = None
Field notes on the FIMAD vegetation class to assist in ground-truthing the Arcview information	The road bisecting SWMU 00-011(a) is not paved. The Arcview coverage is correct for the remainder of the map.
Field notes on T&E Habitat, if applicable. Consider the need for a site visit by a T&E subject matter expert to support the use of the site by T&E receptors.	There is no T&E habitat at this site.
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, ecological receptors are present at the site. Scoping activities revealed abundant invertebrates, reptiles, birds, and plant life. Numerous examples of mammalian site use were evident as well. No aquatic community exist onsite.

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).**	Based on the surface water site assessment, there is a low potential for surface water transport.
Are there any off-site transport pathways (surface water, air, or groundwater)? **(yes/no/uncertain)** **Provide explanation**	No. Runoff potential and contaminant concentrations are low.
Interim action needed to limit off-site transport? **(yes/no/uncertain)** **Provide explanation/ recommendation to project lead for IA SMDP.**	No.

Ecological Effects Information:

Physical Disturbance **(Provide list of major types of disturbances, including erosion and construction activities, review historical aerial photos where appropriate.)**	Signs of disturbance include rock falling from the steep slope. Additionally, a motocross course has been constructed, which involves digging trenches to make ramps and jumps.
Are there obvious ecological effects? **(yes/no/uncertain)** **Provide explanation and apparent cause (e.g., contamination, physical disturbance, other).**	No.
Interim action needed to limit apparent ecological effects? **(yes/no/uncertain)** **Provide explanation and recommendations to mitigate apparent exposure pathways to project lead for IA SMDP.**	No.

No Exposure/Transport Pathways:

If there are no complete exposure pathways to ecological receptors onsite and no transport pathways to offsite 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.)**	The nature and extent of contamination is defined.
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 data addresses potential transport pathways. Few COPCs were detected and COPC concentrations were less than twice the background values.

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: The analytes detected are not volatile.

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): Unlikely.

Provide explanation: Potential for dust entrainment on the mesa top is negligible due to vegetation and bare rock.

Question C:

Can contaminated soil be transported to aquatic ecological communities (use SOP 2.01 run-off score and terminal point of surface water runoff to help answer this question)?

- If the SOP 2.01 run-off score* for each SWMU included in the site is equal to zero, this suggests that erosion at the site is not a transport pathway. (* Note that the runoff score is not the entire erosion potential score, rather it is a subtotal of this score with a maximum value of 46 points).
- 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: The run-off is 6.9, indicating low potential erosion and runoff from the site.

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: There is no surface water on the mesa top, and no springs or seeps exist in vicinity of SWMU 00-011(a). There is no complete pathway to the regional aquifer (ca. 1200 ft, 360 m) from this site.

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: Surface contamination is minimal across the site. There are no perched aquifers near this site.

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: 0

Terrestrial Animals: 0

Provide explanation: None of the site contaminants are volatile.

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: 0

Terrestrial Animals: 0

Provide explanation: Vegetation cover minimizes particulates and dust.

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: 2

Provide explanation: Relatively low concentrations of COPCs were measured in surface and shallow subsurface samples.

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: 1

Provide explanation: No bioaccumulating chemicals were detected onsite. The concentration of chemicals is low.

<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: 2

Provide explanation: Surface and subsurface soil contamination is minor. Most of the contaminants detected were within the range of background concentrations.

<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: 0

Provide explanation: No lipophilic chemicals were detected at this site.

<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: 0

Terrestrial Animals: 0

Provide explanation: No radionuclides are present from site operations.

Stream Channel

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 are no aquatic environments onsite, and there are no pathways to aquatic environments located offsite.

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 are no aquatic environments onsite, and there are no pathways to aquatic environments located offsite.

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 are no aquatic environments onsite, and there are no pathways to aquatic environments located offsite.

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 are no aquatic environments onsite, and there are no pathways to aquatic environments located offsite.

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: No radionuclides are present from site operations.

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 are no aquatic environments onsite, and there are no pathways to aquatic environments located offsite.

<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 are no aquatic environments onsite, and there are no pathways to aquatic environments located offsite.

<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 are no aquatic environments onsite, and there are no pathways to aquatic environments located offsite.

<u>Question V:</u>

Could contaminants interact with aquatic plants or animals through external irradiation?

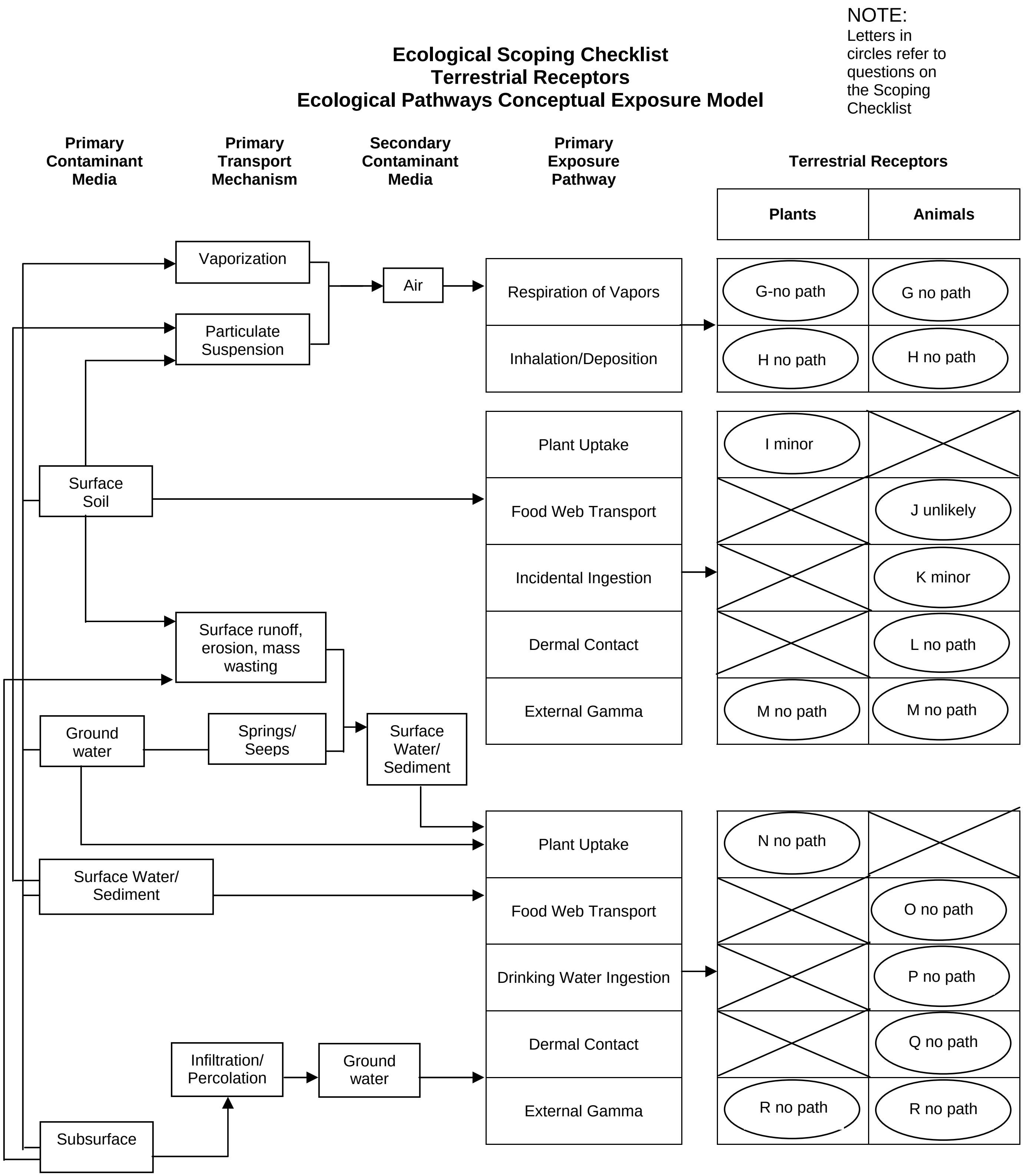
- External irradiation effects are most relevant for gamma emitting radionuclides.
- The water column acts to absorb radiation, thus external irradiation is typically more important for sediment dwelling organisms.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Plants: 0

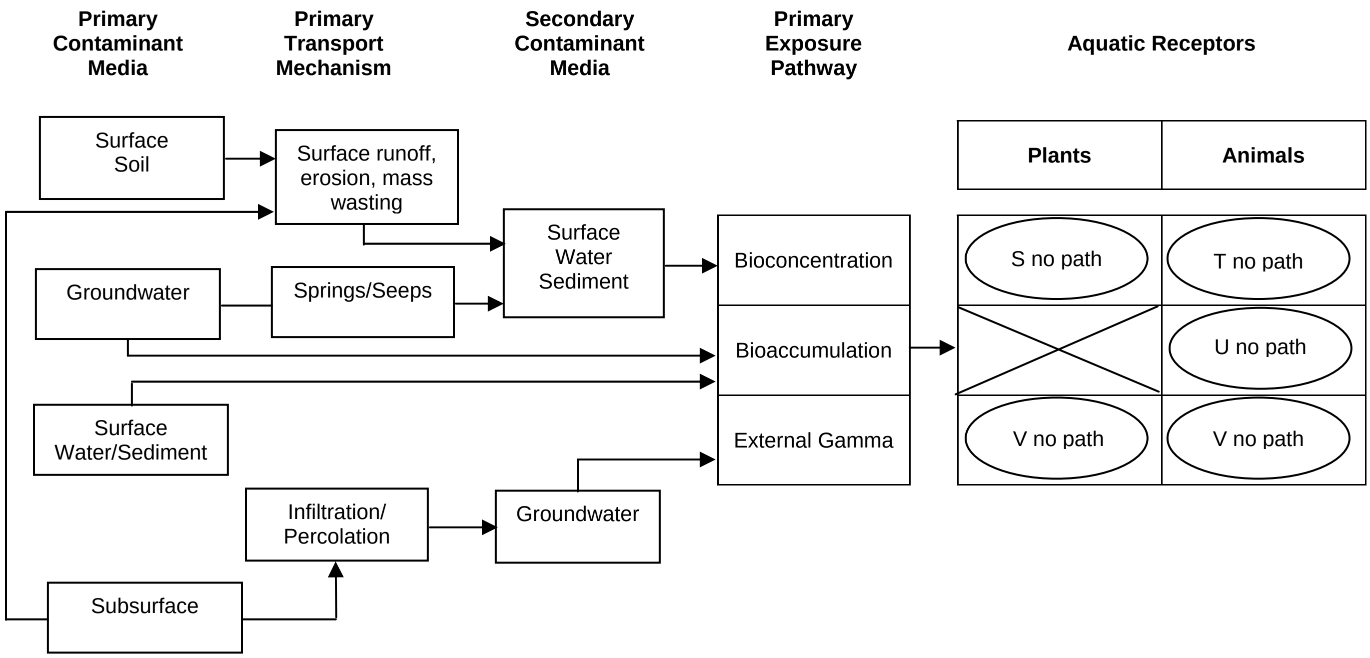
Aquatic Animals: 0

Provide explanation: There are no aquatic environments onsite, and there are no pathways to aquatic environments located offsite.


NOTE:
Letters in circles refer to questions on the Scoping Checklist
Ecological Scoping Checklist
Terrestrial Receptors
Ecological Pathways Conceptual Exposure Model
Primary Contaminant Media
Primary Transport Mechanism
Secondary Contaminant Media
Primary Exposure Pathway
Terrestrial Receptors
Plants
Animals
Vaporization
Particulate Suspension
Air
Respiration of Vapors
Inhalation/Deposition
G-no path
G no path
H no path
H no path
Surface Soil
Plant Uptake
Food Web Transport
Incidental Ingestion
Dermal Contact
External Gamma
I minor
J unlikely
K minor
L no path
M no path
M no path
Surface runoff, erosion, mass wasting
Ground water
Springs/ Seeps
Surface Water/ Sediment
Surface Water/ Sediment
Plant Uptake
Food Web Transport
Drinking Water Ingestion
Dermal Contact
External Gamma
N no path
O no path
P no path
Q no path
R no path
R no path
Infiltration/ Percolation
Ground water
Subsurface

NOTE:
Letters in circles refer to questions on the Scoping Checklist

Ecological Scoping Checklist
Aquatic Receptors
Ecological Pathways Conceptual Exposure Model



Signatures and certifications:

Checklist completed by (provide name, organization and phone number):

Name (printed): Tracy L. McFarland

Name (signature):

Organization: LATA

Phone number: 662-1830

Date Completed: 07/23/2007

Verification by a member of Risk Assessment Project Leader (provide name, organization and phone number):

Name (printed): Richard J. Mirenda

Name (signature):

Organization: ERSS

Phone number: 665-6953

Date Completed: 08/09/07

F1-2.0 SWMU 00-011(c) ECOLOGICAL SCOPING CHECKLIST

PART A—SCOPING MEETING DOCUMENTATION

Site ID	SWMU 00-011(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.	SWMU 00-011(c) is a possible mortar impact area. Two surveys for ordnance, one in 1993 and the other in 2006, have found no evidence of ordnance fragments or debris. This site is within the area burned by the Cerro Grande Fire in 2000.
List of Primary Impacted Media **(Indicate all that apply.)**	**Surface soil –** Applicable **Surface water/sediment –** N/A **Subsurface** – Applicable **Groundwater –** N/A **Other, explain** – none
FIMAD vegetation class based on Arcview vegetation coverage **(Indicate all that apply.)**	**Water –** N/A **Bare Ground/Unvegetated –** Applicable **Spruce/fir/aspen/mixed conifer –** N/A **Ponderosa pine –** N/A **Piñon juniper/juniper savannah –** N/A **Grassland/shrubland –** Applicable **Developed –** N/A
Is T&E Habitat Present? **If applicable, list species known or suspected to use the site for breeding or foraging.**	No
Provide list of Neighboring/ Contiguous/ Up-gradient 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.)**	There are no up-gradient sites from SWMU 00-011(c).
Surface Water Erosion Potential Information **Summarize information from SOP 2.01, including the run-off subscore (maximum of 46); terminal point of surface water transport; slope; and surface water runon sources.**	The site is flat with thick ground cover. The run-on score for the Surface Water Assessment was 7.0 from natural run-on; the run-off score was 26.2. The total score for the surface water site assessment was 36.8. The run-off from this site terminates in Rendija Canyon.

Part B—Site Visit Documentation

Site ID	SWMU 00-011(c)
Date of Site Visit	10/30/2006
Site Visit Conducted by	Tracy L. McFarland and Jon Roberson

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) = None
Field notes on the FIMAD vegetation class to assist in ground-truthing the Arcview information	SWMU 00-011(c) is mainly grassland and shrubs. All of the trees burned during the Cerro Grande Fire and the remains of the trees are on the ground.
Field notes on T&E Habitat, if applicable. Consider the need for a site visit by a T&E subject matter expert to support the use of the site by T&E receptors.	There is no T&E habitat at this site.
Are ecological receptors present at the site? **(yes/no/uncertain)**	Yes, ecological receptors are present at the site. Scoping activities revealed invertebrates, reptiles, birds and plant life.
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.	No aquatic community exist onsite.

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).**	Based on the surface water site assessment, there is a low to moderate potential for surface water transport.
Are there any off-site transport pathways (surface water, air, or groundwater)? **(yes/no/uncertain)** **Provide explanation**	No, contaminants are not present at the site.
Interim action needed to limit off-site transport? **(yes/no/uncertain)** **Provide explanation/ recommendation to project lead for IA SMDP.**	No.

Ecological Effects Information:

Physical Disturbance **(Provide list of major types of disturbances, including erosion and construction activities, review historical aerial photos where appropriate.)**	Signs of disturbance include rock falling from the steep slopes.
Are there obvious ecological effects? **(yes/no/uncertain)** **Provide explanation and apparent cause (e.g., contamination, physical disturbance, other).**	No.
Interim action needed to limit apparent ecological effects? **(yes/no/uncertain)** **Provide explanation and recommendations to mitigate apparent exposure pathways to project lead for IA SMDP.**	No.

No Exposure/Transport Pathways:

If there are no complete exposure pathways to ecological receptors onsite and no transport pathways to offsite 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. There is no evidence that this site was ever used for mortar impacts.

Signatures and certifications:

Checklist completed by (provide name, organization and phone number):

Name (printed): Tracy L. McFarland

Name (signature):

Organization: LATA

Phone number: 662-1830

Date Completed: 07/23/2007

Verification by a member of Risk Assessment Project Leader (provide name, organization and phone number):

Name (printed): Richard J. Mirenda

Name (signature):

Organization: ERSS

Phone number: 665-6953

Date Completed: 08/09/07

F1-3.0 SWMU 00-011(d) ECOLOGICAL SCOPING CHECKLIST

PART A—SCOPING MEETING DOCUMENTATION

Site ID	SWMU 00-011(d)
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.	SWMU 00-011(d) is a former bazooka firing area used as the target area for 2.36-in. bazooka rounds in the mid-to late-1940s. The potential areas of release would be the surface and subsurface soil and tuff of the SWMU.
List of Primary Impacted Media **(Indicate all that apply.)**	**Surface soil –** Applicable **Surface water/sediment –** N/A **Subsurface** – Applicable **Groundwater –** N/A **Other, explain** – none
FIMAD vegetation class based on Arcview vegetation coverage **(Indicate all that apply.)**	**Water –** N/A **Bare Ground/Unvegetated –** Applicable **Spruce/fir/aspen/mixed conifer –** N/A **Ponderosa pine –** Applicable **Piñon juniper/juniper savannah –** Applicable **Grassland/shrubland –** Applicable **Developed –** N/A
Is T&E Habitat Present? **If applicable, list species known or suspected to use the site for breeding or foraging.**	No
Provide list of Neighboring/ Contiguous/ Up-gradient 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.)**	There are no up-gradient sites from SWMU 00-011(d).
Surface Water Erosion Potential Information **Summarize information from SOP 2.01, including the run-off subscore (maximum of 46); terminal point of surface water transport; slope; and surface water runon sources.**	The site has a gradual slope with thick ground cover. The run-on score for the Surface Water Assessment was 7.0 from natural run-on; the run-off score was 46.0. The total score for the surface water site assessment was 73.8. The run-off from this site terminates in Bayo Canyon.

Part B—Site Visit Documentation

Site ID	**SWMU 00-011(d)**
Date of Site Visit	11/27/2006
Site Visit Conducted by	Tracy L. McFarland and Jon Roberson

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) = None
Field notes on the FIMAD vegetation class to assist in ground-truthing the Arcview information	San Ildefonso Road is not within SWMU 00-011(d) boundaries. More bare rock is present on the site than shown o the Arcview map.
Field notes on T&E Habitat, if applicable. Consider the need for a site visit by a T&E subject matter expert to support the use of the site by T&E receptors.	There is no T&E habitat at this site.
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, ecological receptors are present at the site. Scoping activities revealed abundant invertebrates, reptiles, birds, and plant life. Numerous examples of mammalian site use were evident as well. No aquatic community exist onsite.

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).**	Based on the surface water site assessment, there is a high potential for surface water transport.COPC concentrations are low.
Are there any off-site transport pathways (surface water, air, or groundwater)? **(yes/no/uncertain)** **Provide explanation**	No, contaminants at the site are at low concentrations.
Interim action needed to limit off-site transport? **(yes/no/uncertain)** **Provide explanation/ recommendation to project lead for IA SMDP.**	No.

Ecological Effects Information:

Physical Disturbance **(Provide list of major types of disturbances, including erosion and construction activities, review historical aerial photos where appropriate.)**	Signs of disturbance include rock falling from the cliff.
Are there obvious ecological effects? **(yes/no/uncertain)** **Provide explanation and apparent cause (e.g., contamination, physical disturbance, other).**	No.
Interim action needed to limit apparent ecological effects? **(yes/no/uncertain)** **Provide explanation and recommendations to mitigate apparent exposure pathways to project lead for IA SMDP.**	No.

No Exposure/Transport Pathways:

If there are no complete exposure pathways to ecological receptors onsite and no transport pathways to offsite 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.)**	The nature and extent of contamination is defined.
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 data addresses potential transport pathways. Few COPCs were detected and concentraitons were less than twice the background values.

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: The analytes detected are not volatile.

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): Unlikely.

Provide explanation: Potential for dust entrainment on the mesa top is negligible due to rooted vegetation and bare rock.

Question C:

Can contaminated soil be transported to aquatic ecological communities (use SOP 2.01 run-off score and terminal point of surface water runoff to help answer this question)?

- If the SOP 2.01 run-off score* for each SWMU included in the site is equal to zero, this suggests that erosion at the site is not a transport pathway. (* Note that the runoff score is not the entire erosion potential score, rather it is a subtotal of this score with a maximum value of 46 points).
- 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: Although the run-off is 46, the COPC concentrations are low.

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: There is no surface water on the mesa top, and no springs or seeps exist in vicinity of SWMU 00-011(d). There is no complete pathway to the regional aquifer (ca. 1200 ft, 360 m) from this site.

<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 any 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 minimal across the site. There are no perched aquifers near this site.

<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: 0

Terrestrial Animals: 0

Provide explanation: None of the site contaminants are volatile.

<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: 0

Terrestrial Animals: 0

Provide explanation: Vegetation cover minimizes particulates and dust.

<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: 2

Provide explanation: Relatively low concentrations of COPCs were measured in surface and shallow subsurface samples.

<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: 1

Provide explanation: No bioaccumulating chemicals were detected onsite. The concentration of chemicals is low in the 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: 2

Provide explanation: Surface and subsurface soil contamination is minor. Most of the contaminants detected were within the range of background concentrations.

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: 0

Provide explanation: No lipophilic chemicals were detected at this site.

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: 0

Terrestrial Animals: 0

Provide explanation: No radionuclides are present from site operations.

Stream Channel

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 are no aquatic environments onsite, and there are no pathways to aquatic environments located offsite.

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 are no aquatic environments onsite, and there are no pathways to aquatic environments located offsite.

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 are no aquatic environments onsite, and there are no pathways to aquatic environments located offsite.

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 are no aquatic environments onsite, and there are no pathways to aquatic environments located offsite.

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: No radionuclides are present from site operations.

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 are no aquatic environments onsite, and there are no pathways to aquatic environments located offsite.

<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 are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.

<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 are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.

<u>Question V:</u>

Could contaminants interact with aquatic plants or animals through external irradiation?

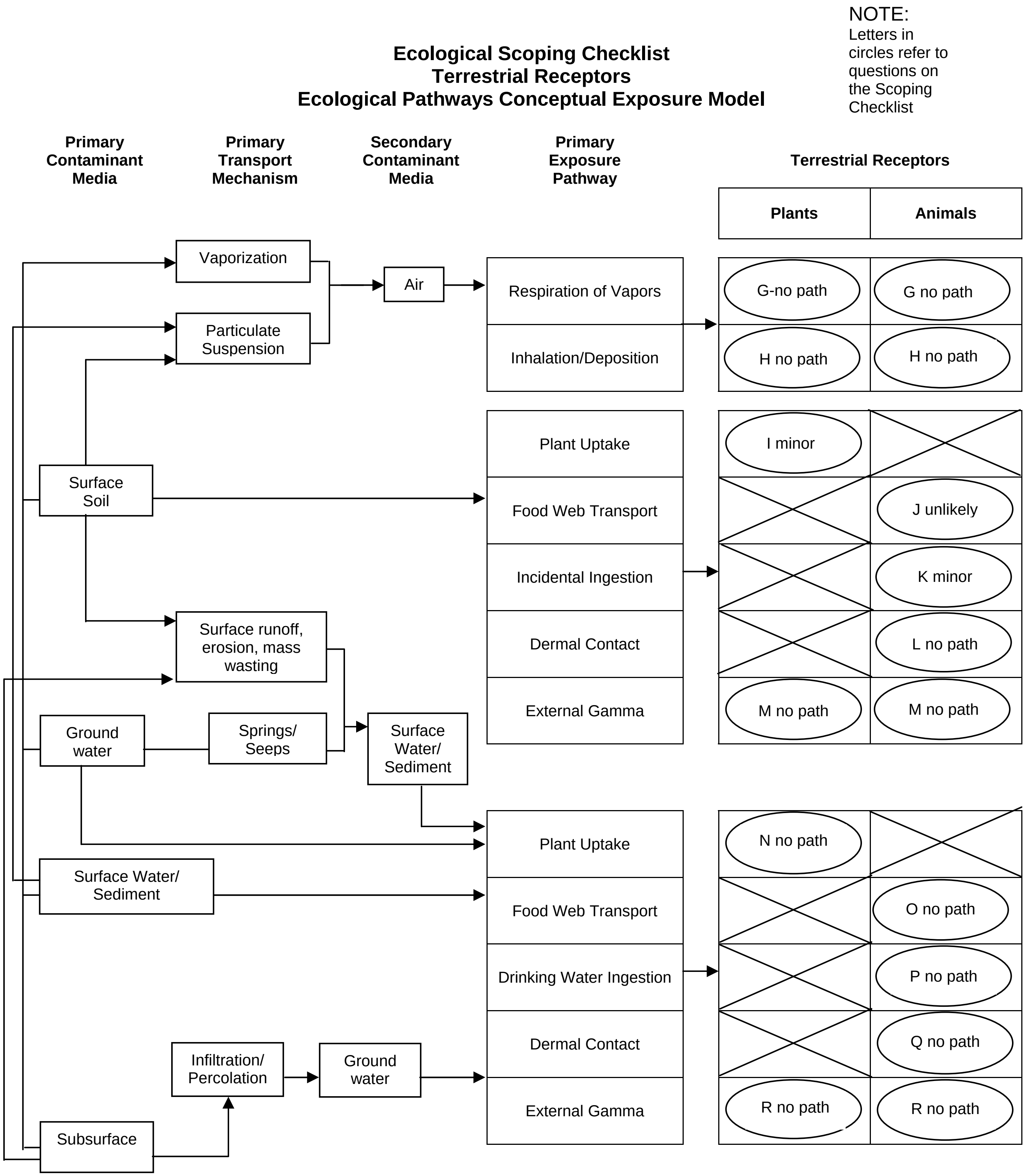
- External irradiation effects are most relevant for gamma emitting radionuclides.
- The water column acts to absorb radiation, thus external irradiation is typically more important for sediment dwelling organisms.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Plants: 0

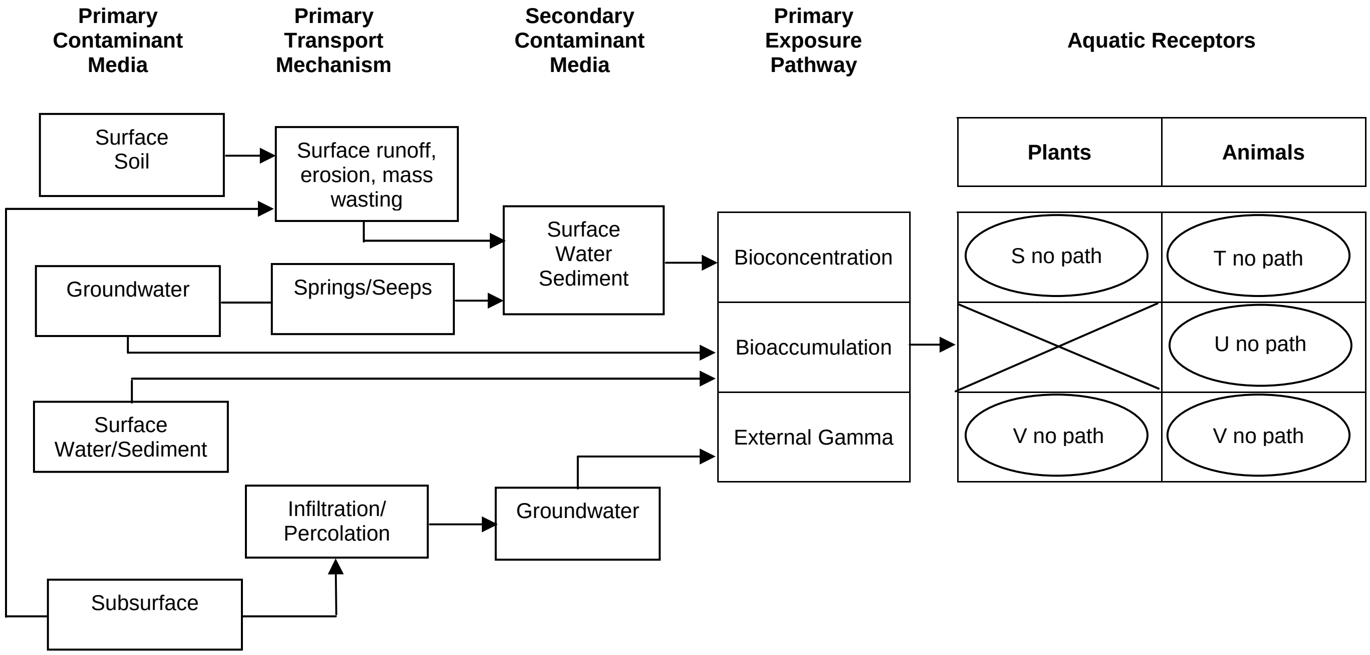
Aquatic Animals: 0

Provide explanation: There are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.


NOTE:
Letters in circles refer to questions on the Scoping Checklist
Ecological Scoping Checklist
Terrestrial Receptors
Ecological Pathways Conceptual Exposure Model
Primary Contaminant Media
Primary Transport Mechanism
Secondary Contaminant Media
Primary Exposure Pathway
Terrestrial Receptors
Plants
Animals
Vaporization
Particulate Suspension
Air
Respiration of Vapors
Inhalation/Deposition
G-no path
G no path
H no path
H no path
Surface Soil
Plant Uptake
Food Web Transport
Incidental Ingestion
Dermal Contact
External Gamma
I minor
J unlikely
K minor
L no path
M no path
M no path
Surface runoff, erosion, mass wasting
Ground water
Springs/ Seeps
Surface Water/ Sediment
Plant Uptake
Food Web Transport
Drinking Water Ingestion
Dermal Contact
External Gamma
N no path
O no path
P no path
Q no path
R no path
R no path
Surface Water/ Sediment
Infiltration/ Percolation
Ground water
Subsurface

NOTE:
Letters in circles refer to questions on the Scoping Checklist

Ecological Scoping Checklist
Aquatic Receptors
Ecological Pathways Conceptual Exposure Model



Signatures and certifications:

Checklist completed by (provide name, organization and phone number):

Name (printed): Tracy L. McFarland

Name (signature): Tracy L. McFarland

Organization: LATA

Phone number: 662-1830

Date Completed: 07/23/2007

Verification by a member of Risk Assessment Project Leader (provide name, organization and phone number):

Name (printed): Richard J. Mirenda

Name (signature): Richard Mirenda

Organization: ERSS

Phone number: 665-6953

Date Completed: 08/09/07

F1-4.0 SWMU 00-011(e) ECOLOGICAL SCOPING CHECKLIST

PART A—SCOPING MEETING DOCUMENTATION

Site ID	SWMU 00-011(e)
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.	SWMU 00-011(e) is a former ammunition impact area used as the target area for 20-mm and 37-mm rounds from the mid-1940s until the late-1940s. The potential areas of release would be the surface and subsurface soil of the SWMU.
List of Primary Impacted Media **(Indicate all that apply.)**	**Surface soil –** Applicable **Surface water/sediment–** N/A **Subsurface** – Applicable **Groundwater –** N/A **Other, explain** – N/A
FIMAD vegetation class based on Arcview vegetation coverage **(Indicate all that apply.)**	**Water –** N/A **Bare Ground/Unvegetated –** Applicable **Spruce/fir/aspen/mixed conifer –** N/A **Ponderosa pine –** Applicable **Piñon juniper/juniper savannah –** Applicable **Grassland/shrubland –** Applicable **Developed –.** N/A
Is T&E Habitat Present? **If applicable, list species known or suspected to use the site for breeding or foraging.**	No
Provide list of Neighboring/ Contiguous/ Up-gradient 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.)**	There are no up-gradient sites from SWMU 00-011(e).
Surface Water Erosion Potential Information **Summarize information from SOP 2.01, including the run-off subscore (maximum of 46); terminal point of surface water transport; slope; and surface water runon sources.**	The run-on score for the Surface Water Assessment was 0.0, the run-off score was 6.9. The surface water site assessment said that the area was too large to perform an assessment, and slope of the land and ground cover were not assessed. The actual slope of the land is steep and ground cover is sparse. Terminal point of surface water transport is Rendija Canyon.

Part B—Site Visit Documentation

Site ID	SWMU 00-011(e)
Date of Site Visit	11/08/2006
Site Visit Conducted by	Tracy L. McFarland and Dave Frank

Receptor Information:

Estimate cover	Relative vegetative cover (high, medium, low, none) = Low Relative wetland cover (high, medium, low, none) = None Relative structures/asphalt, etc. cover (high, medium, low, none) = None
Field notes on the FIMAD vegetation class to assist in ground-truthing the Arcview information	Bare rock is prevalent at SWMU 00-011(e), but is not shown on the Arcview map.
Field notes on T&E Habitat, if applicable. Consider the need for a site visit by a T&E subject matter expert to support the use of the site by T&E receptors.	There is no T&E Habitat at this site.
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, ecological receptors are present at the site. Scoping activities revealed abundant invertebrates, reptiles, birds and plant life. Numerous examples of mammalian site use were evident as well. No aquatic community exist onsite.

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).**	Based on the surface water site assessment there is a low potential for surface water transport.
Are there any off-site transport pathways (surface water, air, or groundwater)? **(yes/no/uncertain)** **Provide explanation**	No. Runoff potential and contaminant concentrations are low.
Interim action needed to limit off-site transport? **(yes/no/uncertain)** **Provide explanation/ recommendation to project lead for IA SMDP.**	No.

Ecological Effects Information:

Physical Disturbance **(Provide list of major types of disturbances, including erosion and construction activities, review historical aerial photos where appropriate.)**	Signs of disturbance include rock falling from the cliff face and rocks rolling down the slope.
Are there obvious ecological effects? **(yes/no/uncertain)** **Provide explanation and apparent cause (e.g., contamination, physical disturbance, other).**	No.
Interim action needed to limit apparent ecological effects? **(yes/no/uncertain)** **Provide explanation and recommendations to mitigate apparent exposure pathways to project lead for IA SMDP.**	No.

No Exposure/Transport Pathways:

If there are no complete exposure pathways to ecological receptors onsite and no transport pathways to offsite 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.)**	The nature and extent of contamination is defined.
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 data addresses potential transport pathways. Few COPCs were detected and concentrations were less than twice the background values.

Part C—Ecological Pathways Conceptual Exposure Model

<u>Question A:</u>

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: The analytes detected are not volatile.

<u>Question B:</u>

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): Unlikely.

Provide explanation: Potential for dust entrainment on the mesa top is negligible due to rooted vegetation and bare rock.

<u>Question C:</u>

Can contaminated soil be transported to aquatic ecological communities (use SOP 2.01 run-off score and terminal point of surface water runoff to help answer this question)?

- If the SOP 2.01 run-off score* for each SWMU included in the site is equal to zero, this suggests that erosion at the site is not a transport pathway. (* Note that the runoff score is not the entire erosion potential score, rather it is a subtotal of this score with a maximum value of 46 points).
- 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: The run-off is 6.9, indicating low potential erosion and runoff from the site.

<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: There is no surface water on the mesa top, and no springs or seeps exist in vicinity of SWMU 00-011(e). There is currently no complete pathway to the regional aquifer (ca. 1200 ft, 360 m) from this site.

<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 any 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 minimal across the site. There are no perched aquifers near this site.

<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: 0

Terrestrial Animals: 0

Provide explanation: None of the site contaminants are volatile.

<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: 0

Terrestrial Animals: 0

Provide explanation: Vegetation cover minimizes particulates and dust.

<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: 2

Provide explanation: Relatively low concentrations of COPCs were measured in surface soil samples.

<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: 1

Provide explanation: No bioaccumulating chemicals were detected onsite. The concentration of chemicals is low in the soil.

<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: 2

Provide explanation: Surface and subsurface soil contamination is minor. Most of the contaminants detected were within the range of background concentrations.

<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: 0

Provide explanation: No lipophilic chemicals were detected at this site.

<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: 0

Terrestrial Animals: 0

Provide explanation: No radionuclides are present from site operations.

Stream Channel

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 are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.

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 are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.

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 are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.

<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 are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.

<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: No radionuclides are present from site operations.

<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 are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.

<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 are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.

<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 are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.

<u>Question V:</u>

Could contaminants interact with aquatic plants or animals through external irradiation?

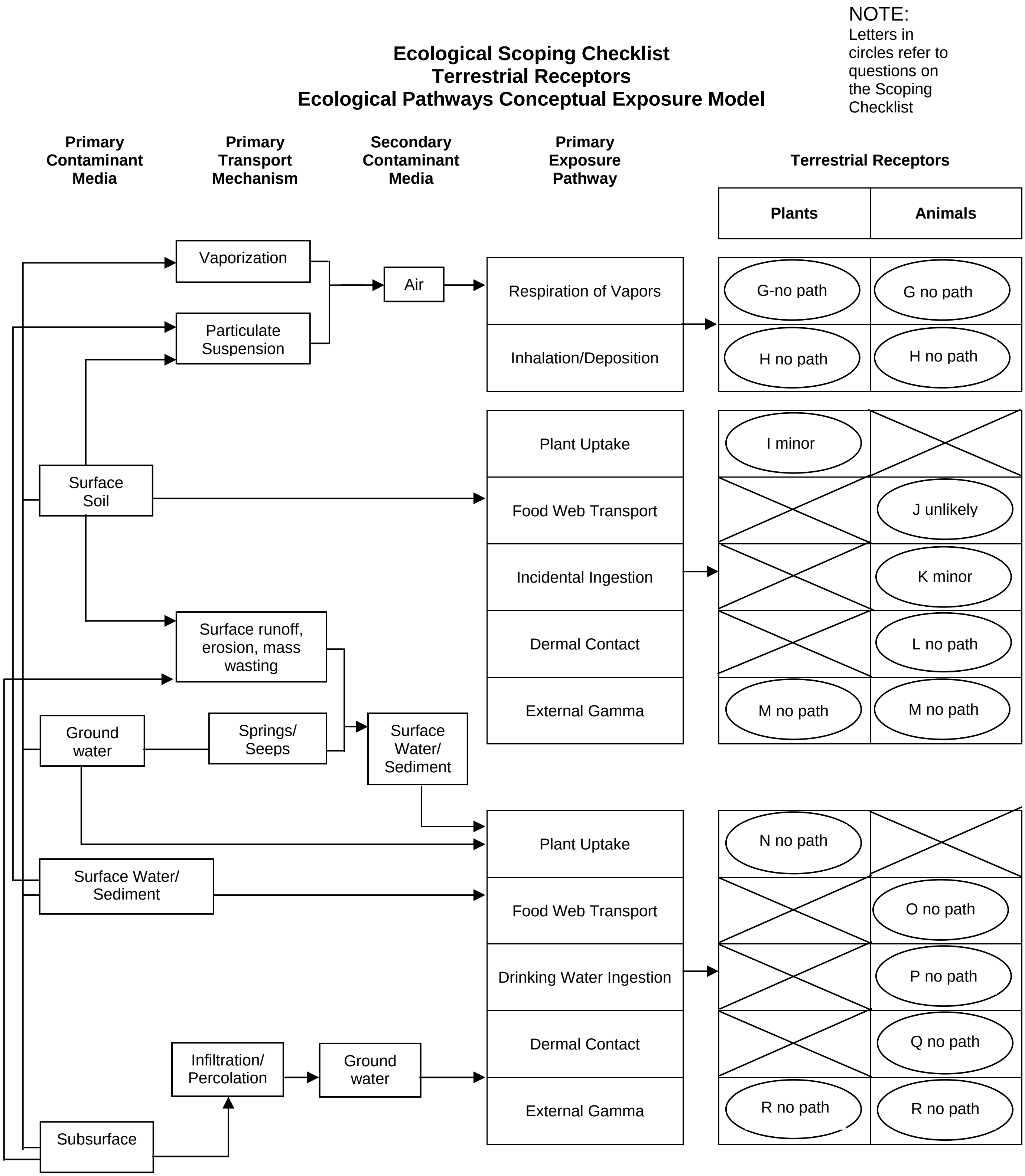
- External irradiation effects are most relevant for gamma emitting radionuclides.
- The water column acts to absorb radiation, thus external irradiation is typically more important for sediment dwelling organisms.

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 are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.


NOTE:
Letters in circles refer to questions on the Scoping Checklist
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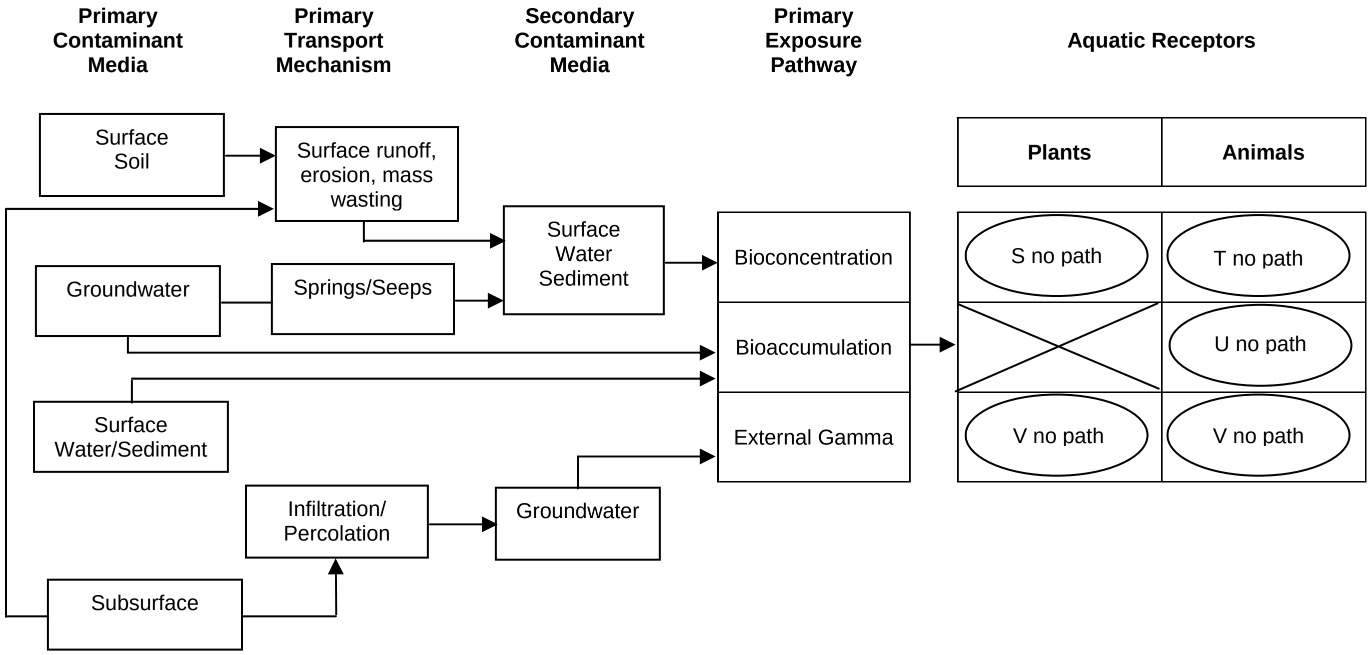
L no path
M no path
M no path
Surface runoff, erosion, mass wasting
Ground water
Springs/ Seeps
Surface Water/ Sediment
Plant Uptake
Food Web Transport
Drinking Water Ingestion
Dermal Contact
External Gamma
Surface Water/ Sediment
N no path
O no path
P no path
Q no path
R no path
R no path
Infiltration/ Percolation
Ground water
Subsurface

NOTE:
Letters in circles refer to questions on the Scoping Checklist

Ecological Scoping Checklist
Aquatic Receptors
Ecological Pathways Conceptual Exposure Model



Signatures and certifications:

Checklist completed by (provide name, organization and phone number):

Name (printed): Tracy L. McFarland

Name (signature): Tracy L. McFarland

Organization: LATA

Phone number: 662-1830

Date Completed: 07/23/2007

Verification by a member of Risk Assessment Project Leader (provide name, organization and phone number):

Name (printed): Richard J. Mirenda

Name (signature): Richard Mirenda

Organization: ERSS

Phone number: 665-6953

Date Completed: 08/09/07

F1-5.0 AOC C-00-020 ECOLOGICAL SCOPING CHECKLIST

PART A—SCOPING MEETING DOCUMENTATION

Site ID	AOC C-00-020
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.	AOC C-00-020 is a possible mortar impact area. Two surveys for ordnance, one in 1993 and the other in 2006, have found no evidence of ordnance fragments or debris. This site is within the area burned by the Cerro Grande Fire in 2000.
List of Primary Impacted Media **(Indicate all that apply.)**	**Surface soil –** Applicable **Surface water/sediment –** N/A **Subsurface** – Applicable **Groundwater –** N/A **Other, explain** – none
FIMAD vegetation class based on Arcview vegetation coverage **(Indicate all that apply.)**	**Water –** N/A **Bare Ground/Unvegetated –** Applicable **Spruce/fir/aspen/mixed conifer –** N/A **Ponderosa pine –** N/A **Piñon juniper/juniper savannah –** N/A **Grassland/shrubland –** Applicable **Developed –.** N/A
Is T&E Habitat Present? **If applicable, list species known or suspected to use the site for breeding or foraging.**	No
Provide list of Neighboring/ Contiguous/ Up-gradient 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.)**	There are no up-gradient sites from AOC C-00-020.
Surface Water Erosion Potential Information **Summarize information from SOP 2.01, including the run-off subscore (maximum of 46); terminal point of surface water transport; slope; and surface water runon sources.**	The site slopes at approximately 15%, gradually increasing to approximately 25% with sparse ground cover. The run-on score for the Surface Water Assessment was 7.0 from natural run-on; the run-off score was 17.9. The total score for the surface water site assessment was 48.4. The run-off from this site terminates in Rendija Canyon.

Part B—Site Visit Documentation

Site ID	AOC C-00-020
Date of Site Visit	10/31/2006
Site Visit Conducted by	Tracy L. McFarland and Jon Roberson

Receptor Information:

Estimate cover	Relative vegetative cover (high, medium, low, none) = Low Relative wetland cover (high, medium, low, none) = None Relative structures/asphalt, etc. cover (high, medium, low, none) = None
Field notes on the FIMAD vegetation class to assist in ground-truthing the Arcview information	AOC C-00-020 is grassland and shrubs with large tuff outcrops. A flat drainage channel bisects the site. All of the trees burned during the Cerro Grande Fire and the remains of the trees are on the ground.
Field notes on T&E Habitat, if applicable. Consider the need for a site visit by a T&E subject matter expert to support the use of the site by T&E receptors.	There is no T&E habitat at this site.
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, ecological receptors are present at the site. Scoping activities revealed invertebrates, reptiles, birds and plant life. No aquatic community exist onsite.

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).**	Based on the surface water site assessment there is low to moderate potential for surface water transport.
Are there any off-site transport pathways (surface water, air, or groundwater)? **(yes/no/uncertain)** **Provide explanation**	No, contaminants are not present at the site.
Interim action needed to limit off-site transport? **(yes/no/uncertain)** **Provide explanation/ recommendation to project lead for IA SMDP.**	No.

Ecological Effects Information:

Physical Disturbance **(Provide list of major types of disturbances, including erosion and construction activities, review historical aerial photos where appropriate.)**	Signs of disturbance include rock falling from the steep slopes.
Are there obvious ecological effects? **(yes/no/uncertain)** **Provide explanation and apparent cause (e.g., contamination, physical disturbance, other).**	No.
Interim action needed to limit apparent ecological effects? **(yes/no/uncertain)** **Provide explanation and recommendations to mitigate apparent exposure pathways to project lead for IA SMDP.**	No.

No Exposure/Transport Pathways:

If there are no complete exposure pathways to ecological receptors onsite and no transport pathways to offsite 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. There is no evidence that this site was ever used for mortar impacts.

Signatures and certifications:

Checklist completed by (provide name, organization and phone number):

Name (printed): Tracy L. McFarland

Name (signature): Tracy L. McFarland

Organization: LATA

Phone number: 662-1830

Date Completed: 07/23/2007

Verification by a member of Risk Assessment Project Leader (provide name, organization and phone number):

Name (printed): Richard J. Mirenda

Name (signature): Richard Mirenda

Organization: ERSS

Phone number: 665-6953

Date Completed: 08/09/07

F1-6.0 AOC C-00-041 ECOLOGICAL SCOPING CHECKLIST

PART A—SCOPING MEETING DOCUMENTATION

Site ID	AOC C-00-041
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.	ACO C-00-041 is a former asphalt batch plant that was active from the late 1940s to 1958. A layer of asphalt was found at a depth of approximately 3 to 4 ft. The potential areas of release would be the surface and subsurface soil and tuff of the AOC.
List of Primary Impacted Media **(Indicate all that apply.)**	**Surface soil –** Applicable **Surface water/sediment –** N/A **Subsurface** – Applicable **Groundwater –** N/A **Other, explain** – none
FIMAD vegetation class based on Arcview vegetation coverage **(Indicate all that apply.)**	**Water –** N/A **Bare Ground/Unvegetated –** Applicable **Spruce/fir/aspen/mixed conifer –** N/A **Ponderosa pine –** Applicable **Piñon juniper/juniper savannah –** N/A **Grassland/shrubland –** Applicable **Developed –.** N/A
Is T&E Habitat Present? **If applicable, list species known or suspected to use the site for breeding or foraging.**	No
Provide list of Neighboring/ Contiguous/ Up-gradient 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.)**	There are no up-gradient sites from AOC C-00-041.
Surface Water Erosion Potential Information **Summarize information from SOP 2.01, including the run-off subscore (maximum of 46); terminal point of surface water transport; slope; and surface water runon sources.**	The site has a gradual slope with thick ground cover. The run-on score for the Surface Water Assessment was 7.0 from structural run-on; the run-off score was 24.0. The total score for the surface water site assessment was 39.8. The run-off from this site terminates in a drainage of Rendija Canyon.

Part B—Site Visit Documentation

Site ID	AOC C-00-041
Date of Site Visit	05/03/07
Site Visit Conducted by	Tracy L. McFarland, Jon Roberson, David Frank

Receptor Information:

Estimate cover	Relative vegetative cover (high, medium, low, none) = High Relative wetland cover (high, medium, low, none) = None Relative structures/asphalt, etc. cover (high, medium, low, none) = None
Field notes on the FIMAD vegetation class to assist in ground-truthing the Arcview information	The Arcview map is correct.
Field notes on T&E Habitat, if applicable. Consider the need for a site visit by a T&E subject matter expert to support the use of the site by T&E receptors.	There is no T&E habitat at this site.
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, ecological receptors are present at the site. Scoping activities revealed abundant invertebrates, reptiles, birds and plant life. Numerous examples of mammalian site use were evident as well. No aquatic community exist onsite.

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).**	Based on the surface water site assessment there is a moderate potential for surface water transport. It is unlikely that contaminants will be transported to Rendija Canyon because the concentrations are low and rock check dams are in place.
Are there any off-site transport pathways (surface water, air, or groundwater)? **(yes/no/uncertain)** **Provide explanation**	No. Although storms may transport materials into the drainage, runoff potential is moderate, contaminant concentrations are low, and check dams are in place.
Interim action needed to limit off-site transport? **(yes/no/uncertain)** **Provide explanation/ recommendation to project lead for IA SMDP.**	No, rock check dams within the channel trap sediment.

Ecological Effects Information:

Physical Disturbance **(Provide list of major types of disturbances, including erosion and construction activities, review historical aerial photos where appropriate.)**	Some erosion is evident.
Are there obvious ecological effects? **(yes/no/uncertain)** **Provide explanation and apparent cause (e.g., contamination, physical disturbance, other).**	No.
Interim action needed to limit apparent ecological effects? **(yes/no/uncertain)** **Provide explanation and recommendations to mitigate apparent exposure pathways to project lead for IA SMDP.**	No.

No Exposure/Transport Pathways:

If there are no complete exposure pathways to ecological receptors onsite and no transport pathways to offsite 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.)**	The nature and extent of contamination is defined.
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 data addresses potential transport pathways. Few COPCs were detected and concentrations were low.

Part C—Ecological Pathways Conceptual Exposure Model

<u>Question A:</u>

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: Some of the analytes detected are volatile, but all detected concentrations were at low levels.

<u>Question B:</u>

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): Unlikely.

Provide explanation: Potential for dust entrainment is negligible due to rooted vegetation.

<u>Question C:</u>

Can contaminated soil be transported to aquatic ecological communities (use SOP 2.01 run-off score and terminal point of surface water runoff to help answer this question)?

- If the SOP 2.01 run-off score* for each SWMU included in the site is equal to zero, this suggests that erosion at the site is not a transport pathway. (* Note that the runoff score is not the entire erosion potential score, rather it is a subtotal of this score with a maximum value of 46 points).
- 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: Rock check dams are located downgradient of the site.

<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 surface water and no springs or seeps exist in vicinity of AOC C-00-041. There is currently no complete pathway to the regional aquifer (ca. 1200 ft, 360 m) from this site.

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 any 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: Rock check dams are in place.

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: 1

Terrestrial Animals: 1

Provide explanation: VOCs are infrequently detected and are at concentrations less than EQLs.

<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: 1

Terrestrial Animals: 1

Provide explanation: Entrainment of fugitive dust is minimal because of the vegetative cover.

<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: 2

Provide explanation: Relatively low concentrations of COPCs were measured in surface soil samples.

<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: 1

Provide explanation: The concentration of chemicals is low in the 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: 2

Provide explanation: Surface and subsurface contamination is minor.

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: 0

Provide explanation: No lipophilic chemicals were detected at this site.

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: 0

Terrestrial Animals: 0

Provide explanation: No radionuclides are present from site operations.

Stream Channel

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 are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.

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 are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.

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 are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.

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 are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.

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: No radionuclides are present from site operations.

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 are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.

<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 are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.

<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 are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.

<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):

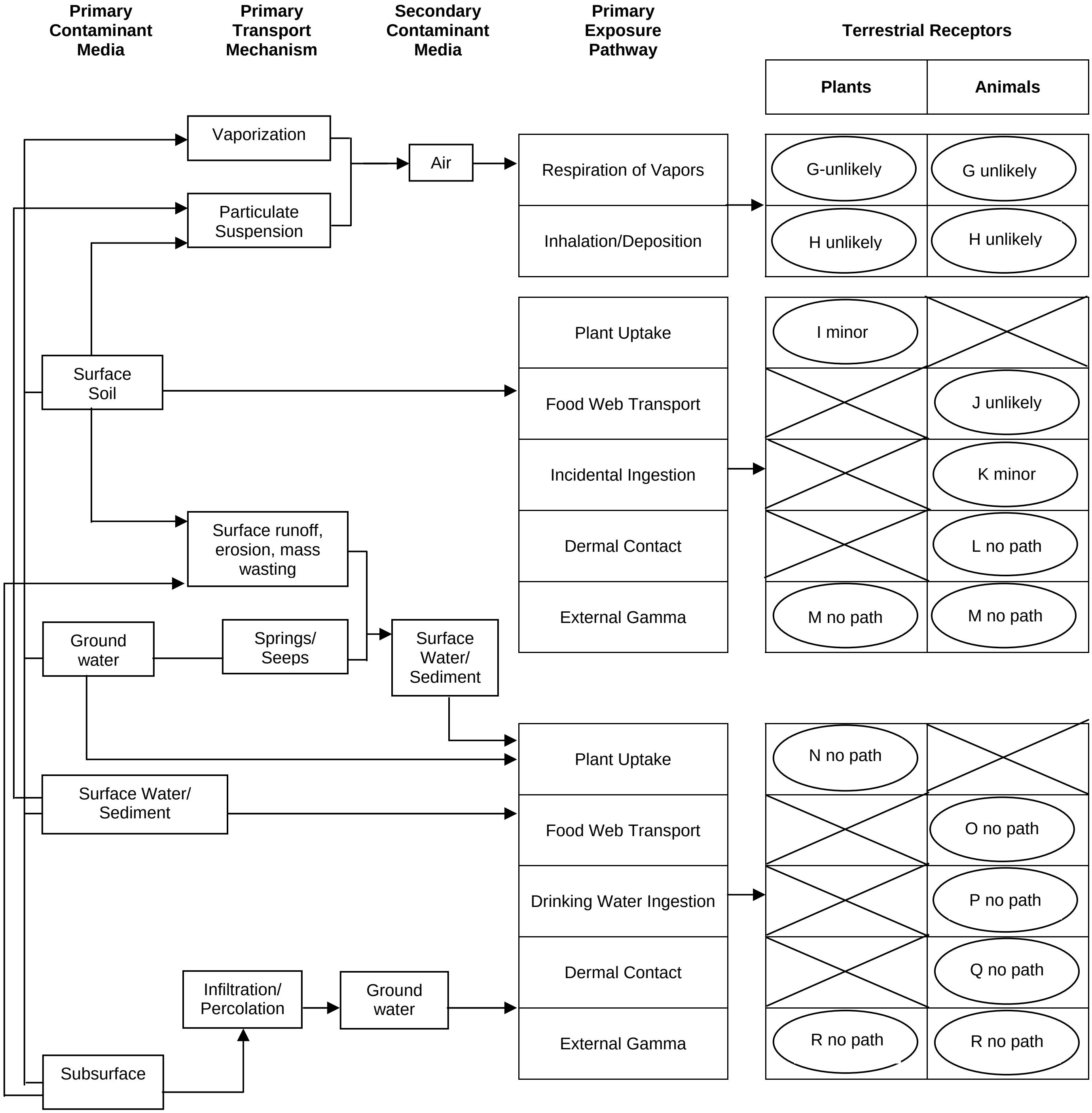
Aquatic Plants: 0

Aquatic Animals: 0

Provide explanation: There are no aquatic environments onsite and there are no pathways to aquatic environments located offsite.

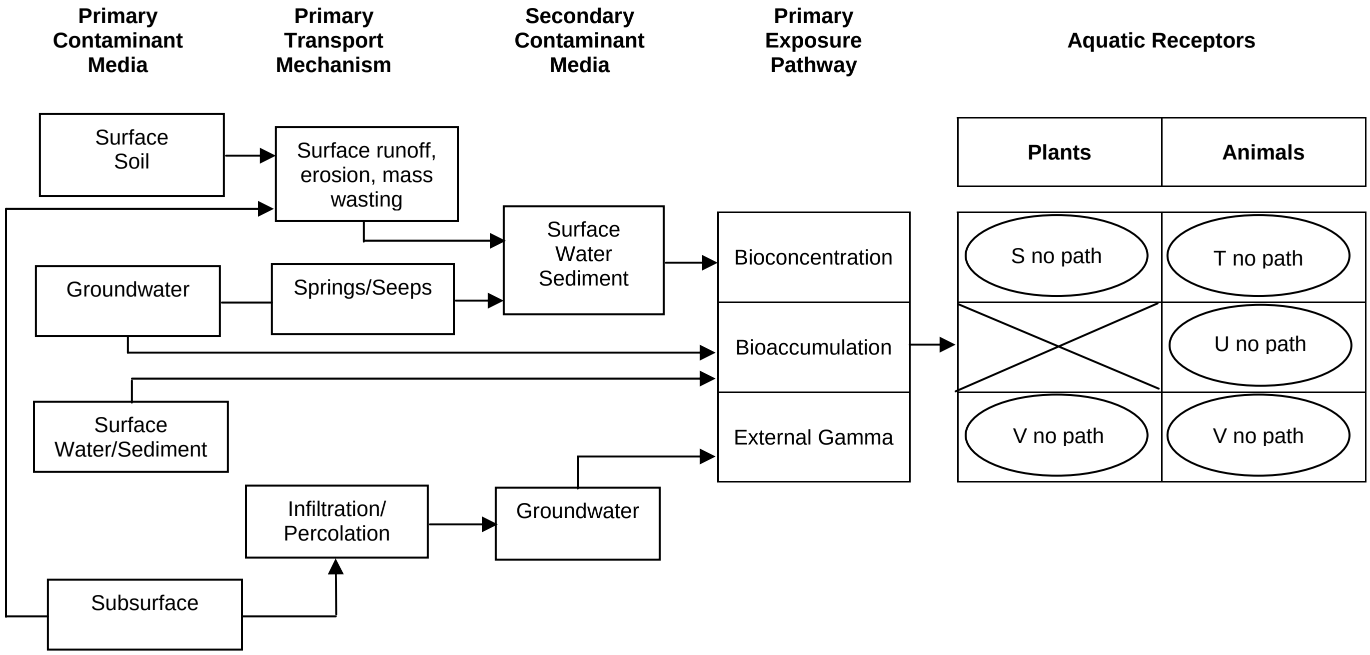
NOTE:
Letters in circles refer to questions on the Scoping Checklist

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 certifications:

Checklist completed by (provide name, organization and phone number):

Name (printed): Tracy L. McFarland

Name (signature): Tracy McFarland

Organization: LATA

Phone number: 662-1830

Date Completed: 07/23/2007

Verification by a member of Risk Assessment Project Leader (provide name, organization and phone number):

Name (printed): Richard J. Mirenda

Name (signature): Richard Mirenda

Organization: ERSS

Phone number: 665-6953

Date Completed: 08/09/07

Appendix G

Surface Water Site Assessments

Surface Water Site Assessment

Site Information

Site ID:	PRS ID:	Nearest Struct:
72	00-011(a)	

Setting

Topography

On Mesa Top: No **On Bench in Canyon:** No **On Canyon Floor, Not Channel:** No **In Channel in Canyon Floor:** No

Topography Explanation:

Open meadow s east of Rendija Sportsman Club. Area too large too perform this assessment on, roads bisect meadow throughout, w ith heavy erosion on roadw ays. Former mortar impact area.

Ground/Canopy Cover

Sparse (<25%): No **Medium (25-75%):** No **Thick (>75%):** No

Ground/Canopy Cover Explanation:

Slope at Area Impacted

Flat (<10%): No **Gradual (10-30%):** No **Steep (>30%):** No

Slope Explanation:

Run-off

Is There Visible Evidence of Run-off Discharging from Site:

Yes

Surface Water Site Assessment

PRS ID: 00-011(a)

Run-off (Continued)

Is Run-off Channelized:	**Channel Type:**
No	

Channelization Explanation:

Visible runoff throughout site. No applicable score for the site how ever.

Where Does Evidence of Runoff Terminate:

Terminus Explanation

Has Run-off Caused Visible Erosion:	**Erosion Type:**
No	

Erosion Explanation:

Run-on

Structural Run On. Are Structures Creating Run-on to the Site:

No

Structural Run-on Explanation:

Surface Water Site Assessment

PRS ID: 00-011(a)

Run-on (Continued)

Natural Run-on. Is Natural Drainage Creating Run-on to the Site:
No

Natural Run-on Explanation:

Current Operations Run-on. Are Current Operations Creating Run-on to the Site:
No

Current Operations Run-on Explanation:

Assessment Finding

Based on the Above Criteria and the Assessment of this Site, Does Soil Erosion Potential Exist:
No

Sign Off

Site Not Found:	Revision of Earlier Assessment:
No	No

Name of Assessment Author:	Assessment Date:
Steve Veenis	06/25/1999

Surface Water Site Assessment

PRS ID: 00-011(a)

Additional Information

Trash and Debris Notes

Is there Visible Trash and Debris on the Site:	Is there Visible Trash and Debris In a Watercourse:
No	No

Trash and Debris Explanation:

General Notes

Assessment Comments:

Site has dense poderosa canopy w ith gravel and dirt roads cross cutting throughout. Tributary drainages to Rendija trend eastw ard throughout area. PRS boundary show n on map too large to perform this type of an assessment on.

Best Management Practice Notes

Are Permanent BMPs in Place:	Permanent BMPs in Place:
No	

Surface Water Site Assessment

PRS ID: 00-011(a)

Erosion Matrix

Erosion/Sediment Transport Potential Scoring Criteria	Max Score Poss	Score Modifers for Transport Potential			Resulting Score
		Low (max * 0.1)	Med (max * 0.5)	High (max * 1.0)	
Setting Group (Max Total 43)					
Topography - On Mesa Top:	1	For these four criteria, use the single highest score from the criteria that received a "Yes" answ er.			1.0
Topography - On Bench in Canyon:	4				
Topography - On Canyon Floor, Not in Channel:	13				
Topography - In Channel in Canyon Floor:	17				
Ground/Canopy Cover (Percent):	13	>75%	25-75%	<25%	1.3
Slope at Area Impacted:	13	<10%	10-30%	>30%	1.3
Run-off Group (Max Total 46)					
Visible Evidence of Run-off:	5	"Yes" = 5. "No" = 0 here and for tw o scores below .			5.0
Where Run-off Terminates:	19	"Other"	"Bench"	"Drainage/Canyon"	1.9
Visible Erosion:		"No" = 0. If "Yes", score by Erosion Type.			0.0
Erosion Type:	22	"Sheet"	"Rill"	"Gully"	
Run-on Group (Max Total 11)					
Structural Run-on:	7	"No" = 0. "Yes" = 7.			0.0
Natural Run-on:	7	"No" = 0. "Yes" = 7.			0.0
Current Operations Run-on:	4	"No" = 0. "Yes" = 4.			0.0
Maximum Possible Total Score:	**100**	*** Actual Total Score:**			**10.5**

Revision of Earlier Assessment: No

*** No permanent BMPs are in place. Score could be lower with them.**

Surface Water Site Assessment

Site Information

Site ID:	PRS ID:	Nearest Struct:
73	00-011(c)	

Setting

Topography

On Mesa Top: Yes **On Bench in Canyon:** No **On Canyon Floor, Not Channel:** No **In Channel in Canyon Floor:** No

Topography Explanation:

The PRS is located in Redija canyon, not w ithin an established channel.

Ground/Canopy Cover

Sparse (<25%): No **Medium (25-75%):** No **Thick (>75%):** Yes

Ground/Canopy Cover Explanation:

Ground coverage is approx. 80-85% consisting of native and forbs. Canopy coverage is approx. 60-65% consisting of burned mature ponderosa pine.

Slope at Area Impacted

Flat (<10%): Yes **Gradual (10-30%):** No **Steep (>30%):** No

Slope Explanation:

PRS slopes to the east at 5-10%.

Run-off

Is There Visible Evidence of Run-off Discharging from Site:

Yes

Surface Water Site Assessment

PRS ID: 00-011(c)

Run-off (Continued)

Is Run-off Channelized:
Yes

Channel Type:
Natural

Channelization Explanation:
There is visible evidence of run-off discharging from site. Sheet flow erosion.

Where Does Evidence of Runoff Terminate:
Drainage/Canyon

Terminus Explanation

Has Run-off Caused Visible Erosion:
Yes

Erosion Type:
Sheet Flow

Erosion Explanation:
Sheet erosion is visible throughout the site.

Run-on

Structural Run On. Are Structures Creating Run-on to the Site:
No

Structural Run-on Explanation:
No structures contributing run-on to the site.

Surface Water Site Assessment

PRS ID: 00-011(c)

Run-on (Continued)

Natural Run-on. Is Natural Drainage Creating Run-on to the Site:
Yes

Natural Run-on Explanation:
Canyon w alls w ill cause some run-on to the site.

Current Operations Run-on. Are Current Operations Creating Run-on to the Site:
No

Current Operations Run-on Explanation:
No current operations are impacting run-on to the site.

Assessment Finding

Based on the Above Criteria and the Assessment of this Site, Does Soil Erosion Potential Exist:
Yes

Sign Off

Site Not Found:	Revision of Earlier Assessment:
No	No

Name of Assessment Author:	Assessment Date:
Jacinto Garduno	08/13/2001

Surface Water Site Assessment

PRS ID: 00-011(c)

Additional Information

Trash and Debris Notes

Is there Visible Trash and Debris on the Site:	Is there Visible Trash and Debris In a Watercourse:
No	No

Trash and Debris Explanation:

General Notes

Assessment Comments:
The exact location of PRS not found, this assessment w as based upon the general area.

Best Management Practice Notes

Are Permanent BMPs in Place:	Permanent BMPs in Place:
No	

Surface Water Site Assessment

PRS ID: 00-011(c)

Erosion Matrix

Erosion/Sediment Transport Potential Scoring Criteria	Max Score Poss	Score Modifers for Transport Potential			Resulting Score
		Low (max * 0.1)	Med (max * 0.5)	High (max * 1.0)	
Setting Group (Max Total 43)					
Topography - On Mesa Top:	1	For these four criteria, use the single highest score from the criteria that received a "Yes" answer.			1.0
Topography - On Bench in Canyon:	4				
Topography - On Canyon Floor, Not in Channel:	13				
Topography - In Channel in Canyon Floor:	17				
Ground/Canopy Cover (Percent):	13	>75%	25-75%	<25%	1.3
Slope at Area Impacted:	13	<10%	10-30%	>30%	1.3
Run-off Group (Max Total 46)					
Visible Evidence of Run-off:	5	"Yes" = 5. "No" = 0 here and for two scores below.			5.0
Where Run-off Terminates:	19	"Other"	"Bench"	"Drainage/Canyon"	19.0
Visible Erosion:		"No" = 0. If "Yes", score by Erosion Type.			2.2
Erosion Type:	22	"Sheet"	"Rill"	"Gully"	
Run-on Group (Max Total 11)					
Structural Run-on:	7	"No" = 0. "Yes" = 7.			0.0
Natural Run-on:	7	"No" = 0. "Yes" = 7.			7.0
Current Operations Run-on:	4	"No" = 0. "Yes" = 4.			0.0
Maximum Possible Total Score:	**100**			*** Actual Total Score:**	**36.8**

Revision of Earlier Assessment: No

*** No permanent BMPs are in place. Score could be lower with them.**

Surface Water Site Assessment

Site Information

Site ID:	PRS ID:	Nearest Struct:
74	00-011(d)	

Setting

Topography

On Mesa Top: No **On Bench in Canyon:** No **On Canyon Floor, Not Channel:** Yes **In Channel in Canyon Floor:** No

Topography Explanation:

The PRS is located on the east side of San Ildelfonso Rd. at the head of Barranca Canyon, approx. 100 ft. w est of the main channel.

Ground/Canopy Cover

Sparse (<25%): No **Medium (25-75%):** No **Thick (>75%):** Yes

Ground/Canopy Cover Explanation:

Ground coverage is at approx. 85-90% consisting of native grasses and forbs.

Slope at Area Impacted

Flat (<10%): No **Gradual (10-30%):** Yes **Steep (>30%):** No

Slope Explanation:

PRS slopes to the east at 10-15%.

Run-off

Is There Visible Evidence of Run-off Discharging from Site:

Yes

Surface Water Site Assessment

PRS ID: 00-011(d)

Run-off (Continued)

Is Run-off Channelized:	Channel Type:
Yes	Natural

Channelization Explanation:
There is evidence of bank erosion in the main channel.

Where Does Evidence of Runoff Terminate:
Drainage/Canyon

Terminus Explanation
Run-off terminates in Rendija Canyon.

Has Run-off Caused Visible Erosion:	Erosion Type:
Yes	Gully

Erosion Explanation:
Some gully erosion is present in the channel.

Run-on

Structural Run On. Are Structures Creating Run-on to the Site:
No

Structural Run-on Explanation:
No structures are creating run-on onto site.

Surface Water Site Assessment

PRS ID: 00-011(d)

Run-on (Continued)

Natural Run-on. Is Natural Drainage Creating Run-on to the Site:
Yes

Natural Run-on Explanation:
Side slope from road will direct run-on to the PRS.

Current Operations Run-on. Are Current Operations Creating Run-on to the Site:
No

Current Operations Run-on Explanation:
No current operations impacting run-on to the site.

Assessment Finding

Based on the Above Criteria and the Assessment of this Site, Does Soil Erosion Potential Exist:
Yes

Sign Off

Site Not Found:	Revision of Earlier Assessment:
No	No

Name of Assessment Author:	Assessment Date:
Jacinto Garduno	08/16/2001

Surface Water Site Assessment

PRS ID: 00-011(d)

Additional Information

Trash and Debris Notes

Is there Visible Trash and Debris on the Site:	Is there Visible Trash and Debris In a Watercourse:
No	No

Trash and Debris Explanation:

General Notes

Assessment Comments:

Best Management Practice Notes

Are Permanent BMPs in Place:	Permanent BMPs in Place:
No	

Surface Water Site Assessment

PRS ID: 00-011(d)

Erosion Matrix

Erosion/Sediment Transport Potential Scoring Criteria	Max Score Poss	Score Modifers for Transport Potential			Resulting Score
		Low (max * 0.1)	Med (max * 0.5)	High (max * 1.0)	
Setting Group (Max Total 43)					
Topography - On Mesa Top:	1	For these four criteria, use the single highest score from the criteria that received a "Yes" answer.			13.0
Topography - On Bench in Canyon:	4				
Topography - On Canyon Floor, Not in Channel:	13				
Topography - In Channel in Canyon Floor:	17				
Ground/Canopy Cover (Percent):	13	>75%	25-75%	<25%	1.3
Slope at Area Impacted:	13	<10%	10-30%	>30%	6.5
Run-off Group (Max Total 46)					
Visible Evidence of Run-off:	5	"Yes" = 5. "No" = 0 here and for two scores below.			5.0
Where Run-off Terminates:	19	"Other"	"Bench"	"Drainage/Canyon"	19.0
Visible Erosion:		"No" = 0. If "Yes", score by Erosion Type.			22.0
Erosion Type:	22	"Sheet"	"Rill"	"Gully"	
Run-on Group (Max Total 11)					
Structural Run-on:	7	"No" = 0. "Yes" = 7.			0.0
Natural Run-on:	7	"No" = 0. "Yes" = 7.			7.0
Current Operations Run-on:	4	"No" = 0. "Yes" = 4.			0.0
Maximum Possible Total Score:	**100**			*** Actual Total Score:**	**73.8**

Revision of Earlier Assessment: No

*** No permanent BMPs are in place. Score could be lower with them.**

Surface Water Site Assessment

Site Information

Site ID:	PRS ID:	Nearest Struct:
75	00-011(e)	

Setting

Topography

On Mesa Top: No **On Bench in Canyon:** No **On Canyon Floor, Not Channel:** No **In Channel in Canyon Floor:** No

Topography Explanation:

Mortar impact area north of Rendija Sportsman Club. Cliffs (300' to 400' high) +/- .5 mile north.

Ground/Canopy Cover

Sparse (<25%): No **Medium (25-75%):** No **Thick (>75%):** No

Ground/Canopy Cover Explanation:

Slope at Area Impacted

Flat (<10%): No **Gradual (10-30%):** No **Steep (>30%):** No

Slope Explanation:

Run-off

Is There Visible Evidence of Run-off Discharging from Site:

Yes

Surface Water Site Assessment

PRS ID: 00-011(e)

Run-off (Continued)

Is Run-off Channelized:	Channel Type:
No	

Channelization Explanation:

Visible runoff throughout site. No applicable score for the site how ever.

Where Does Evidence of Runoff Terminate:

Terminus Explanation

Has Run-off Caused Visible Erosion:	Erosion Type:
No	

Erosion Explanation:

Run-on

Structural Run On. Are Structures Creating Run-on to the Site:

No

Structural Run-on Explanation:

Surface Water Site Assessment

PRS ID: 00-011(e)

Run-on (Continued)

Natural Run-on. Is Natural Drainage Creating Run-on to the Site:
No
Natural Run-on Explanation:

Current Operations Run-on. Are Current Operations Creating Run-on to the Site:
No
Current Operations Run-on Explanation:

Assessment Finding

Based on the Above Criteria and the Assessment of this Site, Does Soil Erosion Potential Exist:
No

Sign Off

Site Not Found:	Revision of Earlier Assessment:	
No	No	
Name of Assessment Author:		**Assessment Date:**
Steve Veenis		06/25/1999

Surface Water Site Assessment

PRS ID: 00-011(e)

Additional Information

Trash and Debris Notes

Is there Visible Trash and Debris on the Site:	Is there Visible Trash and Debris In a Watercourse:
No	No

Trash and Debris Explanation:

General Notes

Assessment Comments:

Site has dense poderosa canopy w ith gravel and dirt roads cross cutting throughout. Tributary drainages to Rendija trend eastw ard throughout area. PRS boundary show n on map too large to perform this type of an assessment on.

Best Management Practice Notes

Are Permanent BMPs in Place:	Permanent BMPs in Place:
No	

Surface Water Site Assessment

PRS ID: 00-011(e)

Erosion Matrix

Erosion/Sediment Transport Potential Scoring Criteria	Max Score Poss	Score Modifers for Transport Potential			Resulting Score
		Low (max * 0.1)	Med (max * 0.5)	High (max * 1.0)	
Setting Group (Max Total 43)					
Topography - On Mesa Top:	1	For these four criteria, use the single highest score from the criteria that received a "Yes" answ er.			1.0
Topography - On Bench in Canyon:	4				
Topography - On Canyon Floor, Not in Channel:	13				
Topography - In Channel in Canyon Floor:	17				
Ground/Canopy Cover (Percent):	13	>75%	25-75%	<25%	1.3
Slope at Area Impacted:	13	<10%	10-30%	>30%	1.3
Run-off Group (Max Total 46)					
Visible Evidence of Run-off:	5	"Yes" = 5. "No" = 0 here and for tw o scores below .			5.0
Where Run-off Terminates:	19	"Other"	"Bench"	"Drainage/Canyon"	1.9
Visible Erosion:		"No" = 0. If "Yes", score by Erosion Type.			0.0
Erosion Type:	22	"Sheet"	"Rill"	"Gully"	
Run-on Group (Max Total 11)					
Structural Run-on:	7	"No" = 0. "Yes" = 7.			0.0
Natural Run-on:	7	"No" = 0. "Yes" = 7.			0.0
Current Operations Run-on:	4	"No" = 0. "Yes" = 4.			0.0
Maximum Possible Total Score:	**100**			*** Actual Total Score:**	**10.5**

Revision of Earlier Assessment: No

*** No permanent BMPs are in place. Score could be lower with them.**

Surface Water Site Assessment

Site Information

Site ID:	PRS ID:	Nearest Struct:
1813	C-00-020	

Setting

Topography

On Mesa Top: No **On Bench in Canyon:** Yes **On Canyon Floor, Not Channel:** No **In Channel in Canyon Floor:** No

Topography Explanation:

This site is located in a northern tributary of Rendija Canyon w est of Guaje Pines Cemetary. During a preliminary site survey in 1991, no ordnance w as found at this site. RFI report stated that the site w as not a former ordnance impact area, and recommended NFA for the site and approval for furure residential use. RFI Phase Report for Operable Unit 1071, SWMU Aggregate O-D, Ordnance Impact Areas. LA-UR Number: No LA-UR. RFI Work Plan for Operable Unit 1071. LA-UR Number: 92-0810.

Ground/Canopy Cover

Sparse (<25%): Yes **Medium (25-75%):** No **Thick (>75%):** No

Ground/Canopy Cover Explanation:

Vegetation throughout site consists mainly of Ponderosa Pines. Ground coverage is sparse; mostly accumulated sediment. Scrub oaks, a few scattered grasses, and forestlitter exist along the perimiter of this site.

Slope at Area Impacted

Flat (<10%): No **Gradual (10-30%):** Yes **Steep (>30%):** No

Slope Explanation:

Slope at impact area is at approx 15% and increases gradually to approx 25 percent to the east/norht east.

Run-off

Is There Visible Evidence of Run-off Discharging from Site:

Yes

Surface Water Site Assessment

PRS ID: C-00-020

Run-off (Continued)

Is Run-off Channelized:	Channel Type:
Yes	Natural

Channelization Explanation:
Channelization appears to be natural and exists w ithin tributary of Rendija Canyon.

Where Does Evidence of Runoff Terminate:
Other

Terminus Explanation
Terminus of run-off exists w ithin tributary of Rendija Canyon.

Has Run-off Caused Visible Erosion:	Erosion Type:
Yes	Rill

Erosion Explanation:
Area of concern exists w ithin a gully type channel or river bed. At time of SWA run-off consisted of rill type erosion.

Run-on

Structural Run On. Are Structures Creating Run-on to the Site:
No

Structural Run-on Explanation:
Potential for structural run-on doesn't exist.

Surface Water Site Assessment

PRS ID: C-00-020

Run-on (Continued)

Natural Run-on. Is Natural Drainage Creating Run-on to the Site:
Yes

Natural Run-on Explanation:
Natural run-on from N and S facing slopes as w ell as natural slope of river bed to the ease w ill create run on to site.

Current Operations Run-on. Are Current Operations Creating Run-on to the Site:
No

Current Operations Run-on Explanation:
Potential for operational run-on doesn't exist.

Assessment Finding

Based on the Above Criteria and the Assessment of this Site, Does Soil Erosion Potential Exist:
Yes

Sign Off

Site Not Found:	Revision of Earlier Assessment:
No	No

Name of Assessment Author:	Assessment Date:
Heather Voss	04/05/2005

Surface Water Site Assessment

PRS ID: C-00-020

Additional Information

Trash and Debris Notes

Is there Visible Trash and Debris on the Site:	Is there Visible Trash and Debris In a Watercourse:
No	No

Trash and Debris Explanation:
Trash/debris doesn't exist on site or w ithin w ater coarse.

General Notes

Assessment Comments:
No visible BMPs exist.

Best Management Practice Notes

Are Permanent BMPs in Place:	Permanent BMPs in Place:
No	

Surface Water Site Assessment

PRS ID: C-00-020

Erosion Matrix

Erosion/Sediment Transport Potential Scoring Criteria	Max Score Poss	Score Modifers for Transport Potential			Resulting Score
		Low (max * 0.1)	Med (max * 0.5)	High (max * 1.0)	
Setting Group (Max Total 43)					
Topography - On Mesa Top:	1	For these four criteria, use the single highest score from the criteria that received a "Yes" answer.			4.0
Topography - On Bench in Canyon:	4				
Topography - On Canyon Floor, Not in Channel:	13				
Topography - In Channel in Canyon Floor:	17				
Ground/Canopy Cover (Percent):	13	>75%	25-75%	<25%	13.0
Slope at Area Impacted:	13	<10%	10-30%	>30%	6.5
Run-off Group (Max Total 46)					
Visible Evidence of Run-off:	5	"Yes" = 5. "No" = 0 here and for two scores below.			5.0
Where Run-off Terminates:	19	"Other"	"Bench"	"Drainage/Canyon"	1.9
Visible Erosion:		"No" = 0. If "Yes", score by Erosion Type.			11.0
Erosion Type:	22	"Sheet"	"Rill"	"Gully"	
Run-on Group (Max Total 11)					
Structural Run-on:	7	"No" = 0. "Yes" = 7.			0.0
Natural Run-on:	7	"No" = 0. "Yes" = 7.			7.0
Current Operations Run-on:	4	"No" = 0. "Yes" = 4.			0.0
Maximum Possible Total Score:	**100**			*** Actual Total Score:**	**48.4**

Revision of Earlier Assessment: No

*** No permanent BMPs are in place. Score could be lower with them.**

Surface Water Site Assessment

Site Information

Site ID:	PRS ID:	Nearest Struct:
1821	C-00-041	

Setting

Topography

On Mesa Top: Yes **On Bench in Canyon:** No **On Canyon Floor, Not Channel:** No **In Channel in Canyon Floor:** No

Topography Explanation:
The PRS is located w ithin a channel on the mesa top that extends in to Rendija canyon.

Ground/Canopy Cover

Sparse (<25%): No **Medium (25-75%):** No **Thick (>75%):** Yes

Ground/Canopy Cover Explanation:
Site is composed of mature grass w ith ponderosa pines.

Slope at Area Impacted

Flat (<10%): No **Gradual (10-30%):** Yes **Steep (>30%):** No

Slope Explanation:
Slope at impact area is gradual and terminates into Rendija canyon.

Run-off

Is There Visible Evidence of Run-off Discharging from Site:
Yes

Surface Water Site Assessment

PRS ID: C-00-041

Run-off (Continued)

Is Run-off Channelized:	**Channel Type:**
Yes	Man-Made

Channelization Explanation:

Site is impacted by culverts located above site and on the southe east facing slope.

Where Does Evidence of Runoff Terminate:

Drainage/Canyon

Terminus Explanation

Terminus of run-off is w ithin a drainage of Rendija canyon.

Has Run-off Caused Visible Erosion:	**Erosion Type:**
No	

Erosion Explanation:

Run-on

Structural Run On. Are Structures Creating Run-on to the Site:

Yes

Structural Run-on Explanation:

Site is impacted by storm drainages from surrounding residential areas, parking/road w ays.

Surface Water Site Assessment

PRS ID: C-00-041

Run-on (Continued)

Natural Run-on. Is Natural Drainage Creating Run-on to the Site:
No

Natural Run-on Explanation:
Potential for natural run-on doesn't exist.

Current Operations Run-on. Are Current Operations Creating Run-on to the Site:
No

Current Operations Run-on Explanation:
Potential for operational run-on doesn't exist.

Assessment Finding

Based on the Above Criteria and the Assessment of this Site, Does Soil Erosion Potential Exist:
Yes

Sign Off

Site Not Found:	Revision of Earlier Assessment:
No	Yes

Name of Assessment Author:	Assessment Date:
Brad K. Schilling	12/14/2005

Surface Water Site Assessment

PRS ID: C-00-041

Additional Information

Trash and Debris Notes

Is there Visible Trash and Debris on the Site:	**Is there Visible Trash and Debris In a Watercourse:**
No	No

Trash and Debris Explanation:
Trash/debris doesn't exist on site.

General Notes

Assessment Comments:
Riprap and gabions below the culvert outlets are helping to reduce the impact of structural run-on from the paved areas above. The rock check dams w ithin the channel are trapping sediment and dissipating the velosity of flow .

Best Management Practice Notes

Are Permanent BMPs in Place:	**Permanent BMPs in Place:**
Yes	Check Dam (Rock) Riprap (General) Gabions (Channel Stabilization) Check Dam (Rock)

Surface Water Site Assessment

PRS ID: C-00-041

Erosion Matrix

Erosion/Sediment Transport Potential Scoring Criteria	Max Score Poss	Score Modifers for Transport Potential			Resulting Score
		Low (max * 0.1)	Med (max * 0.5)	High (max * 1.0)	
Setting Group (Max Total 43)					
Topography - On Mesa Top:	1	For these four criteria, use the single highest score from the criteria that received a "Yes" answ er.			1.0
Topography - On Bench in Canyon:	4				
Topography - On Canyon Floor, Not in Channel:	13				
Topography - In Channel in Canyon Floor:	17				
Ground/Canopy Cover (Percent):	13	>75%	25-75%	<25%	1.3
Slope at Area Impacted:	13	<10%	10-30%	>30%	6.5
Run-off Group (Max Total 46)					
Visible Evidence of Run-off:	5	"Yes" = 5. "No" = 0 here and for tw o scores below .			5.0
Where Run-off Terminates:	19	"Other"	"Bench"	"Drainage/Canyon"	19.0
Visible Erosion:		"No" = 0. If "Yes", score by Erosion Type.			
Erosion Type:	22	"Sheet"	"Rill"	"Gully"	
Run-on Group (Max Total 11)					
Structural Run-on:	7	"No" = 0. "Yes" = 7.			7.0
Natural Run-on:	7	"No" = 0. "Yes" = 7.			0.0
Current Operations Run-on:	4	"No" = 0. "Yes" = 4.			0.0
Maximum Possible Total Score:	**100**	*** Actual Total Score:**			**39.8**

Revision of Earlier Assessment: Yes

*** Permanent BMPs are in place. Score could be higher without them.**

Appendix H

Management of Investigation-Derived Waste

H-1.0 INTRODUCTION

This appendix describes how the waste streams generated during Guaje/Barrancas/Rendija Canyons investigation were managed. Waste was characterized and managed in accordance with Standard Operating Procedures (SOP) 1.06, "Management of Environmental Restoration Project Waste," and SOP-1.10, "Waste Characterization."

The Waste Characterization Strategy Form (WCSF) was used to address the characterization approaches, on-site management, and final disposition for all waste streams generated during these activities. This appendix includes a description of the waste streams, WCSF, Waste Profile Forms (WPF), and Chemical Waste Disposal Request (CWDR) forms. The waste streams associated with the investigation are identified in Table H-1, along with their current disposition, and are summarized below. Available waste disposal documentation is presented in Attachment H-1.

H-2.0 PERSONAL PROTECTIVE EQUIPMENT, SAMPLING SUPPLIES, AND DECONTAMINATION WASTE

This waste stream included spent personal protective equipment ([PPE] gloves); contaminated sampling supplies; and dry decontamination waste (including paper towels, plastic jars, and glass jars). It was characterized as nonhazardous, industrial waste based on the analytical results of the investigation activities. Before shipment, all waste was stored in 55-gal. drums, staged at an industrial waste staging area at Technical Area (TA) 03 within the locked field trailer. All waste from this waste stream was shipped (WPF # 4016, CRWSSDR # L53107) to TA-54 and is currently awaiting shipment to the Waste Management industrial landfill in Rio Rancho, NM.

H-3.0 SPENT ACETONE WITH SOIL FROM HIGH EXPLOSIVE TEST KITS

This waste stream comprised spent solvent mixed with soil contained within the vials and pipettes used while conducting the high explosive (HE) test kits. Less than 10 gal. of spent acetone with soil was generated. It was characterized by a Material Safety Data Sheet (MSDS) and process knowledge and has been characterized to be Resource Conservation and Recovery Act (RCRA) hazardous. The waste is stored in a locked satellite accumulation area (SAA) and will to be disposed of at the Clean Harbor facility in Aragonite, UT.

H-4.0 HE TEST KIT PROCESS WASTE

HE test kit process waste consisted of acetone, soil, and spent sodium azide and was contained in plastic bottles and glass and plastic pipettes. Approximately 60 gal. of HE test kit process waste was generated. This waste stream was characterized as nonhazardous by an MSDS and process knowledge supplied by the kit manufacturer. The HE test kit process waste was contained in plastic bottles and glass pipettes and placed in a larger drum. The waste was stored in a locked SAA and will be disposed of at Waste Management industrial landfill Rio Rancho, NM.

H-5.0 RESIDUAL SODIUM AZIDE BUFFER SOLUTION FROM HE TEST KITS

Approximately 1 mL of residual sodium azide buffer solution may be left over per sample analysis and was transferred into a 1 L polyethylene bottle. The residual sodium azide buffer solution is listed as an acutely hazardous waste, U.S. Environmental Protection Agency (EPA) Hazardous Waste Number P105. The material (1 L) was shipped to TA-54 (WPF# 39820, CRWSSDR # B32607) and then to the Clean Harbor facility in Aragonite, UT.

H-6.0 EMPTY SODIUM AZIDE CONTAINERS FROM HE TEST KITS

Bottles containing residual sodium azide buffer solution were triple rinsed and completely emptied of contents as part of the process and met the definition of RCRA-empty, per 40 CFR 261.7. Rinse material was containerized and disposed of under the previous waste stream (residual sodium azide buffer solution from HE test kits). The empty containers were managed as empty product containers and disposed of as nonhazardous solid waste and will be disposed of at the Waste Management industrial landfill in Rio Rancho, NM.

H-7.0 RETURNED SAMPLES

This waste stream included returned soil and tuff samples. It was characterized based on direct sampling of the returned material and was determined to be nonhazardous waste. The material is stored in 55-gal. drums, staged at an industrial waste staging area at TA-03 within the locked field trailer, and is expected to be disposed of at the Waste Management industrial landfill in Rio Rancho, NM.

An amendment to the WCSF (Amendment 1) was submitted to cover a small quantity (less than 1 qt) of returned sample material that was characterized to be hazardous waste. It is stored in a SAA at TA-03 and will be disposed of at the Clean Harbor facility in Aragonite, UT.

H-8.0 METAL SHRAPNEL DEBRIS

This waste stream included varying sizes of metal shrapnel debris removed from the site. It was characterized based on process knowledge and was categorized as hazardous waste. The material (approx. 1 gal.) was shipped to TA-54 (WPF# 40124, CRDSSDR # A52107) and is currently awaiting shipment to the Clean Harbor facility in Aragonite, UT, for final disposal.

H-9.0 ASPHALT AND SOIL CONTAINING ASPHALT

This waste stream included asphalt and soil contaminated with asphalt. It was characterized by direct sampling of the soil as industrial waste. The material was stored in a roll-off bin at the Guaje/Barrancas/Rendija Canyons Aggregate Area sites before disposal. This material was shipped to the Waste Management industrial landfill, Rio Rancho, NM, for final disposal.

Table H-1
Summary of IDW Generation and Management

Waste Stream	Waste Type	Volume	Characterization Method	On-Site Management	Disposition
PPE, sampling supplies, and decontamination waste	Nonhazardous	58 gal.	Acceptable Knowledge (2006–2007 analytical results)	30-gal. drums	Shipped to TA-54 (06/28/07) and awaiting shipment to Waste Management industrial landfill, Rio Rancho, NM
Spent acetone with soil from HE test kits	Hazardous	10 gal.	Acceptable knowledge (MSDS)	30-gal. drum	Intended path: Clean Harbor, Aragonite, UT
HE test kit process waste	Nonhazardous	60 gal.	Acceptable process knowledge (test kit manufacturer)	30-gal. drums	Intended path: Waste Management industrial landfill, Rio Rancho, NM
Residual sodium azide buffer solution from HE test kits	Hazardous	<1 qt	Acceptable knowledge (MSDS)	1-L poly bottle	Shipped to TA-54 (04/05/07) and then shipped to Clean Harbor, Aragonite, UT, on 07/25/07
Empty sodium azide containers from HE test kits	Nonhazardous	2 gal.	Acceptable knowledge	30-gal. drum	Intended path: Waste Management industrial landfill, Rio Rancho, NM
Returned samples	Nonhazardous	30 gal.	Acceptable knowledge (2006-2007 analytical results)	30-gal. drum	Intended path: Waste Management industrial landfill, Rio Rancho, NM
Returned samples	Hazardous	1 qt	Acceptable knowledge (2006-2007 analytical results)	5-gal. drum	Intended path: Clean Harbor, Aragonite, UT
Metal shrapnel debris	Hazardous	1 gal.	Acceptable knowledge	5-gal. drum	Shipped to TA-54 (06/28/07) and awaiting shipment to Clean Harbor, Aragonite, UT
Asphalt and soil containing asphalt	Industrial	10 yd^3	Acceptable knowledge (2007 analytical results)	12 yd^3 roll-off	Shipped to Waste Management industrial landfill, Rio Rancho, NM (06/14/07)

Attachment H-1

Waste Documentation

Waste Characterization Strategy Form

(For instructions regarding this form, see section 8 of SOP-01.10.)

Project Title	Implementation of the Investigation Work Plan for Guaje/Barrancas/Rendija Canyons Aggregate Area at Technical Area 00
Solid Waste Management Unit or Area of Concern #	SWMUs 00-011(a), 00-011(c), 00-011(d), 00-011(e), and AOCs C-00-020 and C-00-041
Activity Type	Site Characterization Sampling
Field Team Leader	Tracy L. McFarland
Field Waste Management Coordinator	Joseph T. Sena
Completed by	Teresa K. Buck
Date	September 20, 2006

Description of Activity:

Description of activities:

Guaje/Barrancas/Rendija Canyons Investigation Activities

The field investigation of Guaje/Barrancas/Rendija Canyons will be comprised of the following activities:

- A munitions and explosives of concern (MEC) survey will be conducted at SWMUs 00-011(a), 00-011(c), 00-011(d), and 00-011(e) and AOC C-00-020.
- Following the MEC survey, digital geophysical mapping surveys will be conducted at SWMUs 00-011(a), 00-011(d), and 00-011(e).
- Surface and shallow subsurface samples will be collected at SWMUs 00-011(a), 00-011(c), 00-011(d), and 00-011(e) and AOCs C-00-020 and C-00-041.
- The soil and tuff samples will be screened for high explosives using a high explosives spot test kit.
- Asphalt may be removed from AOC C-00-041.

Site History and Description:

Site history and description:

SWMU 00-011(a) is a 28.5-acre former mortar impact area that was used in the 1940s and is located on U.S. Forest Service (USFS) land.

SWMU 00-011(c) is a 10-acre possible mortar impact area that is located on public land managed by the USFS in a tributary of Rendija Canyon north of the Sportsman Club.

SWMU 00-011(d) is a 5-acre bazooka firing area on Los Alamos County land. The bazooka firing range was used in the mid-1940s for 2.36-in. bazooka rounds.

SWMU 00-011(e) is a 14-acre former ammunition impact area located on USFS land in a tributary of Rendija Canyon. It was used in the mid-1940s.

AOC C-00-020 is a 30-acre possible mortar impact area on USFS land in Rendija Canyon.

AOC C-00-041 is the site of a former asphalt batch plant on USFS land. The asphalt plant operated from the late 1940s to 1958.

Previous Investigation Activities

In 1993, RFI activities at SWMUs 00-011(a), 00-011(c), 00-011(d), and 00-011(e) included identifying and removing unexploded ordnance and munitions debris, performing a geophysical survey to complete a quality assurance/quality control check. Geomorphic mapping was conducted and included all drainage channels that drained the area enclosed within the SWMU boundaries. Samples were collected and analyzed for high explosives and inorganic chemicals. The high explosives were analyzed at an off-site fixed laboratory, but were not detected in any sample.

In 1991 an ordnance team from Fort Bliss inspected AOC C-00-020 and determined that the area was not a former impact area. In 1993, an ordnance sweep was conducted followed by a geophysical sweep.

In 1995 a Voluntary Corrective Action was conducted at AOC C-00-041. Asphalt was removed at a depth of 3-4 ft and taken to the Los Alamos County landfill for disposal. In 1999 a small amount of visible tar/asphalt was removed from the drainage channel.

Characterization Strategy:

Waste #1: Investigation-Derived Waste (IDW)

The IDW includes spent PPE (gloves), contaminated sampling supplies and dry decontamination waste (including paper towels, plastic jars, and glass jars). It will be characterized based on the analytical results of the RFI activities, and is anticipated to be Industrial Waste. Characterization samples (soil, sediment, and tuff) will be analyzed for high explosives, total analyte list metals, perchlorate, volatile organic compounds, semivolatile organic compounds, and total petroleum hydrocarbons, per the approved Investigation Work Plan (LANL 2005, 89657). All IDW will be stored in 55-gallon drums, staged at an industrial waste staging area at TA-00 within the locked field trailer, and disposed of at an authorized offsite disposal facility.

Waste #2: Spent acetone with soil from high explosive test kits

This waste stream comprises spent solvent mixed with soil contained within the vials and pipettes used while conducting the test kits. It will be characterized by a Material Safety Data Sheet (MSDS) and is anticipated to be RCRA Hazardous Waste. The waste will be stored in a locked satellite accumulation area (SAA), and disposed of at an authorized offsite TSDF. Less than 8 liters of spent acetone with soil will be generated.

Waste #3: HE test kit process waste

HE test kit process waste consisting of acetone, soil and spent sodium azide and is contained in plastic bottles and glass and plastic pipettes. This waste stream will be characterized by an MSDS and process knowledge. It is anticipated to be industrial waste. The HE test kit process waste will be contained in plastic bottles and glass pipettes and placed in a larger drum. The waste will be stored in a locked SAA, and disposed of at an authorized offsite TSDF. Less than 55 gallons of HE test kit process waste will be generated.

Waste #4: Residual sodium azide buffer solution from high explosives test kits

Approximately one milliliter of residual sodium azide buffer solution may be left over per sample analysis and will be transferred into a one liter polyethylene bottle. The residual sodium azide buffer solution is listed as an acutely hazardous waste, EPA Hazardous Waste Number P105, and will be segregated and stored in a sealed container within a locked SAA and disposed of at an authorized offsite TSDF. Less than one quart of residual sodium azide buffer solution will be generated.

Waste #5: Empty sodium azide containers from high explosives test kits

Bottles containing residual sodium azide buffer solution will be rinsed 3 times and completely emptied of their contents as part of the process and will meet the definition of RCRA-empty, per 40 CFR 261.7 prior to being declared as waste. Rinse material will be containerized and disposed of under waste stream #4. The empty containers will be managed as empty product containers and disposed of as nonhazardous solid waste. Less than 55 gallons of empty sodium azide containers will be generated.

Waste #6: Returned Samples

This waste stream comprises returned soil and tuff samples. It will be characterized based on direct sampling of the returned material, and is anticipated to be Industrial Waste (IW). The material will be stored in 55-gallon drums, staged at an industrial waste staging area at TA-00 within the locked field trailer, and disposed of at an authorized offsite disposal facility.

Waste #7: Metal Shrapnel Debris

This waste stream comprises varying sizes of metal. It will be characterized based on process knowledge and is anticipated to be hazardous waste. The material will be stored in a sealed roll-off within a locked fence at the Guaje/Barrancas/Rendija Canyons aggregate area sites, and disposed of at an authorized offsite disposal facility.

Waste #8: Asphalt and soil containing asphalt

This waste stream comprises soil contaminated with asphalt and asphalt. It will be characterized based on direct sampling of the soil, and is anticipated to be Industrial Waste. The material will be stored in a roll-off bin at the Guaje/Barrancas/Rendija Canyons aggregate area sites, and disposed of at an authorized offsite disposal facility.

Waste Description	Waste # 1 IDW	Waste # 2 Spent Acetone	Waste # 3 HE Test Kit Process Waste	Waste # 4 Residual Sodium Azide	Waste # 5 RCRA Empty Sodium Azide Containers	Waste # 6 Soil/Tuff	Waste #7 Metal Shrapnel Debris	Waste #8 Asphalt and soil contaminated with asphalt
TPH-DRO (EPA 8015-M)								
Toxicity characteristic leaching procedure (TCLP) Metals (EPA 1311/6010-B)								
TCLP Organics (EPA 1311/8260-B & 1311/8270-C)								
TCLP Pest. & Herb. (EPA 1311/8081-A/1311/8151-A)								
Gross Alpha (alpha counting) (EPA 900)								
Gross Beta (beta counting) (EPA 900)								
Tritium (liquid scintillation) (EPA 906.0)								
Gamma spectroscopy (EPA 901.1)								
Isotopic plutonium (chem. separation/alpha spec.) (HASL-300)								
Isotopic uranium (chem. separation/alpha spec.) (HASL-300)								
Total uranium (6020 inductively coupled plasma mass spectroscopy [ICPMS])								
Strontium-90 (EPA 905)								
Americium-241 (chem. separation/alpha spec.) (HASL-300)								
Waste Profile Form #								

Waste Characterization Strategy Form (continued)

CHARACTERIZATION TABLE

Waste Description	Waste # 1 IDW	Waste # 2 Spent Acetone	Waste # 3 HE Test Kit Process Waste	Waste # 4 Residual Sodium Azide	Waste # 5 RCRA Empty Sodium Azide Containers	Waste # 6 Soil/Tuff	Waste #7 Metal Shrapnel Debris	Waste #8 Asphalt and soil contaminated with asphalt
Volume	**2 yd³**	**8 Liters**	**<55 Gallons**	**< 1 quart**	**<55 Gallons**	**<55 Gallons**	**20 yds³**	**40 yds³**
Packaging								
Regulatory classification:								
Radioactive								
Solid	X					X		
Hazardous		X	X	X	X		X	
Mixed (hazardous and radioactive)								
Toxic Substances Control Act (TSCA)								
New Mexico Special Waste								
Industrial								X
Characterization Method								
Acceptable knowledge (AK): Existing Data/Documentation		X (MSDS)	X (MSDS)	X (MSDS)	X (MSDS)		X	
AK: Site Characterization	X							
Direct Sampling of Containerized Waste						X		X
Analytical Testing								
Volatile Organic Compounds (EPA 8260-B)						X		X
Semivolatile Organic Compounds (EPA 8270-C)						X		X
Organic Pesticides (EPA 8081-A)								
Organic Herbicides (EPA 8151-A)								
PCBs (EPA 8082)								
Total Metals (EPA 6010-B/7471-A)						X		X
Total Cyanide (EPA 9012-A)								
High Explosives Constituents (EPA 8330/8321-A)						X		
Asbestos								
Total petroleum hydrocarbon (TPH)-GRO (EPA 8015-M)						X		X

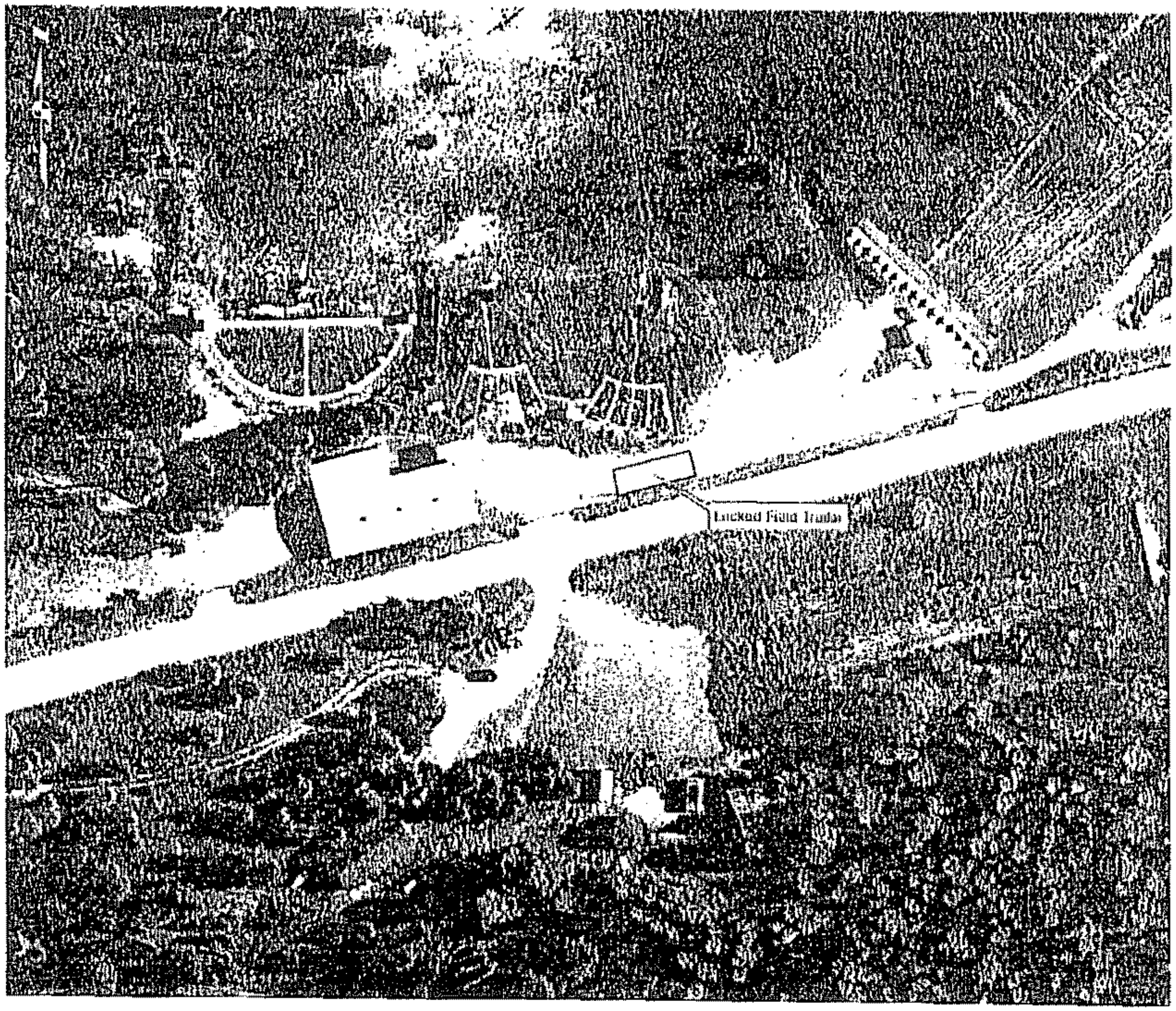
EP2006-0657 – WCSF for the Implementation of the Investigation Work Plan for Guaje/Barrancas/Rendija Canyons Aggregate Area at Technical Area 1

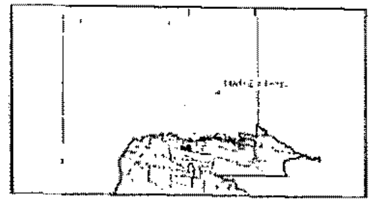
Waste Characterization Strategy Form (continued)

SIGNATURES	DATE
Project Leader (Print name and then sign below.) Becky Coel-Roback	9/21/06
ERS-ECR Waste Management Coordinator (Print name and then sign below.) LEONARD J. TRUJILLO	9/27/06
SWRC Representative (Print name and then sign below.) John M. Tymkowych	9/26/06
NWIS-SWO Representative (Print name and then sign below.)	9/27/06

SOP-01.10, R2	**Los Alamos National Laboratory** **ENV-ECR**

GUAJE/BARRANCAS/RENDIJA LOCATION OF PROPOSED LOCKED FIELD TRAILER





0 100 200

Feet

1:1,390

State Plane Coordinate System
New Mexico Central Zone US Feet NAD 83

SOURCE STATEMENTS:

Location of Original WESTERN REGION LAB

I. Generator and Facility Information

Tracking #: 4992615 Priority : NM
Profile # : 100492NM Date Received: 05/04/07
Effective Date: 06/04/07
Generator : LOS ALAMOS NATIONAL LABORATORY
Waste Category Code:
Description : ASPHALT

Decision Site Waste Mgmt of New Mexi
Proposed Management Facility Waste Mgmt of New Mexi

*** This Decision is APPROVED

II. Decision to Deny Approval for Management of Waste

Reason for Denying Approval

Final Approval ______ Name (print) ______ Date ______

III. Decision to Approve
Approved

a) Approved Management Methods
DIRECT LANDFILL

b) Precaution Conditions or Limitations on Approval

(1) Site Conditions

(2) Contracting Conditions

(3) Site and Contracting Conditions

..
NO RCRA HAZARDOUS WASTE MAY BE SHIPPED ON THIS PROFILE.
..
NO FREE LIQUIDS.
..
THE WASTE PROFILE SHEET NUMBER MUST BE PRINTED ON THE SHIPPING PAPERS.
..
DRUMS MUST BE OPEN TOP DRUMS WITH A LID SECURED BY AN EASY OPENING LOCKING DEVICE.
..
THE PROFILE SHEET NUMBER MUST BE PRINTED ON THE TOP OF EACH DRUM/CONTAINER SHIPPED.
..
WMNM RIO RANCHO FACILITY RESERVES THE RIGHT TO REJECT ANY SHIPMENT OF WASTE THAT FAILS TO CONFORM WITH PROFILE SHEET INFORMATION/DOCUMENTATION.
..
CONTACT WMNM RIO RANCHO FACILITY TO SCHEDULE WASTE FOR DISPOSAL AT LEAST 24 HOURS PRIOR TO SHIPPING.
(505) 892-2055 ..
.
THE GENERATOR MUST TEST THE WASTE ACCORDING TO SW-846 TEST METHODS TO ENSURE THE WASTE IS "NON-HAZARDOUS" ACCORDING TO RCRA 40 CFR PART 261.
..

Time 17:55:48

Location of Original WESTERN REGION LAB

Tracking #: 4992615 Priority : NM
Profile # : 100492NM Date Received: 05/04/07
Effective Date: 06/04/07
Generator : LOS ALAMOS NATIONAL LABORATORY
Waste Category Code:
Description : ASPHALT

I. Generator and Facility Information

Decision Site Waste Mgmt of New Mexi
Proposed Management Facility Waste Mgmt of New Mexi

*** This Decision is APPROVED

III. Continuation.....

c) Analytical Requirements for Each Load
Per Waste Analysis Plan

d) Decision Expiration Date 07/04/07

IV. Final Decision

State any Additional Precautions, Conditions, or Limitations

Final Approval ______________________ Name (print) CECILIA CANOZA Date 06/04/07

Waste Management, Inc.

Date Printed 06/04/07

GENERATOR'S WASTE PROFILE SHEET

Profile # WNM 100492NM

(_) Check here if this is a Recertification LOCATION OF ORIGINAL Industrial Waste Division

GENERAL INFORMATION

1. Generator Name: LOS ALAMOS NATIONAL LABORATORY Generator USEPA ID: N/A

2. Generator Address: TA-00 Billing Address: (_) Same SOUTHWEST ABATEMENT

4200 BROADWAY SE

LOS ALAMOS NM 87545

3. Technical Contact/Phone: CLIFFORD BARNEY 505/873-2967 ALBUQUERQUE NM 87100

4. Alternate Contact/Phone: Billing Contact/Phone:

PROPERTIES AND COMPOSITION

5. Process Generating Waste: ASPHALT REMOVED FROM OLD BATCH PLANT WHICH HAS NOT BEEN IN USE SINCE 1951 (ATTACHED PROCESS DESCR

6. Waste Name: ASPHALT

7A. Is this a USEPA hazardous waste (40 CFR Part 261)? Yes (_) No (_)

B. Identify ALL USEPA listed and characteristic waste code numbers (D,F,K,P,U):

State Waste Codes:

8. Physical State @ 70F: A. Solid(X) Liquid(_) Both(_) Gas(_) B. Single Layer (X) Multilayer (_) C. Free liq. range 0 to 0%

9A. pH: Range 0.0 or Not applicable (X) B. Strong Odor (_);describe

10. Liquid Flash Point: < 73F (_) 73-99F (_) 100-139F (_) 140-199F (_) >= 200F (_) N.A. (X) Closed Cup (X) Open Cup (_)

11. CHEMICAL COMPOSITION: List ALL constituents (incl. halogenated organics) present in any concentration and forward analysis

Constituents	Range	Unit Description
ASPHALT	to 100	%
COMMENTS	to	
FROM FOUR PILES OF ASPHALT, EACH ABOUT 3' IN DIAMETER, FEW INCHES	to	
HIGH, WHERE THE FORMER ASPHALT BATCH PLANT WAS LOCATED.	to	
SEE ATTACHED ANALYTICAL (SAMPLED 05/18/07):	to	
VOCS-TCLP = ND (<0.033 MG/L)	to	See attach2

TOTAL COMPOSITION (MUST EQUAL OR EXCEED 100%): 100.000000

12. OTHER; PCBs if yes, concentration ppm, PCBs regulated by 40 CFR 761 (_). Pyrophoric (_) Explosive (_) Radioactive (_) Benzene if yes, concentration ppm, NESHAP (_) Shock Sensitive (_) Oxidizer (_) Carcinogen (_) Infectious (_) Other

13. If waste subject to the land ban & meets treatment standards, check here: _ & supply analytical results where applicable.

SHIPPING INFORMATION

14. PACKAGING: Bulk Solid (X) Bulk Liquid (_) Drum (_) Type/Size: YARDS Other

15. ANTICIPATED ANNUAL VOLUME: 12 Units: YARDS Shipping Frequency: ONE TIME

SAMPLING INFORMATION Sample Tracking Number: 4992619

16a. Sample source (drum, lagoon, pond, tank, vat, etc.):

Date Sampled: Sampler's Name/Company:

16b. Generator's Agent Supervising Sampling: 17. (X) No sample required (See instructions.)

GENERATOR'S CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize WMI to obtain a sample from any waste shipment for purposes of recertification.

Signature on original profile 100492NM	CLIFFORD BARNEY TRANSPORATION COORDINATOR	6/04/07
Signature	Name and Title	Date

Profile #
WNM 100492NM

ATTACHMENT 2

CHEMICAL COMPOSITION: Additional constituents NOT included on page 1 of the Waste Profile

Constituents	Range	Unit Description
SVOCS-TCLP= ND (<0.03 MG/L)	to	
PCBS - ND (<11 UG/KG)	to	
METALS TCLP= ND (<0.042) - ARSENIC; CHROMIUM; LEAD; SELENIUM	to	
SILVER; MERCURY (<0.002 MG/L).	to	
BARIUM	to 0.011	MG/L TC
CADMIUM	to 0.0043	MG/L TC

WASTE PROFILE FORM

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: SOLID WASTE OPERATIONS GROUP at MS J595. For assistance with completing this form, call SOLID WASTE OPERATIONS GROUP at 5-4000.	Reference Number 40125 (For SOLID WASTE OPERATIONS GROUP use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
146032	Becky Coel-Roback	135015	Mike Le Scouarnec

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room	WMC Telephone
665-5011	M992	ERSS-CAP	00	NA	NA	667-7112

Waste Accumulation (Check only one.)

- ☐ Satellite Accumulation Area Site no: ______
- ☐ Less-than-90-days Storage Area Site no: ______
- ☐ TSDF Site no: ______
- ☐ Universal Waste Storage Area Site no: ______
- ☐ Used Oil for Recycle Site no: ______
- ☐ PCBs Storage Area Site no: ______
- ☐ NM Special Waste Site no: ______
- ☐ Rad Staging Area Site no: ______
- ☐ Rad Storage Area Site no: ______
- ☒ None of the Above

ER Use Only ☐ ER Site SWMU/AOC #: 00-011(a), 00-B

Method of Characterization (Check as many as apply.)

- ☐ Chemical/Physical Analysis ☐ Attached Sample #: ______
- ☐ Radiological Analysis ☐ Attached Sample #: ______
- ☐ PCB Analysis ☐ Attached Sample #: ______
- ☒ Acceptable Knowledge Documentation ☒ Attached Documentation #: See Attach
- ☐ MSDS ☐ Attached

Section 1 – Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes (Provide comments)	☒ No	
Can any of the materials in the waste stream be recycled or reused?	☐ Yes (Provide comments)	☒ No	
Has waste minimization been incorporated into procedures or other process controls?	☒ Yes	☐ No (Provide comments)	
Can this waste be generated outside a RCA?	☐ Yes (Provide comments)	☒ No	☐ N/A

Comments:

Section 2 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ Other (Complete all sections.)

Radiological Information

Was Waste Generated in a RCA? ☐ Yes ☒ No

- ☒ Non-radioactive
- ☐ Radioactive – Low Level
- ☐ Radioactive – Transuranic

Waste Destination (Check only one)
- ☐ SWWS (Complete Attachment 1)
- ☐ RLWTF (Complete Attachment 2)
- ☐ RLWTP (Complete Attachment 3)
- ☐ TA-16/HE (Complete Attachment 4)
- ☐ NTS (Complete Attachment 5)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check all that apply.)
- ☒ Inorganic
- ☐ Organic
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste or residue
- ☐ No-Longer Contained-In
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable

PCB Source Concentration
- ☐ PCB < 50 ppm
- ☐ PCB ≥ 50 - < 500 ppm
- ☐ PCB ≥ 500 ppm
- ☐ Hazardous Waste Contaminated Soil
- ☐ Untreated Hazardous Debris
- ☐ Commercial Solid Waste
- ☒ Other (Describe below)

* See instructions.

Waste Source (Check only one.)

Waste Source A
- ☐ Decon
- ☐ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup – Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Waste Source B
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☒ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping (Non-routine)
- ☐ Spill Cleanup (Non-routine)
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

N/A ML

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☒ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash/Dust
- ☒ ~~Solid~~
- ☐ Sludge
- ☐ Absorbed/solidified liquid
- ☐ Debris

Matrix Type (Check only one.)
- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Estimated Annual Volume (m^3): < 0.5

Section 3 – Process and Waste Descriptions

Process Description:

Waste derived from use of high explosives spot test kits. Test is used as a field screening method to determine whether any high explosives are present in samples of core collected during environmental characterization activities.

Waste Description:

HE test kit process waste consisting of nonhazardous liquid test kit residue contained in plastic bottles, plastic pipettes, plastic filter cup assemblies, and glass vials.

Section 4 – Characteristics

Ignitability (Check only one.) (°F) (°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F) (°C)
☐ < 73 < 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95 ≤ 35
☐ 73 - 99 22.8 - 37.2	☐ 2.1 – 4.0	☐ Water Reactive	☒ > 95 > 35
☐ 100 - 139 37.8 - 59.4	☐ 4.1 – 6.0	☐ Cyanide Bearing	
☐ 140 - 200 60.0 - 93.3	☒ 6.1 – 9.0	☐ Sulfide Bearing	
☐ > 200 > 93.3	☐ 9.1 - 12.4	☐ Pyrophoric	
☐ EPA Ignitable – Non-liquid	☐ ≥ 12.5	☐ Shock Sensitive	
☐ DOT Flammable Gas	☐ Liquid corrosive to steel	☐ Explosive - DOT Div. ______	
☐ DOT Oxidizer	☐ Non-aqueous	☒ Non-reactive	☐ Not applicable
☒ Not ignitable			

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Contaminant present at Minimum – Maximum	Regulatory Limit
Toxicity Characteristic Metals					(10,000 ppm = 1%)	
Arsenic	☒	☐	☐	☒	____ to ____ ppm	5.0 ppm
Barium	☒	☐	☐	☒	____ to ____ ppm	100.0 ppm
Cadmium	☒	☐	☐	☒	____ to ____ ppm	1.0 ppm
Chromium (Total)	☒	☐	☐	☒	____ to ____ ppm	5.0 ppm
Lead	☒	☐	☐	☒	____ to ____ ppm	5.0 ppm
Mercury	☒	☐	☐	☒	____ to ____ ppm	0.2 ppm
Selenium	☒	☐	☐	☒	____ to ____ ppm	1.0 ppm
Silver	☒	☐	☐	☒	____ to ____ ppm	5.0 ppm
Toxicity Characteristic Organics						
Benzene	☒	☐	☐	☒	____ to ____ ppm	0.5 ppm
Carbon tetrachloride	☒	☐	☐	☒	____ to ____ ppm	0.5 ppm
Chlorobenzene	☒	☐	☐	☒	____ to ____ ppm	100.0 ppm
Chloroform	☒	☐	☐	☒	____ to ____ ppm	6.0 ppm
o – cresol	☒	☐	☐	☒	____ to ____ ppm	200.0 ppm
m – cresol	☒	☐	☐	☒	____ to ____ ppm	200.0 ppm
p – cresol	☒	☐	☐	☒	____ to ____ ppm	200.0 ppm
Cresol – mixed	☒	☐	☐	☒	____ to ____ ppm	200.0 ppm
1,4-Dichlorobenzene	☒	☐	☐	☒	____ to ____ ppm	7.5 ppm
1,2-Dichloroethane	☒	☐	☐	☒	____ to ____ ppm	0.5 ppm
1,1-Dichloroethylene	☒	☐	☐	☒	____ to ____ ppm	0.7 ppm
2,4-Dinitrotoluene	☒	☐	☐	☒	____ to ____ ppm	0.13 ppm
Hexachlorobenzene	☒	☐	☐	☒	____ to ____ ppm	0.13 ppm
Hexachlorobutadiene	☒	☐	☐	☒	____ to ____ ppm	0.5 ppm
Hexachloroethane	☒	☐	☐	☒	____ to ____ ppm	3.0 ppm
Methyl ethyl ketone	☒	☐	☐	☒	____ to ____ ppm	200.0 ppm
Nitrobenzene	☒	☐	☐	☒	____ to ____ ppm	2.0 ppm
Pentachlorophenol	☒	☐	☐	☒	____ to ____ ppm	100.0 ppm
Pyridine	☒	☐	☐	☒	____ to ____ ppm	5.0 ppm
Tetrachloroethylene	☒	☐	☐	☒	____ to ____ ppm	0.7 ppm
Trichloroethylene	☒	☐	☐	☒	____ to ____ ppm	0.5 ppm
2,4,5-Trichlorophenol	☒	☐	☐	☒	____ to ____ ppm	400.0 ppm
2,4,6-Trichlorophenol	☒	☐	☐	☒	____ to ____ ppm	2.0 ppm
Vinyl chloride	☒	☐	☐	☒	____ to ____ ppm	0.2 ppm
Herbicides and Pesticides						
Chlordane	☒	☐	☐	☒	____ to ____ ppm	0.03 ppm
2,4-D	☒	☐	☐	☒	____ to ____ ppm	10.0 ppm
Endrin	☒	☐	☐	☒	____ to ____ ppm	0.02 ppm
Heptachlor (& its epoxide)	☒	☐	☐	☒	____ to ____ ppm	0.008 ppm
Lindane	☒	☐	☐	☒	____ to ____ ppm	0.4 ppm
Methoxychlor	☒	☐	☐	☒	____ to ____ ppm	10.0 ppm
Toxaphene	☒	☐	☐	☒	____ to ____ ppm	0.5 ppm
2,4,5-TP (Silvex)	☒	☐	☐	☒	____ to ____ ppm	0.5 ppm

Section 5 - Additional Constituents and Information

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	Liquid residue (in glass and plastic containers)	90	to	100	%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section and page 2			100	in %

Additional Information (Use additional sheet if necessary.)

If additional information is available on the chemical, physical, or radiological character of the waste not covered on this form, provide it below:

"the components included in reagents D and E in the DTech TNT (Product # TK-1004-1) and RDX (Product # TK-1005-1) Test Kits are not listed and not characteristic of RCRA waste." Refer to attached E-mail from manufacture Stategic Diagnostics Inc., dated 3-21-07.

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste?	☒ Yes	☐ No (Provide comments)
Do the procedures for this process address controls to prevent changes to waste constituents and concentrations or addition or removal of waste to/from containers?	☒ Yes	☐ No (Provide comments)

Comments:

Section 7 - Packaging and Storage Control

Describe how the waste will be packaged in according to the applicable WAC:

Waste will be packed in 30 gallon drums.

Identify the storage management controls that will be used for this waste stream: (check all that apply)

☐ Tamper indication devices	☒ Locked cabinet or building
☐ Limited use locks with log-in for waste	☐ Other (describe)

Section 8 – Waste Certification Statements (check only one)

☒ Waste appears to meet WAC chapter for: Non-Hazardous Waste

☐ Waste stream needs exception/exemption for treatment, storage, or disposal at:

☐ Waste does not meet the criteria for any known TSDF. (DOE approval is required. Contact the Waste Management Program Office for assistance.)

WASTE GENERATOR CERTIFICATION: Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the waste characterization information on this form is correct and that it meets the requirements of the applicable waste acceptance criteria. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Signature [signature] Date 4/30/07

WASTE CERTIFYING OFFICIAL: I have reviewed this form and any associated attachments and the characterization information provided appears to be complete and accurate. I certify, to the best of my knowledge, that the waste characterization information provided by the waste generator meets the requirements of the applicable WAC.

Signature [signature] Date 4-27-07

From: "Tim Lawruk" <tlawruk@sdix.com>
To: <mcle@lanl.gov>
Cc: "'Jason M. Ambrosius'" <jambrosius@sdix.com>
Subject: Product Disposal

Dear Mike,
The purpose of this email is to inform you that the components included in Reagents D and E in the DTECH TNT (Product #TK-1004-1) and RDX (Product #TK-1005-1) Test Kits are not listed and not characteristic of RCRA waste. If you have any further questions, please let me know.

Tim Lawruk
Manager, Product Marketing
Strategic Diagnostics Inc.
111 Pencader Dr.
Newark, DE 19702

Office (302) 456-6789 x206
Fax (302) 456-6783
Cell (302) 753-4019
tlawruk@sdix.com
www.sdix.com

From: Waste Profile Database Application <wpf@swoon.lanl.gov>
To: mcle@lanl.gov
Subject: WPF PROCESSING NOTIFICATION

(Please DO NOT email a reply to this computer generated message)
(Inquiries can be made at: 664-0014)

WASTE MANAGEMENT COORDINATOR

Name: MICHAEL LE SCOUARNEC Group: WS-WA MS: M992

WASTE PROFILE FORM PROCESSING NOTIFICATION

Waste Services has received and is processing your Waste Profile Form. If clarification of the documentation is needed, then a Waste Services Team member will contact you or the Waste Generator.

The following reference number has been assigned to your Waste Profile Form. Any inquiries to Waste Services regarding this Waste Profile Form should reference this number.

WPF Reference Number: ***** 40125 *****
WPF Logged in : 11-MAY-07
WPF Waste Location : TA 00 Building 1237 Room 609
Waste Generator : REBECCA COEL-ROBACK
Process Description : WASTE DERIVED FROM USE OF HIGH EXPLOSIVES SPOT TEST KITS. TEST IS USED AS A FIELD SCREENING METHOD TO DETERMINE WHETHER ANY HIGH EXPLOSIVES ARE PRESENT IN SAMPLES OF CORE COLLECTED DURING ENVIRONMENTAL CHARACTERIZATION ACTIVITIES.
Waste Description : HE TEST KIT PROCESS WASTE CONSISTING OF NONHAZARDOUS LIQUID TEST KIT RESIDUE CONTAINED IN PLASTIC BOTTLES, PLASTIC PIPETTES, PLASTIC FILTER CUP ASSEMBLIES, AND GLASS VIALS.

○ ADD: → AK attat. See Sect. 5

add: Pb.

Solid ☒
liq ☐

RUSH COPY

WASTE PROFILE FORM

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: SOLID WASTE OPERATIONS GROUP at MS J595. For assistance with completing this form, call SOLID WASTE OPERATIONS GROUP at 5-4000.	Reference Number (For SOLID WASTE OPERATIONS GROUP use only.)

Generator's Z Number	Waste Generator's Name (print)		WMC's Z Number	WMC's Name (print)		
146032	Becky Coel-Roback		135015	Michael Le Scouarnec		
Generator's Telephone	**Generator's Mail Stop**	**Waste Generating Group**	**Waste Stream Technical Area**	**Building**	**Room**	**WMC Telephone**
665-5011	M992	ERSS-CAP	00	NA	NA	667-7112

Waste Accumulation (Check only one.)

- ☐ Satellite Accumulation Area Site no: ____
- ☐ Less-than-90-days Storage Area Site no: ____
- ☐ TSDF Site no: ____
- ☐ Universal Waste Storage Area Site no: ____
- ☐ Used Oil for Recycle Site no: ____
- ☐ PCBs Storage Area Site no: ____
- ☐ NM Special Waste Site no: ____
- ☐ Rad Staging Area Site no: ____
- ☐ Rad Storage Area Site no: ____
- ☒ None of the Above

ER Use Only ☒ ER Site SWMU/AOC #: C-00-041

Method of Characterization (Check as many as apply.)

- ☒ Chemical/Physical Analysis ☒ Attached Sample #: RE00-07-76609
- ☐ Radiological Analysis ☐ Attached Sample #: ____
- ☐ PCB Analysis ☐ Attached Sample #: ____
- ☒ Acceptable Knowledge Documentation ☒ Attached Documentation #: see attachment
- ☐ MSDS ☐ Attached

Section 1 – Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes (Provide comments)	☒ No	
Can any of the materials in the waste stream be recycled or reused?	☐ Yes (Provide comments)	☒ No	
Has waste minimization been incorporated into procedures or other process controls?	☒ Yes	☐ No (Provide comments)	
Can this waste be generated outside a RCA?	☐ Yes (Provide comments)	☐ No	☒ N/A

Comments:

Section 2 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ Other (Complete all sections.)

Radiological Information
Was Waste Generated in a RCA? ☐ Yes ☒ No
- ☒ Non-radioactive
- ☐ Radioactive – Low Level
- ☐ Radioactive – Transuranic

Waste Destination (Check only one)
- ☐ SWWS (Complete Attachment 1)
- ☐ RLWTF (Complete Attachment 2)
- ☐ RLWTP (Complete Attachment 3)
- ☐ TA-16/HE (Complete Attachment 4)
- ☐ NTS (Complete Attachment 5)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check all that apply.)
- ☒ Inorganic
- ☐ Organic
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste or residue
- ☐ No-Longer Contained-In
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable

PCB Source Concentration
- ☐ PCB < 50 ppm
- ☐ PCB ≥ 50 - < 500 ppm
- ☐ PCB ≥ 500 ppm
- ☐ Hazardous Waste Contaminated Soil
- ☐ Untreated Hazardous Debris
- ☐ Commercial Solid Waste
- ☒ Other (Describe below)

* See instructions.

Waste Source (Check only one.)

Waste Source A
- ☐ Decon
- ☐ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup – Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Waste Source B
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☒ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping (Non-routine)
- ☐ Spill Cleanup (Non-routine)
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☐ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash/Dust
- ☒ Solid
- ☐ Sludge
- ☐ Absorbed/solidified liquid
- ☐ Debris

Matrix Type (Check only one.)
- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Estimated Annual Volume (m^3): < 10

Section 3 – Process and Waste Descriptions

Process Description:

Asphalt generated from clean-up activities.

Waste Description:

Pieces of asphalt in a roll-off bin.

Section 4 – Characteristics

Ignitability (Check only one.) (°F) (°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F) (°C)
☐ < 73 < 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95 ≤ 35
☐ 73 - 99 22.8 - 37.2	☐ 2.1 – 4.0	☐ Water Reactive	☐ > 95 > 35
☐ 100 - 139 37.8 - 59.4	☐ 4.1 – 6.0	☐ Cyanide Bearing	
☐ 140 - 200 60.0 - 93.3	☐ 6.1 – 9.0	☐ Sulfide Bearing	
☐ > 200 > 93.3	☐ 9.1 - 12.4	☐ Pyrophoric	
☐ EPA Ignitable – Non-liquid	☐ ≥ 12.5	☐ Shock Sensitive	
☐ DOT Flammable Gas	☐ Liquid corrosive to steel	☐ Explosive - DOT Div. ______	
☐ DOT Oxidizer	☒ Non-aqueous	☒ Non-reactive	☒ Not applicable
☒ Not ignitable			

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Contaminant present at Minimum	Maximum	Regulatory Limit
					(10,000 ppm = 1%)		
Toxicity Characteristic Metals							
Arsenic	☐	☒	☐	☒	______ to	______ ppm	5.0 ppm
Barium	☐	☒	☐	☒	______ to	______ ppm	100.0 ppm
Cadmium	☐	☒	☐	☒	______ to	______ ppm	1.0 ppm
Chromium (Total)	☐	☒	☐	☒	______ to	______ ppm	5.0 ppm
Lead	☐	☒	☐	☒	______ to	______ ppm	5.0 ppm
Mercury	☐	☒	☐	☒	______ to	______ ppm	0.2 ppm
Selenium	☐	☒	☐	☒	______ to	______ ppm	1.0 ppm
Silver	☐	☒	☐	☒	______ to	______ ppm	5.0 ppm
Toxicity Characteristic Organics							
Benzene	☐	☒	☐	☒	______ to	______ ppm	0.5 ppm
Carbon tetrachloride	☐	☒	☐	☒	______ to	______ ppm	0.5 ppm
Chlorobenzene	☐	☒	☐	☒	______ to	______ ppm	100.0 ppm
Chloroform	☐	☒	☐	☒	______ to	______ ppm	6.0 ppm
o – cresol	☐	☒	☐	☒	______ to	______ ppm	200.0 ppm
m – cresol	☐	☒	☐	☒	______ to	______ ppm	200.0 ppm
p – cresol	☐	☒	☐	☒	______ to	______ ppm	200.0 ppm
Cresol – mixed	☐	☒	☐	☒	______ to	______ ppm	200.0 ppm
1,4-Dichlorobenzene	☐	☒	☐	☒	______ to	______ ppm	7.5 ppm
1,2-Dichloroethane	☐	☒	☐	☒	______ to	______ ppm	0.5 ppm
1,1-Dichloroethylene	☐	☒	☐	☒	______ to	______ ppm	0.7 ppm
2,4-Dinitrotoluene	☐	☒	☐	☒	______ to	______ ppm	0.13 ppm
Hexachlorobenzene	☐	☒	☐	☒	______ to	______ ppm	0.13 ppm
Hexachlorobutadiene	☐	☒	☐	☒	______ to	______ ppm	0.5 ppm
Hexachloroethane	☐	☒	☐	☒	______ to	______ ppm	3.0 ppm
Methyl ethyl ketone	☐	☒	☐	☒	______ to	______ ppm	200.0 ppm
Nitrobenzene	☐	☒	☐	☒	______ to	______ ppm	2.0 ppm
Pentachlorophenol	☐	☒	☐	☒	______ to	______ ppm	100.0 ppm
Pyridine	☐	☒	☐	☒	______ to	______ ppm	5.0 ppm
Tetrachloroethylene	☐	☒	☐	☒	______ to	______ ppm	0.7 ppm
Trichloroethylene	☐	☒	☐	☒	______ to	______ ppm	0.5 ppm
2,4,5-Trichlorophenol	☐	☒	☐	☒	______ to	______ ppm	400.0 ppm
2,4,6-Trichlorophenol	☐	☒	☐	☒	______ to	______ ppm	2.0 ppm
Vinyl chloride	☐	☒	☐	☒	______ to	______ ppm	0.2 ppm
Herbicides and Pesticides							
Chlordane	☒	☐	☐	☒	______ to	______ ppm	0.03 ppm
2,4-D	☒	☐	☐	☒	______ to	______ ppm	10.0 ppm
Endrin	☒	☐	☐	☒	______ to	______ ppm	0.02 ppm
Heptachlor (& its epoxide)	☒	☐	☐	☒	______ to	______ ppm	0.008 ppm
Lindane	☒	☐	☐	☒	______ to	______ ppm	0.4 ppm
Methoxychlor	☒	☐	☐	☒	______ to	______ ppm	10.0 ppm
Toxaphene	☒	☐	☐	☒	______ to	______ ppm	0.5 ppm
2,4,5-TP (Silvex)	☒	☐	☐	☒	______ to	______ ppm	0.5 ppm

Section 5 - Additional Constituents and Information

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents. For material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	Asphalt	98	to	100	%
	Soil	1	to	2	%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section and page 2			102	in %

Additional Information (Use additional sheet if necessary.)

If additional information is available on the chemical, physical, or radiological character of the waste not covered on this form, provide it below:

C-00-041consists of waste stream # 8 in WCSF as industrial waste.

see attached: Analytical and WCSF

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste?	☒ Yes	☐ No (Provide comments)
Do the procedures for this process address controls to prevent changes to waste constituents and concentrations or addition or removal of waste to/from containers?	☒ Yes	☐ No (Provide comments)

Comments:

Section 7 - Packaging and Storage Control

Describe how the waste will be packaged in according to the applicable WAC:

Waste will be packaged in a roll off.

Identify the storage management controls that will be used for this waste stream: (check all that apply)

☐ Tamper indication devices	☐ Locked cabinet or building
☐ Limited use locks with log-in for waste	☒ Other (describe) Roll off is secured by tarp

Section 8 – Waste Certification Statements (check only one)

☒ Waste appears to meet WAC chapter for: Non-Hazardous Industrial waste

☐ Waste stream needs exception/exemption for treatment, storage, or disposal at:

☐ Waste does not meet the criteria for any known TSDF. (DOE approval is required. Contact the Waste Management Program Office for assistance.)

WASTE GENERATOR CERTIFICATION: Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the waste characterization information on this form is correct and that it meets the requirements of the applicable waste acceptance criteria. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Signature [signature] Date 5/29/07

WASTE CERTIFYING OFFICIAL: I have reviewed this form and any associated attachments and the characterization information provided appears to be complete and accurate. I certify, to the best of my knowledge, that the waste characterization information provided by the waste generator meets the requirements of the applicable WAC.

Signature [signature] Date 5.29.07

PU on 6/28/07

A52107

→ Rendija

SAA Shrapnel

CONSOLIDATED REMOTE WASTE STORAGE SITE DISPOSAL REQUEST

Waste Pick-up Location and Storage Type: Rendija Can yon , LA County			☐	< 90 Day Accumulation Area Start Date:	☑	**Satellite Accumulation Area** Approximate Volume: 2 Gallons
TA:	Building: outside	Room: N/A	☐	**Universal Waste** Start Date:	☐	**PCB Waste** Start Date:
					☐	**NM Special Waste** (<90 days) Start Date:

Item ID	Phys State	Volume	Unit	Weight	Unit	Temp.Con*	Acis Bar C	Profile	Cost Ctr	Prg Cd	Cost Acc	Work Pkg	Description of Waste	RCRA *	Subcat.*
10046085	S	5	G	8	P			40124	6A000A	MR3A	0221	LBT0	Metal Shrapnel		

*Temp. Con, RCRA, and subcat codes to be completed by FWO-SWO personnel only.

Units for Volume	**Units for Weight**
G-Gallon M-Cubic Meters L-Liters O-Fluid Ounce F-Cubic Feet P-Pint Q-Quart C-Cubic centimeters	P-Pound O-Ounce K-Kilograms T-Tons G-Grams

WMC CERTIFICATION STATEMENT: To the best of my knowledge, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Printed Name Michael Le Scouarnec	**Signature**	**Z Number** 135015	**Date**5-21-07

FMU6-F373,R.1 (3/04)
DOP-SWO-028, PLAN-SWO-024

Printed on: 3/24/2004

L53107 PU 6·28·07

CONSOLIDATED REMOTE WASTE STORAGE SITE DISPOSAL REQUEST

Waste Pick-up Location and Storage Type:PPE for Rendija Project	☐	< 90 Day Accumulation Area Start Date:	☐	Satellite Accumulation Area Approximate Volume:
TA: 00 / Building: outside / Room: N/A	☐	Universal Waste Start Date:	☐	PCB Waste Start Date:
			☐	NM Special Waste (<90 days) Start Date:

Item ID	Phys State	Volume	Unit	Weight	Unit	Temp.Con*	Acis Bar C	Profile	Cost Ctr	Prg Cd	Cost Acc	Work Pkg	Description of Waste	RCRA *	Subcat.*
10056261	S	30	G	100	P			40160	6A000A	MR3A	0221	LBT0	PPE (including plasite gloves and paper towels), Industrial Non-hazardous		
10056262	S	30	G	100	P			40160	6A000A	MR3A	0221	LBT0	PPE (inclnding plasite gloves and paper towels), Industrial Non-hazardous		

*Temp. Con, RCRA, and subcat codes to be completed by FWO-SWO personnel only.

Units for Volume	Units for Weight
G-Gallon **M**-Cubic Meters **L**-Liters **O**-Fluid Ounce **F**-Cubic Feet **P**-Pint **Q**-Quart **C**-Cubic centimeters	**P**-Pound **O**-Ounce **K**-Kilograms **T**-Tons **G**-Grams

WMC CERTIFICATION STATEMENT: To the best of my knowledge, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Printed Name Michael Le Scouarnec	Signature	Z Number 135015	Date5-18-07

WASTE PROFILE FORM

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: SOLID WASTE OPERATIONS GROUP at MS J595. For assistance with completing this form, call SOLID WASTE OPERATIONS GROUP at 5-4000.	Reference Number 40160 (For SOLID WASTE OPERATIONS GROUP use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
146032	Becky Coel-Roback	135015	Michael Le Scouarnec

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room	WMC Telephone
665-5011	M992	ERSS-CAP	00	NA	NA	667-7112

Waste Accumulation (Check only one.)

- ☐ Satellite Accumulation Area Site no: ____
- ☐ Less-than-90-days Storage Area Site no: ____
- ☐ TSDF Site no: ____
- ☐ Universal Waste Storage Area Site no: ____
- ☐ Used Oil for Recycle Site no: ____
- ☐ PCBs Storage Area Site no: ____
- ☐ NM Special Waste Site no: ____
- ☐ Rad Staging Area Site no: ____
- ☐ Rad Storage Area Site no: ____
- ☒ None of the Above

ER Use Only ☐ ER Site SWMU/AOC #: ____

Method of Characterization (Check as many as apply.)

☐ Chemical/Physical Analysis	☐ Attached	Sample #: ____
☐ Radiological Analysis	☐ Attached	Sample #: ____
☐ PCB Analysis	☐ Attached	Sample #: ____
☒ Acceptable Knowledge Documentation	☒ Attached	Documentation #: see attachment
☐ MSDS	☐ Attached	

Section 1 – Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes (Provide comments)	☒ No	
Can any of the materials in the waste stream be recycled or reused?	☐ Yes (Provide comments)	☒ No	
Has waste minimization been incorporated into procedures or other process controls?	☒ Yes	☐ No (Provide comments)	
Can this waste be generated outside a RCA?	☐ Yes (Provide comments)	☐ No	☒ N/A

Comments:

Section 2 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ Other (Complete all sections.)

Radiological Information
Was Waste Generated in a RCA? ☐ Yes ☒ No
- ☒ Non-radioactive
- ☐ Radioactive – Low Level
- ☐ Radioactive – Transuranic

Waste Destination (Check only one)
- ☐ SWWS (Complete Attachment 1)
- ☐ RLWTF (Complete Attachment 2)
- ☐ RLWTP (Complete Attachment 3)
- ☐ TA-16/HE (Complete Attachment 4)
- ☐ NTS (Complete Attachment 5)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check all that apply.)
- ☒ Inorganic
- ☐ Organic
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste or residue
- ☐ No-Longer Contained-In
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable

PCB Source Concentration
- ☐ PCB < 50 ppm
- ☐ PCB ≥ 50 - < 500 ppm
- ☐ PCB ≥ 500 ppm
- ☐ Hazardous Waste Contaminated Soil
- ☐ Untreated Hazardous Debris
- ☐ Commercial Solid Waste
- ☒ Other (Describe below)

* See instructions.

Waste Source (Check only one.)

Waste Source A
- ☐ Decon
- ☐ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup – Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Waste Source B
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☒ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping (Non-routine)
- ☐ Spill Cleanup (Non-routine)
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☐ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash/Dust
- ☒ Solid
- ☐ Sludge
- ☐ Absorbed/solidified liquid
- ☐ Debris

Matrix Type (Check only one.)
- ☐ Homogeneous
- ☒ Heterogeneous (Describe below)

Estimated Annual Volume (m^3): < 0.5

Section 3 – Process and Waste Descriptions

Process Description:

Contaminated personal protective equipment (PPE) and sampling supplies generated from field activities and high explosive test kits referenced for WP 40125.

Waste Description:

Spent PPE, sampling supplies (including paper towels, plastic bags, and nitrile gloves).

Section 4 – Characteristics

Ignitability (Check only one.) (°F) (°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F) (°C)
☐ < 73 < 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95 ≤ 35
☐ 73 - 99 22.8 - 37.2	☐ 2.1 – 4.0	☐ Water Reactive	☐ > 95 > 35
☐ 100 - 139 37.8 - 59.4	☐ 4.1 – 6.0	☐ Cyanide Bearing	
☐ 140 - 200 60.0 - 93.3	☐ 6.1 – 9.0	☐ Sulfide Bearing	
☐ > 200 > 93.3	☐ 9.1 - 12.4	☐ Pyrophoric	
☐ EPA Ignitable – Non-liquid	☐ ≥ 12.5	☐ Shock Sensitive	
☐ DOT Flammable Gas	☐ Liquid corrosive to steel	☐ Explosive - DOT Div. ________	
☐ DOT Oxidizer	☒ Non-aqueous	☒ Non-reactive	☒ Not applicable
☒ Not ignitable			

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	None or Non-detect	Concentration of Contaminants – Contaminant present at Minimum / Maximum	Regulatory Limit
Toxicity Characteristic Metals					(10,000 ppm = 1%)	
Arsenic	☒	☐	☐	☒	______ to ______ ppm	5.0 ppm
Barium	☒	☐	☐	☒	______ to ______ ppm	100.0 ppm
Cadmium	☒	☐	☐	☒	______ to ______ ppm	1.0 ppm
Chromium (Total)	☒	☐	☐	☒	______ to ______ ppm	5.0 ppm
Lead	☒	☐	☐	☒	______ to ______ ppm	5.0 ppm
Mercury	☒	☐	☐	☒	______ to ______ ppm	0.2 ppm
Selenium	☒	☐	☐	☒	______ to ______ ppm	1.0 ppm
Silver	☒	☐	☐	☒	______ to ______ ppm	5.0 ppm
Toxicity Characteristic Organics						
Benzene	☒	☐	☐	☒	______ to ______ ppm	0.5 ppm
Carbon tetrachloride	☒	☐	☐	☒	______ to ______ ppm	0.5 ppm
Chlorobenzene	☒	☐	☐	☒	______ to ______ ppm	100.0 ppm
Chloroform	☒	☐	☐	☒	______ to ______ ppm	6.0 ppm
o – cresol	☒	☐	☐	☒	______ to ______ ppm	200.0 ppm
m – cresol	☒	☐	☐	☒	______ to ______ ppm	200.0 ppm
p – cresol	☒	☐	☐	☒	______ to ______ ppm	200.0 ppm
Cresol – mixed	☒	☐	☐	☒	______ to ______ ppm	200.0 ppm
1,4-Dichlorobenzene	☒	☐	☐	☒	______ to ______ ppm	7.5 ppm
1,2-Dichloroethane	☒	☐	☐	☒	______ to ______ ppm	0.5 ppm
1,1-Dichloroethylene	☒	☐	☐	☒	______ to ______ ppm	0.7 ppm
2,4-Dinitrotoluene	☒	☐	☐	☒	______ to ______ ppm	0.13 ppm
Hexachlorobenzene	☒	☐	☐	☒	______ to ______ ppm	0.13 ppm
Hexachlorobutadiene	☒	☐	☐	☒	______ to ______ ppm	0.5 ppm
Hexachloroethane	☒	☐	☐	☒	______ to ______ ppm	3.0 ppm
Methyl ethyl ketone	☒	☐	☐	☒	______ to ______ ppm	200.0 ppm
Nitrobenzene	☒	☐	☐	☒	______ to ______ ppm	2.0 ppm
Pentachlorophenol	☒	☐	☐	☒	______ to ______ ppm	100.0 ppm
Pyridine	☒	☐	☐	☒	______ to ______ ppm	5.0 ppm
Tetrachloroethylene	☒	☐	☐	☒	______ to ______ ppm	0.7 ppm
Trichloroethylene	☒	☐	☐	☒	______ to ______ ppm	0.5 ppm
2,4,5-Trichlorophenol	☒	☐	☐	☒	______ to ______ ppm	400.0 ppm
2,4,6-Trichlorophenol	☒	☐	☐	☒	______ to ______ ppm	2.0 ppm
Vinyl chloride	☒	☐	☐	☒	______ to ______ ppm	0.2 ppm
Herbicides and Pesticides						
Chlordane	☒	☐	☐	☒	______ to ______ ppm	0.03 ppm
2,4-D	☒	☐	☐	☒	______ to ______ ppm	10.0 ppm
Endrin	☒	☐	☐	☒	______ to ______ ppm	0.02 ppm
Heptachlor (& its epoxide)	☒	☐	☐	☒	______ to ______ ppm	0.008 ppm
Lindane	☒	☐	☐	☒	______ to ______ ppm	0.4 ppm
Methoxychlor	☒	☐	☐	☒	______ to ______ ppm	10.0 ppm
Toxaphene	☒	☐	☐	☒	______ to ______ ppm	0.5 ppm
2,4,5-TP (Silvex)	☒	☐	☐	☒	______ to ______ ppm	0.5 ppm

Section 5 - Additional Constituents and Information

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	Plastic	50	to	60	%
	Paper Towels	30	to	40	%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section and page 2			100	in %

Additional Information (Use additional sheet if necessary.)

If additional information is available on the chemical, physical, or radiological character of the waste not covered on this form, provide it below:

PPE and sampling supplies contact use for the HE test kit analyses. This waste is non-hazardous according to the manufacture: " The components included in Reagents D and E in the DTECH TNT (Product #TK-1004-1) and RDX (Product #TK-1005-1)Test Kits are not listed and not characteristic of RCRA waste." Refer to attached e-mail from manufacture Strategic Diagnostic Inc., dated 3-21-05.

C-00-041 consists of waste stream #3 in WCSF as industrial waste.

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste?	☒ Yes	☐ No (Provide comments)
Do the procedures for this process address controls to prevent changes to waste constituents and concentrations or addition or removal of waste to/from containers?	☒ Yes	☐ No (Provide comments)

Comments:

Section 7 - Packaging and Storage Control

Describe how the waste will be packaged in according to the applicable WAC:

Waste will be packaged in 30 gallon drums.

Identify the storage management controls that will be used for this waste stream: (check all that apply)

☐ Tamper indication devices ☒ Locked cabinet or building

☐ Limited use locks with log-in for waste ☐ Other (describe)

Section 8 – Waste Certification Statements (check only one)

☒ Waste appears to meet WAC chapter for: Non-Hazardous Industrial waste

☐ Waste stream needs exception/exemption for treatment, storage, or disposal at:

☐ Waste does not meet the criteria for any known TSDF. (DOE approval is required. Contact the Waste Management Program Office for assistance.)

WASTE GENERATOR CERTIFICATION: Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the waste characterization information on this form is correct and that it meets the requirements of the applicable waste acceptance criteria. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Signature [signature] Date 5/23/07

WASTE CERTIFYING OFFICIAL: I have reviewed this form and any associated attachments and the characterization information provided appears to be complete and accurate. I certify, to the best of my knowledge, that the waste characterization information provided by the waste generator meets the requirements of the applicable WAC.

Signature [signature] Date 5.23.07

WASTE PROFILE FORM

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: SOLID WASTE OPERATIONS GROUP at MS J595. For assistance with completing this form, call SOLID WASTE OPERATIONS GROUP at 5-4000.	Reference Number 40124 (For SOLID WASTE OPERATIONS GROUP use only.)

Generator's Z Number	Waste Generator's Name (print)		WMC's Z Number	WMC's Name (print)	
146032	Becky Coel-Roback		135015	Michael Le Scouarnec	

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room	WMC Telephone
665-5011	M992	ERSS-CAP	00	NA	NA	667-7112

Waste Accumulation (Check only one.)

- ☐ Satellite Accumulation Area Site no: ______
- ☐ Less-than-90-days Storage Area Site no: ______
- ☐ TSDF Site no: ______
- ☐ Universal Waste Storage Area Site no: ______
- ☐ Used Oil for Recycle Site no: ______
- ☐ PCBs Storage Area Site no: ______
- ☐ NM Special Waste Site no: ______
- ☐ Rad Staging Area Site no: ______
- ☐ Rad Storage Area Site no: ______
- ☒ None of the Above

ER Use Only ☐ ER Site SWMU/AOC #: 00-011(d)

Method of Characterization (Check as many as apply.)

- ☐ Chemical/Physical Analysis ☐ Attached Sample #: ______
- ☐ Radiological Analysis ☐ Attached Sample #: ______
- ☐ PCB Analysis ☐ Attached Sample #: ______
- ☒ Acceptable Knowledge Documentation ☒ Attached Documentation #: EP2006-0657
- ☐ MSDS ☐ Attached

Section 1 – Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes (Provide comments)	☒ No	
Can any of the materials in the waste stream be recycled or reused?	☐ Yes (Provide comments)	☒ No	
Has waste minimization been incorporated into procedures or other process controls?	☒ Yes	☐ No (Provide comments)	
Can this waste be generated outside a RCA?	☐ Yes (Provide comments)	☒ No	☐ N/A

Comments:

Section 2 - Chemical and Physical Information

Waste Type (Check only one.)
- ☒ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☐ Process Waste/Spent Chemical/ Other (Complete all sections.)

Radiological Information

Was Waste Generated in a RCA? ☐ Yes ☒ No

- ☒ Non-radioactive
- ☐ Radioactive – Low Level
- ☐ Radioactive – Transuranic

Waste Destination (Check only one)
- ☐ SWWS (Complete Attachment 1)
- ☐ RLWTF (Complete Attachment 2)
- ☐ RLWTP (Complete Attachment 3)
- ☐ TA-16/HE (Complete Attachment 4)
- ☐ NTS (Complete Attachment 5)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check all that apply.)
- ☒ Inorganic
- ☐ Organic
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste or residue
- ☐ No-Longer Contained-In
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable

PCB Source Concentration
- ☐ PCB < 50 ppm
- ☐ PCB ≥ 50 - < 500 ppm
- ☐ PCB ≥ 500 ppm
- ☐ Hazardous Waste Contaminated Soil
- ☐ Untreated Hazardous Debris
- ☐ Commercial Solid Waste
- ☒ Other (Describe below)

* See instructions.

Waste Source (Check only one.)

Waste Source A
- ☐ Decon
- ☐ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup – Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Waste Source B
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☒ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping (Non-routine)
- ☐ Spill Cleanup (Non-routine)
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☐ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash/Dust
- ☒ Solid
- ☐ Sludge
- ☐ Absorbed/solidified liquid
- ☐ Debris

Matrix Type (Check only one.)
- ☐ Homogeneous
- ☒ Heterogeneous (Describe below)

Estimated Annual Volume (m^3): < 0.1

Section 3 – Process and Waste Descriptions

Process Description:

Metal shrapnel pieces found during munitions and explosives of concern survey (MEC).

Waste Description:

Metal shrapnel pieces containing lead, cadmium, and chromium.

Section 4 – Characteristics

Ignitability (Check only one.) (°F) (°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F) (°C)
☐ < 73 < 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95 ≤ 35
☐ 73 - 99 22.8 - 37.2	☐ 2.1 – 4.0	☐ Water Reactive	☐ > 95 > 35
☐ 100 - 139 37.8 - 59.4	☐ 4.1 – 6.0	☐ Cyanide Bearing	
☐ 140 -200 60.0 - 93.3	☐ 6.1 – 9.0	☐ Sulfide Bearing	
☐ > 200 > 93.3	☐ 9.1 - 12.4	☐ Pyrophoric	
☐ EPA Ignitable – Non-liquid	☐ ≥ 12.5	☐ Shock Sensitive	
☐ DOT Flammable Gas	☐ Liquid corrosive to steel	☐ Explosive - DOT Div. ______	
☐ DOT Oxidizer	☒ Non-aqueous	☒ Non-reactive	☒ Not applicable
☒ Not ignitable			

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	Concentration of Contaminants: None or Non-detect	Contaminant present at Minimum (10,000 ppm = 1%)	to	Maximum		Regulatory Limit
Toxicity Characteristic Metals									
Arsenic	☒	☐	☐	☒		to		ppm	5.0 ppm
Barium	☒	☐	☐	☒		to		ppm	100.0 ppm
Cadmium	☒	☐	☐	☐	7	to	10	ppm	1.0 ppm
Chromium (Total)	☒	☐	☐	☐	7	to	10	ppm	5.0 ppm
Lead	☒	☐	☐	☐	7	to	10	ppm	5.0 ppm
Mercury	☒	☐	☐	☒		to		ppm	0.2 ppm
Selenium	☒	☐	☐	☒		to		ppm	1.0 ppm
Silver	☒	☐	☐	☒		to		ppm	5.0 ppm
Toxicity Characteristic Organics									
Benzene	☒	☐	☐	☒		to		ppm	0.5 ppm
Carbon tetrachloride	☒	☐	☐	☒		to		ppm	0.5 ppm
Chlorobenzene	☒	☐	☐	☒		to		ppm	100.0 ppm
Chloroform	☒	☐	☐	☒		to		ppm	6.0 ppm
o – cresol	☒	☐	☐	☒		to		ppm	200.0 ppm
m – cresol	☒	☐	☐	☒		to		ppm	200.0 ppm
p – cresol	☒	☐	☐	☒		to		ppm	200.0 ppm
Cresol – mixed	☒	☐	☐	☒		to		ppm	200.0 ppm
1,4-Dichlorobenzene	☒	☐	☐	☒		to		ppm	7.5 ppm
1,2-Dichloroethane	☒	☐	☐	☒		to		ppm	0.5 ppm
1,1-Dichloroethylene	☒	☐	☐	☒		to		ppm	0.7 ppm
2,4-Dinitrotoluene	☒	☐	☐	☒		to		ppm	0.13 ppm
Hexachlorobenzene	☒	☐	☐	☒		to		ppm	0.13 ppm
Hexachlorobutadiene	☒	☐	☐	☒		to		ppm	0.5 ppm
Hexachloroethane	☒	☐	☐	☒		to		ppm	3.0 ppm
Methyl ethyl ketone	☒	☐	☐	☒		to		ppm	200.0 ppm
Nitrobenzene	☒	☐	☐	☒		to		ppm	2.0 ppm
Pentachlorophenol	☒	☐	☐	☒		to		ppm	100.0 ppm
Pyridine	☒	☐	☐	☒		to		ppm	5.0 ppm
Tetrachloroethylene	☒	☐	☐	☒		to		ppm	0.7 ppm
Trichloroethylene	☒	☐	☐	☒		to		ppm	0.5 ppm
2,4,5-Trichlorophenol	☒	☐	☐	☒		to		ppm	400.0 ppm
2,4,6-Trichlorophenol	☒	☐	☐	☒		to		ppm	2.0 ppm
Vinyl chloride	☒	☐	☐	☒		to		ppm	0.2 ppm
Herbicides and Pesticides									
Chlordane	☒	☐	☐	☒		to		ppm	0.03 ppm
2,4-D	☒	☐	☐	☒		to		ppm	10.0 ppm
Endrin	☒	☐	☐	☒		to		ppm	0.02 ppm
Heptachlor (& its epoxide)	☒	☐	☐	☒		to		ppm	0.008 ppm
Lindane	☒	☐	☐	☒		to		ppm	0.4 ppm
Methoxychlor	☒	☐	☐	☒		to		ppm	10.0 ppm
Toxaphene	☒	☐	☐	☒		to		ppm	0.5 ppm
2,4,5-TP (Silvex)	☒	☐	☐	☒		to		ppm	0.5 ppm

Section 5 - Additional Constituents and Information

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	Metal Shrapnel	90	to	100	%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section and page 2			100	in %

Additional Information (Use additional sheet if necessary.)

If additional information is available on the chemical, physical, or radiological character of the waste not covered on this form, provide it below:

WCSF # 2006-0657
Waste Stream #7

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste?	☒ Yes	☐ No (Provide comments)
Do the procedures for this process address controls to prevent changes to waste constituents and concentrations or addition or removal of waste to/from containers?	☒ Yes	☐ No (Provide comments)

Comments:

Section 7 - Packaging and Storage Control

Describe how the waste will be packaged in according to the applicable WAC:

Waste will be packaged in a 5 gallon drum.

Identify the storage management controls that will be used for this waste stream: (check all that apply)

☐ Tamper indication devices	☒ Locked cabinet or building
☐ Limited use locks with log-in for waste	☐ Other (describe)

Section 8 – Waste Certification Statements (check only one)

☒ Waste appears to meet WAC chapter for: Non-Hazardous Waste

☐ Waste stream needs exception/exemption for treatment, storage, or disposal at:

☐ Waste does not meet the criteria for any known TSDF. (DOE approval is required. Contact the Waste Management Program Office for assistance.)

WASTE GENERATOR CERTIFICATION: Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the waste characterization information on this form is correct and that it meets the requirements of the applicable waste acceptance criteria. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Signature [signature] Date 4/30/07

WASTE CERTIFYING OFFICIAL: I have reviewed this form and any associated attachments and the characterization information provided appears to be complete and accurate. I certify, to the best of my knowledge, that the waste characterization information provided by the waste generator meets the requirements of the applicable WAC.

Signature [signature] Date 4-27-07

Attachment 4 - LDR and UHC Information

Identify category and presence of any constituents listed below (equal to or above limit).

Non-Wastewater / Wastewater Category – Check only one.

☒ Non Wastewater ☐ Wastewater [as defined by 40 CFR 268.2(f)] ☐ Lab Pack [40 CFR 268.42(c)] **Sign Certification #1**

NOTIFICATIONS AND CERTIFICATIONS – **Check the applicable boxes**

GENERATOR REQUIREMENTS:

☐ This shipment contains hazardous waste contaminated soil that does not meet treatment standards	Sign Certification #2
☐ This shipment contains untreated hazardous debris to be treated to 40 CFR 268.45 treatment standards	(No certification)
☐ Hazardous wastes (except soil) meeting treatment standards at point of generation	Sign Certification #3
☐ Hazardous wastes contaminated soil meeting treatment standards at point of generation	Sign Certification #4

TSDF OR GENERATOR TREATMENT:

☐ TSDF Treated hazardous debris meeting the alternative treatment standards of 40 CFR 268.45	Sign Certification #5
☐ Generator Treated hazardous debris meeting the alternative treatment standards of 40 CFR 268.45	Sign Certification #6
☐ Hazardous wastes contaminated soil treated to 40 CFR 268.49	Sign Certification #7
☐ Wastes or Residues from characteristic hazardous waste treatment meeting treatment standards and UTS	Sign Certification #8
☐ Wastes or Residues from characteristic hazardous waste treatment not meeting UTS	Sign Certification #9
☐ Other TSDF wastes meeting the more stringent 40 CFR 268.40 treatment standards to be land disposed	Sign Certification #10
☐ Other Generator wastes meeting the more stringent 40 CFR 268.40 treatment standards to be land disposed	Sign Certification #11

Notification Of Underlying Hazardous Constituents

(Check the applicable underlying constituents above the concentration levels for D001 through D043 characteristic wastes only)

☐ *No Underlying Hazardous Constituents in this waste stream.*

	Organic constituents			CASRN I	Wastewater Standard (mg/l)	Non wastewater standard (mg/kg unless noted otherwise)	Hazardous Soil 10Xs UTS Nonwastewater (mg/kg unless noted otherwise)
☐	Acenaphthylene			208-96-8	0.059	3.4	34
☐	Acenaphthene			83-32-9	0.059	3.4	34
☐	Acetone			67-64-1	0.28	160	1600
☐	Acetonitrile			75-05-8	5.6	38	380
☐	Acetophenone			96-86-2	0.010	9.7	97
☐	2-Acetylaminofluorene			53-96-3	0.059	140	1400
☐	Acrolein			107-02-8	0.29	NA	NA
☐	Acrylamide			79-06-1	19	23	230
☐	Acrylonitrile			107-13-1	0.24	84	840
☐	Aldicarb sulfone			1646-88-4	0.056	0.28	2.8
☐	Aldrin			309-00-2	0.021	0.066	0.66
☐	4-Aminobiphenyl			92-67-1	0.13	NA	NA
☐	Aniline			62-53-3	0.81	14	140
☐	o-Anididine (2-methoxyaniline)			90-04-0	0.010	0.66	6.6
☐	Anthracene			120-12-7	0.059	3.4	34
☐	Aramite			140-57-8	0.36	NA	NA
☐	alpha-BHC			319-84-6	0.00014	0.066	0.66
☐	beta-BHC			319-85-7	0.00014	0.066	0.66
☐	delta-BHC			319-86-8	0.023	0.066	0.66
☐	gamma-BHC			58-89-9	0.0017	0.066	0.66
☐	Barban			101-27-9	0.056	1.4	14
☐	Bendiocarb			22781-23-3	0.056	1.4	14
☐	Benomyl			17804-35-2	0.056	1.4	14
☐	Benzene			71-43-2	0.14	10	100
☐	Benz(a)anthracene			56-55-3	0.059	3.4	34
☐	Benzal chloride			98-87-3	0.055	6.0	60
☐	Benzo(b)fluoranthene			205-99-2	0.11	6.8	68
☐	Benzo(k)fluoranthene			207-08-9	0.11	6.8	68
☐	Benzo(g,h,i)perylene			191-24-2	0.0055	1.8	18

	Organic constituents			CASRN 1	Wastewater Standard (mg/l)	Non wastewater standard (mg/kg unless noted otherwise)	Hazardous Soil 10Xs UTS Nonwastewater (mg/kg unless noted otherwise)
☐	Benzo(a)pyrene			50-32-8	0.061	3.4	34
☐	Bromodichloromethane			75-27-4	0.35	15	150
☐	Bromomethane (Methyl bromide)			74-83-9	0.11	15	150
☐	4-Bromophenyl phenyl ether			101-55-3	0.055	15	150
☐	n-Butyl alcohol			71-36-3	5.6	2.6	26
☐	Butylate			2008-41-5	0.042	1.4	14
☐	Butyl benzyl phthalate			85-68-7	0.017	28	280
☐	2-sec-Butyl-4,6-dinitrophenol (Dinoseb)			88-85-7	0.066	2.5	25
☐	Carbaryl			63-25-2	0.006	0.14	1.4
☐	Carbenzadim			10605-21-7	0.056	1.4	14
☐	Carbofuran			1563-66-2	0.006	0.14	1.4
☐	Carbofuran phenol			1563-38-8	0.056	1.4	14
☐	Carbon disulfide			75-15-0	3.8	4.8 mg/l TCLP	48 mg/l TCLP
☐	Carbon tertachloride			56-23-5	0.057	6.0	60
☐	Carbosulfan			55285-14-8	0.028	1.4	14
☐	Chlordane (alpha & gamma isomers)			57-74-9	0.0033	0.26	2.6
☐	p-Chloroaniline			106-47-8	0.46	16	160
☐	Chlorobenzene			108-90-7	0.057	6.0	60
☐	Chlorobenzilate			510-15-6	0.10	NA	NA
☐	2-Chloro-1,3-butadiene			126-99-8	0.057	0.28	2.8
☐	Chlorodibromomethane			124-48-1	0.057	15	150
☐	Chloroethane			75-00-3	0.27	6.0	60
☐	bis(2-Chloroethoxy) methane			111-91-1	0.036	7.2	72
☐	bis(2-Chloroethyl) ether			111-44-4	0.033	6.0	60
☐	Chloroform			67-66-3	0.046	6.0	60
☐	bis(2-Chloroisopropyl) ether			108-60-1	0.055	7.2	72
☐	p-Chloro-m-cresol			59-50-7	0.018	14	140
☐	2-Chloroethyl vinyl ether			110-75-8	0.062	NA	NA
☐	Chloromethane (Methyl chloride)			74-87-3	0.19	30	300
☐	2-Chloronaphthalene			91-58-7	0.055	5.6	56
☐	2-Chlorophenol			95-57-8	0.044	5.7	57
☐	3-Chloropropylene			107-05-1	0.036	30	300
☐	Chrysene			218-01-9	0.059	3.4	34
☐	p-Cresidine			120-71-8	0.010	0.66	6.6
☐	o-Cresol			95-48-7	0.11	5.6	56
☐	m-Cresol			108-39-4	0.77	5.6	56
☐	p-Cresol			106-44-5	0.77	5.6	56
☐	m-Cumenyl methylcarbamate			64-00-6	0.056	1.4	14
☐	Cyclohexanone			108-94-1	0.36	0.75 mg/l TCLP	7.5 mg/l TCLP
☐	o,p'-ddd			53-19-0	0.023	0.087	0.87
☐	p,p'-ddd			72-54-8	0.023	0.087	0.87
☐	o,p'-dde			3424-82-6	0.031	0.087	0.87
☐	p,p'-dde			72-55-9	0.031	0.087	0.87
☐	o,p'-ddt			789-02-6	0.0039	0.087	0.87
☐	p,p'-ddt			50-29-3	0.0039	0.087	0.87
☐	Dibenz(a,h)anthracene			53-70-3	0.055	8.2	82
☐	Dibenz(a,e)pyrene			192-65-4	0.061	NA	NA

	Organic constituents			CASRN 1	Wastewater Standard (mg/l)	Non wastewater standard (mg/kg unless noted otherwise)	Hazardous Soil 10Xs UTS Nonwastewater (mg/kg unless noted otherwise)
☐	1,2-Dibromo-3-chloropropane			96-12-8	0.11	15	150
☐	1,2-Dibromoethane (Ethylene dibromide)			106-93-4	0.028	15	150
☐	Dibromomethane			74-95-3	0.11	15	150
☐	m-Dichlorobenzene			541-73-1	0.036	6.0	60
☐	o-Dichlorobenzene			95-50-1	0.088	6.0	60
☐	p-Dichlorobenzene			106-46-7	0.090	6.0	60
☐	Dichlorodifluoromethane			75-71-8	0.23	7.2	72
☐	1,1-Dichloroethane			75-34-3	0.059	6.0	60
☐	1,2-Dichloroethane			107-06-2	0.21	6.0	60
☐	1,1-Dichloroethylene			75-35-4	0.025	6.0	60
☐	trans-1,2-Dichloroethylene			156-60-5	0.054	30	300
☐	2,4-Dichlorophenol			120-83-2	0.044	14	140
☐	2,6-Dichlorophenol			87-65-0	0.044	14	140
☐	2,4-Dichlorophenoxyacetic acid (2,4-D)			94-75-7	0.72	10	100
☐	1,2-Dichloropropane			78-87-5	0.85	18	180
☐	cis-1,3-Dichloropropylene			10061-01-5	0.036	18	180
☐	trans-1,3-Dichloropropylene			10061-02-6	0.036	18	180
☐	Dieldrin			60-57-1	0.017	0.13	1.3
☐	Diethyl phthalate			84-66-2	0.20	28	280
☐	p-Dimethylaminoazobenzene			60-11-7	0.13	NA	NA
☐	2,4-Dimethylaniline (2,4-xylidine)			95-68-1	0.010	0.66	6.6
☐	2,4-Dimethyl phenol			105-67-9	0.036	14	140
☐	Dimethyl phthalate			131-11-3	0.047	28	280
☐	Di-n-butyl phthalate			84-74-2	0.057	28	280
☐	1,4-Dinitrobenzene			100-25-4	0.32	2.3	23
☐	4,6-Dinitro-o-cresol			534-52-1	0.28	160	1600
☐	2,4-Dinitrophenol			51-28-5	0.12	160	1600
☐	2,4-Dinitrotoluene			121-14-2	0.32	140	1400
☐	2,6-Dinitrotoluene			606-20-2	0.55	28	280
☐	Di-n-octyl phthalate			117-84-0	0.017	28	280
☐	Di-n-propylnitrosamine			621-64-7	0.40	14	140
☐	1,4-Dioxane			123-91-1	12.0	170	1700
☐	Diphenylamine			122-39-4	0.92	13	130
☐	Diphenylnitrosamine			86-30-6	0.92	13	130
☐	1,2-Diphenylhydrazine			122-66-7	0.087	NA	NA
☐	Disulfoton			298-04-4	0.017	6.2	62
☐	Dithiocarbamates (total)			NA	0.028	28	280
☐	Endosulfan I			959-98-8	0.023	0.066	0.66
☐	Endosulfan II			33213-65-9	0.029	0.13	1.3
☐	Endosulfan sulfate			1031-07-8	0.029	0.13	1.3
☐	Endrin			72-20-8	0.0028	0.13	1.3
☐	Endrin aldehyde			7421-93-4	0.025	0.13	1.3
☐	EPTC			759-94-4	0.042	1.4	14
☐	Ethyl acetate			141-78-6	0.34	33	330
☐	Ethyl benzene			100-41-4	0.057	10	100
☐	Ethyl cyanide (Propanenitrile)			107-12-0	0.24	360	3600

	Organic constituents			CASRN 1	Wastewater Standard (mg/l)	Non wastewater standard (mg/kg unless noted otherwise)	Hazardous Soil 10Xs UTS Nonwastewater (mg/kg unless noted otherwise)
☐	Ethyl ether			60-29-7	0.12	160	1600
☐	bis(2-Ethylhexyl)phthalate			117-81-7	0.28	28	280
☐	Ethyl methacrylate			97-63-2	0.14	160	1600
☐	Ethylene oxide			75-21-8	0.12	NA	NA
☐	Famphur			52-85-7	0.017	15	150
☐	Fluoranthene			206-44-0	0.068	3.4	34
☐	Fluorene			86-73-7	0.059	3.4	34
☐	Formetanate hydrochloride			23422-53-9	0.056	1.4	14
☐	Heptachlor			76-44-8	0.0012	0.066	0.66
☐	Heptachlor epoxide			1024-57-3	0.016	0.066	0.66
☐	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin			35822-46-9	0.000035	0.0025	0.025
☐	1,2,3,4,6,7,8-Heptachlorodibenzofuran			67562-39-4	0.000035	0.0025	0.025
☐	1,2,3,4,7,8,9-Heptachlorodibenzofuran			55673-89-7	0.000035	0.0025	0.025
☐	Hexachlorobenzene			118-74-1	0.055	10	100
☐	Hexachlorobutadiene			87-68-3	0.055	5.6	56
☐	Hexachlorocyclopentadiene			77-47-4	0.057	2.4	24
☐	Hexachlorodibenzo-p-dioxins (HxCDDs)			NA	0.000063	0.001	0.01
☐	Hexachlorodibenzo-furans (HxCDFs)			NA	0.000063	0.001	0.01
☐	Hexachloroethane			67-72-1	0.055	30	300
☐	Hexachloropropylene			1888-71-7	0.035	30	300
☐	Indeno (1,2,3-c,d) pyrene			193-39-5	0.0055	3.4	34
☐	Iodomethane			74-88-4	0.19	65	650
☐	Isobutyl alcohol			78-83-1	5.6	170	1700
☐	Isodrin			465-73-6	0.021	0.066	0.66
☐	Isosafrole			120-58-1	0.081	2.6	26
☐	Kepone			143-50-0	0.0011	0.13	1.3
☐	Methacrylonitrile			126-98-7	0.24	84	840
☐	Methanol			67-56-1	5.6	0.75 mg/l TCLP	7.5 mg/l TCLP
☐	Methapyrilene			91-80-5	0.081	1.5	15
☐	Methiocarb			2032-65-7	0.056	1.4	14
☐	Methomyl			16752-77-5	0.028	0.14	1.4
☐	Methoxychlor			72-43-5	0.25	0.18	1.8
☐	3-Methylchlolanthrene			56-49-5	0.0055	15	150
☐	4,4-Methylene bis(2-chloroaniline)			101-14-4	0.50	30	300
☐	Methylene chloride			75-09-2	0.089	30	300
☐	Methyl ethyl ketone			78-93-3	0.28	36	360
☐	Methyl isobutyl ketone			108-10-1	0.14	33	330
☐	Methyl methacrylate			80-62-6	0.14	160	1600
☐	Methyl methansulfonate			66-27-3	0.018	NA	NA
☐	Methyl parathion			298-00-0	0.014	4.6	46
☐	Metolcarb			1129-41-5	0.056	1.4	14
☐	Mexacarbate			315-18-4	0.056	1.4	14
☐	Molinate			2212-67-1	0.042	1.4	14
☐	Naphthalene			91-20-3	0.059	5.6	56
☐	2-Naphthylamine			91-59-8	0.52	NA	NA

	Organic constituents			CASRN 1	Wastewater Standard (mg/l)	Non wastewater standard (mg/kg unless noted otherwise)	Hazardous Soil 10Xs UTS Nonwastewater (mg/kg unless noted otherwise)
☐	o-Nitroaniline			88-74-4	0.27	14	140
☐	p-Nitroaniline			100-01-6	0.028	28	280
☐	Nitrobenzene			98-95-3	0.068	14	140
☐	5-Nitro-o-toluidine			99-55-8	0.32	28	280
☐	o-Nitrophenol			88-75-5	0.028	13	130
☐	p-Nitrophenol			100-02-7	0.12	29	290
☐	N-Nitrosodiethylamine			55-18-5	0.40	28	280
☐	N-Nitrosodimethylamine			62-75-9	0.40	2.3	23
☐	N-Nitroso-di-n-butylamine			924-16-3	0.40	17	170
☐	N-Nitrosomethylethylamine			10595-95-6	0.40	2.3	23
☐	N-Nitrosomorpholine			59-89-2	0.40	2.3	23
☐	N-Nitrosopiperidine			100-75-4	0.013	35	350
☐	N-Nitrosopyrrolidine			930-55-2	0.013	35	350
☐	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin			3268-87-9	0.000063	0.005	0.05
☐	1,2,3,4,6,7,8,9-Octachlorodibenzofuran			39001-02-0	0.000063	0.005	0.05
☐	Oxamyl			23135-22-0	0.056	0.28	2.8
☐	Parathion			56-38-2	0.014	4.6	46
☐	PCBs (total)			1336-36-3	0.10	10	100
☐	Pebulate			1114-71-2	0.042	1.4	14
☐	Pentachlorobenzene			608-93-5	0.055	10	100
☐	Pentachlorodibenzo-p-dioxins (PeCDDs)			NA	0.000063	0.001	0.01
☐	Pentachlorodibenzo-furans (PeCDFs)			NA	0.000035	0.001	0.01
☐	Pentachloroethane			76-01-7	0.055	6.0	60
☐	Pentachloronitrobenzene			82-68-8	0.055	4.8	48
☐	Pentachlorophenol			87-86-5	0.089	7.4	74
☐	Phenacetin			62-44-2	0.081	16	160
☐	Phenanthrene			85-01-8	0.059	5.6	56
☐	Phenol			108-95-2	0.039	6.2	62
☐	1,3-Phenylenediamine			108-45-2	0.01	0.66	6.6
☐	Phorate			298-02-2	0.021	4.6	46
☐	Phthalic acid			100-21-0	0.055	28	280
☐	Phthalic anhydride			85-44-9	0.055	28	280
☐	Physostigmine			57-47-6	0.056	1.4	14
☐	Physostigmine salicylate			57-64-7	0.056	1.4	14
☐	Promecarb			2631-37-0	0.056	1.4	14
☐	Pronamide			23950-58-5	0.093	1.5	15
☐	Propham			122-42-9	0.056	1.4	14
☐	Propoxur			114-26-1	0.056	1.4	14
☐	Prosulfocarb			52888-80-9	0.042	1.4	14
☐	Pyrene			129-00-0	0.067	8.2	82
☐	Pyridine			110-86-1	0.014	16	160
☐	Safrole			94-59-7	0.081	22	220
☐	Silvex (2,4,5-TP)			93-72-1	0.72	7.9	79
☐	1,2,4,5-Tetrachlorobenzene			95-94-3	0.055	14	140
☐	Tetrachlorodibenzo-p-dioxins (TCDDs)			NA	0.000063	0.001	0.01
☐	Tetrachlorodibenzofurans (TCDFs)			NA	0.000063	0.001	0.01

	Organic constituents			CASRN 1	Wastewater Standard (mg/l)	Non wastewater standard (mg/kg unless noted otherwise)	Hazardous Soil 10Xs UTS Nonwastewater (mg/kg unless noted otherwise)
☐	1,1,1,2-Tetrachloroethane			630-20-6	0.057	6.0	60
☐	1,1,2,2-Tetrachloroethane			79-34-5	0.057	6.0	60
☐	Tetrachloroethylene			127-18-4	0.056	6.0	60
☐	2,3,4,6-Tertachlorophenol			58-90-2	0.030	7.4	74
☐	Thiodicarb			59669-26-0	0.019	1.4	14
☐	Thiophanate-methyl			23564-05-8	0.056	1.4	14
☐	Toluene			108-88-3	0.080	10	100
☐	Toxaphene			8001-35-2	0.0095	2.6	26
☐	Triallate			2303-17-5	0.042	1.4	14
☐	Tribromomethane (Bromoform)			75-25-2	0.63	15	150
☐	2,4,6-Tribromophenol			118-79-6	0.035	7.4	74
☐	1,2,4-Trichlorobenzene			120-82-1	0.055	19	190
☐	1,1,1-Trichloroethane			71-55-6	0.054	6.0	60
☐	1,1,2-Trichloroethane			79-00-5	0.054	6.0	60
☐	Trichloroethylene			79-01-6	0.054	6.0	60
☐	Trichloromonofluoromethane			75-69-4	0.020	30	300
☐	2,4,5-Trichlorophenol			95-95-4	0.18	7.4	74
☐	2,4,6-Trichlorophenol			88-06-2	0.035	7.4	74
☐	2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)			93-76-5	0.72	7.9	79
☐	1,2,3-Trichloropropane			96-18-4	0.85	30	300
☐	1,1,2-Trichloro-1,2,2-trifluoroethane			76-13-1	0.057	30	300
☐	Triethylamine			121-44-8	0.081	1.5	15
☐	tris-(2,3-Dibromopropyl) phosphate			126-72-7	0.11	0.10	1.0
☐	Vernolate			1929-77-7	0.042	1.4	14
☐	Vinyl chloride			75-01-4	0.27	6.0	60
☐	Xylenes (total)			1330-20-7	0.32	30	300
☐	Antimony			7440-36-0	1.9	1.15 mg/l TCLP	11.5 mg/l TCLP
☐	Arsenic			7440-38-2	1.4	5.0 mg/l TCLP	50 mg/l TCLP
☐	Barium			7440-39-3	1.2	21 mg/l TCLP	210 mg/l TCLP
☐	Beryllium			7440-41-7	0.82	1.22 mg/l TCLP	12.2 mg/l TCLP
☒	Cadmium			7440-43-9	0.69	0.11 mg/l TCLP	1.1 mg/l TCLP
☒	Chromium (Total)			7440-47-3	2.77	0.60 mg/l TCLP	6.0 mg/l TCLP
☐	Cyanides (Total)[4]			57-12-5	1.2	590	5900
☐	Cyanides (Amenable)[4]			57-12-5	0.86	30	300
☐	Fluoride			16984-48-8	35	NA	NA
☒	Lead			7439-92-1	0.69	0.75 mg/l TCLP	7.5 mg/l TCLP
☐	Mercury (Retort residues)			7439-97-6	NA	0.20 mg/l TCLP	2.0 mg/l TCLP
☐	Mercury - All others			7439-97-6	0.15	0.025 mg/l TCLP	0.25 mg/l TCLP
☐	Nickel			7440-02-0	3.98	11 mg/l TCLP	110 mg/l TCLP
☐	Selenium			7782-49-2	0.82	5.7 mg/l TCLP	57 mg/l TCLP
☐	Silver			7440-22-4	0.43	0.14 mg/l TCLP	1.4 mg/l TCLP
☐	Sulfide			18496-25-8	14	NA	NA
☐	Thallium			7440-28-0	1.4	0.20 mg/l TCLP	2.0 mg/l TCLP
☐	Vanadium[5]			7440-62-2	4.3	1.6 mg/l TCLP	16 mg/l TCLP
☐	Zinc[5]			7440-66-6	2.61	4.3 mg/l TCLP	43 mg/l TCLP

WASTE PROFILE FORM

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: SOLID WASTE OPERATIONS GROUP at MS J595. For assistance with completing this form, call SOLID WASTE OPERATIONS GROUP at 5-4000.	Reference Number (For SOLID WASTE OPERATIONS GROUP use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
146032	Becky Coel-Roback	135015	Michael Le Scouarnec

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room	WMC Telephone
665-5011	M992	ERSS-CAP	00	NA	NA	667-7112

Waste Accumulation (Check only one.)

- ☐ Satellite Accumulation Area Site no: ______
- ☐ Less-than-90-days Storage Area Site no: ______
- ☐ TSDF Site no: ______
- ☐ Universal Waste Storage Area Site no: ______
- ☐ Used Oil for Recycle Site no: ______
- ☐ PCBs Storage Area Site no: ______
- ☐ NM Special Waste Site no: ______
- ☐ Rad Staging Area Site no: ______
- ☐ Rad Storage Area Site no: ______
- ☒ None of the Above

ER Use Only ☒ ER Site SWMU/AOC #: C-00-041

Method of Characterization (Check as many as apply.)

- ☐ Chemical/Physical Analysis ☐ Attached Sample #: ______
- ☐ Radiological Analysis ☐ Attached Sample #: ______
- ☐ PCB Analysis ☐ Attached Sample #: ______
- ☒ Acceptable Knowledge Documentation ☒ Attached Documentation #: PRS#C-00-041
- ☐ MSDS ☐ Attached

Section 1 – Waste Prevention/Minimization (answer all questions)			
Can hazard segregation, elimination, or material substitution be used?	☐ Yes (Provide comments)	☒ No	
Can any of the materials in the waste stream be recycled or reused?	☐ Yes (Provide comments)	☒ No	
Has waste minimization been incorporated into procedures or other process controls?	☒ Yes	☐ No (Provide comments)	
Can this waste be generated outside a RCA?	☐ Yes (Provide comments)	☐ No	☒ N/A
Comments:			

Section 2 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ Other (Complete all sections.)

Radiological Information

Was Waste Generated in a RCA? ☐ Yes ☒ No

- ☒ Non-radioactive
- ☐ Radioactive – Low Level
- ☐ Radioactive – Transuranic

Waste Destination (Check only one)
- ☐ SWWS (Complete Attachment 1)
- ☐ RLWTF (Complete Attachment 2)
- ☐ RLWTP (Complete Attachment 3)
- ☐ TA-16/HE (Complete Attachment 4)
- ☐ NTS (Complete Attachment 5)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check all that apply.)
- ☐ Inorganic
- ☒ Organic
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste or residue
- ☐ No-Longer Contained-In
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable

PCB Source Concentration
- ☐ PCB < 50 ppm
- ☐ PCB ≥ 50 - < 500 ppm
- ☐ PCB ≥ 500 ppm
- ☐ Hazardous Waste Contaminated Soil
- ☐ Untreated Hazardous Debris
- ☐ Commercial Solid Waste
- ☐ Other (Describe below)

* See instructions.

Waste Source (Check only one.)

Waste Source A
- ☐ Decon
- ☐ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup – Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Waste Source B
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☒ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping (Non-routine)
- ☐ Spill Cleanup (Non-routine)
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☐ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash/Dust
- ☒ Solid
- ☐ Sludge
- ☐ Absorbed/solidified liquid
- ☐ Debris

Matrix Type (Check only one.)
- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Estimated Annual Volume (m^3): 15

Section 3 – Process and Waste Descriptions

Process Description:

Waste consists of asphalt debris clean-up from former asphalt batch plant in Rendija Canyon.

Waste Description:

Asphalt pieces and very small amount of soil. Soil that is around the pieces is clean soil. There is no events pertaining to release on the soil at this location.

Section 4 – Characteristics

Ignitability (Check only one.) (°F) (°C)	Corrosivity (Check only one.) (pH)	Reactivity (Check as many as apply.)	Boiling Point (Check only one.) (°F) (°C)
☐ < 73 < 22.8	☐ ≤ 2.0	☐ RCRA Unstable	☐ ≤ 95 ≤ 35
☐ 73 - 99 22.8 - 37.2	☐ 2.1 – 4.0	☐ Water Reactive	☐ > 95 > 35
☐ 100 - 139 37.8 - 59.4	☐ 4.1 – 6.0	☐ Cyanide Bearing	
☐ 140 -200 60.0 - 93.3	☐ 6.1 – 9.0	☐ Sulfide Bearing	
☐ > 200 > 93.3	☐ 9.1 - 12.4	☐ Pyrophoric	
☐ EPA Ignitable – Non-liquid	☐ ≥ 12.5	☐ Shock Sensitive	
☐ DOT Flammable Gas	☐ Liquid corrosive to steel	☐ Explosive - DOT Div. ______	
☐ DOT Oxidizer	☒ Non-aqueous	☒ Non-reactive	☒ Not applicable
☒ Not ignitable			

Identify for all contaminants listed.	Characterization Method: AK	TCLP	Total	None or Non-detect	Concentration of Contaminants: Contaminant present at Minimum to Maximum (10,000 ppm = 1%)	Regulatory Limit
Toxicity Characteristic Metals						
Arsenic	☒	☐	☐	☒	______ to ______ ppm	5.0 ppm
Barium	☒	☐	☐	☒	______ to ______ ppm	100.0 ppm
Cadmium	☒	☐	☐	☒	______ to ______ ppm	1.0 ppm
Chromium (Total)	☒	☐	☐	☒	______ to ______ ppm	5.0 ppm
Lead	☒	☐	☐	☒	______ to ______ ppm	5.0 ppm
Mercury	☒	☐	☐	☒	______ to ______ ppm	0.2 ppm
Selenium	☒	☐	☐	☒	______ to ______ ppm	1.0 ppm
Silver	☒	☐	☐	☒	______ to ______ ppm	5.0 ppm
Toxicity Characteristic Organics						
Benzene	☒	☐	☐	☒	______ to ______ ppm	0.5 ppm
Carbon tetrachloride	☒	☐	☐	☒	______ to ______ ppm	0.5 ppm
Chlorobenzene	☒	☐	☐	☒	______ to ______ ppm	100.0 ppm
Chloroform	☒	☐	☐	☒	______ to ______ ppm	6.0 ppm
o – cresol	☒	☐	☐	☒	______ to ______ ppm	200.0 ppm
m – cresol	☒	☐	☐	☒	______ to ______ ppm	200.0 ppm
p – cresol	☒	☐	☐	☒	______ to ______ ppm	200.0 ppm
Cresol – mixed	☒	☐	☐	☒	______ to ______ ppm	200.0 ppm
1,4-Dichlorobenzene	☒	☐	☐	☒	______ to ______ ppm	7.5 ppm
1,2-Dichloroethane	☒	☐	☐	☒	______ to ______ ppm	0.5 ppm
1,1-Dichloroethylene	☒	☐	☐	☒	______ to ______ ppm	0.7 ppm
2,4-Dinitrotoluene	☒	☐	☐	☒	______ to ______ ppm	0.13 ppm
Hexachlorobenzene	☒	☐	☐	☒	______ to ______ ppm	0.13 ppm
Hexachlorobutadiene	☒	☐	☐	☒	______ to ______ ppm	0.5 ppm
Hexachloroethane	☒	☐	☐	☒	______ to ______ ppm	3.0 ppm
Methyl ethyl ketone	☒	☐	☐	☒	______ to ______ ppm	200.0 ppm
Nitrobenzene	☒	☐	☐	☒	______ to ______ ppm	2.0 ppm
Pentachlorophenol	☒	☐	☐	☒	______ to ______ ppm	100.0 ppm
Pyridine	☒	☐	☐	☒	______ to ______ ppm	5.0 ppm
Tetrachloroethylene	☒	☐	☐	☒	______ to ______ ppm	0.7 ppm
Trichloroethylene	☒	☐	☐	☒	______ to ______ ppm	0.5 ppm
2,4,5-Trichlorophenol	☒	☐	☐	☒	______ to ______ ppm	400.0 ppm
2,4,6-Trichlorophenol	☒	☐	☐	☒	______ to ______ ppm	2.0 ppm
Vinyl chloride	☒	☐	☐	☒	______ to ______ ppm	0.2 ppm
Herbicides and Pesticides						
Chlordane	☒	☐	☐	☒	______ to ______ ppm	0.03 ppm
2,4-D	☒	☐	☐	☒	______ to ______ ppm	10.0 ppm
Endrin	☒	☐	☐	☒	______ to ______ ppm	0.02 ppm
Heptachlor (& its epoxide)	☒	☐	☐	☒	______ to ______ ppm	0.008 ppm
Lindane	☒	☐	☐	☒	______ to ______ ppm	0.4 ppm
Methoxychlor	☒	☐	☐	☒	______ to ______ ppm	10.0 ppm
Toxaphene	☒	☐	☐	☒	______ to ______ ppm	0.5 ppm
2,4,5-TP (Silvex)	☒	☐	☐	☒	______ to ______ ppm	0.5 ppm

Section 5 - Additional Constituents and Information

Additional Constituents and Contaminants. Please account for 100% of waste. Ranges should be given within guidelines of individual constituents. List all other constituents (including inerts) not identified above and attach any applicable analysis. No chemical formulas allowed in this field. Continue in Section 3 Additional Information as necessary. CAS Numbers are needed for all chemical constituents, for material without a CAS Number enter "No CAS Number." Contact Waste Services at 5-4000 for assistance.

CAS No.	Name of constituent	Minimum		Maximum	
	Asphalt	95	to	97	%
	Dirt	3	to	5	%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
			to		%
	Total of max. ranges of this section and page 2			102	in %

Additional Information (Use additional sheet if necessary.)

If additional information is available on the chemical, physical, or radiological character of the waste not covered on this form, provide it below:

Section 6 - Work Control Documentation (answer all questions)

Do the procedures for this process cover how to manage this waste?	☒ Yes	☐ No (Provide comments)
Do the procedures for this process address controls to prevent changes to waste constituents and concentrations or addition or removal of waste to/from containers?	☒ Yes	☐ No (Provide comments)

Comments:

Section 7 - Packaging and Storage Control

Describe how the waste will be packaged in according to the applicable WAC:

Waste will be packaged in accordance with DOT requirements

Identify the storage management controls that will be used for this waste stream: (check all that apply)

☐ Tamper indication devices	☐ Locked cabinet or building
☐ Limited use locks with log-in for waste	☒ Other (describe) Roll off is secured by tarp

Section 8 – Waste Certification Statements (check only one)

☒ Waste appears to meet WAC chapter for: 17

☐ Waste stream needs exception/exemption for treatment, storage, or disposal at: Rio Rancho Landfill

☐ Waste does not meet the criteria for any known TSDF. (DOE approval is required. Contact the Waste Management Program Office for assistance.)

WASTE GENERATOR CERTIFICATION: Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the waste characterization information on this form is correct and that it meets the requirements of the applicable waste acceptance criteria. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Signature [signature] Date 5/14/07

WASTE CERTIFYING OFFICIAL: I have reviewed this form and any associated attachments and the characterization information provided appears to be complete and accurate. I certify, to the best of my knowledge, that the waste characterization information provided by the waste generator meets the requirements of the applicable WAC.

Signature [signature] Date 5.14.07

WASTE PROFILE FORM

Contact (if other than given below)	For rapid processing, complete all sections in black or blue ink and mail to: SOLID WASTE OPERATIONS GROUP at MS J595. For assistance with completing this form, call SOLID WASTE OPERATIONS GROUP at 5-4000.	Reference Number (For SOLID WASTE OPERATIONS GROUP use only.)

Generator's Z Number	Waste Generator's Name (print)	WMC's Z Number	WMC's Name (print)
146032	Becky Coel-Roback	135015	Michael Le Scouarnec

Generator's Telephone	Generator's Mail Stop	Waste Generating Group	Waste Stream Technical Area	Building	Room	WMC Telephone
665-5011	M992	ERSS-CAP	00	NA	NA	667-7112

Waste Accumulation (Check only one.)

- ☐ Satellite Accumulation Area — Site no: ______
- ☐ Less-than-90-days Storage Area — Site no: ______
- ☐ TSDF — Site no: ______
- ☐ Universal Waste Storage Area — Site no: ______
- ☐ Used Oil for Recycle — Site no: ______
- ☐ PCBs Storage Area — Site no: ______
- ☐ NM Special Waste — Site no: ______
- ☐ Rad Staging Area — Site no: ______
- ☐ Rad Storage Area — Site no: ______
- ☒ None of the Above

ER Use Only ☒ ER Site — SWMU/AOC #: C-00-041

Method of Characterization (Check as many as apply.)

☒ Chemical/Physical Analysis	☒ Attached	Sample #: svoc + 8 metals
☐ Radiological Analysis	☐ Attached	Sample #: ______
☒ PCB Analysis	☒ Attached	Sample #: arochlor
☒ Acceptable Knowledge Documentation	☒ Attached	Documentation #: PRS#C-00-041
☐ MSDS	☐ Attached	

Section 1 – Waste Prevention/Minimization (answer all questions)

Can hazard segregation, elimination, or material substitution be used?	☐ Yes (Provide comments)	☒ No	
Can any of the materials in the waste stream be recycled or reused?	☐ Yes (Provide comments)	☒ No	
Has waste minimization been incorporated into procedures or other process controls?	☒ Yes	☐ No (Provide comments)	
Can this waste be generated outside a RCA?	☐ Yes (Provide comments)	☐ No	☒ N/A

Comments:

Section 2 - Chemical and Physical Information

Waste Type (Check only one.)
- ☐ Unused/Unspent Chemical (Complete all sections as appropriate.)
- ☒ Process Waste/Spent Chemical/ Other (Complete all sections.)

Radiological Information

Was Waste Generated in a RCA? ☐ Yes ☒ No

- ☒ Non-radioactive
- ☐ Radioactive – Low Level
- ☐ Radioactive – Transuranic

Waste Destination (Check only one)
- ☐ SWWS (Complete Attachment 1)
- ☐ RLWTF (Complete Attachment 2)
- ☐ RLWTP (Complete Attachment 3)
- ☐ TA-16/HE (Complete Attachment 4)
- ☐ NTS (Complete Attachment 5)

Classification Information
- ☒ Unclassified
- ☐ Classified/Sensitive

Waste Category (Check all that apply.)
- ☐ Inorganic
- ☒ Organic
- ☐ Solvent *
- ☐ Degreaser *
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous waste or residue
- ☐ No-Longer Contained-In
- ☐ Explosive process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (See instructions)
- ☐ Battery (See instructions)
- Asbestos ☐ friable ☐ non-friable

PCB Source Concentration
- ☐ PCB < 50 ppm
- ☐ PCB ≥ 50 - < 500 ppm
- ☐ PCB ≥ 500 ppm
- ☐ Hazardous Waste Contaminated Soil
- ☐ Untreated Hazardous Debris
- ☐ Commercial Solid Waste
- ☐ Other (Describe below)

* See instructions.

Waste Source (Check only one.)

Waste Source A
- ☐ Decon
- ☐ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup – Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (Describe below)

Waste Source B
- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☐ Investigative Derived
- ☐ Orphan/Legacy
- ☒ Remediation/Restoration
- ☐ Repacking (Secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping (Non-routine)
- ☐ Spill Cleanup (Non-routine)
- ☐ UST - Non-petroleum
- ☐ UST - Petroleum
- ☐ Other (Describe below)

Waste Matrix (Check only one.)

Gas
- ☐ ≤ 1.5 Atmospheres pressure
- ☐ > 1.5 Atmospheres pressure
- ☐ Liquefied compressed gas

Liquid
- ☐ Aqueous
- ☐ Non-aqueous
- ☐ Suspended Solids/ Aqueous
- ☐ Suspended Solids/ Non-aqueous

Solid
- ☐ Powder/Ash/Dust
- ☒ Solid
- ☐ Sludge
- ☐ Absorbed/solidified liquid
- ☐ Debris

Matrix Type (Check only one.)
- ☒ Homogeneous
- ☐ Heterogeneous (Describe below)

Estimated Annual Volume (m^3): 15

DRAFT

CONSOLIDATED REMOTE WASTE STORAGE SITE DISPOSAL REQUEST

Waste Pick-up Location and Storage Type: Waste located at Rendija Canyon			☐	< 90 Day Accumulation Area Start Date:	☐	**Satellite Accumulation Area** Approximate Volume:
TA: county	Building: outside	Room: N/A	☐	**Universal Waste** Start Date:	☐	**PCB Waste** Start Date:
					☐	**NM Special Waste** (<90 days) Start Date:

Item ID	Phys State	Volume	Unit	Weight	Unit	Temp.Con*	Acis Bar C	Profile	Cost Ctr	Prg Cd	Cost Acc	Work Pkg	Description of Waste	RCRA *	Subcat.*
10033753	S	10	CY	11170	P				6A000A	MR3A	223	KXT0	Non-Reg Asphalt Debris		

*Temp. Con, RCRA, and subcat codes to be completed by FWO-SWO personnel only.

Units for Volume	**Units for Weight**
G-Gallon M-Cubic Meters L-Liters O-Fluid Ounce F-Cubic Feet P-Pint Q-Quart C-Cubic centimeters	P-Pound O-Ounce K-Kilograms T-Tons G-Grams

WMC CERTIFICATION STATEMENT: To the best of my knowledge, I certify that the information on this form is correct. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Printed Name Michael Le Scouarnec	**Signature**	**Z Number** 135015	**Date**5-16-07

Environmental Programs (EP)
Document Signature Form

Document Catalog Number: EP2007-0275
(Please prefix the name of all electronic versions of this document with this number.)

Document Title /Subject: AOC C-00-041
PRSs: None **OUO Information:** Y / N
Associated Document Catalog Number(s): None
Author: Le Scouarnec, Michael C 667 -7112 mcle@lanl.gov
Organization: Corrective Actions Project (EP-CAP), Pkg1728
Document Team: None
Document Type: Waste Profile Form (WPF) **Former OU:** N/A

Date Due: Unknown **Date Final Complete:** Unknown
Date Sent to DOE: Unknown **Date Sent to NMED:** Unknown
Date Sent to RPF: Unknown **Received Per RPF:** Unknown

LA-UR Number: **RPF ER ID Number:** **Performance Measure:** No
AA Deliverable: No **Certification Required:** No **Force Peer Review:** No
Distribution TO: **Distribution FROM:**
Distribution COPY: **Distribution THRU:**
Attachment Notes:
Status/Comments:

Reviewer Signatures: (By signing below, the reviewer indicates that he/she reviewed and approves the document. Conditional approval may be indicated by checking the COMMENTS ATTACHED box.)

Reviewer (Print reviewer's name under title)	Signature	Date	Comments Attached
Author BECKY COEL-ROBACK	[signature]	5/14/07	
Technical Reviewer MIKE LE SCOUARNEC	[signature]	5·14·07	
Solid Waste Regulatory Compliance (SWRC)			
Project Leader BECKY COEL-ROBACK	[signature]	5/14/07	

Document Catalog Number EP2007-0275

ATTACHMENT L

WASTE CHARACTERIZATION STRATEGY FORM
for
INVESTIGATION WORK PLAN for GUAJE/BARRANCAS/RENDIJA CANYONS AGGREGATE AREA at TECHNICAL AREA 00

SPECIAL WASTE SHIPMENT RECORD

Rio Rancho Sanitary Landfill

Mailing Address:	Physical Address:
P.O. Box 15700	33rd St. & Northern Blvd.
Rio Rancho, NM 87174	Rio Rancho, NM 87144
505/892-2055	SWM #231402

Shipment 46524

Profile #

1. Generator's work site name and address

2. Generator's name and address	Generator's Telephone no.

3. Authorized Agent's name and mailing address (if different from #2)	Agent's Telephone no.

4. Proper name and type of waste	5. Containers No. Type	6. Total quantity (yd3) (tons)

7. **Special handling instructions:**

8. GENERATOR'S OR AUTHORIZED AGENT'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway in accordance with applicable international and government regulations.

I hereby certify that the above named material does not contain free liquid as defined by 40CFR Part 258.28 and is not a hazardous waste as defined by 40CFR 261 or any applicable state law.

Generator's or Authorized Agent's printed/typed name	Signature	Month / Day / Year
		6/14/07

9. Transporter 1 (Acknowlegement of receipt of materials)

Printed/typed name, address, telephone no.	Signature	Month / Day / Year
		/ /

10. Transporter 2 (Acknowlegement of receipt of materials)

Printed/typed name, address, telephone no.	Signature	Month / Day / Year
		6/14/07

11. Discrepancy indication space

12. Waste disposal site location coordinates

Received By (printed/typed name):	Signature	Month / Day / Year
		/ /

White/GEN Yellow/CUSTOMER Pink/LANDFILL

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: [illegible]
2. Page 1 of
3. Emergency Response Phone: [illegible]
4. Manifest Tracking Number: 000363865 JJK

5. Generator's Name and Mailing Address: [illegible]
Generator's Phone: [illegible]
Generator's Site Address (if different than mailing address): [illegible]

6. Transporter 1 Company Name: [illegible] — U.S. EPA ID Number: N/A

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address: [illegible]
Facility's Phone: [illegible] — U.S. EPA ID Number: [illegible]

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. [illegible]		[illegible]	[illegible]	[illegible]	
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information: [illegible]

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: [illegible] — Signature — Month Day Year

INT'L
16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER
17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name — Signature — Month Day Year
Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY
18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
18b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name — Signature — Month Day Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

CRWSS WASTE MANIFEST

Manifest No.: L062807-02 *** IN CASE OF EMERGENCY CALL 505-667-6211 ***

EPA ID#: NM0890010515

SHIP TO: TA 54

LOS ALAMOS NATIONAL LABORATORY

CRWSS LOCATION:

TA-03 ______ TA-45 ______

TA-35 ______ TA-53 ______

TA-43 ______ AREA J ______

TRANSPORTER: Portage Environmental

SHIP FROM:

WMC: Michael LeScouarnec

Z#: / PH.#: 135015/7-7112

MAIL STOP: M992

TA. / BLDG. 00

ROOM: N/A

ITEM	HM	DOT SHIPPING DESCRIPTION	CONTAINER NO.	CONTAINER TYPE	TOTAL QUANTITY	UNIT WT/VOL
a.	X	Hazardous waste solid, N.O.S, 9, UN3077, PG III	01	DF	8	P
b.		Non regulated waste	02	DM	200	P
c.						
d.						

ADDITIONAL DESCRIPTIONS FOR MATERIALS LISTED ABOVE:

Item a. ERG# 171

Item b. ERG# N/A

Item c. ERG#

Item d. ERG#

SPECIAL HANDLING INSTRUCTIONS AND ADDITIONAL INFORMATION:

Generator's certification: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment. OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

PRINTED/TYPED NAME: MICHAEL LE SCOUARNEC — SIGNATURE x [signature] — DATE 6/28/07

TRANSPORTER ACKNOWLEDGEMENT OF RECEIPT OF MATERIALS

PRINTED/TYPED NAME: Nickolas Gallegos — SIGNATURE x [signature] — DATE 6-28-07

CRWSS RECEIVING PERSONNEL: CERTIFICATION OF RECEIPT OF HAZARDOUS MATERIALS COVERED BY THIS MANIFEST

Steve Shelton — x [signature] — 6-28-07

PRINTED/TYPED NAME — SIGNATURE — DATE

WHITE: ORIGINAL-RETURN TO GENERATOR — YELLOW: CRWSS SITE COPY

PINK: CRWSS FILE COPY — GOLD: GENERATOR COPY

CRWSS WASTE MANIFEST

Manifest No.: L040507-01

*** IN CASE OF EMERGENCY CALL 505-667-6211 ***

EPA ID#: NM0890010515

SHIP TO:

S ALAMOS NATIONAL LABORATORY

CRWSS LOCATION:

TA-03 ____ TA-46 ____

TA-35 ____ TA-53 ____

TA-43 ____ AREA J + L ____

TRANSPORTER: Portage

SHIP FROM:

WMC: Mike Le Scouarnec

Z#: / PH.#: 135015 / 7-7112

MAIL STOP: M992

TA. / BLDG.: 00.10

ROOM:

EM	HM	DOT SHIPPING DESCRIPTION	CONTAINER NO.	CONTAINER TYPE	TOTAL QUANTITY	UNIT WT/VOL
1.	X	Waste Sodium azide, 6.1, UN1687, PG II	01	DF	3	P
1.	X	Hazardous waste solid, N.O.S, 9, NA3077, PG III	01	DF	3	P
1.	X	Hazardous waste solid, N.O.S, 9, NA3077, PG III	01	DM	238	P
1.		Non regulated waste	01	DM	540	P

DITIONAL DESCRIPTIONS FOR MATERIALS LISTED ABOVE:

1a. ERG# 153

1b. ERG# 171

1c. ERG# 171

1d. ERG# N/A

CIAL HANDLING INSTRUCTIONS AND ADDITIONAL INFORMATION:

rator's certification: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all cts in proper condition for transport by highway according to applicable international and national government regulations.

n a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have ted the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity rator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

NTED/TYPED NAME: Mike LE Scouarnec — SIGNATURE: x [signature] — DATE: 4-5-07

NSPORTER ACKNOWLEDGEMENT OF RECEIPT OF MATERIALS

NTED/TYPED NAME: Michael L. Pope — SIGNATURE: x Michael L. Pope — DATE: 4-5-07

SS RECEIVING PERSONNEL: CERTIFICATION OF RECEIPT OF HAZARDOUS MATERIALS COVERED BY THIS MANIFEST

Steve Shelton — x [signature] — 4-5-07

NTED/TYPED NAME — SIGNATURE — DATE

Appendix I

Munitions Debris/Munitions
and Explosives of Concern Report
(on CD included with this document)

Appendix J

Geophysical Reports
(on CD included with this document)