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Historical Investigation Report for Cañon de Valle Aggregate Area

Los Alamos
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EXECUTIVE SUMMARY

This historical investigation report (HIR) provides details of historical operations and known historical investigation results for the Cañon de Valle Aggregate Area and other Los Alamos National Laboratory landmarks. This HIR is a companion document to the Cañon de Valle Aggregate Area Investigation Work Plan.

The Cañon de Valle Aggregate Area consists of 239 solid waste management units (SWMUs) and areas of concern (AOCs) (also referred to as sites, many comprising consolidated units) in Technical Areas (TAs) -14, -15, and -16 that are either located within the Cañon de Valle watershed or that are discharged directly to the Cañon de Valle watershed from the mesa tops. Of the 239 SWMUs and AOCs, 94 are not included in the HIR because (1) no further action has been approved or is pending by either the New Mexico Environment Department or the U.S. Environmental Protection Agency (53 sites); (2) the sites are included in other investigation work plans (33 sites); or (3) the sites are Resource Conservation and Recovery Act sites that will be closed under interim status (Title 40, Code of Federal Regulations, Part 265) (8 sites).

To facilitate the discussion of and activities proposed for the large number of SWMUs and AOCs comprising the Cañon de Valle Aggregate Area, the 145 sites included in this HIR are subdivided into one of the following 10 subaggregate areas based on location and operational history.

- TA-16-220 Complex—Subaggregate 1 (7 SWMUs and AOCs)
- Material Disposal Area (MDA) R, SWMU 16-019—Subaggregate 2 (1 SWMU)
- TA-16 Burning Ground—Subaggregate 3 (11 SWMUs and AOCs)
- TA-16 Administrative Area—Subaggregate 4 (32 SWMUs and AOCs).
- TA-16 T-Site—Subaggregate 5 (13 SWMUs and AOCs)
- TA-16 WWII GMX-3 Area—Subaggregate 6 (20 SWMUs and AOCs)
- TA-16-280/260 Complexes—Subaggregate 7 (12 SWMUs and AOCs)
- TA-14 Firing Site Area—Subaggregate 8 (26 SWMUs and AOCs)
- TA-15 West—Subaggregate 9 (21 SWMUs and AOCs)
- TA-16-340 Complex—Subaggregate 10 (2 SWMUs and AOCs)

Site descriptions and operational histories of the 145 SWMUs and AOCs contained in the Cañon de Valle Aggregate Area are briefly described. Where historical investigation data are available for a SWMU or AOC, the analytical results are presented, and the quality of the data is evaluated. Both screening-level data (data of insufficient quality to allow delineation of the nature and extent of contamination in the investigation work plan) and decision-level data (data of sufficient quality to allow delineation of the nature and extent of contamination in the investigation work plan) are presented. In addition, field-screening results are also presented, where applicable.

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1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE) and managed by 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 covers 40 mi^2 of the Pajarito Plateau, which consists of a series of fingerlike mesas separated by deep canyons containing ephemeral, perennial, and intermittent streams running from west to east. Mesa tops range in elevation between 6200 and 7800 ft above mean sea level.

The Laboratory's Environmental Programs (EP), formerly 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 EP 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, EP 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 historical investigation report (HIR) provides operational histories and summaries of the field investigations and associated environmental data collected to date for the sites in the Cañon de Valle Aggregate Area Investigation Work Plan (LANL 2006, 91698). The purpose of the HIR is to provide supporting information for the activities necessary to complete the investigation, as presented in the work plan.

The SWMUs and AOCs addressed in this HIR are potentially contaminated with both hazardous and radioactive components. The New Mexico Environment Department (NMED), pursuant to the New Mexico Hazardous Waste Act, regulates cleanup of hazardous wastes and hazardous constituents. DOE regulates cleanup of radioactive contamination, pursuant to DOE Order 5400.5, "Radiation Protection of the Public and the Environment," and DOE Order 435.1, "Radioactive Waste Management." Information on radioactive materials and radionuclides, including the results of sampling and analyses of radioactive constituents, is voluntarily provided to NMED in accordance with DOE policy.

Corrective actions at the Laboratory are subject to the Compliance Order on Consent (the Consent Order) signed by NMED, DOE, the Regents of the University of California, and the state of New Mexico Attorney General on March 1, 2005. The Consent Order was issued pursuant to the New Mexico Hazardous Waste Act, New Mexico Statutes Annotated 1978, § 74-4-10 and 74-9-36(D), and the New Mexico Solid Waste Act.

1.1 General Site Information

The Cañon de Valle Aggregate Area consists of 239 SWMUs and AOCs (also referred to as sites) that are either located within the Cañon de Valle watershed or that are discharged directly to the Cañon de Valle watershed from the mesa tops Plate 1, Figure 1.1-1, and Table 1.1-1).

Of the 239 SWMUs and AOCs, 94 are not included in this HIR (Table 1.1-1). The current regulatory status of these 94 sites is as follows.

- Twenty-two SWMUs were removed from Module VIII of the Laboratory's Hazardous Waste Facility Permit (HWFP) by NMED, and no further action (NFA) is required (Kelley 1998, 63042; NMED 2001, 70010; Young 2001, 70236).

- Twenty-one AOCs have NFA approval by the U.S. Environmental Protection Agency (EPA) (King 2005, 88464) and do not require additional actions under the Consent Order (King 2005, 88464).
- Ten SWMUs have requests for removal from Module VIII of the Laboratory's HWFP or NFA proposals pending action by NMED (LANL 2001, 71096; LANL 2002, 73644; and LANL 2005, 91544). These sites are identified in Table 1.1-1 as pending.
- Thirty-three SWMUs are addressed in other investigation work plans.
- Eight SWMUs are Resource Conservation and Recovery Act (RCRA)-permitted units that are not subject to the Consent Order and will be closed under 40 CFR Part 264.

The remaining 145 SWMUs and AOCs are included in this HIR (Table 1.1-2). Table 1.1-2 also includes a column that briefly describes the proposed work plan activities for each SWMU and AOC (LANL 2006, 91698). Investigation of six of the SWMUs has been deferred under Table IV-2 of the Consent Order because they are within the testing hazard zone of active sites. To facilitate the discussion of the large number of SWMUs and AOCs comprising this aggregate, the 145 SWMUs are divided into the following 10 subaggregates, based upon location and operational history.

- Subaggregate 1, Technical Area (TA) 16-220 Complex (7 SWMUs and AOCs): The 16-20 Complex is located in the northwest area of TA-16 and was used for radiography of high explosive (HE) components of nuclear weapons for many years. The radiography area of TA-16 was built in 1952 and consisted of seven buildings. Three rest houses, three x-ray buildings, and a centrally located photoprocessing building were connected by enclosed walkways. The complex was removed by decontamination and decommissioning (D&D) in 2003. No HE processing was done in the complex.
- Subaggregate 2, Material Disposal Area (MDA) R (SWMU 16-019) (1 SWMU): MDA R consists of the original World War II (WWII) S-Site Burning Ground and associated waste disposal site. Located north of building 16-260 and south of Cañon de Valle, MDA R was built in the mid-1940s and was used as a burning ground for waste explosives until the early 1950s.
- Subaggregate 3, TA-16 Burning Ground (11 SWMUs and AOCs): The TA-16 Burning Ground is located in the northeastern corner of TA-16 and was constructed in 1951 for HE treatment. It operated until 1966. After treatment, residual material was placed in the MDA P landfill until 1984. After 1984, the treated material was taken to TA-54 for disposal. All of the structures at the burning ground were removed by D&D in 2003.
- Subaggregate 4, TA-16 Administrative Area (32 SWMUs and AOCs): The TA-16 Administrative Area Subaggregate includes SWMUs and AOCs located in the western part of the Cañon de Valle watershed and consists of sites that were not used for HE processing. These sites include a steam plant, storage buildings, a drywell system, a septic system, a trash (non-HE) burning site, the outfall from the TA-16 fire station, underground storage tanks (USTs), and soil contamination areas. Many of these sites have not been investigated.
- Subaggregate 5, TA-16 T-Site (13 SWMUs and AOCs): T-Site (formerly TA-24) is located in the northwestern portion of TA-16, northwest of the S-Site explosives manufacturing complex, and consists of former HE-related magazines, hutments, warehouses, shops, laboratories, and a septic system. T-Site, constructed between 1944 and 1950, was used primarily for radiography of HE charges. Intentional burning in 1960 destroyed most of the structures, and residual debris and subsurface structures were removed in 1966. No structures remain on the site, which is overgrown with trees.

- Subaggregate 6, TA-16 WWII GMX-3 Area (20 SWMUs and AOCs): The TA-16 WWII GMX-3 operations were located in the southwestern portion of TA-16 and were devoted to developing techniques to produce HE lenses (the explosives components of a nuclear weapon) with both high chemical purity and accurate shapes. SWMUs and AOCs include potential soil contamination at footprints of former HE-machining buildings, including the associated sumps and drainlines. All the buildings were built during the 1940s and inactivated in 1959. Intentional burning in 1960 destroyed the buildings. Explosive residues were disposed of at TA-54, and noncombustibles were disposed of at MDA P (SWMU 16-018). The sumps and drainlines were removed in 1967.
- Subaggregate 7, TA-16-280/260 Complexes (12 SWMUs and AOCs): The TA-16-280/260 Complexes are located south of MDA R in the north-central portion of TA-16. Building 16-280 is a physical inspection and metrology laboratory for HE and other weapons components. Building16-280 is also a staging facility for assembling test device components. Building 16-260 is an HE-machining facility that processes large amounts of explosives. The 16-280/260 Complex consists of sumps, drainlines, outfalls, and associated contaminated soil for HE-processing buildings 16-260 (exclusive of the main HE-machining outfall) and 16-280.
- Subaggregate 8, TA-14 Firing Site Area (26 SWMUs and AOCs): The Firing Site Area is located north of Cañon de Valle, east of TA-16, and includes firing sites, burning areas, an incinerator, an HE sump and drainline, and a septic system. Known as Q-Site, TA-14 has been used since 1944 for explosives development and testing, including testing that involves radioactive materials. In 1952, the firing site was renovated, structures were removed, and a new firing site was constructed (LANL 1996, 54086, p. i). Investigation of five SWMUs at TA-14 has been deferred under Table IV-2 of the Consent Order because the SWMUs are within the testing hazard zone of active sites.
- Subaggregate 9, TA-15 West (21 SWMUs and AOCs): The TA-15 West Area is located on the eastern portion of the Cañon de Valle watershed and includes sites associated with the area known as the Hollow and areas associated with firing site support buildings. It also includes small firing sites, as well as a waste disposal area, MDA Z. Investigation of SWMU 15-004(g) has been deferred under Table IV-2 of the Consent Order because it is within the testing hazard zone of active sites.
- Subaggregate 10, TA-16-340 Complex (2 SWMUs and AOCs): The 16-340 Complex is located in the northeastern corner of TA-16 and consists of two sites associated with the 16-340 Complex that have not been previously investigated. The 16-340 Complex operated from 1952 to 1999 and processed and produced large quantities of plastic-bonded explosives. The plastic-bonded explosives were produced by slurrying HE and solvents together with inert binders. HE- and solvent-contaminated wash-down water was routed as waste to six sumps associated with building 16-340 and to the single sump and outfall associated with building 16-342. Historically, discharges from building 16-340 and 16-342 sumps were routed to the building 16-340 and 16-342 outfalls, respectively. During the D&D activities, which occurred between October 2004 and April 2005, the buildings and human-made fixtures associated with the16-340 Complex were removed.

Details of historical investigations for each SWMU and AOC in each of the 10 subaggregates are presented in sections 2.0 through 11.0, respectively. Appendix A contains acronyms, a glossary, a metric conversion table, and a table that defines data qualifiers. The map data sources are provided in section 13.2.

1.2 Data-Quality Approach for Cañon de Valle Subaggregates

The data collected during the investigations of the SWMUs and AOCs in this HIR vary in quality. In the current Environmental Restoration database (ERDB), all data records include a vintage code field denoting how and where samples were submitted for analyses. In the early years of the ER Project, samples may have been submitted to a mobile laboratory and an analytical laboratory. The results from the mobile laboratories—the Laboratory's Chemical Science and Technology (CST) Division Mobile Chemical Analytical Laboratory (ChemVan) or the CST Mobile Radiological Analysis Laboratory (RADVan)—identified by vintage codes CSTCV and CSTRV, respectively, are screening-level samples and are not used to determine nature and extent. For fixed-laboratory analysis, samples were submitted to the CST Division. Samples were analyzed either at a CST laboratory or were shipped from CST to one of several off-site contract laboratories. Samples analyzed at CST Division laboratories are identified by the vintage code CST Onsite. Samples shipped by CST Division to off-site laboratories are identified by the vintage code CST Offsite. From late 1995 to the present, samples have been shipped through the Sample Management Office (SMO) to off-site contract laboratories. These samples are identified by the vintage code SMO.

Because samples analyzed at CST laboratories were not accompanied by full chain-of-custody and quality control (QC) documentation, CST Onsite samples are used only as screening-level data samples. As a result, CST Onsite sampling data have been used at various times during current and previous investigations to guide sampling and analysis but are not used to determine nature and extent.

Because CST Offsite sampling data have been reviewed by examining the original data packages and by validating and qualifying the reported results whenever possible, most CST Offsite data are fully valid for use in defining nature and extent as discussed in the Cañon de Valle Investigation Work Plan (LANL 2006, 91698). CST Offsite data have been included with the SMO data to determine nature and extent if the data packages are available and were used to validate the data.

Some samples were shipped directly from the field to the analytical laboratory without first being submitted through SMO. These samples have a vintage code AN95. Results from these samples are screening-level data and are not used to determine nature and extent in the Cañon de Valle Investigation Work Plan (LANL 2006, 91698).

Therefore, the only sample results that are decision-level data and used to determine nature and extent are the results of samples that were submitted to SMO, analyzed at an off-site laboratory, and validated using the original data packages. In some cases, individual analytical results are qualified as rejected (R) because of various data-quality issues. Rejected analytical results are not included in the evaluation of nature and extent. (Refer to Appendix A for the definitions of data qualifiers.)

Data-quality issues, including rejected analytical results, are summarized for each subaggregate. Quality assurance (QA), QC, and data validation detailed in the National Functional Guidelines (EPA 1999, 66649; EPA 1994, 48639) and standard operating procedure (SOP) (Table 1.2-1) procedures were implemented in accordance with the "Quality Assurance Project Plan Requirements for Sampling and Analysis" (LANL 1996, 54609) and the statement of work (SOW) for analytical laboratories (LANL 1995, 49738; LANL 2000, 71233). The results of the QA/QC procedures were used to estimate the accuracy, bias, and precision of the analytical measurements. Samples for QC include method blanks, blank spikes, matrix spikes (MSs), laboratory control samples (LCSs), internal standards, initial and continuing calibrations, surrogates, and tracers.

Field duplicate samples were also collected for QC as required during fieldwork. Field duplicate samples are a pair of identically prepared subsamples taken from the same sample in the field. The relative percent difference (RPD) is calculated and used to assess the precision between parent sample result and their associated duplicate result. Field duplicate samples were not included in the frequency of detect or the sample identification tables in this document.

The type and frequency of QC analyses are described in the analytical laboratory SOWs (LANL 1995, 49738; LANL 2000, 71233). Other QC factors, such as sample preservation and holding times, were also assessed in accordance with the requirements outlined in SOP-1.02, “Sample Containers and Preservation.” A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. The focused validation included a detailed review of the data generated by the analytical laboratory.

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. The data qualifiers used in data validation procedures are defined in Table 1.2-2.

1.2.1 Inorganic Chemical QA/QC Samples

When appropriate, LCSs, method blanks, preparation blanks, MS samples, laboratory duplicate samples, interference check samples, and serial dilution samples were analyzed as QC samples to assess accuracy and precision of inorganic chemical analyses. Each of these QA/QC sample types is defined in the analytical laboratory SOWs (LANL 1995, 49738; LANL 2000, 71233) and is described briefly in the sections below. Because some of the analyses were performed before the 1995 SOW, slightly different QA/QC procedures may have been followed.

The LCS monitors 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, 48639) 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 1995, 49738; LANL 2000, 71233).

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

A preparation blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as those used in the environmental sample processing, and it is prepared and analyzed in the same manner as the corresponding environmental samples. The preparation blank is used to assess the potential for contamination of samples during preparation and analysis.

The accuracy of inorganic chemical analyses is also assessed using MS samples. An MS sample provides 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%.

Laboratory duplicate samples are taken from the same sample container, prepared for analyses, and analyzed independently but under identical conditions. They are used to assess or demonstrate acceptable laboratory-method precision at the time of analysis. Each duplicate sample is equally representative of the original material.

Interference-check samples (ICS) are used to verify the contract analytical laboratory’s interelement and background correction factors for inductively coupled plasma emission spectroscopy analyses. The ICS shall be analyzed at least twice in each 8-h shift or at the beginning and end of each analysis run, whichever is more frequent.

A serial dilution sample is 1:5 dilution of a sample. The analyte concentration in the undiluted sample should be at least 50 times the method detection limit (MDL) for a comparison to be made (100 times for inductively coupled plasma mass spectroscopy). If the analyte concentration is sufficiently high, the serial dilution sample should agree within 10% of the original sample. The serial dilution sample is used to measure physical or chemical interferences.

1.2.2 Organic Chemical QA/QC Samples

The methods for validating organic chemical sample results based on various QA/QC sample types are specified in SOPs for semivolatile organic compounds (SVOCs), volatile organic compounds (VOCs), HE, pesticides, and polychlorinated biphenyls (PCBs). Because some of the analyses were performed before the current SOWs were implemented (LANL 1995, 49738; LANL 2000, 71233), slightly different QA/QC procedures may have been followed. The validation of organic chemical data using QA/QC samples and other methods may result in the rejection of the data or the assignment of various qualifiers to individual sample results.

Calibration verifications, instrument performance checks, LCSs, method blanks, MS 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 laboratory SOWs (LANL 1995, 49738; LANL 2000, 71233) and is described briefly below.

Calibration verification establishes a quantitative relationship between the response of the analytical procedure and the concentration of the target analyte. The two aspects of calibration verification are 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. Continuing calibration ensures that the initial calibration is holding and correct as the instrument processes samples. Continuing calibration also determines that other analyte identification criteria, such as retention times and spectral matching, are being met.

Instrument performance checks are analyses of a chemical of known relative mass abundance that indicate how well a mass spectrometer is calibrated.

The LCS is a sample of a known matrix that has been spiked with compounds that are representative of the target analytes, and it monitors overall performance on a controlled sample. The LCS is the primary, daily demonstration 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, 66649) 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 1995, 49738; LANL 2000, 71233).

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. The method blank is extracted and analyzed in the same manner as the corresponding environmental samples. Method blanks assess the potential for sample contamination during extraction and analyses. All target analytes should be below the contract-required DL in the method blank (LANL 1995, 49738; LANL 2000, 71233).

The accuracy of organic chemical analyses is also assessed using MS samples, which are aliquots of the submitted samples spiked with a known concentration of the target analyte(s). The MS samples measure the ability to recover prescribed analytes from a native sample matrix. Spiking typically occurs before sample preparation and analyses. The MS sample recoveries should be within the acceptance range of 75%–125% (LANL 1995, 49738; LANL 2000, 71233).

A surrogate is an organic chemical 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 environmental samples. Surrogates are added to every blank, sample, and spike to evaluate the efficiency with which analytes are recovered during extraction and analyses. The recovery percentage of the surrogates must be within specified ranges.

Internal standards are organic chemical compounds added to every blank, sample, and standard extract at a known concentration. They compensate for (1) analyte concentration changes that might occur during storage of the extract and (2) quantitation variations that can occur during analyses. Internal standards are the basis for quantitation of target analytes. The range of percent recovery for internal standards should be within 50%–200%.

1.2.3 Radionuclide QA/QC Samples

Radionuclides with reported values less than the minimum detectable activity were qualified as nondetected (U). Each radionuclide result was also compared with the corresponding 1-sigma total propagated uncertainty. If the result was not greater than 3 times the total propagated uncertainty, the radionuclide was qualified as nondetected (U).

Certain gamma spectroscopy analytes are subject to spectral interference from energies of other radionuclides. When this occurs and it is not possible to reliably measure these radionuclides, these values are rejected (R) because of spectral interference.

The precision and bias of radiochemical analyses performed at off-site fixed laboratories were assessed by MS samples, LCSs, laboratory duplicates, and tracers. The analytical laboratory SOWs (LANL 1995, 49738; LANL 2000, 71233) specify that spike sample recoveries should be within ±25% of the certified value. All spike sample recoveries met this acceptance criterion. LCSs are known matrices that have been spiked with compounds representative of target analytes, and they are analyzed to assess the accuracy of radionuclide analyses. The LCSs monitor the overall performance of each step during analyses, including the radiochemical separation preparation. The analytical laboratory SOWs (LANL 1995, 49738; LANL 2000, 71233) specify that LCS recoveries should be within ±25% of the certified value. Laboratory duplicate samples are the portions of a sample taken from the same sample container that is prepared for analyses, analyzed independently but under identical conditions, and used to assess or demonstrate acceptable laboratory method precision during analyses. Each duplicate sample is expected to represent the original material equally.

1.3 Sample Data

The data reviewed for this HIR were divided into one of three groups: (1) decision-level data, (2) screening-level data, or (3) field-screening data. These three categories are primarily based upon the utility of the data to define nature and extent (discussed in the Cañon de Valle Investigation Work Plan; LANL 2006, 91698). Decision-level data can be used to define nature and extent and are data that have undergone validation for which the data packages are available on-site. Screening-level data are data that are not of sufficient quality to be used for defining nature and extent. The screening-level data reviewed for this HIR fall into two categories: (1) AN95 and (2) excavated samples. AN95 data are sample results that have not been submitted through the sample SMO, and the data validation packages are not stored on-site. It may be possible to acquire the data validation packages and perform the appropriate data validation. The data could then be upgraded to decision-level data, depending on the outcome of the data validation. The data validation packages in question could not be requested from the central repository in Denver in time to be reviewed for this HIR. Samples with the excavation flag set in the ERDB are from locations that have undergone some type of removal of the sample media (e.g., soil or sediment) and thus are not representative of current site conditions. The data themselves may be decision or AN95 data, but since the samples were taken from media that are no longer present on-site, the data cannot be used to define nature and extent. The third type of data, field screening, is usually not of sufficient chemical specificity or analytical sensitivity to be used for the definition of nature and extent. This type of data is presented in the HIR so that the reader is aware all of the environmental data available for a site.

All of the inorganic and radionuclide decision- and screening-level data are compared with background values (BVs) throughout this document using Laboratory-reviewed BVs (LANL 1998, 59730.2). If a BV is available for an analyte, then only the samples with results greater than BV or fallout value (FV) (for certain radionuclides) are presented. If a BV or FV value is not available, then the concentration greater than analytical laboratory DL is presented. For organic chemicals, BVs are not applicable. All organic analyte results greater than analytical laboratory DLs are presented in this HIR.

Throughout the tables presented in this document, the sample media are identified by the media code used in the ERDB. These codes are defined as follows.

- ALLH—soil
- FILL—fill
- SED—sediment
- QBT—tuff. The tuff layer is further defined by a numeric code, e.g., QBT 2 or QBT4.
- SLUDGE—sludge (septic systems only)

The analytical results presented in the tables may have been rounded for presentation purposes; however, all of the results presented in the figures are displayed using full precision without rounding. Any differences in the tables and figures for any particular presented result due to this rounding do not have any impact on the interpretation of the analytical data or any conclusions derived therefrom.

Complete sample results for all decision- and screening-level data presented in this report are provided on a CD as Appendix B.

Coordinates for all sampling locations represented in Appendix B are provided in Appendix C.

For some investigations of the SWMUs and AOCs in the Cañon de Valle Aggregate Area, field screening was used to guide the collection of samples for submittal to analytical laboratories. These field-screening data are provided in Appendix D for all SWMUs and AOCs for which data were available.

In the late 1980s, the Comprehensive Environmental Assessment and Response Program (CEARP) evaluated and collected data at various Laboratory sites. Data from the CEARP collected at sites within the Cañon de Valle Aggregate Area are provided in Appendix E.

2.0 SUBAGGREGATE 1, TA-16-220 COMPLEX

The TA-16-220 Complex Subaggregate consists of the following consolidated unit, SWMUs, and AOCs (Figure 2.0-1): Consolidated Unit 16-026(l)-00 [SWMUs 16-026(l) and 16-028(c)]; SWMUs 16-016(d), 16-020, and 16-026(i,j); and AOC C-16-051. These sites are further organized into areas such as x-ray buildings, 16-222 Outfall, surface disposal site, and oil switch.

The 16-220 Complex was used for radiography of HE parts for nuclear weapons for many years (LANL 1995, 57225, pp. 5-28-9–5-28-13). The radiography area of TA-16 was built in 1952 and consisted of seven buildings: three rest houses, three x-ray buildings, and a centrally located photoprocessing building (LANL 1995, 57225, p. 5-28-9). The buildings were connected by enclosed walkways. The complex was removed by D&D in 2003 (Border Demolition and Environmental, Inc. 2005, 92461). Several buildings (e.g., building 16-226) in the complex were used for x-ray radiography of HE parts. No HE processing was done in the complex (LANL 1995, 57225, pp. 5-28-9–5-28-13). Film developing for all of these radiography buildings was done in a central facility, building 16-222 (LANL 1995, 57225, p. 6-8). Photoprocessing effluent from building 16-222 was discharged to an outfall to the south of the building, which is SWMU 16-020 (LANL 1995, 57225, p. 6-8).

2.1 X-ray Buildings: SWMUs 16-026(i,j) and Consolidated Unit 16-026(l)-00

2.1.1 Site Description and Operational History

SWMU 16-026(i) is soil contamination associated with an outfall and drainline from an x-ray building (building 16-224) located on the north side of S-Site (Figure 2.0-1). The building was removed in 2003 (Border Demolition and Environmental, Inc. 2005, 92461). Building 16-224 was 58 ft × 44 ft × 10 ft (LANL 1995, 57225, p. 5-28-1). The rest houses stored finished, packaged HE components before and after they were radiographed (LANL 1995, 57225, p. 5-28-9). The components were transported between the rest houses and the x-ray buildings on the enclosed walkways. When components arrived at the x-ray buildings, they were removed from their packaging, x-rayed, and repackaged (LANL 1995, 57225, p. 5-28-9). Floor drains in building 16-224 were connected to two drainlines that joined and formed one line, which discharged to the outfall. The two drainlines were located in the northeast and northwest corners of building 16-224; the outfall daylighted northeast of building 16-224 (LANL 1995, 57225, p. 5-28-13). Site workers stated that HE dust and small chips would break off during the x-ray process and could enter the floor drains (LANL 1995, 57225, p. 5-28-13). Because this SWMU is associated with floor drains in the x-ray building, HE contamination could be present at the outfall (LANL 1995, 57225, p.5-28-9). Small HE chips have historically been observed in the drains (LANL 1995, 57225, p. 5-28-13). The floor drains were plugged in 1991 (LANL 1995, 57225, p. 5-28-13). The outfall was characterized by low flow onto a shallow, grassy slope. Chemicals of potential concern (COPCs) identified in the Operable Unit (OU) 1082 RCRA facility investigation (RFI) work plan include HE, metals, barium, SVOCs, and VOCs (LANL 1995, 57225, p. 5-28-20).

SWMU 16-026(j) is soil contamination (Figure 2.0-1) associated with the drainlines and an outfall from an inactive x-ray building (building 16-226) located on the north side of S-Site (LANL 1995, 57225, p 5-28-9). Building 16-226 was similar to building 16-224 (discussed above) and was 58 ft × 44 ft × 10 ft (LANL 1995, 57225, p. 5-28-1). Building 16-226 was removed in 2003 (Border Demolition and Environmental, Inc. 2005, 92461). Floor drains within the building were connected to two drainlines that discharged to SWMU 16-026(j); the drainlines were located in the southeast and southwest corners of building 16-226 (LANL 1995, 57225, p. 5-28-13). The two drainlines joined and formed one 6-in.-diameter vitrified clay pipe (VCP) line out of the building, draining into a grassy, gradually sloping area (LANL 1995, 57225, p. 5-28-13). Although during several site visits the drain outfall from 16-226 could not be located, an engineering drawing (ENG-C 15605) shows the drain flowing southeast (LANL 1995, 57225, p. 5-28-13). Site workers stated that HE dust and small chips would break off during the x-ray process and could enter the floor drains (LANL 1995, 57225, p. 5-28-13). Because this SWMU is associated with floor drains in the x-ray building, HE contamination could be present at the outfall (LANL 1995, 57225, p. 5-28-9). Small HE chips historically have been observed in the drains (LANL 1995, 57225, p. 5-28-13). The floor drains were plugged in 1991 (LANL 1995, 57225, p. 5-28-13). COPCs identified in the OU 1082 RFI work plan include HE, metals, barium, SVOCs, and VOCs (LANL 1995, 57225, p. 5-28-20).

Consolidated Unit 16-026(l)-00 (Figure 2.0-1) consists of SWMUs 16-026(l) and 16-028(c). The SWMUs are soil contamination associated with drainlines and outfalls that were connected to floor drains located throughout an x-ray building (building 16-220) (LANL 1995, 57225, pp. 5-28-13, 6-6). Waste was discharged from both outfalls to an area where the outfalls overlap; potential contaminants are commingled. Building 16-220 (41 × 68 × 20 ft) was the low-energy x-ray facility for HE components, located on the north side of S-Site (LANL 1995, 57225, pp. 5-28-1, 5-28-13). Building 16-220 was removed in 2003 (Border Demolition and Environmental, Inc. 2005, 92461). Because these SWMUs are associated with floor drains in the x-ray building, HE contamination could be present at the outfall (LANL 1995, 57225, p. 5-28-9).

SWMU 16-026(l) is potentially contaminated soil (Figure 2.0-1) associated with outfalls from building 16-220 (LANL 1998, 59685, p. 6-6). SWMU 16-026(l) is listed as outfalls originating from roof drains; the outfalls could not be located during site visits (LANL 1998, 59685, p. 6-4). According to the 1998 rewritten Chapter 6 of addendum 2 to the OU 1082 RFI work plan, the SWMU consists of drains from the east wall and the northeast and southeast corners of building 16-220 (LANL 1998, 59685, p. 6-3). Engineering drawing ENG-C 15660 shows that roof drainage was from the northeast and southeast corners of the building and that the east wall contained a steam pit drain (LANL 1998, 59685, p. 6-3). The only other drain was a permitted floor drain outfall covered under SWMU 16-028(c) (LANL 1998, 59685, p. 6-6). The rewritten Chapter 6 of addendum 2 to the OU 1082 RFI work plan recommended NFA for SWMU 16-026(l) (LANL 1995, 57225, p. 6-7).

SWMU 16-028(c) is a former National Pollution Discharge Elimination System (NPDES)-permitted outfall and drainline (Figure 2.0-1) that received discharges from eight floor drains in building 16-220 (LANL 1995, 57225, p. 5-28-13). This outfall, numbered 4A070, was removed from the Laboratory's NPDES permit effective September 19, 1997 (LANL 1995, 57225, p. 5-28-13). The effluent contained noncontact cooling water, chiller condensate, periodic discharge from an HE vacuum pump and floor washings (LANL 1995, 57225, p. 5-28-13). The 6-in.-diameter VCP daylighted in a rocky ditch near the building (LANL 1995, 57225, p. 5-28-13). The ditch flows to a relatively flat, grassy field. The floor drains at building 16-220 were plugged in 1991 (LANL 1995, 57225, p. 5-28-13). COPCs identified in the OU 1082 RFI work plan include HE, metals, barium, VOCs, and SVOCs (LANL 1995, 57225, p. 5-28-20).

2.1.1.1 Land Use

Present and future land use is industrial at TA-16.

2.1.1.2 Relationship to Other SWMUs and AOCs

Forty-seven SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft of SWMUs 16-026(i,j) and Consolidated Unit 16-026(l)-00 (Figure 2.0-1), including former settling ponds, HE magazines, HE-processing buildings, sumps and septic tanks, workshops (e.g., electroplating), HE rest houses, x-ray radiography buildings, offices, warehouses and storage buildings, drains and outfalls, a steam plant, and electrical switch.

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 2.0-1) are described elsewhere in this document. All of the surrounding sites shown in Figure 2.0-1 (other than contaminated soil in outfalls) have been removed, and none of the structures currently exists. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 2.0-1 and identified in the legend) is described in detail in other documents. Two SWMUs are located in Subaggregate 1 (section 2); 10 SWMUs and 3 AOCs are located in Subaggregate 5 (section 6); 2 SWMUs are located in Subaggregate 6 (section 7), and 1 SWMU and 1 AOC are located in

Subaggregate 7 (section 8). Three surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory's HWFP on December 23, 1998. Four surrounding SWMUs included in the Cañon de Valle Aggregate Area have been proposed for NFA and are pending.

Based upon review of the topography (Figure 2.0-1), some of the former structures (former HE-related structures part of Subaggregate 4, WWII GMX-3 Area) are at higher elevations than SWMUs 16-026(i,j) and Consolidated Unit 16-026(l)-00. However, it does not appear that any contaminants from these surrounding sites would have impacted SWMUs 16-026(i,j) and Consolidated Unit 16-026(l)-00, based upon the topography.

2.1.1.3 Waste Inventory

Waste at SWMUs 16-026(i,j) would have consisted of HE dust and small chips that would break off during the x-ray process (LANL 1995, 57225, p. 5-28-13).

Consolidated Unit 16-026(l)-00 consists of SWMUs 16-026(l) and 16-028(c). No wastes associated with this consolidated unit were identified during review of the available documentation (LANL 1995, 57225, p. 6-7).

Wastes at SWMU 16-028(c) are associated with noncontact cooling water, chiller condensate, and periodic discharge from an HE vacuum pump and floor washings (LANL 1995, 57225, p. 5-28-13).

2.1.1.4 Historical Releases

Discharge from the floor drains of buildings 16-224 and 16-226 into SWMUs 16-026(i,j) may have contained HE dust and chips, but no releases have been documented for these SWMUs (LANL 1995, 57225, p. 5-28-13).

The effluent from the floor drains in building 16-220 contained noncontact cooling water, chiller condensate, and periodic discharge from an HE vacuum pump and floor washings, but no releases for Consolidated Unit 16-026(l)-00 have been documented (LANL 1995, 57225, p. 5-28-13; LANL 1998, 59685, p. 6-4).

2.1.1.5 Summary of Historical Investigations

All of the samples from the SWMUs and consolidated unit associated with the x-ray buildings were collected as D&D confirmation samples from the former building footprints (Figure 2.1-1). The sample results discussed below are therefore not necessarily indicative of contaminants present in the building outfalls.

SWMU 16-026(i)

In 2003, after the building was removed by D&D (Border Demolition and Environmental, Inc. 2005, 92461), four near-surface confirmation samples were collected (Table 2.1-1, Figure 2.1-1) within the building 16-224 footprint, which is outside the SMWU boundary as shown in Figure 2.1-1. The samples were analyzed for HE, inorganic chemicals, VOCs, and SVOCs.

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 2.1-2 and 2.1-3, respectively.

The following inorganic chemicals were detected greater than BVs (number of detects greater than BVs in parentheses after the chemical name): cadmium (3), calcium (2), iron (1), lead (1), and zinc (1) (Table 2.1-4, Figure 2.1-2).

The following organic chemicals were detected (number of detects in parentheses after the chemical name): acenaphthene (4), acenaphthylene (2), acetone (4), anthracene (4), benzo(a)anthracene (4), benzo(a)pyrene (4), benzo(b)fluoranthene (4), benzo(g,h,i)perylene (3), chrysene (4), dibenzofuran (4), 2,4-dimethylphenol (2), fluoranthene (4), fluorene (4), indeno(1,2,3-cd)pyrene (3), 4-isopropyltoluene (1), 2-methylnaphthalene (4), 2-methylphenol (1), 4-methylphenol (3), naphthalene (4), phenanthrene (4), pyrene (4), and toluene (2) (Table 2.1-5, Figure 2.1-3).

SWMU 16-026(j)

When building 16-226 underwent D&D in 2003 (Border Demolition and Environmental, Inc. 2005, 92461), the drainlines from the floor drains were also removed. Four soil (two near-surface and two subsurface) confirmation samples were collected (Table 2.1-1, Figure 2.1-1) within the building 16-226 footprint, which is outside the SMWU boundary, as shown in Figure 2.1-1. The samples were analyzed for HE, inorganic chemicals, VOCs, and SVOCs

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 2.1-2 and 2.1-3, respectively. No inorganic chemicals were detected greater than BVs in the near-surface soil samples.

The following inorganic chemicals were detected in subsurface soil greater than BVs (number of detects greater than BVs in parentheses after the chemical name): aluminum (1), beryllium (1), calcium (2), chromium (1), copper (1), iron (1), magnesium (1), nickel (1), and zinc (1) (Table 2.1-4, Figure 2.1-2).

The following organic chemicals were detected in near-surface soil (number of detects in parentheses after the chemical name): acenaphthene (2), anthracene (2), benzo(a)anthracene (2), benzo(a)pyrene (2), benzo(b)fluoranthene (2), chrysene (2), dibenzofuran (2), fluoranthene (2), fluorene (2), 2-methylnaphthalene (2), naphthalene (2), phenanthrene (2), and pyrene (2) (Table 2.1-5, Figure 2.1-3).

The following organic chemicals were detected in subsurface soil (number of detects in parentheses after the chemical name): acenaphthene (1), acetone (1), anthracene (1), benzo(a)anthracene (1), benzo(a)pyrene (1), benzo(b)fluoranthene (1), benzo(g,h,i)perylene (1), chrysene (1), dibenzofuran (1), fluoranthene (2), fluorene (1), indeno(1,2,3-cd)pyrene (1), 2-methylnaphthalene (1), naphthalene (1), phenanthrene (2), and pyrene (2) (Table 2.1-5, Figure 2.1-3).

Consolidated Unit 16-026(l)-00

SWMU 16-026(l)

After building 16-220 underwent D&D in 2003 (Border Demolition and Environmental, Inc. 2005, 92461), four near-surface confirmation samples were collected within the building 16-220 footprint and drainlines, which are outside the SMWU boundary, as shown in Figure 2.1-1. The samples were analyzed for HE, inorganic chemicals, VOCs, and SVOCs (Table 2.1-1).

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 2.1-2 and 2.1-3, respectively.

The following inorganic chemicals were detected greater than BVs (number of detects greater than BVs in parentheses after the chemical name): aluminum (1), calcium (1), chromium (1), lead (2), and nickel (1) (Table 2.1-4 and Figure 2.1-2).

The following organic chemicals were detected (number of detects in parentheses after the chemical name): acenaphthene (2), acetone (3), anthracene (4), benzo(a)anthracene (4), benzo(a)pyrene (4), benzo(b)fluoranthene (4), benzo(g,h,i)perylene (1), bis(2-ethylhexyl)phthalate (1), chrysene (4), dibenzofuran (2), fluoranthene (4), fluorene (2), indeno(1,2,3-cd)pyrene (1), 2-methylnaphthalene (2), naphthalene (4), phenanthrene (4), and pyrene (4) (Table 2.1-5 and Figure 2.1-3).

SWMU 16-028(c)

No samples have been collected from this SWMU. However, the D&D confirmation sample results from the footprint of building 16-220, which is the source of the outfall that is SWMU 16-028(c), are presented under SWMU 16-026(l).

2.1.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods for 16-026(i)

Four samples were collected at SWMU 16-026(i) in 2003 and sent to off-site analytical laboratories for analyses.

Inorganic Chemicals

Four antimony results were rejected (R) because the associated spike sample recovery was less than 30%. Four results for arsenic and four results for selenium were reported as estimated and potentially biased low (J-) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated spike sample.

Organic Chemicals

No data-quality issues were identified.

Sample Collection and Analytical Methods for 16-026(j)

Four samples were collected at SWMU 16-026(j) in 2003 and sent to off-site analytical laboratories for analyses.

Inorganic Chemicals

Two thallium results were reported as estimated (J) because the results were between the estimated quantitation limit (EQL) and the MDL. Three antimony results were reported as not detected (UJ), and two lead results and two vanadium results were reported as estimated (J), based on quality deficiencies identified by the validator. One result for antimony was reported as estimated and potentially biased low (J-), and one other result for antimony was reported as not detected (UJ) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated spike sample.

Organic Chemicals

No data-quality issues were identified.

Sample Collection and Analytical Methods for Consolidated Unit 16-026(l)-00

Four samples were collected at Consolidated Unit 16-026(l)-00 in 2003 and sent to off-site analytical laboratories for analyses.

Inorganic Chemicals

Four antimony results were rejected (R) because the associated spike sample recovery was less than 30%. Four results for arsenic and four results for selenium were reported as estimated and potentially biased low (J-) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated spike sample.

Organic Chemicals

One sample had nine SVOCs (anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, chrysene, fluoranthene, naphthalene, phenanthrene, and pyrene) reported as estimated and potentially biased high (J+) because two or more sample surrogate recoveries in the same fraction were less than the lower acceptance limit but greater than 10% recovery.

2.2 Building 16-222 Outfall: SWMU 16-020 Silver Outfall

2.2.1 Site Description and Operational History

SWMU 16-020, known as the Silver Outfall (Figure 2.0-1), is a former operational release area where untreated, spent photofixing bath solutions were released to soil and sediment (LANL 1993, 20948, p. 5-119). According to the 1990 SWMU report, before 1979, photoprocessing liquids were discharged directly to the environment without treatment. After 1979, the solutions were treated by a silver recovery unit before discharge (LANL 1990, 07512, p. 16-019). Hazardous releases occurred before the silver recovery unit was put into service in 1979 (LANL 1990, 07512, p. 16-020).

Photoprocessing effluent from building 16-222 was discharged to an outfall to the south of the building; the outfall NPDES permit number was 06A073 (LANL 1993, 20948, p. 5-119). The building was removed by D&D in 2003 (Border Demolition and Environmental, Inc. 2005, 92461). For more than 20 years, SWMU 16-020 received significant quantities of silver (>12 g/L) as silver thiosulfate complexes in untreated, spent x-ray fixing solutions (LANL 1993, 20948, p. 5-119). Soil downgradient of this outfall was contaminated with photoprocessing chemicals, including silver and chromium, as well as polynuclear aromatic hydrocarbons (PAHs) from asphalt roofing materials (IT Corporation 2001, 85511, p. 1). Sampling efforts conducted in 1995 showed high levels of silver, chromium, and PAHs (IT Corporation 2001, 85511, p. 1). Approximately 200 yd^3 of soils in SWMU 16-020 was removed in an interim measure following the Cerro Grande fire in 2000 (IT Corporation 2001, 85511, p. 5). The OU 1082 RFI work plan identified COPCs as silver and cyanide (LANL 1993, 20948, p. 5-121).

2.2.1.1 Land Use

Present and future land use is industrial at TA-16.

2.2.1.2 Relationship to Other SWMUs and AOCs

Sixteen SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft of SWMU 16-020 (Figure 2.0-1), which include former HE magazines, HE-processing buildings, sumps, HE rest houses, drains and outfalls, an oil switch, and an electrical switch.

Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 2.0-1 and identified in the legend) is described in detail in other documents. Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 2.0-1) are described elsewhere in this document. Most of the aboveground structures associated with the surrounding sites shown in Figure 2.0-1 (other than contaminated soil in outfalls) have been removed. Five of the associated sites are within Subaggregate 1 (section 2), and two of the associated sites are within Subaggregate 5 (section 6). Seven surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory's HWFP on December 23, 1998, and three surrounding AOCs included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005. Four surrounding SWMUs included in the Cañon de Valle Aggregate Area have been proposed for NFA and are pending.

Based upon review of the topography (Figure 2.0-1), some of the former structures (former HE-related structures part of Subaggregate 4, WWII GMX-3 Area) are at higher elevations than SWMU 16-020. However, based upon the topography and the types of processes at these former structures, it does not appear that any contaminants from these surrounding sites would have impacted SWMU 16-020.

2.2.1.3 Waste Inventory

Photoprocessing chemicals, including silver, chromium, and cyanide, were discharged in the effluent from the photoprocessing activities that occurred in building 16-222. Chemicals reported to have been used include silver thiosulfate, sodium thiosulfate or "hypo," sulfuric acid, boric acid, and cyanide (LANL 1993, 20948, p. 5-119).

2.2.1.4 Historical Releases

SWMU 16-020 is a former operational release area where photoprocessing effluent from building 16-222 was discharged. According to the 1990 SWMU report, before 1979, photoprocessing liquids were discharged directly to the environment without treatment. After 1979, the solutions were treated by a silver recovery unit before discharge (LANL 1990, 07512, p. 16-019). Hazardous constituent releases occurred before the silver recovery unit was put into service in 1979 (LANL 1990, 07512, p. 16-019). Under the NPDES permit EPA 06A073, the facility was permitted to discharge to the environment concentrations of silver between 0.5 and 1.0 ppm (daily average and daily maximum, respectively) and 0.2 ppm cyanide (daily average and maximum concentration) (LANL 1993, 20948, p. 5-123).

2.2.1.5 Summary of Historical Investigations

The outfall water from building 16-222 was analyzed in the late 1970s as part of the NPDES permit application process; silver concentrations ranged from 2.16 to 7.30 mg/L, and cyanide concentrations ranged from <0.004 to 2.08 mg/L (LANL 1993, 20948, p. 5-122).

A site transport study conducted in 1985 included an examination of the vertical distribution of silver in soils and the downstream distribution of silver in sediments, soils, and plants (LANL 1993, 20948, p. 5-122). Silver analysis of sediments and soils defined the vertical and horizontal extent of silver in the stream. The silver content of the sediments and the soils decreased with increasing distance from the mouth of the waste outfall (LANL 1993, 20948, p. 5-122). Sediment silver concentrations ranged from 14,500 ppm at the outfall to 4 ppm at 1378 ft, decreasing linearly (LANL 1993, 20948, p. 5-122. Sharp drops in the silver concentration occurred at 295 ft where the waste outfall converges with Cañon de Valle and at 984 ft where a side canyon converges with Cañon de Valle (LANL 1993, 20948, p. 5-122). Silver concentrations in the soil followed a much more erratic pattern and were always lower in soil than the sediment (LANL 1993, 20948, p. 5-122). Subsurface soil analyses at 33 ft and 66 ft from the mouth of the outfall indicated that subsurface concentrations decreased with increasing distance from the mouth of the outfall and with increasing depth from the surface. At 33 ft, silver concentrations ranged from 1400 ppm at the surface to 182 ppm at the 3-ft depth (LANL 1993, 20948, p. 5-122).

The following samples were collected in 1995 (Table 2.2-1, Figure 2.1-1):

- 13 surface soil: HE, inorganic chemicals, SVOC
- 11 subsurface soil: HE, inorganic chemicals, SVOC, VOC
- 3 surface sediment: HE, inorganic chemicals, SVOC
- 5 subsurface tuff: HE, inorganic chemicals, SVOC, VOC

All of these samples were collected from media that were subsequently excavated. The analytical results for these samples are therefore considered screening-level data because the sample results no longer represent current site conditions (section 1.3).

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 2.2-2 and 2.2-3, respectively.

The following inorganic chemicals were detected (Table 2.2-4, Figure 2.1-2) greater than BVs in the excavated 1995 samples and are screening-level data (number of detects greater than BV in parentheses after the chemical name).

- Surface soil: arsenic (3), cadmium (3), chromium (8), cobalt (1), copper (8), lead (4), manganese (1), mercury (5), nickel (2), silver (13), vanadium (1), and zinc (4). DLs were greater than BVs for the following analytes (number of samples greater than BV in parentheses after the chemical name): antimony (13), cadmium (10), and total cyanide (13).
- Subsurface soil: cadmium (3), chromium (3), cobalt (1), copper (4), nickel (3), silver (11), and zinc (1). DLs were greater than BVs for the following analytes (number of samples greater than BV in parentheses after the chemical name): antimony (11), cadmium (8), and total cyanide (11).
- Surface sediment: arsenic (1), cadmium (2), chromium (1), cobalt (1), copper (2), lead (2), manganese (1), mercury (1), nickel (1), silver (3), vanadium (2), and zinc (1). DLs were greater than BVs for the following analytes (number of samples greater than BV in parentheses after the chemical name): antimony (3), cadmium (1), total cyanide (3), and selenium (1).
- Subsurface tuff: aluminum (1), barium (3), beryllium (1), chromium (5), cobalt (5), copper (5), iron (1), lead (1), magnesium (1), nickel (5), silver (5), vanadium (1), and zinc (2). DLs were greater than BVs for the following analytes (number of samples greater than BV in parentheses after the chemical name): antimony (5) and total cyanide (5).

The following organic chemicals were detected (Table 2.2-5, Figure 2.1-3) in the 1995 excavated samples and are screening-level data (number of samples in parentheses after the chemical name).

- Surface soil: acenaphthene (9), anthracene (9), benzo(a)anthracene (9), benzo(a)pyrene (9), benzo(b)fluoranthene (11), benzo(g,h,i)perylene (8), benzo(k)fluoranthene (8), bis(2-ethylhexyl)phthalate (2), chrysene (11), dibenz(a,h)anthracene (5), dibenzofuran (8), fluoranthene (12), fluorene (9), indeno(1,2,3-cd)pyrene (9), 2-methylnaphthalene (5), naphthalene (7), phenanthrene (12), and pyrene (12)
- Subsurface soil: acenaphthene (3), acenaphthylene (1), acetone (3), anthracene (4), benzo(a)anthracene (7), benzo(a)pyrene (7), benzo(b)fluoranthene (7), benzo(g,h,i)perylene (4), benzo(k)fluoranthene (4), benzoic acid (3), chrysene (7), dibenz(a,h)anthracene (4), dibenzofuran (1), 2,4-dimethylphenol (1), fluoranthene (9), fluorene (3), indeno(1,2,3-cd)pyrene (4), methylene chloride (3), 2-methylnaphthalene (1), 4-methylphenol (1), naphthalene (1), phenanthrene (8), pyrene (9), toluene (1), and trichlorofluoromethane (7)
- Surface sediment: acenaphthene (1), anthracene (1), benzo(a)anthracene (1), benzo(a)pyrene (1), benzo(b)fluoranthene (1), benzo(g,h,i)perylene (1), benzo(k)fluoranthene (1), benzoic acid (1), bis(2-ethylhexyl)phthalate (1), chrysene (1), dibenz(a,h)anthracene (1), di-n-butylphthalate (1), fluoranthene (1), fluorene (1), indeno(1,2,3-cd)pyrene (1), phenanthrene (1), and pyrene (1)
- Subsurface tuff: acetone (4), benzo(a)anthracene (1), benzo(b)fluoranthene (1), chrysene (2), diethylphthalate (1), fluoranthene (2), phenanthrene (1), pyrene (2), and trichlorofluoromethane (3)

In fall 2000, a flood control interim action at SWMU 16-020 was conducted (IT Corporation 2001,85511, p. 1). Before soil removal activities, field-screening surface soil samples were collected that transected the outfall channel at 2.5-ft intervals to determine the lateral extent of the outfall channel based upon contaminant levels (IT Corporation 2001, 85511, p. 4). The collected samples were field screened for silver and chromium (total) x-ray fluorescence (XRF) (IT Corporation 2001, 85511, p. 4). The results of the field-screening samples are provided in Appendix D. The following numbers of samples were collected from each transect:

- 300 ft: 9
- 425 ft: 11
- 526 ft: 11
- 738 ft: 7

The XRF field-screening analyses determined that all of the samples showed elevated silver and chromium concentrations (IT Corporation 2001, 85511, Appendix 9). These results were used to guide the removal effort, which occurred in September 2000 (IT Corporation 2001, 85511, p. 4). The maximum depth of excavation was approximately 6 ft and was in the area surrounding the outfall discharge pipes, approximately 15 ft downgradient (IT Corporation 2001, 85511, p. 5). The average excavation depth throughout the outfall channel was approximately 1 ft.

After the soil removal was complete, three samples transecting the outfall were collected at the source and then downgradient at 25, 50, 75, 100, 150, 200, 250, 300, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, and 738 ft; a total of 54 samples were collected for field screening silver and total chromium (XRF) (IT Corporation 2001, 85511, p. 6). Both silver and chromium were detected greater than BVs. All of the field-screening results are presented in Appendix D.

Based upon the postsoil removal field-screening results, 20 samples were collected in September 2000 after the soil was removed from the outfall area and submitted to an off-site analytical laboratory:

- Ten surface soil: HE, inorganic chemicals, SVOC, VOC
- Nine subsurface soil: HE, inorganic chemicals, SVOC, VOC
- One surface sediment: HE, inorganic chemicals, SVOC

These samples are decision-level data.

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 2.2-2 and 2.2-3, respectively.

The following inorganic chemicals were detected (Table 2.2-4, Figure 2.1-2) greater than BVs in the 2000 decision-level data confirmation samples (number of detects greater than BV in parentheses after the chemical name).

- Surface soil: arsenic (1), cadmium (4), chromium (3), copper (1), silver (10), and zinc (3)
- Subsurface soil: cadmium (3), chromium (1), silver (9), and zinc (1)
- Surface sediment: barium (1), boron (1), lead (1), mercury (1), selenium (1), and silver (1)

The following organic chemicals were detected (Table 2.2-5, Figure 2.1-3) in the 2000 decision-level data confirmation samples (number of samples in parentheses after the chemical name).

- Surface soil: acenaphthene (1), acetone (6), 2-amino-4,6-dinitrotoluene (1), anthracene (2), benzo(a)anthracene (6), benzo(a)pyrene (6), benzo(b)fluoranthene (6), benzo(g,h,i)perylene (5), benzo(k)fluoranthene (5), bis(2-ethylhexyl)phthalate (2), chrysene (6), dibenzofuran (1), fluoranthene (6), fluorene (1), indeno(1,2,3-cd)pyrene (4), 4-isopropyltoluene (3), methylene chloride (5), 3-methylphenol (1), naphthalene (1), 2-nitrotoluene (1), 4-nitrotoluene (1), phenanthrene (6), pyrene (8), hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX [Royal Demolition Explosive]) (1), toluene (2), and trichlorofluoromethane (7)
- Subsurface soil: acenaphthene (2), acetone (6), anthracene (2), benzo(a)anthracene (4), benzo(a)pyrene (4), benzo(b)fluoranthene (5), benzo(g,h,i)perylene (3), benzo(k)fluoranthene (4), bis(2-ethylhexyl)phthalate (1), chrysene (4), di-n-butylphthalate (1), fluoranthene (4), fluorene (2), indeno(1,2,3-cd)pyrene (3), 4-isopropyltoluene (2), methylene chloride (5), naphthalene (1), phenanthrene (4), pyrene (6), toluene (2), and trichlorofluoromethane (7)
- Surface sediment: benzo(a)anthracene (1), benzo(a)pyrene (1), benzo(b)fluoranthene (1), benzo(g,h,i)perylene (1), benzo(k)fluoranthene (1), benzoic acid (1), bis(2-ethylhexyl)phthalate (1), chrysene (1), fluoranthene (1), indeno(1,2,3-cd)pyrene (1), phenanthrene (1), and pyrene (1)

2.2.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods for SWMU 16-020, Decision-Level Data Samples

Twenty confirmatory samples were collected at SWMU 16-020 in 2000 and sent to off-site analytical laboratories for analyses.

Inorganic Chemicals

Twenty antimony results were rejected (R) because the associated spike sample recovery was less than 30%. Eight inorganic chemical (beryllium, boron, cadmium, cobalt, mercury, nickel, silver, and thallium) results were reported as estimated (J) because the results were between the EQL and the MDL. Seventeen results for silver were reported as estimated (J) because both the sample and duplicate sample results were greater than 5 times the reporting limit, and the duplicate RPD was greater than 35% for soil samples. Ten thallium results were reported as estimated and potentially biased high (J+) because the analyte recovery was above the upper acceptance level but less than 150% in the associated spike sample.

Organic Chemicals

Twelve 4-nitrotoluene results and multiple iodomethane, chloroform, and SVOC results were reported as not detected (UJ), and 12 acetone results were reported as estimated (J) because the associated percent relative standard deviation divided by the percent difference (%RSD/%D) exceeded criteria in the initial or continuing calibration standards. One 2,4-dinitrotoluene result was reported as not detected (U) because the analyte was not confirmed during the analysis of a second dissimilar column; therefore, it is presumed to be absent from the sample. Multiple SVOC results—three acetone results and four methylene chloride results—were reported as not detected (UJ) with estimated reporting limits, and some acetone and methylene chloride results were reported as estimated and potentially biased low (J-) because the associated laboratory control sample recovery was less than the lower acceptance limit but greater than 10% recovery.

Sample Collection and Analytical Methods for 1995 Excavated Samples for SWMU 16-020 Silver Outfall, Screening-Level Data Samples

Thirty-two soil, sediment, and tuff samples were collected at SWMU 16-020 in 1995 and sent to off-site analytical laboratories for analyses. The locations of these samples were later excavated, and the results are screening-level data.

Inorganic Chemicals

Multiple inorganic chemical results were reported as estimated (J) because the results were between the EQL and the MDL. Four inorganic chemicals (chromium, cobalt, lead, and zinc) had results reported as estimated and potentially biased high (J+) because the analyte recovery was above the upper acceptance level but less than 150% of the associated sample spike. Results for arsenic, manganese, and zinc were reported as estimated and potentially biased low (J-), and 11 selenium results were reported as not detected (UJ) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated spike sample. Nine mercury results and one arsenic result were reported as not detected (U) because the results were less than 5 times the amount in the preparation blank.

Organic Chemicals

Six results for PAHs in one sample (RE16-03-50420) were reported as estimated (J) because the associated internal standard counts showed less than 50% recovery or greater than 200% recovery when compared with the area counts in the applicable continuing calibration standard. Multiple results for PAHs were reported as estimated (J), and one result for di-n-octylphthalate and multiple VOC results were reported as not detected (UJ) because the associated internal standard counts showed less than 50% recovery or greater than 10% recovery when compared with the area counts in the applicable continuing calibration standard. Ten bis(2-ethylhexyl)phthalate results and one di-n-octylphthalate result were reported as not detected (U) because the associated sample concentration was less than 5 times the amount in the method blank. One trichlorofluoromethane result was reported as estimated and potentially biased low (J-), and multiple VOCs were reported as not detected (UJ) because the associated sample surrogate recovery was less than the lower acceptance limit but greater than 10% recovery. Fifteen methylene chloride results and one trichlorofluoromethane result were reported as not detected (U) because the associated sample concentration was less than 5 times the amount in the method blank (or 10 times the amount in the method blank for common laboratory contaminants).

Sample Collection and Analytical Methods for 1996 Excavated Samples for SWMU 16-020 Silver Outfall, Screening-Level Data Samples

Two soil samples were collected at SWMU 16-020 in 1996 and were shipped directly to analytical laboratories from the field. The results for these samples are screening-level data.

No data-quality issues were identified.

2.3 Surface Disposal Site: SWMU 16-016(d)

2.3.1 Site Description and Operational History

SWMU 16-016(d) is a small debris disposal area at a darkroom building (building 16-222) (LANL 1995, 57225, p. 6-4). Items observed in the debris disposal area included a partially full can used to mix cement; and segments of corrugated metal pipe, cable, and rebar (LANL 1995, 57225, p. 6-4). Debris appeared to consist of construction-related materials. The debris pile was field screened for HE and radioactivity and removed to the TA-16 Burning Ground in March 1995 by the operating group (LANL 1995, 57225, p. 6-4). The remnants within the disposal area did not appear to be hazardous (LANL 1995, 57225, p. 6-6). HE spot tests were conducted at all three locations on various pieces of debris, and none of the materials was found to be HE contaminated (Watanabe 1994, 52964.653). Debris in the disposal area was field screened (XRF). The results indicated that the debris at SWMU 16-016(d) was nonhazardous, and the debris was removed (LANL 1995, 57225, p. 6-6).

2.3.1.1 Land Use

Present and future land use is industrial at TA-16.

2.3.1.2 Relationship to Other SWMUs and AOCs

Sixteen SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of SWMU 16-016(d) (Figure 2.0-1), which includes former HE magazines, HE-processing buildings, sumps, HE rest houses, drains and outfalls, an oil switch, and an electrical switch.

Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 2.0-1 and identified in the legend) is described in detail in other documents. Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 2.0-1) are described elsewhere in this document. Most of the aboveground structures associated with the surrounding sites shown in Figure 2.0-1 (other than contaminated soil in outfalls) have been removed. Five of the associated sites are within Subaggregate 1 (section 2), and two of the associated sites are within Subaggregate 5 (section 6). Three surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory's HWFP on December 23, 1998, and two surrounding AOCs included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005. Four surrounding SWMUs included in the Cañon de Valle Aggregate Area have been proposed for NFA and are pending.

Based upon review of the topography (Figure 2.0-1), some of the former structures (former HE-related structures part of Subaggregate 4, WWII GMX-3 Area) are at higher elevations than SWMU 16-016(d). However, it does not appear that any contaminants from these surrounding sites would have impacted SWMU 16-016(d), based upon the topography and the types of processes at these former structures. One outfall, SWMU 16-020 (see section 2.2), is adjacent to SWMU 16-016(d) and could potentially impact this SWMU.

2.3.1.3 Waste Inventory

The debris at SWMU 16-016(d) appeared to contain construction-related materials (LANL 1998, 59685, p. 6-4).

2.3.1.4 Historical Releases

No previous environmental investigations were identified for this site.

2.3.1.5 Summary of Historical Investigations

No samples have been collected from this SWMU.

2.3.2 Historical Data-Quality Interpretation

No samples have been collected from this SWMU.

2.4 Oil Switch: AOC C-16-051

2.4.1 Site Description and Operational History

AOC C-16-051 is one of a group of three decommissioned 200- to 400-gal. oil switches used to control large amounts of electrical power for several clusters of buildings at S-Site (LANL 1995, 57225, p. 6-31). AOC C-16-051, structure 16-1103, was used to control power to the 300s Line buildings and was installed in 1952 and removed in 1967 (LANL 1995, 57225, p. 6-31). The switch was mounted on a 7 ft × 7 ft concrete pad that was surrounded by a metal fence (LANL 1995, 57225, p. 6-31). A site inspection found no visible signs of staining in the area around the oil switches (LANL 1995, 57225, p. 6-31). The potential contaminants identified in the OU 1082 RFI work plan include PCBs (LANL 1995, 57225, p. 6-31).

2.4.1.1 Land Use

Present and future land use is industrial at TA-16.

2.4.1.2 Relationship to Other SWMUs and AOCs

Forty-seven SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of AOC C-16-051 (Figure 2.0-1), including former settling ponds, HE magazines, HE-processing buildings, sumps and septic tanks, workshops (e.g., electroplating), HE rest houses, x-ray radiography buildings, offices, warehouses and storage buildings, drains and outfalls, a steam plant, and electrical switch.

Those surrounding sites included in the Cañon de Valle Aggregate Area (shown in Figure 2.0-1) are described elsewhere in this document. All of the surrounding sites shown in Figure 2.0-1 (other than contaminated soil in outfalls) have been removed, and none of the structures currently exist. Two SWMUs are located in Subaggregate 1 (section 2); 10 SWMUs and 3 AOCs are located in Subaggregate 5 (section 6); 2 SWMUs are located in Subaggregate 6 (section 7); and 1 SWMU and 1 AOC are located in Subaggregate 7 (section 8). Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 2.0-1 and identified in the legend) is described in detail in other documents. Three surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory’s HWFP on December 23, 1998, and six surrounding AOCs included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005. Four surrounding SWMUs included in the Cañon de Valle Aggregate Area have been proposed for NFA and are pending.

Based upon review of the topography (Figure 2.0-1), some of the former structures (former HE-related structures part of Subaggregate 4, WWII GMX-3 Area) are at higher elevations than AOC C-16-051. However, it does not appear that any contaminants from these surrounding sites would have impacted AOC C-16-051, based upon the topography.

2.4.1.3 Waste Inventory

The most likely potential waste would be lubricating oil that contains PCBs (LANL 1995, 57225, p. 6-31).

2.4.1.4 Historical Releases

No releases were documented for this site (LANL 1995, 57225, p. 6-31).

2.4.1.5 Summary of Historical Investigations

No samples have been collected from this AOC.

2.4.2 Historical Data-Quality Interpretation

No samples have been collected from this AOC.

3.0 SUBAGGREGATE 2, MDA R

The MDA R Aggregate consists of one unit, SWMU 16-019. Drainages to the west, north, and east of MDA R are tributaries to Cañon de Valle (Figure 3.0-1).

3.1 MDA R (SWMU 16-019)

3.1.1 Site Description and Operational History

MDA R is located north of building 16-260 and south of Cañon de Valle (Figure 3.0-1) on relatively flat terrain with a moderate slope to the north that drops off approximately 80 ft into Cañon de Valle (LANL

2001, 69971, p. 1). MDA R was built in the mid-1940s and was used as a burning ground for waste explosives until the early 1950s, probably 1951, when building 16-260 was constructed (LANL 1993, 20948, p. 5-186). Initially, HE was burned in the open; later three bermed U-shaped pits, each approximately 75 ft × 75 ft, were used for burning HE scrap. The three pits were placed roughly parallel to and approximately 100 ft from the edge of the canyon and were constructed side-by-side such that adjacent sides were common. Thus, the total footprint of the burning pits was approximately 225 ft × 75 ft. A road encircled the pits and the area was fenced. The total area of MDA R was estimated as 2.25 acres (LANL 2001, 69971, p. 1). During the construction of the 260s Line, the berms and surface soil were graded northward into Cañon de Valle (LANL 1993, 20948, p. 5-186). The area has not been used for any hazardous materials or waste activities since the early 1950s and is currently covered in grasses, small trees, and shrubs.

In May 2000, the Cerro Grande fire burned across the surface of MDA R and continued to burn underground for several weeks. Although MDA R covers 2.25 acres, fire response activities were focused on extinguishing a smoldering area along a steep slope measuring 60 ft × 600 ft that had been ignited by the fire. Workers at the site reported that tree roots, tree trunks, railroad ties, and cabling were the materials burning within MDA R (LANL 2001, 69971. p. 1).

After the Cerro Grande fire, the ER Project identified sites that were subject to corrective action and/or located in floodplains. MDA R was one of the fire-burned sites with the potential for contaminant migration through flooding and erosion. Because of the loss of vegetation and the charred soil at this site, the potential for accelerated erosion and runoff was high. In addition, the intense heat of the Cerro Grande fire caused combustible materials below the ground surface to burn for weeks after the wildfire swept over the site. The risks associated with this burning subsurface material demanded immediate suppression of the fire (LANL 2001, 69971, p. 1).

As part of the emergency response efforts associated with the fire, MDA R underwent an accelerated cleanup action, including fire-suppression activities and soil stabilization. On June 1, 2000, the area was robotically excavated to suppress the smoldering, underground fire. To accomplish this, a flat “bench” was excavated along the top slope of the landfill on which excavated materials were placed from smoldering areas. Fire suppression involved excavating and staging about 800 yd^3 of clean soil and 1500 yd^3 of contaminated soil and debris. Subsequently, these materials were moved to the mesa top and staged in piles south of the landfill (LANL 2000, 67089, p. 1). Approximately 600 yd^3 of soil was removed and field screened for metals (XRF) instrumentation. The removed soil was determined to be “clean”; metals concentrations were measured at background levels. This clean soil from the bench excavation was returned to the upper slopes and contoured to control erosion. Dead and burned trees were cut and placed parallel to Cañon de Valle, along the mid-slope, below the landfill. Straw wattles were placed and then packed along the trees to act as silt control, which attenuated silt migration while allowing water to pass. Straw wattles were also placed at the top of the slope, near the mesa top, to attenuate silt migration (LANL 2001, 69971, p. 3).

3.1.1.1 Land Use

Present and future land use is industrial at TA-16.

3.1.1.2 Relationship to Other SWMUs and AOCs

Twelve SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of MDA R (Figure 3.0-1), including sumps, drainlines, outfalls, an inactive septic system, a satellite accumulation area, HE rest houses, the Silver Outfall, potential soil contamination associated with a former cooling tower discharge and structure, and a former PCB transformer.

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 3.0-1) are described elsewhere in this document. All of the surface structures at surrounding sites shown in Figure 3.0-1 (other than contaminated soil in outfalls) have been removed, and none of the structures currently exists. One site is within Subaggregate 1 (section 2), and five sites are within Subaggregate 5 (section 6). Four surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory's HWFP on December 23, 1998.

The Silver Outfall (SWMU 16-020) is upgradient of MDA R, but the drainage from this outfall would flow to the western boundary of MDA R and then to the north and east. Runoff from SWMU 16-020 could not contribute to any contamination in the landfill area itself but could have contributed to contamination in the MDA R drainages. An inactive septic system [SWMU 15-005(f)] is beneath MDA R and could potentially have contributed to the subsurface contamination at MDA R.

3.1.1.3 Waste Inventory

MDA R was used as a burning ground for waste explosives before the construction of the present burn site in 1951. At MDA R, HE scrap was collected, broken up, and burned until the site was abandoned some time in the early 1950s. The exact types of explosives burned are unknown but likely consisted primarily of RDX and 2,4,6-trinitrotoluene (TNT), the primary HE available in the 1940s and early 1950s.

Shortly after the 2000 Cerro Grande fire, the waste generated during the excavation of MDA R consisted of contaminated soils, barium nitrate pieces, and asbestos-containing material (LANL 2001, 69971, p. 5). After the 2000 Cerro Grande fire was suppressed and the site was excavated, an XRF survey was done on the slopes exposed by the excavation. Barium and lead appeared to be the principal remaining contaminants (based upon frequency of detects) at MDA R. Soils contaminated with barium remain in the central area. The barium contamination in surface soils near the former drainage arroyo exceeded 200,000 ppm. A few shallow (less than 1 ft deep) subsurface samples exceeded 14,000 ppm. Approximately 100 lb of barium nitrate pieces was collected and managed as hazardous debris during the excavation.

Excavated soils were managed as solid waste within the boundary of the project area, pending the results of analyses performed on composite samples. Results of the analyses indicated that the soils were not hazardous waste. No listed hazardous constituents were noted. Therefore, the 1960 yd^3 of soil was managed as industrial soil within a bermed area until it was transported to the Rio Rancho industrial landfill in 20-yd^3 semitrailers on November 17, 2000; December 15, 2000; and January 4, 5, and 8, 2001 (LANL 2001, 69971, p. 5).

Approximately 175 lb of barium nitrate pieces was visually identified during the soil-screening process. This waste was containerized, appropriately labeled as hazardous waste, and placed in the less-than-90-day accumulation area at the southern end of building 16-260 until it was transported to TA-54 on August 8, 2000. Approximately 300 lb of friable asbestos-containing waste was also visually identified during the screening process. This waste was containerized, appropriately labeled, and placed in the less-than-90-day accumulation area at the southern end of building 16-260, and it was transported to TA-54 on August 29, 2000. Final disposal of the barium nitrate pieces and asbestos-containing waste was made through a permitted disposal facility (LANL 2001, 69971, p. 5).

3.1.1.4 Historical Releases

During construction for the 260s Line in the late 1940s and early 1950s, the burn pit berms and surrounding surface soil at MDA R were graded northward into Cañon de Valle (LANL 2001, 69971, p. 1).

A field examination of MDA R revealed much debris that had been pushed northward over the edge of what was the MDA R Burning Ground toward the canyon floor. The debris was being held back by a natural barrier of wood and trees that resulted from cleaning the area for building 16-260 (LANL 2000, 91137, p. 1).

In 1992, inspection of MDA R revealed the presence of oil cans, glass vials, metal structures, and coaxial cables below MDA R on the south side of the canyon (LANL 2001, 69971. p. 1). All large and smaller, yet visible, pieces of metal were surveyed for beta radiation to indicate the presence of depleted or natural uranium. All surveys indicated that uranium was not present. On June 12, 2000, materials containing asbestos were exposed during excavation of a small area on the western end of the site. Personnel in Level C personal protective equipment conducted an asbestos recovery. This was done before excavation continued to prevent widespread dispersal of the friable contamination. Not all landfill material was removed from the site during excavation since fire suppression was of primary concern; however, significant quantities of barium nitrate pieces, friable asbestos, and contaminated soils were removed from MDA R. Landfill material that was not excavated during fire suppression remains in the eastern and western ends of MDA R. The actual lateral extent of the landfill was not defined during these activities (LANL 2001, 69971. p. 3).

3.1.1.5 Summary of Historical Investigations

Sixty-three surface and subsurface samples (Table 3.1-1) from soil, fill, and tuff were collected from 39 locations within the landfill area (Figure 3.1-1) during various activities in 1997, 1998, and 2000. All samples were analyzed for metals and SVOCs; 62 samples were analyzed for HE; and 3 samples were also analyzed for cyanide and VOCs. During the 2000 activities, approximately 170 samples were collected and screened for barium (XRF), HE (HE spot test), and radionuclides (NaI detector). These screening results were used to guide the subsequent collection of analytical samples. The full set of screening results is presented in Appendix D. For the purposes of this evaluation, the landfill area is defined as the area within the MDA R boundary shown in Figure 3.0-1.

Surface water drains from the landfill to the west, north, and east. As part of the MDA R investigations, as well as investigations of SWMU 16-018 and SWMU 16-021(c), samples have been collected in these drainage areas (Figure 3.1-1). Thirteen sediment samples from nine locations, one fill sample, and two surface soil samples from two locations were collected (Table 3.1-1) and analyzed (total number of analyses in parentheses) for anions (7), metals, cyanide (8), radionuclides (7), HE (16), inorganic chemicals (16), SVOCs (14), and VOCs (1). Details of the samples collected are described below.

Landfill Area

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 3.1-2 and 3.1-3, respectively.

The analytical results of inorganic chemicals in soil, sediment, fill, and tuff samples with concentrations greater than BVs are shown in Table 3.1-5, and sampling locations are presented in Figure 3.1-2. The following metals were detected in the listed media at the depths indicated (number of detects greater than BVs in parentheses after the chemical name).

- Surface soil/fill: aluminum (1), barium (22), beryllium (1), cadmium (1), calcium (1), chromium (4), cobalt (7), copper (3), iron (7), lead (4), manganese (1), selenium (3), silver (13), thallium (1), and zinc (8)

- Subsurface soil/fill: aluminum (2), barium (24), beryllium (3), cadmium (1), calcium (1), chromium (1), cobalt (5), copper (5), cyanide (total) (1), iron (3), lead (3), manganese (2), mercury (4), nickel (2), selenium (13), silver (7), thallium (2), and zinc (7)
- Tuff: aluminum (3), arsenic (6), barium (3), beryllium (1), cadmium (1), calcium (2), chromium (2), cobalt (2), copper (2), cyanide (total) (2), iron (2), lead (2), magnesium (2), nickel (2), selenium (7), and vanadium (2)
- Silver and thallium each had two samples that had DLs greater than the BV.

The analytical results of organic chemicals in soil, sediment, fill, and tuff samples are shown in Table 3.1-6; sampling locations are presented in Figure 3.1-3. The following organic chemicals were detected in the listed media at the depths indicated (number of detects in parentheses after the chemical name).

- Surface soil/fill: 4-amino-2,6-dinitrotoluene (2), 2-amino-4,6-dinitrotoluene (2), amino-dinitrotoluenes (1), aniline (1), bis(2-ethylhexyl)phthalate (2), di-n-butylphthalate (2), HMX (high melting explosive [octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine]) (5), naphthalene (1), phenanthrene (3), pyridine (1), RDX (11), and TNT (4)
- Subsurface soil/fill: 2-amino-4,6-dinitrotoluene (1), benzoic acid (1), bis(2-ethylhexyl)phthalate (3), di-n-butylphthalate (1), HMX (5), 4-methylphenol (1), naphthalene (1), phenanthrene (2), pyridine (1), RDX (11), TNT (2), and 1,3-xylene+1,4-xylene (1)
- Tuff: bis(2-ethylhexyl)phthalate (2), and RDX (1)

Drainage Areas

The frequency of detected inorganic chemicals, organic chemicals, and radionuclides is presented in Tables 3.1-2, 3.1-3, and 3.1-4, respectively.

Table 3.1-7 lists the inorganic data results for 2 surface soil, 1 surface fill, and 13 sediment samples obtained from 12 MDA R drainage locations. As detailed in Table 3.1-7 and Figure 3.1-2, the following inorganic chemicals were detected at concentrations greater than BVs (number of detects in parentheses after the chemical name).

- Surface soil/fill: barium (3), cobalt (2), copper (3), lead (3), silver (2), and zinc (2)
- Sediment: arsenic (3), barium (12), boron (2), cadmium (2), chromium (1), cobalt (6), copper (6), cyanide (total) (1), iron (1), lead (5), manganese (1), nickel (8), nitrate-nitrite as n (3), selenium (3), silver (7), thallium (1), uranium (1), vanadium (4), and zinc (1). In addition, 10 selenium and 8 thallium samples had DLs greater than BVs.

Table 3.1-8 lists the organic data results for 2 surface soil, 1 surface fill, and 13 sediment samples obtained from nine MDA R drainage locations. The following organic chemicals were detected (number of detects in parentheses after the chemical name).

- Surface soil/fill: amino-dinitrotoluenes (1), HMX (1), RDX (2), and TNT (1)
- Sediment: 4-amino-2,6-dinitrotoluene (3), 2-amino-4,6-dinitrotoluene (3), benzoic acid (1), di-n-butylphthalate (7), 1,3-dinitrobenzene (1), fluoranthene (1), HMX (2), pyrene (1), RDX (4), and TNT (3)

Table 3.1-9 lists the radionuclide data results for sediment samples obtained from MDA R drainage locations that were not excavated (Figure 3.1-4). Gamma spectroscopy was performed on seven sediment samples collected from seven locations. One radionuclide, cesium-137, was detected in one sample from soil in the drainage areas (Figure 3.1-4 and Table 3.1-9) at a concentration greater than the BV.

Upgradient Samples

All five samples collected from the upgradient sampling locations were excavated postsampling. Four soil samples and one sediment sample were collected. The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 3.1-2 and 3.1-4, respectively. Analytical results for inorganic and organic chemicals are presented in Figures 3.1-2 and 3.1-3, respectively.

Table 3.1-10 lists the inorganic chemical results for five upgradient samples collected from three locations that were excavated after sample collection. Inorganic chemicals detected at concentrations greater than BVs or with DLs greater than BVs (Table 3.1-10) include the following (number of detects in parentheses after the chemical name): copper (5) lead (3), nickel (5), and silver (5). Antimony, cadmium, and cyanide (total) had DLs greater than BVs in all five samples.

Table 3.1-11 lists the organic data results for three soil samples obtained from three locations that were excavated after sample collection. Detected organic chemicals (Table 3.1-11) include the following (number of detects in parentheses after the chemical name): benzo(b)fluoranthene (2), chrysene (2), fluoranthene (3), phenanthrene (3), and pyrene (3).

3.1.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Samples were collected at MDA R, MDA R drainages, and upgradient of MDA R in 1996, 1997, 1998, 1999, 2000, and 2002 and sent to off-site analytical laboratories for analysis. One sample was collected and analyzed by an on-site laboratory and is presented as a screening-level data sample.

Sample Collection and Analytical Methods for MDA R Landfill

Inorganic Chemicals

Antimony results were rejected in 57 samples (R) because the associated spike sample recovery was less than 30%. Multiple inorganic chemicals had results considered estimated (J) because the result was between the EQL and the MDL. Seven inorganic chemicals were considered estimated (J) for multiple samples, and three selenium results were reported as not detected (UJ) because the sample and duplicate results were greater than 5 times the reporting limit; the duplicate RPD is greater than 35%. Two magnesium results, two potassium results, one cadmium result, one vanadium result, and nine zinc results were estimated and potentially biased high (J+). Eight cadmium results were reported as not detected (UJ) because the analyte recovery was above 150% in the associated sample spike. Multiple inorganic chemicals had results considered estimated and potentially biased high (J+) because the analyte recovery was above the upper acceptance level but less than 150% of the associated sample spike. Two nickel results, 6 barium results, 3 silver results, and 15 zinc results were estimated and are potentially biased low (J-). Some antimony, mercury, nickel and thallium results were reported as not detected (UJ) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated sample spike. Multiple samples had results for arsenic, beryllium, cyanide, and mercury reported as not detected (U) because the results are less than 5 times the amount in the preparation blank.

Organic Chemicals

Two results for bis(2-ethylhexyl)phthalate and one result for di-n-butyl phthalate were rejected (R) because the required calibration is missing or the sample was analyzed on an expired calibration. Twenty-three results for 4-nitrotoluene, one result for benzoic acid, six aniline results, seven 4-chloroaniline results, and eight 2-chloronaphthalene results were reported as not detected (UJ) because the associated laboratory control sample recovery was less than the lower acceptance limit but greater than 10%. Multiple results for 2,6-dinitrotoluene, nitrobenzene, and 1,3,5-trinitrobenzene and 10 different SVOCs were reported as not detected (UJ) because the associated %RSD/%D exceeded criteria in the initial or continuing calibration standards. One benzoic acid result was reported as estimated and potentially biased low (J-) because the associated laboratory control sample recovery was less than 10%. Twelve results for bis(2-ethylhexyl)phthalate; four results for di-n-butyl phthalate; and three results for acetone, dichlorofluoromethane, and methylene chloride were reported as not detected (U) because the associated sample concentration was less than 5 times the amount in the method blank (or 10 times the amount in the method blank for common laboratory contaminants). Two phenol results were reported as not detected (U) because the associated mass spectrum did not meet method specifications. Some of the results for multiple organic chemicals were reported as estimated (J) by the analytical laboratory.

Radionuclides

No data-quality issues were identified.

Sample Collection and Analytical Methods for MDA R Drainage

Inorganic Chemicals

Four antimony results, two barium results, and one silver result were rejected (R) because the associated spike sample recovery was less than 30%. One nitrate-nitrite as N result was rejected in a drainage sample because the validator identified quality deficiencies that required validation. Multiple inorganic chemicals had results considered estimated (J) because the result was between the EQL and the MDL. Some results for chromium, copper, lead, iron, and silver were reported as estimated (J). One selenium result was reported as not detected (UJ) because the sample and duplicate results were greater than 5 times the reporting limit, and the duplicate RPD was greater than 35%. One sample had magnesium and potassium results estimated and potentially biased high (J+) because the analyte recovery was above 150% in the associated sample spike. Seven manganese results and one barium result were considered estimated and potentially biased high (J+) because the analyte recovery was above the upper acceptance level but less than 150% of the associated sample spike. Five nickel results and one silver result were estimated and potentially biased low (J-). Eight antimony results and five cyanide results were reported as not detected (UJ) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated sample spike. Multiple samples had results for arsenic, beryllium, chromium, mercury, nickel, selenium, and sodium reported as not detected (U) because the results were less than 5 times the amount in the preparation blank.

Organic Chemicals

One result for 4-nitrotoluene was reported as not detected (UJ) because the associated LCS recovery was less than the lower acceptance limit but greater than 10%. One result for 1,3-dinitrobenzene was estimated and potentially biased high (J+) because the associated laboratory control sample recovery was greater than the upper acceptance limit. One result for 1,3,5-trinitrobenzene and five SVOC results for one sample were reported as not detected (UJ) because the associated %RSD/%D exceeded criteria in the initial or continuing calibration standards. One sample had the SVOC results reported as estimated (UJ) because at least two sample surrogate recoveries in the same fraction were less than the lower acceptance limit but greater than 10% R. One result for bis(2-ethylhexyl)phthalate, one acetone result, and one methylene chloride result were reported as not detected (U) because the associated sample concentration was less than 5 times the amount in the method blank (or 10 times the amount in the method blank for common laboratory contaminants).

Radionuclides

One sample had results for bismuth-211 and mercury-203 rejected (R) because the minimum detectable concentration documentation was missing and validation could not be completed.

Sample Collection and Analytical Methods for MDA R Upgradient (Excavated Samples)

Inorganic Chemicals

Five sodium results and one beryllium result were considered estimated (J) because the result was between the EQL and the MDL. Lead, chromium, cobalt, and zinc had results reported as estimated and potentially biased high (J+) for five samples because the analyte recovery was above the upper acceptance level but less than 150% of the associated sample spike. Five arsenic results were reported as estimated and potentially biased low (J-), and five selenium results were reported as not detected (UJ) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated sample spike. Five mercury results were reported as not detected (U) because the results were less than 5 times the amount in the preparation blank.

Organic Chemicals

Five bis(2-ethylhexyl)phthalate results and two methylene chloride results were reported as not detected (U) because the associated sample concentration was less than 5 times the amount in the method blank (or 10 times the amount in the method blank for common laboratory contaminants).

Sample Collection and Analytical Methods for MDA R Screening-Level Data Samples

One sample was analyzed for uranium at an on-site laboratory using method SW-846:6020. The uranium result was reported as not detected (U) because the result was less than 5 times the amount in the preparation blank.

4.0 SUBAGGREGATE 3, TA-16 BURNING GROUND

The TA-16 Burning Ground is located in the northeast corner of TA-16 (Figure 4.0-1). The Burning Ground was constructed in 1951 for HE treatment. Following treatment, residual material was placed in the MDA P landfill until 1984. After 1984, the treated material was taken to TA-54 for disposal.

The TA-16 Burning Ground Subaggregate consists of Consolidated Unit 16-010(h)-99 and SWMU 16-028(a) (Figure 4.0-1). Consolidated Unit 16-010(h)-99 comprises seven SWMUs titled burning ground structures, hereafter referred to as the filter basket wash and associated filter beds. Consolidated Unit 16-010(h)-99 consists of SWMUs 16-005(g) and 16-010(h,i,k,l,m,n). The other SWMU in this subaggregate, 16-028(a), is referred to as the south drainage channel. Three AOCs are also in this subaggregate: C-16-001 (abovegrade platform), C-16-061 (latrine), and C-16-070 (underground propane tank).

The SWMUs do not include the closed hazardous waste management units (Kieling 2005, 92226) that were part of the TA-16 Burning Ground operation [16-010(j)] and structures 16-401 [SWMU 16-010(e)] and 16-406 [SWMU 16-010(f)]. These units were previously identified as corrective action units in Module VIII but are not subject to corrective action requirements under the Consent Order.

4.1 Filter Basket Wash and Filter Beds: Consolidated Unit 16-010(h)-99

The basket wash facility was in operation from 1951 to 1966. Modifications were made to the basket wash facility throughout its operational life.

4.1.1 Site Description and Operational History

The filter basket wash facility (Figure 4.0-1) was constructed in 1951 to clean HE sump filter baskets and was used until 1966 (LANL 1993, 20948, p. 5-151). Modifications were made to the basket wash facility throughout its operational life. Residual wash-down water from this process was sent down elevated, open steel V-shaped troughs to filters beds. Later, metal pressure-filter vessels replaced the filter pads. The supernatant liquid from the filter process was allowed to run off from the pads (or pressure-filter vessels) to the ground surface. HE material was collected on the filter beds (or pressure-filter vessels) and then burned on the beds or filter vessel. After burning, the filter-pad sand was removed for disposal (MDA P in early operations and later at TA-54) and replaced by new material. Unless otherwise noted, all of the structures related to the subject SWMUs were removed by D&D in 2003 (LANL 2003, 91865).

As originally constructed (LANL 1990, 07512, p. 16-010), the basket filter facility consisted of the following buildings and structures (Figure 4.0-1).

- Building 16-390 [SWMU 16-010(h)] was a basket wash house.
- Structure 16-1134 [SWMU 16-010(l)] was a trough, feeding wash-down water from basket wash house (building 16-390) to filter bed 16-394.
- Structure 16-394 [SWMU 16-010(j)] was a filter bed receiving wash-down water from basket wash house (building 16-390) through trough 16-1134.
- Structure 16-1135 [SWMU 16-010(m)] was a trough, feeding wash-down water from basket wash house (building 16-390) to filter bed 16-393.
- Structure 16-393 [SWMU 16-005(g)] was a filter bed, receiving wash-down water from basket wash house (building 16-390) through trough 16-1135.
- Structure 16-1136 [SWMU 16-010(n)] was a trough, feeding wash-down water from basket wash house (building 16-390) to filter bed 16-392.
- Structure 16-392 [SWMU 16-010(i)] was a filter bed, receiving wash-down water from basket wash house (building 16-390) through trough 16-1136.

- Structure 16-396 (AOC C-16-061) was a latrine for the burning grounds.
- Structure 16-398 (AOC C-16-070) was an underground propane tank.

In 1961, the following structures were added to the basket wash facility (LANL 1990, 07512, p. 16-010).

- Structure 16-1129 [SWMU 16-010-(k)] was a trough, feeding wash-down water from the basket wash house (building 16-390) to filter vessel 16-401 (permitted RCRA unit). The 1961 date listed in the 1990 SWMU report (LANL 1990, 07512, p. 16-010) for adding SWMU 16-010(k) conflicts with information in the OU 1082 RFI work plan (LANL 1993, 20948, p. 5-152) that indicates SWMU 16-010(k) was added in 1951. An aerial photograph from 1958 (USAF 1958, 15855) clearly shows that this structure was not present at the time of the photograph, indicating that the 1961 date provided in the 1990 SWMU report (LANL 1990, 07512, p. 16-010) is likely correct.
- Structure 16-401 [permitted RCRA unit, SWMU 16-010(e)] is a filter vessel, receiving wash-down water from basket wash house (building 16-390) through trough 16-1129.
- Structure 16-384 (AOC C-16-001) was a T-shaped, elevated, crossover platform that ran across the HE slurry drain troughs.

In 1965, the following additional modifications were made (LANL 1990, 07512, p. 16-010).

- Structure 16-406 is a filter vessel. Structure 16-393 was removed to TA-54, and in its place this filter vessel [permitted RCRA unit, SWMU 16-010(f)] was constructed to receive wash-down water from the basket wash house (building 16-390) through trough 16-1135.

The filter basket wash facility ceased operations in 1966 (LANL 1993, 20948, p. 5-151). From about 1966 to 2005, sludge from sitewide HE sumps was trucked to the burning ground, filtered, and then dried and burned at structures 16-401 and 16-406 (Figure 4.0-1). Both of these vessels have been closed under RCRA and approved by NMED (Kieling 2005, 92226). The filter-bed sand was scrapped up after burning and placed in drums for disposal at TA-54. From 1986 to 1988, the wastewater from the pressure-filter tanks drained into a Hypalon-lined surface impoundment [AOC 16-008(b), an interim status RCRA unit] located just south of the pressure-filter vessel 16-401. This pond has undergone RCRA closure, and EPA approved NFA (King 2005, 88464). Before closure, filtrate from the filter pads was allowed to drain into the same area south of the filter tanks and eventually into a tributary of the Cañon de Valle. In 1988, a carbon filter/treatment unit, structure 16-228, was built to treat the filtrate from structures 16-401 and 16-406 before discharging into a tributary of Cañon de Valle under NPDES permit NM0028355. The filter/treatment unit has since been renumbered 16-363 (LANL 1993, 20948, pp 5–151). The filter/treatment unit is located southwest of pressure-filter vessel 16-401 (Figure 4.0-1), just adjacent to the northwest corner of SWMU 16-028(a) (see section 4.2).

In 1988, former filter-bed structure 16-392 [SWMU 16-010(i)] was converted to a burn pad to burn HE-contaminated uranium objects (LANL 1993, 20948, p. 5-152). However, it is likely that HE contaminated with uranium was processed and burned on filter-pad structure 16-292 at the filter basket wash through trough structure 16-1136 [SWMU 16-010(n)] throughout its operating period due to historical testing conducted at TA-16. The trough serving the former filter bed (16-1136) was dismantled when the filter bed was modified.

Filter-bed structure 16-394 [SWMU 16-010(j)] was converted to a burn tray in 1990 and operated as a hazardous waste treatment unit under RCRA interim status (LANL 1999, 65311, p. 1). The burn tray was used to burn HE-contaminated oils, solvents, and water mixed with oils and solvents. After materials were poured onto the tray, wood stacked beneath the tray was ignited remotely. Residues from burning were managed in accordance with state and federal regulations. LANL submitted a RCRA closure plan for the burn tray [SWMU 16-010(j)] (LANL 1999, 65311) after burn operations were relocated to another RCRA-permitted unit [structure 16-388, SWMU 16-010(c)]. This active RCRA-permitted unit [SWMU 16-010(c)] is not included in this HIR.

Descriptions of four SWMUs integral to the operations (historical and current) at the burning ground are provided below [SWMUs 16-010(e,f,g) and 16-008(b)]. These SWMUs are not included in this report, but their operational history is relevant to the burning ground. All three sites have been closed in compliance with the RCRA hazardous waste permit (Kieling 2005, 92226). Historical releases that may have occurred before permitting have not been investigated.

Pressure-Filter Vessel 16-401, SWMU 16-010(e) and 16-406, SWMU 16-010(f) Operational Description

The pressure-filter vessels are 0.25-in. steel funnel-shaped vessels that are 8.75 ft in diameter and approximately 4 ft high, containing sand-filter beds (LANL 2003, 91448, p. 6). Approximately half of each vessel is below ground level (LANL 2003, 91448, Figure 3). Currently, the base of each vessel is welded to underground pipes leading to structure 16-363 [SWMU 16-010(g)], a manhole tank at the High Explosive Water Treatment Facility (HEWTF). Historically, the vessels drained to the surface impoundment [AOC 16-008(b)] or into the drainage area defined by SWMU 16-028(a). The vessels are filled with gravel at the bottom, topped with sand, and lined with firebrick to protect the steel during open-burning operations (LANL 2003, 91448, p. 6). Wastewater from HE operations was collected in sumps and then pumped into a truck and transported to the sand-filter vessels. The flow rate through the sand filters was typically several gallons per minute, and it generally required a day to unload a full tank truck into the filters (LANL 2003, 91448, p. 6).

Two types of wastewater were pretreated within the sand filters. The first type was wastewater with low levels of HE, which was generated during HE processing (e.g., washing down machining or pressing bays) from cleanup activities of HE-contaminated materials (such as steam cleaning contaminated equipment) and other processes (LANL 2003, 91448, p. 6). The second type was HE saturated with water (e.g., filters from the HE-machining facility that have been collected during ER activities and stored in water for safety). As the wastewater percolated through the sand and gravel, the solids were removed, and the filtered wastewater was piped to the HEWTF's manhole tank (LANL 2003, 91448, p. 6). Large particles of wet HE would remain on the surface of the sand filters and were dried before burning. When open-burning operations were conducted at the sand filters, a heavy steel lid was placed over the filter, and the HE was dried with heated forced air for 4 or 5 days. After burning, any ash and the top layer of sand were removed, characterized, and disposed of per regulations (LANL 2003, 91448, p. 6).

Burning Ground Surface Impoundment [AOC 16-008(b)] Operational Description

The surface impoundment [AOC 16-008(b)] is located directly south of and adjacent to Consolidated Unit 16-010(h)-99 and is within SWMU 16-028(a) and the drainage channel to Cañon de Valle (Figure 4.0-1). The TA-16 surface impoundment received filtrate from pressure-filter vessel structures 16-401 and 16-406, the only source of material placed in the impoundment (LANL 1986, 91447.1, p. 2). The surface impoundment was equipped with a Hypalon liner in 1986 and was unlined before 1986. Inflow to the impoundment occurred at two points: one in the northwest corner of the structure and one in the center of the east side. Periodically, fluids from the impoundment were discharged to an NPDES-permitted outfall within SWMU 16-028(a). This impoundment has since undergone RCRA closure (King 2005, 88464).

4.1.1.1 Land Use

Present and future land use is industrial at TA-16.

4.1.1.2 Relationship to Other SWMUs and AOCs

Fourteen SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft of the basket wash facility (counting three SWMUs in one consolidated unit) (Figure 4.0-1), including a septic system, flash pads, a former barium nitrate pile, burn sites, a water treatment structure, a former surface impoundment, a drainage area for the basket wash facility, a former aboveground platform, a former latrine, a former underground propane tank, and filter vessels.

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 4.0-1) are described elsewhere in this document. Many of the surface structures at surrounding sites shown in Figure 4.0-1 have been removed. Four of the sites are located in Subaggregate 3. One surrounding SWMU included in the Cañon de Valle Aggregate Area was removed from the Laboratory's HWFP on December 23, 1998, and one surrounding AOC included in the Cañon de Valle Aggregate Area was approved for NFA by EPA on January 21, 2005. The two burn sites are still active, but the flash pad and filter vessels are closed.

Some of the sites to the west and north of the basket wash facility are at higher elevations than the basket wash facility; however, based upon the topography (Figure 4.0-1) and/or operations at these sites, it is unlikely that they would have contributed any contamination to the basket wash facility.

4.1.1.3 Waste Inventory

At the three filter pads (structures 16-392, 16-393, 16-394), HE was filtered from wash-down water, dried, and burned. The following waste streams have been treated at the structure 16-394 burn tray: HE-contaminated water mixed with solvents and/or metals; HE-contaminated spent solvent waste; HE-contaminated used oil; and HE-contaminated liquid acids, bases, and/or inorganic salts (LANL 1999, 65311, p. 9). Former filter pad structure 16-392 was converted to a burn pad to burn HE-contaminated uranium objects (LANL 1993, 20948, p. 5-15). Structures 16-401 and 16-406 are closed RCRA units, now operated as part of wastewater treatment, and are not included in Consolidated Unit 16-010(h)-99.

4.1.1.4 Historical Releases

Historical releases consist primarily of HE in the filtrate from the basket wash house. Uranium may have been released (LANL 1993, 20948, p. 5-152) while HE burned on uranium objects at filter pad structure 16-392 [SWMU 16-010(i)].

4.1.1.5 Summary of Historical Investigations

Samples were collected during Phase I RFI activities in 1995 based upon the OU 1082 RFI work plan (LANL 1993, 20948) and subsequent investigative sampling events in 1996 and 1997. The Phase I RFI report was never written. Field screening was used to guide the collection of analytical samples. A summary of these field-screening samples is provided below for each SWMU, and the full details of the field-screening results are in Appendix D.

Sixty samples were collected from 41 locations and submitted for laboratory analyses during these investigations (Tables 4.1-1 and 4.1-2, Figure 4.1-1). Two of the samples were collected and sent to off-site laboratories but were not submitted through the SMO and are screening-level data (Table 4.1-2). Two confirmation samples from two locations were collected from two additional locations within the footprint of building 16-390 [SWMU 16-010(h)] during the 2003 D&D activities. Both of these confirmation samples are decision-level data.

The frequency of detected inorganic chemicals and organic chemicals for the decision- and screening-level data samples is presented separately in Tables 4.1-3 through 4.1-5. Details of the samples collected from each SWMU within this consolidated unit are discussed below:

SWMU 16-005(g) Filter Bed and Drainage, Structure 16-393

Four samples were field screened for barium (XRF). Five samples from surface and subsurface soil, fill, and tuff were collected from two locations (Table 4.1-1, Figure 4.1-1) and analyzed for metals, HE, SVOCs, and VOCs (Table 4.1-1). In addition, the two samples from location 16-01341 were also analyzed for cyanide. Three samples were collected from location 16-01660; the sampling location coordinates were not recorded in the sample collection log (SCL) or the ERDB. The following metals were detected in the listed media at the depths indicated (number of detects greater than BVs in parentheses after the chemical name) (Table 4.1-6, Figure 4.1-2):

- Surface soil: zinc (1)
- Subsurface soil/fill: chromium (3), copper (1), and zinc (1)
- Tuff: beryllium (1)
- The following analytes had DLs greater than BVs (number of samples in parentheses): antimony (2), cadmium (3), mercury (3), silver (3), and thallium (3).

As shown in Table 4.1-7 and Figure 4.1-3, the following organic chemicals were detected in the listed media at the depths indicated (number of detects in parentheses after the chemical name).

- Surface soil: 4-amino-2,6-dinitrotoluene (1), 2-amino-4,6-dinitrotoluene (1), bis(2-ethylhexyl)phthalate (1), HMX (1), and RDX (1)
- Subsurface soil/fill: 4-amino-2,6-dinitrotoluene (1), 2-amino-4,6-dinitrotoluene (1), HMX (2), and RDX (1)
- Tuff: HMX (2), and RDX (1)

SWMU 16-010(h) Basket Wash House, Structure 16-390

Eleven samples were field screened for radionuclides (NaI detector) and HE (HE spot test). Six samples (two soil and four fill) were collected from three locations (Figure 4.1-1) during 1995 Phase I RFI activities and analyzed for metals, cyanide, HE, and SVOCs (Table 4.1-1). In addition, two subsurface soil samples were collected from the building 16-390 footprint (Figure 4.1-1) during the 2003 D&D activities and analyzed for metals, HE, SVOCs, and VOCs (Table 4.1-1). The sampling location coordinates were not recorded on the SCL or in the ERDB. The following metals were detected in the listed media at the depths indicated (number of detects greater than BVs in parentheses after the chemical name) (Table 4.1-6, Figure 4.1-2).

- Surface soil/fill: cadmium (2), calcium (2), chromium (1), lead (2), uranium (2), and zinc (2)
- Subsurface soil/fill: cadmium (1), lead (2), uranium (2), and zinc (3). The following analytes had DLs greater than BVs (number of samples in parentheses): antimony (6) and cadmium (3).

As shown in Table 4.1-7 and Figure 4.1-3, the following organic chemicals were detected in the listed media at the depths indicated (number of detects in parentheses after the chemical name).

- Surface soil/fill: 4-amino-2,6-dinitrotoluene (1), 2-amino-4,6-dinitrotoluene (2), anthracene (1), di-n-butylphthalate (2), 2,4-dinitrotoluene (2), fluoranthene (1), HMX (3), pyrene (1), RDX (2), and TNT (2)
- Subsurface soil/fill: 4-amino-2,6-dinitrotoluene (2), 2-amino-4,6-dinitrotoluene (2), benzo(a)anthracene (1), chrysene (1), 2,4-dinitrotoluene (1), fluoranthene (2), HMX (2), phenanthrene (1), pyrene (1), RDX (4), and TNT (1)

SWMU 16-010(i) Filter Bed, Structure 16-392, and Drainage

Twenty-seven samples were field screened for radionuclides (NaI detector) and 19 samples were field screened for HE (HE spot test). Sixteen surface and near-surface soil, sediment, and fill samples (Table 4.1-1, Figure 4.1-1) were collected from 11 locations and analyzed for metals, cyanide, HE, SVOCs (15 samples), and VOCs (8 samples).

Barium was detected greater than BV in 12 of the 16 samples (Table 4.1-6, Figure 4.1-2). Cadmium was detected greater than BVs in 3 samples and had DLs greater than BVs in the remaining 13 samples. Uranium was detected greater than BV in 14 of the 16 samples collected (Table 4.1-6). Other metals were detected greater than BVs: copper in three samples, lead in six samples, mercury in five samples, and zinc in three samples. DLs for antimony were greater than BVs in all 16 samples, and the DL for cadmium was greater than BV for 13 samples (Table 4.1-6).

The primary organic chemicals detected was HE. The HE compounds detected (Table 4.1-7, Figure 4.1-3) were HMX (all 16 samples), RDX (14 of 16 samples), TNT (13 of 16 samples), 1,3,5-trinitrobenzene (7 of 16), and 2,4-dinitrotoluene (9 of 16 samples). Acetone was detected in four samples. In one surface fill sample, 4-nitrotoluene.was detected. In two fill samples; 2-nitrotoluene was detected. In three soil, five fill, and three sediment samples, 4-amino-2,6-dinitrotoluene was detected. In two soil, seven fill, and two sediment samples, 2-amino-4,6-dinitrotoluene was detected. In one surface fill sample, 1,3-dinitrobenzene and N-nitrosodimethylamine were detected. Tetryl was detected in one surface soil sample. In one subsurface fill sample, 1,2-dichloroethane and toluene were detected. Bis(2-ethylhexyl)phthalate was detected in one subsurface fill sample. In two soil samples, 4-isopropyltoluene was detected. Fluoranthene and phenanthrene were each detected in one surface soil sample.

Data from an additional screening-level data sample were also available (Table 4.1-2, Figure 4.1-1). This surface soil sample (0316-96-0003) was analyzed for metals, SVOCs, and VOCs. Barium, cadmium, and lead were detected greater than BVs. DLs for arsenic, mercury, selenium, and silver were greater than BVs (Table 4.1-8). A limited number of organic chemicals (SVOCs and VOCs) were analyzed for in this sample but none were detected.

SWMU 16-010(k) Trough to Pressure Filter Vessel 16-401

Twenty-two samples were field screened for radionuclides (NaI detector), barium (XRF), and HE (HE spot test). Twelve surface and near-surface soil samples were collected from nine locations (Table 4.1-1, Figure 4.1-1) and analyzed for metals, cyanide, HE, SVOCs (three samples), and VOCs (three samples).

Barium was detected greater than BV in 8 of the 12 samples (Table 4.1-6, Figure 4.1-2). Cadmium was detected greater than BVs in 2 samples and had DLs greater than BVs in the remaining 10 samples.

Other metals detected greater than BVs (Table 4.1-6, Figure 4.1-2) included copper in one sample, lead in four samples, mercury in two samples, and zinc in three samples. DLs for antimony were greater than BVs in all 12 samples, and the DL for cadmium was greater than BV in 10 samples (Table 4.1-6).

The primary organic chemicals detected in the samples collected from this SWMU (Table 4.1-7, Figure 4.1-3) were HE, including HMX (12 of 12), RDX (7 of 12), TNT (1 of 12), 4-amino-2,6-dinitrotoluene (10 of 12), 2-amino-4,6-dinitrotoluene (10 of 12), and 2,4-dinitrotoluene (1 of 12).

SWMU 16-010(l) Trough to Filter Bed 16-394

Twenty-two samples were field screened for radionuclides (NaI detector) and 24 samples were field screened for barium (XRF) and HE (HE spot test). Six surface and subsurface soil samples were collected from four locations (Table 4.1-1, Figure 4.1-1) and analyzed for metals, cyanide, HE, SVOCs (two samples), and VOCs (two samples).

The following metals were detected in the listed media at the depths indicated (number of detects greater than BVs in parentheses after the chemical name) (Table 4.1-6, Figure 4.1-2).

- Surface soil: barium (4), silver (1), and zinc (3)
- Subsurface soil: uranium (1), and zinc (2)
- The following analytes had DLs greater than BVs (number of samples in parentheses): antimony (6), and cadmium (6).

As shown in Table 4.1-7 and Figure 4.1-3, the following organic chemicals were detected in the listed media at the depths indicated (number of detects in parentheses after the chemical name).

- Surface soil: 4-amino-2,6-dinitrotoluene (3), 2-amino-4,6-dinitrotoluene (3), 2,6-dinitrotoluene (1), HMX (4), pyrene (1), RDX (2), 1,3,5-trinitrobenzene (1), and TNT (1)
- Subsurface soil: 4-amino-2,6-dinitrotoluene (1), 2-amino-4,6-dinitrotoluene (2), bis(2-ethylhexyl)phthalate (2), HMX (2), RDX (2), and TNT (1)

Data from an additional screening-level data sample were also available (Table 4.1-2, Figure 4.1-1). This surface soil sample (0316-96-0004) was analyzed for metals, SVOCs, and VOCs. Barium was detected greater than BV. DLs for arsenic, cadmium, mercury, selenium, and silver were greater than BVs (Table 4.1-8). A limited number of organic chemicals (SVOCs and VOCs) were analyzed for in this sample (Table 4.1-6), but none were detected.

SWMU 16-010(m) Trough to Filter Bed 16-393

Twenty samples were field screened for radionuclides (sodium iodide [NaI] detector), barium (XRF), and HE (HE spot test). Ten surface (seven samples) and subsurface (three samples), soil and fill samples, were collected from seven locations (Table 4.1-1, Figure 4.1-1) and analyzed for metals, cyanide, HE, SVOCs (three subsurface samples), and VOCs (three subsurface samples).

The following metals were detected in the listed media at the depths indicated (number of detects greater than BVs in parentheses after the chemical name) (Table 4.1-6, Figure 4.1-2).

- Surface soil/fill: antimony (1), barium (3), chromium (1), copper (1), lead (2), mercury (1), and zinc (5)

- Subsurface soil/fill: lead (2), mercury (1), uranium (3), and zinc (1)
- The following analytes had DLs greater than BVs (number of samples in parentheses): antimony (9), and cadmium (10).

As shown in Table 4.1-7 and Figure 4.1-3, the following organic chemicals were detected in the listed media at the depths indicated (number of detects in parentheses after the chemical name).

- Surface soil/fill: 4-amino-2,6-dinitrotoluene (6), 2-amino-4,6-dinitrotoluene (6), HMX (7), RDX (4), 1,3,5-trinitrobenzene(1), and TNT (1)
- Subsurface soil/fill: 2-amino-4,6-dinitrotoluene (2), 2,4-dinitrotoluene (2), HMX (3), RDX (3), 1,3,5-trinitrobenzene(2), and TNT (2)

SWMU 16-010(n)

Fifteen samples were field screened for radionuclides (NaI detector), barium (XRF), and HE (HE spot test). Three surface soil samples were collected and analyzed for metals, cyanide, and HE (Table 4.1-1, Figure 4.1-1).

Barium and zinc were detected greater than BVs in one sample, and uranium was detected greater than BV in two samples (Table 4.1-6, Figure 4.1-2). DLs for antimony and cadmium were greater than BVs in all three samples collected (Table 4.1-6), and the DL for uranium was greater than BV in one sample.

Three HE analytes were detected: 4-amino-2,6-dinitrotoluene, 2-amino-4,6-dinitrotoluene, and HMX, and they were detected in one sample (Table 4.1-7, Figure 4.1-3).

4.1.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods for Decision-Level Data Samples

Samples were collected at the TA-16 Burning Ground in 1995, 1996, 1997, and 2003 and sent to off-site analytical laboratories for analyses. For Consolidated Unit 16-010(h)-99, 56 samples were collected in 1995 from soil (36 samples), fill (15 samples), tuff (1 sample), and sediment (3 samples). In 1997, two samples were collected from soil (two samples) and one tuff sample was collected. Two soil samples were collected in 2003.

Inorganic Chemicals

The following data were rejected for inorganic chemicals. Antimony and selenium results were rejected in three samples collected in Consolidated Unit 16-010(h)-99 at location 16-01660 in 1997. These six results were rejected because of low recovery in the associated spike sample. Twelve inorganic chemicals had results considered estimated (J) because the result was between the EQL and the MDL. Nine inorganic chemicals had results that were estimated and potentially biased low (J-), and 2 antimony and 37 selenium results were reported with estimated DLs because the analyte recovery was below the lower acceptance level but greater than 30% in the associated sample spike. Seven inorganic chemicals were estimated and potentially biased high (J+) because the analyte recovery was above the upper acceptance level but less than 150% in the associated sample spike. One uranium result was qualified as a nondetected concentration (U) because the result was less than 5 times the amount in the preparation blank.

Organic Chemicals

No data were rejected for organic chemical results for Consolidated Unit 16-010(h)-99. Eleven organic chemicals had results reported as estimated (J) by the analytical laboratory for some samples. Five results for bis(2-ethylhexyl)phthalate, three results for acetone, and four results for methylene chloride were qualified as nondetected concentrations because the results were less than 5 times the amount in the method blank (or 10 times the amount in the method blank for common laboratory contaminants).

Sample Collection and Analytical Methods for Screening-Level Data Samples

In 1996, two of the samples collected were shipped directly to analytical laboratories from the field. The results for these two samples are screening-level data

No data-quality issues were identified.

4.2 Southern Drainage: SWMU 16-028(a)

SWMU 16-028(a) is the south drainage channel from the burning ground at TA-16. The drainage is associated with Consolidated Unit 16-10(h)-99, the basket wash facility. The site provides the only drainage for half the burning ground, and it marks the southern edge of burning ground activities (LANL 1997, 62539, p. 106).

4.2.1 Site Description and Operational History

This site is located near a tributary of Water Canyon known as Fish Ladder Canyon within the Cañon de Valle Aggregate Area. The site has minimal fire damage to the west and south. Some minor burning occurred within the SWMU boundary but consisted mostly of destroyed grasses (LANL 2001, 71342, p. 26). In 1997, straw bale barriers were installed at this site to minimize contaminant migration from the site. In 2000, additional best management practices were installed in the form of straw wattles and permanent seeding.

4.2.1.1 Land Use

Present and future land use is industrial.

4.2.1.2 Relationship to Other SWMUs and AOCs

Twenty-one SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of the drainage area (counting 11 SWMUs in 2 consolidated units) (Figure 4.0-1), including a septic system, flash pads, a former barium nitrate pile, burn sites, a water treatment structure, a former surface impoundment, the basket wash facility (basket wash house, troughs, and filter pads), a former aboveground platform, a former latrine, a former underground propane tank, and filter vessels.

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 4.0-1) are described elsewhere in this document. All of the surface structures at the basket wash facility shown in Figure 4.0-1 have been removed. Eleven of the sites (eight SWMUs in one consolidated unit and three AOCs) are located in Subaggregate 3. One surrounding SWMU included in the Cañon de Valle Aggregate Area was removed from Module VIII of the Laboratory's HWFP on December 23, 1998, and one surrounding AOC included in the Cañon de Valle Aggregate Area was approved for NFA by EPA on January 21, 2005. The two burn sites are still active, but the flash pad and filter vessels are closed.

All of the sites associated with the drainage area (see section 4.2), the filter vessels, water treatment facility, surface impoundment, and one of the burn sites drain(ed) into the southern drainage area (Figure 4.0-1). All of the potential contamination present in SWMU 16-028(a) is the result of operations at these sites.

4.2.1.3 Waste Inventory

Potential wastes in the drainage were HE, inorganic chemicals, and uranium due to both site-related processes and runoff. Soil samples were collected for analysis from the south drainage in 1987 for soluble barium, inorganic chemicals, and organic chemicals.

4.2.1.4 Historical Releases

The drainage was suspected to contain various types of HE contamination and possibly barium from the burning ground runoff. Potential contaminants at this site were identified as HE, metals (particularly barium), and laboratory chemicals such as solvents that were burned at the burning ground (LANL 1997, 62539, p. 106).

4.2.1.5 Summary of Historical Investigations

The ER Project conducted an RFI at SWMU 16-028(a) in 1995 and resampled some locations in 1997. The RFI results were summarized in a 1997 RFI report (LANL 1997, 62539, pp. 105–117). Five surface fill samples were collected from five locations and analyzed for metals, cyanide, HE, and SVOCs during the 1995 RFI activities (Table 4.1-1, Figure 4.1-1). During the 1997 sampling activities, a total of four samples—three soil samples and one tuff sample—were collected from two locations and analyzed for metals, HE, SVOC (1), and VOCs (Table 4.1-1). All of the samples are decision-level data.

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 4.1-3 and 4.1-5, respectively.

DLs for antimony were greater than BVs (Table 4.1-6) in eight of the nine samples collected; antimony was not detected greater than BV in the remaining sample. Barium was detected greater than BV in six of the nine samples. DLs for cadmium in five of the nine samples were greater than BVs; cadmium was not detected greater than BVs in the other four samples. Cobalt was detected greater than BV in two samples; copper was greater than BV in four samples; lead was greater than BV in one sample; nickel was greater than BV in four samples; uranium was greater than BV in two samples; and zinc was greater than BVs in four samples. Three of the nine selenium samples had DLs greater than BVs; selenium was not detected greater than BVs in the other six samples.

HMX was detected in six of eight samples (Table 4.1-7, Figure 4.1-3) collected from soil and fill. RDX was detected in one surface fill sample; TNT was detected in two surface fill samples. In three fill samples, 4-amino-2,6-dinitrotoluene was detected; 2-amino-4,6-dinitrotoluene was detected in two fill samples; and

1,3,5-trinitrobenzene was detected in one fill sample. Nine different PAHs (Table 4.1-7) were detected in one sample. The halogenated solvent tetrachloroethene was detected in the three subsurface (one soil and two tuff) samples collected.

4.2.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods

Samples were collected at the TA-16 Burning Ground in 1995, 1996, 1997, and 2003 and sent to off-site analytical laboratories for analyses. For SWMU 16-028(a), five fill samples were collected in 1995, and four samples were collected in 1997 from soil (one sample) and tuff (three samples).

Inorganic Chemicals

No data were rejected for inorganic chemical results for SWMU 16-028(a). Twelve inorganic chemicals had results considered estimated (J) because the result was between the EQL and the MDL. Five chromium results were estimated and potentially biased low (J-), and four antimony and four selenium results were reported with estimated DLs (UJ) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated sample spike. One chromium result and one thallium result were each qualified as nondetected concentrations (U) because the results were less than 5 times the amount in the preparation blank.

Organic Chemicals

Results for multiple SVOCs were rejected in two samples in SWMU 16-028(a) at location 16-01330 and in one sample at location 16-01329 because at least one sample surrogate recovery was less than 10%. All of these three samples were collected in 1997. Nine PAHs were considered estimated (J) by the analytical laboratory for one sample. One result for 2,4-dinitrotoluene was estimated (J), and 23 results for bis(2-ethylhexyl)phthalate, 1 result for di-n-octylphthalate, 7 results for acetone, 12 results for methylene chloride, and 8 results for trichlorofluoromethane were qualified as nondetected concentrations (U) because the results were less than 5 times the amount in the method blank (or 10 times the amount in the method blank for common Laboratory contaminants). One result for 2,4-dinitrotoluene and one result for phenanthrene were estimated. Two samples had multiple SVOC results; three samples had multiple VOC results qualified as nondetected concentrations (UJ) based on the comparison of the internal standard counts to the applicable continuing calibration standard. One 4-isopropyltoluene result was considered estimated and potentially biased high (J+) based on the surrogate sample recovery.

4.3 Miscellaneous Structures: AOCs C-16-001 (Abovegrade Platform), C-16-061 (Latrine), and C-16-070 (Underground Propane Tank)

4.3.1 Site Description and Operational History

AOC C-16-001 was a T-shaped, elevated, crossover platform (structure 16-384) that ran across the three HE slurry drain troughs [SWMUs 16-010(h,m,n)] coming out of building 16-390 at the TA-16 Burning Ground. The platform was constructed of steel, with an open, crosshatched floor and was approximately 7 ft × 9 ft × 3 ft. The platform was constructed in 1962 to allow workers to cross over the trough area instead of walking around it. Laboratory records indicate that the structure was intended for removal in 1970 (Russo 1970, 05786; Blackwell 1983, 05823.5), and engineering records confirm that it was removed, although no removal date is available. A former site worker identified that the structure was not associated with hazardous materials (Blackwell 1983, 05823.5).

AOC C-16-061 is associated with structure 16-396, the latrine for the TA-16 Burning Grounds. The latrine was located approximately 80 ft east of building 16-390, the central basket wash facility for the burning ground. Structure 16-396 was constructed in 1951 and removed in 1968 and disposed of at MDA P (SWMU 16-018). The structure was 4 ft × 4 ft × 7.5 ft, wood-frame construction, and contained no plumbing. No hazardous materials were associated with this structure (Blackwell 1983, 05823.5).

AOC C-16-070 was an underground propane tank, structure TA-16-0391, that was installed at the TA-16 Burning Grounds in 1951. The tank was 24 ft long × 5 ft in diameter and had a capacity of 3063 gal. It was located approximately 50 ft northeast of building 16-390. The tank had a manhole to access tank valves and a 6-in. corrugated metal drain from the manhole. The tank provided fuel to heat and dry the sand in the filter tanks [SWMUs 16-010(e) and 16-010(f)] before the sand was burned to remove HE (Martin and Hickmott 1994, 52964.594). The tank was abandoned in place in 1970 and later was removed. Facility staff recalled that the tank was removed in approximately 1989–1990 (Paige 1994, 52964.607). The tank was not associated with the use of hazardous materials (other than propane) (Blackwell 1983, 05823.5) and had been shown to be free of HE and radioactive contamination (Brooks 1970, 05785; Buckland 1970, 05788).

4.3.1.1 Land Use

Present and future land use is industrial at TA-16.

4.3.1.2 Relationship to Other SWMUs and AOCs

Twenty-one SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of the former aboveground platform (AOC C-16-001), former latrine (AOC C-16-061), and the former underground propane tank (AOC C-16-070) (counting 11 SWMUs in 2 consolidated units) (Figure 4.0-1), including a septic system, flash pads, a former barium nitrate pile, burn sites, a water treatment structure, a former surface impoundment, the basket wash facility (basket wash house, troughs, and filter pads), a drainage area for the basket wash facility, and filter vessels.

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 4.0-1) are described elsewhere in this document. All of the surface structures at the basket wash facility shown in Figure 4.0-1 have been removed. Twelve of the sites (eight SWMUs in one consolidated unit, one SWMU, and three AOCs) are located in Subaggregate 3. One surrounding SWMU included in the Cañon de Valle Aggregate Area was removed from Module VIII of the Laboratory’s HWFP on December 23, 1998, and one surrounding AOC included in the Cañon de Valle Aggregate Area was approved for NFA by EPA on January 21, 2005. The two burn sites are still active, but the flash pad and filter vessels are closed.

Both the propane tank and the latrine were located at an elevation above all of the surrounding sites; therefore, none of the surrounding sites could have contributed to any contamination at either the former latrine or former underground propane tank. The former aboveground platform was aboveground level, and thus it was unlikely to have received any contamination from any of the surrounding sites as a result of any environmental transport phenomenon (e.g., surface water runoff).

4.3.1.3 Waste Inventory

No wastes are associated with these AOCs.

4.3.1.4 Historical Releases

No documented historical releases associated with these AOCs have been identified.

4.3.1.5 Summary of Historical Investigations

No samples have been collected from these AOCs.

4.3.2 Historical Data-Quality Interpretation

No samples were collected and analyzed; therefore, no historical data are available for the subject AOCs.

5.0 SUBAGGREGATE 4, TA-16 ADMINISTRATIVE AREA

The TA-16 Administrative Area Subaggregate includes consolidated units, SWMUs, and AOCs located in the western part of the Cañon de Valle watershed and includes only sites that were not used for HE processing (Figure 5.0-1). Sites include the drywell system associated with building 16-540 [Consolidated Unit 16-001(a)-99, containing the following: SWMUs 16-001(a,b,c)]; storage buildings and shops [Consolidated Unit 16-017(i)-99, containing SWMU 16-017(i) and AOCs C-16-025 and C-16-026; SWMUs 16-034(h,i,j,k); and AOCs C-16-008, C16-009, C-16-010, C-16-012, C-16-013-, C-16-014, C-16-015, C-16-016, C-16-017, C-16-011, and C-16-041]; underground fuel storage tanks [AOCs 16-033(e,f), 16-037, and C-16-072], a septic system for building 16-54 [SWMU 16-006(a), AOC C-16-036], a trash (non-HE) burn area [SWMU 16-009(a)], a surface disposal area [SWMU 16-016(b)], and miscellaneous structures [AOCs C-16-018 and C-16-044 and SWMU 16-027(b)].

5.1 Steam Plant: Consolidated Unit 16-001(a)-99

Consolidated Unit 16-001(a)-99 consists of SWMUs 16-001(a,b,c), which are associated with the TA-16 steam plant, building 16-540 (LANL 1993, 20948, p. 5-1) (Figure 5.0-1). The steam plant served the S-Site explosives-development mission. The SWMUs consist of two tanks and two dry wells that received effluent from the steam plant.

5.1.1 Site Description and Operational History

SWMU 16-001(a) was a blowdown tank (structure 16-456), which served the steam plant boilers (LANL 1993, 20948, p. 5-4). The tank was installed in 1968 and replaced the previous tank, structure 16-54

[SWMU 16-001(c)] (LANL 1990, 07512, p. 16-001). Structure 16-456 was located about 40 ft from the northeast corner of the steam plant. It was a 2000-gal.-capacity, 7-ft-long steel tube with an inside diameter of 6 ft and was half-buried in the ground. The tank received hot water blowdown from the steam boilers and was designed to cool the water. The blowdown water exited the tank and went through two dry wells [SWMU 16-001(b)] that discharged to an NPDES-permitted outfall, EPA 02A007 (LANL 1990, 07512, p. 16-001); a release stack allowed superheated water to vent to the atmosphere. The tank was replaced in 1988.

SWMU 16-001(b) consists of two connected dry wells, which are 4 ft in diameter (LANL 1993, 20948, p. 5-4). One is 6 ft deep; the other is 7.5 ft deep. Both are made of concrete and are covered with a manhole cover. The wells are located about 50 ft downslope and northeast of structure 16-456 [SWMU 16-001(a)]. The dry wells were designed to allow effluent to seep into the ground. A pipe equipped with a splash deflector enters each well near its bottom. The primary well has an outflow pipe leading to the secondary well. The dry wells previously received overflow from structure 16-456 but were bypassed after 1988 because their capacity was inadequate. The dry wells discharged to the former NPDES-permitted outfall, EPA 02A007 (LANL 1990, 07512, p. 16-001). The dry well system was refurbished after 1988 with new blowdown and settling tanks.

SWMU 16-001(c) is a blowdown tank (structure 16-541) that received steam plant blowdown (LANL 1993, 20948, p. 5-4). It was installed in 1962 and operated until 1968 when blowdown was diverted to another tank [structure 16-456, SWMU 16-001(a)]. Structure 16-541 remained in place on level ground just south of 16-456 when the OU 1082 RFI work plan was written (LANL 1993, 20948, pp. 5-1–5-4). It was covered with a concrete pad and equipped with a wire-mesh vent. A standpipe vent is located about 8 ft east of the tank. About 100 ft further downslope is a ditch that according to the OU 1082 RFI work plan may have received outfall from the tank (LANL 1993, 20948, pp. 5-1—5-4).

5.1.1.1 Land Use

Present and future land use is industrial at TA-16.

5.1.1.2 Relationship to Other SWMUs and AOCs

Fourteen SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of the former steam plant, including HE magazines, outfalls, an aboveground propane tank, a fuel oil UST, storage buildings and warehouses, a surface disposal area, and a burn area (Figure 5.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 5.0-1) are described elsewhere in this document. All of the surface structures and the UST have been removed. Both the surface disposal area and burn area are inactive. Seven of the sites (four SWMUs and three AOCs) are located in Subaggregate 4. One surrounding SWMU included in the Cañon de Valle Aggregate Area was removed from Module VIII of the Laboratory’s HWFP on December 23, 1998, and one surrounding AOC included in the Cañon de Valle Aggregate Area was approved for NFA by EPA on January 21, 2005. Seven surrounding SWMUs and one AOC in the Cañon de Valle Aggregate Area have been proposed for NFA and are pending.

The area surrounding the former steam plant is relatively flat (Figure 5.0-1), and there are no significant elevation differences between the former steam plant and surrounding sites. In addition, none of the operations at the surrounding sites had any outfalls or drainage areas associated with their operations. Consequently, it is unlikely that any of the surrounding sites would have contributed any contamination to Consolidated Unit 16-001(a)-99.

5.1.1.3 Waste Inventory

According to the 1990 SWMU report (LANL 1990, 07512, p. 16-001), “corrosion inhibitors and algaecides were present in the blowdown liquid.” According to the OU 1082 RFI work plan (LANL 1993, 20948, p. 5-5) “The principal potential contaminants of concern (PCOCs) at the steam plant, SWMUs 16-001(a-c), are chromates. Chromates were typically used as algaecides to prevent fouling of boilers.” However, according to a Laboratory engineer cited in the OU 1082 RFI work plan, “chromates were not used as descalers at this plant” (LANL 1993, 20948, p. 5-5). The OU 1082 RFI work plan concluded that “Despite these assurances, chromates are a PCOC because documentary evidence concerning operations in the steam plant during the 1950s and 1960s is lacking” (LANL 1993, 20948, p. 5-5). Because both of the blowdown tanks and the two dry wells would have received blowdown water, chromium is the primary waste of concern.

5.1.1.4 Historical Releases

According to the 1990 SWMU report (LANL 1990, 07512, p. 16-001), “it is unknown whether any of the wells or the blowdown tank have caused a hazardous release.”

5.1.1.5 Summary of Historical Investigations

No samples have been collected from this consolidated unit.

5.1.2 Historical Data-Quality Interpretation

No samples have been collected from this consolidated unit.

5.2 Storage Buildings and Shops: Consolidated Unit 16-017(i)-99, SWMUs 16-034(h,i,j,k), and AOCs C-16-008, C-16-009, C-16-010, C-16-011, C-16-012, C-16-013, C-16-014, C-16-015, C-16-016, C-16-017, and C-16-041

5.2.1 Site Description and Operational History

Consolidated Unit 16-017(i)-99 consists of SWMU 16-017(i) (associated with building 16-10) and AOCs C-16-025 and C-16-026, which are associated with storage buildings 16-8 and 16-6, respectively (Figure 5.0-1). SWMU 16-017(i) is the location of a 200-ft × 40-ft × 20-ft former warehouse at TA-16 (building 16-10). SWMU 16-017(i) operated from 1945 to 1998. HE casting molds were washed out on the north end of 16-10 (LANL 1994, 39440, p. 5-423). D&D of building 16-10 occurred in 1998 (LANL 1998, 59602). AOC C-16-025 was a cabinet shop (building 16-8) that was built in 1945 and removed in March 1956. It was of wood-frame construction and was located west of building 16-10 and south of building 16-9. The cabinet shop was used as a carpentry shop. AOC C-16-026 was a repair shop (building 16-6) that was built in 1945 and removed in March 1956. It was of wood-frame construction and was located south of building 16-10. The repair shop was used for storing tools and supplies. No known hazardous materials were used at this location.

SWMU 16-034(h) is a potentially contaminated soil area associated with the footprint of building 16-137, a plumbing and electrical shop that was part of a Zia Company satellite maintenance area used for upkeep on S-Site buildings (LANL 1995, 57225, pp. 5-26-11, 5-26-13). The maintenance area was built in 1944 and 1945, included the fire station, and was removed in 1955. It was located west of West Road, which was the only entry to S-Site before 1951, and formed the boundary of the HE exclusion zone. HE was not allowed beyond the boundary of the exclusion zone (LANL 1995, 57225, p. 6-15). According to addendum 2 of the 1995 OU 1082 RFI work plan, building 16-137 was listed as having no association with hazardous materials (LANL 1995, 57225, p. 5-26-13).

SWMUs 16-034(i,k) are potential areas of soil contamination in the footprints of portable wooden structures 16-141 and 16-140 (previously numbered S-145), respectively, that were 16 ft × 16 ft × 9 ft and were used for storage at the Zia Company satellite maintenance station at S-Site (LANL 1995, 57225, p. 6-16) (Figure 5.0-1). Structures 16-141 and 16-140 were part of a Zia Company satellite maintenance area used for upkeep on S-Site buildings. The maintenance area was built in 1944 and 1945 and was removed by 1955. It was located west of West Road, which was the only entry to S-Site before 1951 and formed the boundary of the HE exclusion zone. West Road was fenced on the east side and formed the boundary of the HE exclusion zone, beyond which HE was not allowed. Thus, the maintenance station was protected from exposure to HE by administrative control. The area is now a field covered with grass and small trees. Structure 16-141 [SWMU 16-034(i)] was previously numbered S-146 and was later relocated to TA-35 for use as a construction shack (LANL 1998, 59685, p. 6-17). What was stored in former structure 16-140 is unknown, and its exact location has not been determined (LANL 1998, 59685, pp. 6-13–6-14). The former Zia company maintenance manager during most of the life of the station stated that methods and policies ensured that no HE would enter the maintenance station and said that contamination would be insignificant (Miller 1994, 52964.598). A former worker at the site during WWII also claimed that the area was not contaminated (Martin 1993, 52964.268; Martin and Hickmott 1994, 52964.594). Conversations with two site workers indicate that both of these buildings were removed, not destroyed by burning, which further indicates that HE contamination was not present (Martin 1993, 52964.268).

SWMU 16-034(j) is potentially contaminated soil associated with a decommissioned container storage rack (structure 16-190) in the Zia Company satellite maintenance area at S-Site (LANL 1995, 57225, p. 5-26-11) (Figure 5.0-1). Former structure 16-190 was located north of a wooden storage building (former building 16-139). The rack held fifteen 55-gal. containers that provided lubricants and solvents by gravity feed. It is possible that other chemicals were stored on the rack. The rack was in place by 1950 and was removed by 1955. The storage rack may have been constructed in 1945 and was identified in aerial photographs from 1947 to 1950 (LANL 1995, 57225, p. 5-26-11). In these photographs, the structure is exposed, having no roof or walls. The maintenance area was located west of West Road, which was the only entry to S-Site before 1951 and formed the boundary of the HE exclusion zone.

AOC C-16-008 is a former implement shed, structure 16-136, that was part of a cluster of buildings the Zia Company used for utilities maintenance at S-Site (Figure 5.0-1). In 1994, structure 16-136 was constructed, and it was removed in 1955. It was 32 ft × 18 ft × 9 ft. This structure was located west of West Road, which was the only entrance to S-Site before 1951. This area is now a field covered with grass and small trees. No unpackaged high explosives were allowed west of West Road, so this building did not handle unpackaged HE (LANL 1995, 57225, p. 6-30). A 1983 memorandum included this structure in a list of structures that had no association with hazardous materials (Blackwell 1983, 05823.5).

AOC C-16-009 is a former mess hall, building 16-134, that was part of a cluster of buildings the Zia Company used for utilities maintenance at S-Site (Figure 5.0-1). Building 16-134 was constructed in 1944, removed in 1955, and was 52 ft × 32 ft ×10 ft (LANL 1995, 57225, p. 6-30). This building was located west of West Road, which was the only entrance to S-Site before 1951. This area is now a field covered with grass and small trees. No unpackaged high explosives were allowed west of West Road, so this building did not handle unpackaged HE. A 1983 memorandum included this structure in a list of structures that had no association with hazardous materials (Blackwell 1983, 05823.5).

AOC C-16-010 is a former storage building, building 16-135, which was part of a cluster of buildings the Zia Company used for utilities maintenance at S-Site (Figure 5.0-1). Building 16-135 was constructed in 1944, removed in 1955, and was 16 ft × 16 ft (LANL 1995, 57225, p. 6-30). This building was located west of West Road, which was the only entrance to S-Site before 1951. This area is now a field covered with grass and small trees. No unpackaged high explosives were allowed west of West Road, so this building did not handle unpackaged HE. A 1983 memorandum included this structure in a list of structures that had no association with hazardous materials (Blackwell 1983, 05823.5).

AOC C-16-011 is potentially contaminated soil associated with the footprint of a former paint shop (building 16-132) (Figure 5.0-1). Building 16-132 was part of a Zia Company satellite maintenance area used for upkeep on S-Site buildings (LANL 1995, 57225, p. 5-26-11). The structural composition of building 16-132 is not known. The maintenance area was built in 1944 and 1945 and was removed by 1955. It was located west of West Road, which was the only entry to S-Site before 1951 and formed the boundary of the HE exclusion zone. The maintenance area included the fire station.

AOC C-16-012 is a former blacksmith shop, building 16-138, which was part of a cluster of buildings the Zia Company used for utilities maintenance at S-Site (Figure 5.0-1). Building 16-138 was constructed in 1944, removed in 1955, and was 10 ft × 8 ft × 9 ft (LANL 1995, 57225, p. 6-30). This building was located west of West Road, which was the only entrance to S-Site before 1951. This area is now a field covered with grass and small trees. No unpackaged high explosives were allowed west of West Road, so this building did not handle unpackaged HE. A 1983 memorandum included this structure in a list of structures that had no association with hazardous materials (Blackwell 1983, 05823.5).

AOC C-16-013 is a former lumber storage area, structure 16-133, that was part of a cluster of buildings the Zia Company used for utilities maintenance at S-Site (Figure 5.0-1). In 1994, structure 16-133 was constructed, and it was removed in 1955. It was 69 ft × 18 ft × 10 ft and was open along one long side (LANL 1995, 57225, p. 6-30). This structure was located west of West Road, which was the only entrance to S-Site before 1951. This area is now a field covered with grass and small trees. No unpackaged high explosives were allowed west of West Road, so this building did not handle unpackaged HE. A 1983 memorandum included this structure in a list of structures that had no association with hazardous materials (Blackwell 1983, 05823.5).

AOC C-16-014 is a former equipment room, structure 16-144, that was part of a cluster of buildings the Zia Company used for utilities maintenance at S-Site (Figure 5.0-1). In 1945, 16-144 was constructed; it was removed in 1955. It was 45 ft × 20 ft × 10 ft (LANL 1995, 57225, p. 6-30). This structure was located west of West Road, which was the only entrance to S-Site before 1951. This area is now a field covered with grass and small trees. No unpackaged high explosives were allowed west of West Road, so this structure did not handle unpackaged HE. A 1983 memorandum included this structure in a list of structures that had no association with hazardous materials (Blackwell 1983, 05823.5).

AOC C-16-015 is a former hose house, structure 16-143, that was part of a cluster of buildings Zia Company used for utilities maintenance at S-Site (Figure 5.0-1). In 1945, 16-143 was constructed; it was removed in 1955; It was 55 ft × 12 ft × 10 ft (LANL 1995, 57225, p. 6-30). This structure was located west of West Road, which was the only entrance to S-Site before 1951. This area is now a field covered with grass and small trees. No unpackaged high explosives were allowed west of West Road, so this structure did not handle unpackaged HE. A 1983 memorandum included this structure in a list of structures that had no association with hazardous materials (Blackwell 1983, 05823.5).

AOC C-16-016 is a former fire house, structure 16-142, that was part of a cluster of buildings Zia Company used for utilities maintenance at S-Site (Figure 5.0-1). In 1945, structure 16-142 was constructed; it was removed in 1955. It was 74 ft × 56 ft × 13 ft (LANL 1995, 57225, p. 6-30). This building was located west of West Road, which was the only entrance to S-Site before 1951. This area is now a field covered with grass and small trees. No unpackaged high explosives were allowed west of West Road, so this building did not handle unpackaged HE. A 1983 memorandum included this structure in a list of structures that had no association with hazardous materials (Blackwell 1983, 05823.5).

AOC C-16-017 is the site of a former steam plant, building 16-502, located at T-Site (LANL 1994, 39440, p. 5-484) (Figure 5.0-1). The steam plant was built in 1945 and removed in 1960 (LANL 1990, 07512, Figure 16-13). It was 16 ft × 16 ft × 9 ft with a wooden floor. It is not known what chemicals were used in this facility, but chromates were possibly used as additives. The building contained no sumps. Building 16-502 was intentionally burned in 1960.

AOC C-16-041 is a former hose house, structure 16-198, that was located on the driveway into the old burning area along Anchor Ranch Road, north of the S-Site Administrative Area (Figure 5.0-1). Structure 16-198 was constructed in 1945 and was 6.5 ft × 3.5 ft × 7.5 ft (LANL 1995, 57225, p. 6-24). The wooden structure was used to store and protect lengths of fire hose. The structure tested free of contamination in 1967 (Buckland 1967, 05342), and according to a 1983 memorandum, it was not associated with hazardous materials (Blackwell 1983, 05823.5) This structure has been removed (LANL 1990, 07512, Figure 16-13).

5.2.1.1 Land Use

Present and future land use is industrial at TA-16.

5.2.1.2 Relationship to Other SWMUs and AOCs

Because of the distance between the areas addressed in section 5.1.2 (Figure 5.0-1), they are discussed separately below.

Warehouse and Storage Buildings: Consolidated Unit 16-017(i)-99

Twenty SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft of the former warehouse and storage buildings (Consolidated Unit 16-017(i)-99), including outfalls, above- and belowground fuel storage tanks, manholes, shops, offices, warehouses, storage areas, septic systems, a surface disposal area and a burn area (Figure 5.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 5.0-1) are described elsewhere in this document. All of the surface structures and the storage tanks have been removed. Both the surface disposal area and burn area are inactive. Four of the sites (two SWMUs and two AOCs) are located in Subaggregate 4. One surrounding SWMU included in the Cañon de Valle Aggregate Area was removed from Module VIII of the Laboratory's HWFP on December 23, 1998, and seven surrounding AOC included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005.

The area surrounding the former warehouse and storage buildings (Consolidated Unit 16-017(i)-99) is relatively flat (Figure 5.0-1), and there are no significant elevation differences between the warehouse and storage buildings and surrounding sites. In addition, none of the operations at the surrounding sites had any outfalls or drainage areas associated with their operations that could have flowed to the area of the former warehouse and storage buildings, based upon the topography. Consequently, it is unlikely that any of the surrounding sites would have contributed any contamination to the former warehouse or storage buildings.

Storage Buildings and Shops: SWMUs 16-034(h,i,j,k), and AOCs C-16-008, C-16-009, C-16-010, C-16-011, C-16-012, C-16-013, C-16-014, C-16-015, C-16-016, C-16-017, and C-16-041

Fourteen SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of the former storage buildings and shops, including outfalls, above- and belowground fuel storage tanks, manholes, shops, offices, warehouses, storage areas, septic systems, a surface disposal area, and a burn area (Figure 5.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 5.0-1) are described elsewhere in this document. All of the surface structures and the storage tanks have been removed. Both the surface disposal area and burn area are inactive. Seven of the sites (three SWMUs and four AOCs) are located in Subaggregate 4. Two surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory’s HWFP on December 23, 1998, and six surrounding AOCs included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005.

The area surrounding the former storage buildings and shop is relatively flat (Figure 5.0-1), and no significant elevation differences are between the warehouse, storage buildings, and surrounding sites. In addition, none of the operations at the surrounding sites had any outfalls or drainage areas associated with their operations, which based upon the topography, could have flowed to the area of the former storage buildings and shops. Consequently, it is unlikely that any of the surrounding sites would have contributed any contamination to the former storage buildings or shops.

5.2.1.3 Waste Inventory

Based upon the operational history of the consolidated units, SWMUs, and AOCs in this group, the following wastes are possibly associated with the listed site.

- SWMU 16-017(i): HE (Although radioactivity was detected during D&D of this building, radionuclides cannot be associated with documented operational history for this building.)
  - ♦ During the 1998 D&D activities, approximately 100 ft^2 of radioactive concrete was removed from the foundation of building 16-10 (LANL 1998, 59602, p. 7). The D&D report provided no details on the type of radioactivity (e.g., alpha or gamma), nor were any confirmation samples collected from beneath the radioactive concrete contamination and analyzed for radionuclides.
- SWMU 16-034(j): solvents and lubricants
- AOC C-16-011: paints and stains
- AOC C-16-013: If pressure-treated lumber was stored, possible waste could include arsenic and chromium.
- AOC C-16-017: chromates

For all of the other consolidated units, SWMUs, and AOCs in this group, information is insufficient to establish the nature of any potential wastes.

5.2.1.4 Historical Releases

No releases of hazardous chemicals are documented from these consolidated units, SWMUs, and AOCs.

5.2.1.5 Summary of Historical Investigations

An engineering structure list indicated that structure 16-198 (AOC C-16-041) was removed in 1958; however, in 1967, AOC C-16-041 was tested for radioactive contamination, and none was found (LANL 1995, 57225, p. 6-25).

During 1997 RFI activities, one surface and one subsurface soil sample were collected from AOC C-16-017 and analyzed for inorganic chemicals and SVOCs (Table 5.2-1, Figure 5.2-1). Neither sample was submitted for analysis of HE.

In 1998, three surface soil and one surface fill sample were collected from SWMU 16-017(i) and analyzed for inorganic chemicals, HE, SVOCs, and VOCs (Table 5.2-1) as part of confirmation sampling after D&D of the structure.

The frequency of detected inorganic chemicals is presented in Table 5.2-2.

AOC C-16-017

No inorganic chemicals were detected greater than BVs.

No organic chemicals were detected in any of the samples collected from AOC C-16-017.

SWMU 16-017(i)

Cobalt, copper, lead, and zinc were each detected greater than BVs in one of the surface soil samples (Table 5.2-3, Figure 5.2-2). DLs for antimony, cadmium, mercury, silver, and uranium were greater than BVs in all four samples.

No organic chemicals were detected in any of the samples collected from SWMU 16-017(i).

5.2.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods

Validated data include only decision-level data. Two samples were collected for AOC C-16-017 in 1997, and four samples were collected for SWMU 16-017(i) in 1998 and sent to off-site analytical laboratories for analyses.

No results were rejected for the samples collected from SWMU 16-017(i) and AOC C-16-017.

Inorganic Chemicals

For SWMU 16-017(i), four sample results for manganese and arsenic were reported as estimated and potentially biased low (J-), and four sample results for antimony and selenium were reported as not detected (UJ) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated sample spike. Seven inorganic chemicals from two samples in AOC C-16-017 were considered estimated (J) because the result was between the EQL and the MDL. One antimony result was reported as not detected (UJ) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated sample spike.

Organic Chemicals

No data-quality issues were identified.

5.3 Underground Fuel Storage Tanks: AOCs 16-033(e,f), 16-037, and C-16-072

5.3.1 Site Description and Operational History

AOC 16-033(e) consists of two underground fuel tanks, associated fuel lines, and a pump base located northwest of former building 16-10 (LANL 1995, 57225, p. 5-27-1) (Figure 5.0-1). Building 16-10 was a former warehouse at TA-16 [see Consolidated Unit 16-017(i)-99, discussed in section 5.2]. The warehouse operated from 1945 to 1998. No information exists about the installation, construction, capacity, or removal of the two underground fuel tanks because they do not have structure numbers.

AOC 16-033(f) was a 1000-gal. oil tank, structure 16-512, that served the T-Site steam plant, building 16-502 (AOC C-16-017, discussed in section 5.2) (Figure 5.0-1). The tank was installed in 1944 and removed in 1968 (LANL 1995, 57225, p. 6-38). In 1960, the tank was found to be free of radioactivity and toxic contamination. According to a 1983 memorandum, no hazards were associated with structure 16-512 (LANL 1995, 57225, p. 6-38).

AOC 16-037 was listed in the 1990 SWMU report (LANL 1990, 07512, p. 16-037) as an industrial waste tank, structure 16-215 (Figure 5.0-1). The existence of this tank was investigated extensively during preparation of addendum 2 of the OU 1082 RFI work plan, and it appears that the tank 16-215 was never installed (LANL 1995, 57225, p. 6-27). During the investigation, engineering records showed that this structure number was proposed in 1982, but no job numbers or work orders existed for its installation (LANL 1995, 57225, p. 6-27).

AOC C-16-072 is identified in the 1990 SWMU report (LANL 1990, 07512, p. 16-072) as a fuel tank, structure 16-216 (Figure 5.0-1). Archival information reviewed during preparation of addendum 2 of the OU 1082 RFI work plan, including engineering records and site interviews, confirmed that the structure had never been constructed (LANL 1995, 57225, p. 6-19).

5.3.1.1 Land Use

Present and future land use is industrial at TA-16.

5.3.1.2 Relationship to Other SWMUs and AOCs

Two of the USTs discussed in section 5.3.1 [AOCs 16-033(e) and 16-033(f)] are separated by more than 1000 ft and are discussed separately below. The other two tanks discussed in section 5.3.1, AOCs 16-037 and 16-072, could not be located, and their relationship to other SWMUs and AOCs was not evaluated.

Two Underground Fuel Tanks, Associated Fuel Lines, and Pump Base: AOC 16-033(e)

Twenty-two SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of these USTs (counting one SWMU and two AOCs in one consolidated unit), including outfalls, above- and belowground fuel storage tanks, manholes, shops, offices, warehouses, storage areas, septic systems, and a burn area (Figure 5.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 5.0-1) are described elsewhere in this document. Most of the surface structures and the storage tanks have been removed. The burn area is inactive. Six of the sites (three SWMUs and three AOCs) are located in Subaggregate 4. One surrounding SWMU included in the Cañon de Valle Aggregate Area was removed from Module VIII of the Laboratory’s HWFP on December 23, 1998, and seven surrounding AOCs included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005.

The area surrounding the USTs is relatively flat (Figure 5.0-1), and no significant elevation differences are between the tanks and surrounding sites. In addition, none of the operations at the surrounding sites had any outfalls or drainage areas associated with their operations, which could have flowed to the area of the tanks based upon the topography. Consequently, it is unlikely that any of the surrounding sites would have contributed any contamination to these USTs.

1000-Gal. Fuel Tank: AOC 16-033(f)

Forty-six SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of this oil tank (counting 13 SWMUs in 3 consolidated units), including an implement shed, mess hall, shops, storage areas and structures, outfalls, a steam plant, water and steam manholes, HE sumps, HE magazines, HE-machining buildings, laboratories, source hutments, x-ray buildings, and an oil switch (Figure 5.0-1). No fuel, oil, or gasoline storage tanks (above- or belowground) were identified within 750 ft of AOC 16-030(f).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 5.0-1) are described elsewhere in this document. All of the surface structures have been removed. Most of the subsurface structures have also been removed, but a few are abandoned and still in place. The burn area is inactive. Two sites (counting 2 SWMUs in one consolidated unit) are located in Subaggregate 1 (section 2); 19 of the sites (3 SWMUs and 13 AOCs) are located in Subaggregate 4; 13 sites (counting 10 SWMUs in one consolidated unit and three AOCs) are located in Subaggregate 5 (section 6); and 3 sites (counting 1 SWMU in 1 consolidated unit and 2 SWMUs) are located in Subaggregate 6 (section 7). Two surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory’s HWFP on December 23, 1998, and six surrounding AOCs included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005.

Numerous shops and buildings were at higher elevations to the west of this tank; based upon the topography, they are upgradient of this oil storage tank. None of the operations at the surrounding sites had any outfalls or drainage areas associated with their operations, and none of the operations identified for these sites could be associated with petroleum hydrocarbons or fuel-related materials. Consequently, it is unlikely that any of the surrounding sites would have contributed any contamination to this tank.

5.3.1.3 Waste Inventory

Potential wastes at these AOCs are benzene, toluene, ethylbenzene, xylenes, and possibly lead, as well as petroleum hydrocarbons.

5.3.1.4 Historical Releases

No historical releases from these tanks have been documented.

5.3.1.5 Summary of Historical Investigations

No samples have been collected from these AOCs.

5.3.2 Historical Data-Quality Interpretation

No samples have been collected from these AOCs.

5.4 Septic Tanks and Systems: SWMU 16-006(a) and AOC C-16-036

5.4.1 Site Description and Operational History

SWMU 16-006(a) was a septic tank (structure 16-175) (Figure 5.0-1). It consisted of a 500-gal. capacity, 10 ft × 5 ft, reinforced-concrete tank and a 4-in.-diameter VCP that ran from the instrumentation/test building (building 16-54) to the tank (LANL 1993, 20948, p. 5-99). The tank was installed in 1946 and replaced in 1988. Use of the drainline was discontinued, and the line was left in place. The septic tank, structure 16-175, was connected to drainlines; as of 1990, the system was working properly (LANL 1990, 07512, p. 16-006). Outfalls were associated with structure 16-175 (LANL 1990, 07512, p. 16-006). The original septic tank served building 16-54, which was initially a barium nitrate grinding facility. The building was used as an environmental testing laboratory from the late 1950s to 1988. The laboratory had physical testing machines that included a vibration table and shock-testing and drop-impact machines. Various weapons and nonweapons components, some of which may have contained hazardous materials, were tested in building 16-54 (LANL 1993, 20948, p. 5-99). Building 16-54 currently is used as an office building. The OU 1082 RFI work plan indicated that potential contaminants include organic chemicals, such as those used for lubrication and cleaning (LANL 1993, 20948, p. 5-99).

AOC C-16-036 is a former latrine, structure 16-145, that was part of a cluster of buildings Zia Company used for utilities maintenance at S-Site (for other buildings within the cluster, see section 5.2) (Figure 5.0-1). Structure 16-145 was constructed in 1945 and removed in 1955; it was 7 ft × 7 ft × 9 ft (LANL 1995, 57225, p. 6-30). This building was located west of West Road, which was the only entrance to S-Site before 1951. This area is now a field covered with grass and small trees. No unpackaged high explosives were allowed west of West Road, so this building did not handle unpackaged HE. A 1983 memorandum included this structure in a list of structures that had no association with hazardous materials (Blackwell 1983, 05823.5). According to addendum 2 of the RFI work plan, the historical use of this structure is well documented, and no hazardous materials releases occurred at this location (LANL 1995, 57225, p. 6-31). Furthermore, this building was physically isolated from work involving HE.

5.4.1.1 Land Use

Present and future land use is industrial at TA-16.

5.4.1.2 Relationship to Other SWMUs and AOCs

The latrine (AOC C-16-036) and septic system [SWMU 16-006(a)] discussed in section 5.4.1 are separated by more than 600 ft and are therefore discussed separately below.

Latrine: AOC C-16-036

Twenty-seven SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft of this latrine, including an implement shed, mess hall, shops, storage areas and structures, fire hose houses, a fire house, a latrine and septic systems, outfalls, a steam plant, water and steam manholes, HE sumps, HE magazines, HE-machining buildings, a laboratory, a burn area, a surface disposal area, and an oil switch (Figure 5.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 5.0-1) are described elsewhere in this document. All of the surface structures have been removed. Most of the subsurface structures have also been removed, but a few are abandoned and still in place. The burn area and surface disposal area are inactive. Nineteen of the sites (7 SWMUs and 12 AOCs) are located in Subaggregate 4. Two surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory's HWFP on December 23, 1998, and six surrounding AOCs included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005.

A small number of shops and buildings were at higher elevations to the west of the latrine; based upon the topography, they are upgradient of the latrine. None of the operations at the surrounding sites had any outfalls or drainage areas associated with their operations. Consequently, it is unlikely that any of the surrounding sites would have contributed any contamination to this tank.

Septic System: SWMU 16-006(a)

Forty-four SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft of this septic system (counting four SWMUs and two AOCs in two consolidated units), including an implement shed, mess hall, shops, storage areas and structures, fire hose houses, a fire house, a latrine and septic systems, outfalls, a steam plant, water and steam manholes, diesel and fuel storage tanks, HE sumps, HE magazines, HE-machining buildings, a laboratory, a burn area, a surface disposal area, and an oil switch (Figure 5.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 5.0-1) are described elsewhere in this document. All of the surface structures have been removed. Most of the subsurface structures have also been removed, but a few are abandoned and still in place. The burn area and surface disposal area are inactive. Twenty-three of the sites (7 SWMUs and 16 AOCs) are located in Subaggregate 4, and three sites (one SWMU and two AOCs) are located in Subaggregate 6 (section 7.0). Two surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory's HWFP on December 23, 1998, and nine surrounding AOCs included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005.

The former inactive burn area [SWMU 16-009a)] is only site at a higher elevation than the septic system that is also upgradient of the septic system, based upon the topography. None of the operations at the inactive burn area had any outfalls or drainage areas associated with its operation. However, based upon proximity and topography, it is possible that the inactive former burn area could have contributed contamination to soil near the septic system by transporting contamination from the former inactive burn area through surface water runoff.

5.4.1.3 Waste Inventory

Potential wastes at SWMU 16-006(a) are organic chemicals (LANL 1993, 20948, p. 5-99). Hazardous materials were not used at the former latrine AOC C-16-036 (LANL 1995, 57225, p. 6-31). Potential waste includes sanitary waste.

5.4.1.4 Historical Releases

No historical releases from either SWMU or AOC have been documented.

5.4.1.5 Summary of Historical Investigations

No analytical laboratory samples have been collected from SWMU 16-006(a) or AOC C-16-036.

5.4.2 Historical Data-Quality Interpretation

No samples have been collected from this SWMU and AOC.

5.5 Burn Area: SWMU 16-009(a)

5.5.1 Site Description and Operational History

SWMU 16-009(a) was a burn area that was located in a level field near the western end of TA-16 (Figure 5.0-1). The burn area was about 250 ft northwest of the WWII barium nitrate grinding facility, structure 16-54. Aerial photographs indicate that the burn area for SWMU 16-009(a) occupied about 16,800 ft^2, and a 6-ft-high berm surrounded the area on three sides (LANL 1993, 20948, p. 5-200). The burn area was established in 1945 as a trash-burning site and was in use until the 1960s. The site was decommissioned and the berm was leveled (LANL 1993, 20948, p. 5-200). According to the 1990 SWMU report, waste burned at the site consisted of HE, some of which contained barium (LANL 1990, 07512, p. 16-009). The 1993 OU 1082 RFI work plan stated that possible contaminants include barium, uranium, other metals, and SVOCs but that it was probably not used for burning HE (LANL 1993, 20948, p. 5-202). Currently, the site is an open vegetated field (LANL 1993, 20948, p. 5-200).

5.5.1.1 Land Use

Present and future land use is industrial at TA-16.

5.5.1.2 Relationship to Other SWMUs and AOCs

Thirty-six SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of this inactive burn area (counting four SWMUs and two AOCs in two consolidated units), including an implement shed, mess hall, shops, storage areas and structures, warehouses, fire hose houses, a fire house, a latrine and septic systems, outfalls, a steam plant, water and steam manholes, gasoline storage tanks, HE magazines, a laboratory, a PCB transformer, a surface disposal area, and an oil switch (Figure 5.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 5.0-1) are described elsewhere in this document. All of the surface structures have been removed. Most of the subsurface structures have also been removed, but a few are abandoned and still in place. The surface disposal area is inactive. Twenty-eight of the sites (19 SWMUs and 9 AOCs) are located in Subaggregate 4. One surrounding SWMU included in the Cañon de Valle Aggregate Area was removed from Module VIII of the Laboratory’s HWFP on December 23, 1998, and five surrounding AOCs included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005.

The former inactive surface disposal area [SWMU 16-016(b)] and the former steam plant (Consolidated Unit 16-001(a)-99) are only sites at a higher elevation than the burn area that are also upgradient, based upon the topography. None of the operations at the inactive surface disposal area had any outfalls or drainage areas associated with its operation. The steam plant outfall (Figure 5.0-1) flowed due east toward the southern portion of the burn area. Based upon proximity and topography, it is possible that both the inactive land area and the former steam plant could have contributed contamination to soil in the burn area by the transport of contamination through surface water runoff.

5.5.1.3 Waste Inventory

Potential wastes include HE, barium nitrate, uranium, metals, and SVOCs (LANL 1993, 20948, p. 5-202).

5.5.1.4 Historical Releases

Potential releases of contaminants, such as HE, uranium, and barium, may have occurred as a result of solid and liquid surface disposal, burning, spills, leaks, and waste burial (LANL 1993, 20948, p. 5-202).

5.5.1.5 Summary of Historical Investigations

No samples have been collected from this SWMU.

5.5.2 Historical Data-Quality Interpretation

No samples have been collected from this SWMU.

5.6 Surface Disposal Area: SWMU 16-016(b)

5.6.1 Site Description and Operational History

SWMU 16-016(b) is the site of a former surface disposal area at TA-16 (LANL 1993, 20948, p. 5-202) (Figure 5.0-1). The area consisted of several mounds of soil containing asphalt, concrete, and other construction debris located about 500 ft north of the TA-16 steam plant (structure 16-540). The debris was believed to have been deposited at the site between 1948 and 1958. Although the site was outside the HE corridor at TA-16, potential contaminants include HE, barium, uranium, and metals (LANL 1990, 07512, p. 16-016; LANL 1993, 20948, p. 5-202).

5.6.1.1 Land Use

Present and future land use is industrial at TA-16.

5.6.1.2 Relationship to Other SWMUs and AOCs

Twenty-three SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of this inactive surface disposal area (counting three SWMUs in one consolidated unit), including an implement shed, mess hall, shops, storage areas and structures, warehouses, fire hose houses, a fire house, a latrine and septic systems, outfalls, a steam plant, water and steam manholes, gasoline storage tanks, HE magazines, a laboratory, a PCB transformer, and a burn area (Figure 5.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 5.0-1) are described elsewhere in this document. All of the surface structures have been removed. Most of the subsurface structures have also been removed, but a few are abandoned and are still in place. The burn area is inactive. Twenty-two of the sites (9 SWMUs and 13 AOCs) are located in Subaggregate 4. One surrounding SWMU included in the Cañon de Valle Aggregate Area was removed from Module VIII of the Laboratory's HWFP on December 23, 1998.

No sites are within 750 ft of the surface disposal area that are topographically upgradient. Therefore, none of the sites summarized above could have contributed any contamination to the surface disposal area.

5.6.1.3 Waste Inventory

SWMU 16-016(b) is a surface disposal area that contained several mounds of soil containing asphalt, concrete, and other construction debris. Potential contaminants include HE, barium, uranium, and metals (LANL 1990, 07512, p. 16-016; LANL 1993, 20948, p. 5-202).

5.6.1.4 Historical Releases

It is unknown whether hazardous waste has been released from SWMU 16-016(b) (LANL 1990, 07512, p. 16-016; LANL 1993, 20948, p. 5-202).

5.6.1.5 Summary of Historical Investigations

The OU 1082 RFI work plan stated that the 1987 DOE CEARP field survey revealed traces of HE contamination in the landfill (LANL 1993, 20948, p. 5-202). However, neither the 1987 "CEARP Phase I Installation Assessment" (DOE 1987, 08663, p. TA16-15) nor the 1989 "CEARP Sampling and Data Analysis Document" (DOE 1989, 15364) contains any information detailing any contamination at SWMU 16-016(b).

The ER Project conducted a voluntary corrective action (VCA) in 1995 that removed the debris and followed with confirmation samples (LANL 1996, 54326). Cleanup involved excavating the soil mounds and associated debris. The soil mounds and associated debris were taken to the TA-16 gravel pits and staged until confirmatory sample results indicated that the soil was free of contamination. Once the soil and debris were determined to be clean, the soil and debris were used as construction fill at the gravel pits. The site was restored by regrading and allowing native grasses to revegetate the area.

Three surface soil confirmation samples were collected from SWMU 16-016(b) in 1995 after soil was removed during the VCA (LANL 1996, 54326, p. 1) and were analyzed for inorganic chemicals and HE by an off-site analytical laboratory (Table 5.6-1, Figure 5.2-1). However, none of the samples were processed through the SMO, and they are designated screening-level data.

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 5.6-2 and 5.6-3, respectively.

Thallium was detected in one sample greater than BV (Table 5.6-4, Figure 5.2-2).

HMX was detected in one sample (Table 5.6-5, Figure 5.2-3).

5.6.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods for Screening-Level Data Samples

Three samples were collected for SWMU 16-016(b) in 1995 and were shipped directly to the laboratory from the field. The data for these three samples are screening-level data.

Inorganic Chemicals

Three results for antimony, three results for mercury and one result for potassium, were estimated (J) by the analytical laboratory. No further Laboratory validation was performed.

Organic Chemicals

No data-quality issues were identified.

5.7 Miscellaneous Structures: AOCs C-16-018 (Water Tank) and C-16-044 (Steam Manhole), and SWMU 16-027(b) (PCB Transformer)

5.7.1 Site Description and Operational History

AOC C-16-018 is a potential soil contamination area in the footprint of a 30,000-gal. water tank, structure 16-172, that was 48 ft long × 10.5 ft in diameter (Figure 5.0-1). The tank was never used to manage hazardous waste or constituents (LANL 1995, 57225, p. 6-22). It was located along Jemez Road across from the current entrance to TA-16, approximately 125 ft north of water tank structure 16-171 and 100 ft west of water tank structure 16-247 (LANL 1995, 57225, p. 6-22). This tank was used from 1945 to 1959 and then it was moved to TA-49 and renumbered as structure 49-66.

AOC C-16-044 was a steam manhole, structure 16-1079, made of reinforced concrete with a wooden cover (LANL 1995, 57225, p. 6-25) (Figure 5.0-1). It was located along Anchor Ranch Road near the decommissioned fire station (AOC C-16-016). The manhole was built in 1945 and decommissioned at an unknown date. The manhole is believed to have contained only pipes that carried distilled steam vapor or cool condensate water from and to the steam plant. No hazardous materials were reported associated with the manhole (Blackwell 1983, 05823.5).

AOC 16-027(b) is a leak from a transformer (PCB ID #5020; no structure number available) located on the second floor of building 16-540, a steam plant (LANL 1995, 57225, p. 6-45) (Figure 5.0-1). The transformer had contained 100 to 500 gal. of PCB-containing dielectric oil listed at concentrations greater than 500,000 ppm. The 1990 SWMU report characterized the transformer as being 31 to 35 yr old and having a moderate leak (LANL 1990, 07512, p. 16-027). The 1990 SWMU report describes this transformer as having a moderate leak. No spill onto surfaces required cleanup. The transformer was retrofilled July 15, 1988, and was reclassified as non-PCB containing. Disposing the PCB-containing fluids and refilling the transformer with non-PCB containing fluid were documented (LANL 1995, 57225, p. 6-45).

5.7.1.1 Land Use

Present and future land use is industrial at TA-16.

5.7.1.2 Relationship to Other SWMUs and AOCs

Because each of the structures in section 5.7.1 is so widely separated (Figure 5.0-1), each one was evaluated individually and is discussed below separately.

PCB Transformer: AOC 16-027(b)

Fourteen SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft of this former PCB transformer (counting three SWMUs in one consolidated unit), including gasoline and fuel oil storage tanks, HE magazines, a steam plant, a surface disposal area, an oil water separator outfall, a chlorination station, and a burn area (Figure 5.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 5.0-1) are described elsewhere in this document. Most of the surface structures have been removed. Most of the subsurface structures have also been removed, but a few are abandoned and still in place. The burn area is inactive. Four of the sites (six SWMUs and one AOC) are located in Subaggregate 4. One surrounding SWMU in the Cañon de Valle Aggregate Area was removed fro Module VIII of the Laboratory's HWFP on December 23, 1998. Two surrounding SWMUs in the Cañon de Valle Aggregate Area have been proposed for NFA and are pending.

The transformer was located on the second floor of a building (steam plant) that no longer exists. None of the surrounding sites could have contributed any contamination to AOC 16-027(b).

30,000-Gal. Water Tank: AOC C-16-018

Eight SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft of this former water tank including a gasoline storage tank, water storage tanks, HE magazines, an oil water separator outfall, a chlorination station, and a storage building (Figure 5.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 5.0-1) are described elsewhere in this document. Most of the surface structures have been removed. Most of the subsurface structures have also been removed, but a few are abandoned and still in place. One SWMU is located in Subaggregate 4. One surrounding SWMU included in the Cañon de Valle Aggregate Area was removed from Module VIII of the Laboratory's HWFP on December 23, 1998. Two surrounding SWMUs in the Cañon de Valle Aggregate Area have been proposed for NFA and are pending.

The elevation of this former water tank is above all of the surrounding sites. No contamination from these surrounding sites is likely.

Manhole: C-16-044

Fifty-one SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft of this manhole (counting 15 SWMUs in 4 consolidated units), including an implement shed, mess hall, shops, storage areas and structures, warehouses, fire hose houses, a fire house, a latrine and septic systems, outfalls, a steam plant, water and steam manholes, gasoline storage tanks, HE magazines, a laboratory, a PCB transformer, a surface disposal area, a burn area, an oil switch, source hutments, x-ray buildings, laboratories, and shops (Figure 5.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 5.0-1) are described elsewhere in this document. All of the surface structures have been removed. Most of the subsurface structures have also been removed, but a few are abandoned and still in place. The surface disposal area and the burn area are inactive. Twenty-four of the sites (11 SWMUs and 13 AOCs) are located in Subaggregate 4; 12 sites (10 SWMUs and 2 AOCs) are located in Subaggregate 5 (section 6); and 2 sites (2 SWMUs) are located in Subaggregate 6 (section 7). Two surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory's HWFP on December 23, 1998, and nine surrounding AOCs included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005.

The manhole is at a lower elevation than surrounding sites. However, based upon the topography runoff from both the burn area and the surface, the disposal area would likely flow to the south of the manhole. Surface runoff from some of the miscellaneous shops and offices to the west could flow into the area of the manhole and potentially contribute contamination to AOC C-16-044, but the type of contaminants at these sites would be different than the type of contaminants expected at the manhole, based upon operations at these sites

5.7.1.3 Waste Inventory

Water, steam, and condensate were the only materials used in AOCs C-16-018 and C-16-044; PCBs are the only known hazardous materials associated with AOC 16-027(b).

5.7.1.4 Historical Releases

The 1990 SWMU report describes this PCB-containing transformer as having a moderate leak, but no releases to the environment have been documented.

5.7.1.5 Summary of Historical Investigations

No samples have been collected from this AOC.

5.7.2 Historical Data-Quality Interpretation

No samples have been collected from these AOCs.

6.0 SUBAGGREGATE 5, T-SITE

T-Site is located in the northwest part of TA-16, northwest of the S-Site explosives manufacturing complex (Figure 6.0-1). T-Site was used primarily for radiography of HE charges. Construction of T-Site structures began in 1944 and continued until fall 1950 when activities were transferred to the newly constructed GT-Site located at the old Anchor East site (TA-09) (LANL 1994, 39440, p. 5-480). Intentional burning in 1960 destroyed most of the structures, and residual debris and subsurface structures were removed in 1966. All structures were surveyed for radiation, HE, and toxic chemicals before being burned (LANL 1994, 39440, p. 5-481). Unless otherwise noted, the survey results were negative. High explosives were reported to have been removed to better than 3% weight, and radionuclides were resurveyed in 1966 after the buildings were burned. The combustion residuals were determined to be free of residual radioactivity (LANL 1994, 39440, p. 5-481). No structures remain on the site, which is overgrown with trees (LANL 1994, 39440, pp. 5-479–5-481).

6.1 Laboratories, Offices, and Warehouses: Consolidated Unit 16-034(b)-99

6.1.1 Site Description and Operational History

Consolidated Unit 16-034(b)-99 consists of SWMUs 16-005(j,m), 16-025(m,n,o), and 16-034(b,c,d,e,f) (Figure 6.0-1). The consolidated unit encompasses an area that was the former location of the T-Site HE-related magazines, hutments, warehouses, shops, laboratories, and septic system.

SWMU 16-005(j) is potentially contaminated subsurface soil associated with the footprint of a former septic tank (structure 16-504) that served the lavatories and darkrooms in building 16-490 (Figure 6.0-1). It was located about 75 ft east of the building and connected by a 4-in.-diameter VCP (LANL 1994, 39440, p. 5-481). The dimensions of the septic tank were 4 ft × 5 ft × 3 ft (LANL 1994, 39440, p. 5-477). The septic tank and the sump (structure 16-507) were added to building 16-490 in late 1944 (LANL 1994, 39440, p. 5-479); however, the 1990 SWMU report lists the construction date as 1948 (LANL 1990, 07512, p. 16-005). According to the 1990 SWMU report, the tank received solvents and photographic solutions and was removed in 1963 (LANL 1990, 07512, p. 16-005). Addendum 1 of the OU 1082 RFI work plan does not list a removal date (LANL 1994, 39440, p. 5-481). Potential contaminants described in addendum 1 to the OU 1082 RFI work plan include HE, radionuclides (depleted and enriched uranium, radium, cobalt-60, plutonium, and strontium-90), metals, barium, VOCs, SVOCs, and cyanide (LANL 1994, 39440, p. 5-486).

SWMU 16-005(m) is potentially contaminated subsurface soil adjacent to a decommissioned concrete HE sump, (former structure 16-507) (Figure 6.0-1). The sump, built in 1944, was located north of former building 16-490 and received effluent from the large room in the central section of the building. The sump drained east of building 16-490 through a 6-in.-diameter VCP and was shown to be contaminated with HE before its removal in 1960 (LANL 1994, 39440, p. 5-481). The dimensions of the sump were 8.5 ft × 4.5 ft × 5 ft (LANL 1994, 39440, p. 5-477). Potential contaminants described in addendum 1 of the OU 1082 RFI work plan include HE, radionuclides (depleted and enriched uranium, radium, cobalt-60, plutonium, and strontium-90), metals, barium, VOCs, SVOCs, and cyanide (LANL 1994, 39440, p. 5-486).

SWMU 16-025(m) is potentially contaminated surface soil associated with a former x-ray and gamma-ray facility (building 16-495) built in 1945 (LANL 1994, 39440, p. 5-480) or 1947 (LANL 1997, 05660.289, p. 128) (Figure 6.0-1). Building 16-495 was a 16 ft × 16 ft × 9-ft-tall wood-frame structure with a concrete floor (LANL 1994, 39440, pp. 5-477, 5-482). It was a source building that contained either radium-226 or cobalt-60 gamma sources and did not have a pit in the center of the building as did the other source buildings, 16-499 and 16-500 (LANL 1997, 56660.289, p. 148). The former building (16-495) had no plumbing or sumps. Radiographic inspections at T-Site were expanded to include materials other than HE during the 5 yr after WWII. Sources containing radioactive lanthanum (half-life 1.7 days) were used for radiography of steel and contained strontium-90 as an impurity (LANL 1994, 39440, p. 5-480). Examination of depleted and enriched uranium parts led to alpha contamination at building 16-495 (LANL 1994, 39440, p. 5-480). Before it was burned, it was determined that the building was contaminated with HE and uranium-238 (LANL 1994, 39440, p. 5-482). In addendum 1 of the OU 1082 RFI work plan, the potential contaminants identified were HE, radionuclides (depleted and enriched uranium, radium, cobalt-60, and strontium-90), and barium (LANL 1994, 39440, p. 5-486). In the 1997 TA-16 RFI report, potential contaminants were listed as metals, SVOCs, HE, and radionuclides (LANL 1997, 56660.289, p. 148).

SWMU 16-025(n) is potentially contaminated surface soil associated with a decommissioned source hutment (structure 16-499) that was built in 1945 (LANL 1994, 39440, p. 5-479) (Figure 6.0-1). The construction was wood-frame with a concrete floor, and the structure measured 16 ft × 16 ft × 9 ft (LANL 1994, 39440, p. 5-477). The concrete floor had a pit in its center that was 2 ft × 4 ft × 2.5 ft (LANL 1994, 39440, p. 5-482). The structure had no sumps or plumbing (LANL 1997, 56660.289, p.154). Radium-226 was used in the hutment to produce gamma rays that could be used to examine the dense baratol charges and uranium-238 parts that were used in the implosion device (LANL 1994, 39440, p. 5-479). Radiographic inspections at T-Site were expanded to include materials other than HE during the 5 yr after WWII. Sources containing radioactive lanthanum (half-life 1.7 days) were used for radiography of steel and contained strontium-90 as an impurity (LANL 1994, 39440, p. 5-480).

Examination of depleted and enriched uranium parts led to alpha contamination at structure 16-499 (LANL 1994, 39440, p. 5-480). By 1950, the hutment contained a cobalt-60 source (LANL 1994, 39440, p. 5-480). Before it was burned in 1960, a shelf in structure 16-499 was found to be contaminated with alpha activity. The structure was also found to be contaminated with HE before it was burned (LANL 1994, 39440, pp. 5-482–5-483). According to the 1990 SWMU report, structure 16-499 was removed in 1960 (LANL 1990, 07512, p. 16-025). In addendum 1 of the OU 1082 RFI work plan, potential contaminants were identified as HE, radionuclides (depleted and enriched uranium, radium, cobalt-60, and strontium-90), and barium (LANL 1994, 39440, p. 5-486). In the 1997 TA-16 RFI report, potential contaminants were listed as metals, SVOCs, HE, and radionuclides (LANL 1997, 56660.289, p. 155).

SWMU 16-025(o) is potentially contaminated surface soil associated with a decommissioned source hutment (structure 16-500) that was identical to former structure 16-499 (Figure 6.0-1). Like structure 16-499, structure 16-500 was used for gamma-ray radiography of baratol lenses and other dense (e.g., uranium-238) weapon parts (LANL 1994, 39440, p. 5-482). Structure 16-500 was built in 1945 (LANL 1997, 56660.289, p. 162) or 1947 (LANL 1994, 39440, p. 5-480). It was of wood-frame construction with a concrete floor and was 16 × 16 × 9 ft (LANL 1997, 56660.289, p. 162). The concrete floor had a pit in its center that was 2 ft × 4 ft × 2.5 ft (LANL 1994, 39440, p. 5-482). The former structure (16-500) had no sumps or plumbing (LANL 1997, 56660.289, p. 162).

A radium-226 source and a cobalt-60 source were used in the structure (LANL 1994, 39440, pp. 5-477, 5-480). Radiographic inspections at T-Site were expanded to include materials other than HE during the 5 yr after WWII. Sources containing radioactive lanthanum (half-life 1.7 days) were used for radiography of steel and contained strontium-90 as an impurity (LANL 1994, 39440, p. 5-480). It is likely that the lanthanum source was used in structure 16-500 (LANL 1994, 39440, p. 5-483). Examination of depleted and enriched uranium parts led to alpha contamination at 16-500 (LANL 1994, 39440, p. 5-480). HE and radioactive contamination were found in the structure before it was burned in 1960, and the concrete floor was sent to the landfill at TA-54 (LANL 1994, 39440, pp. 5-482–5-483). In addendum 1 of the OU 1082 RFI work plan, potential contaminants were identified as HE, radionuclides (depleted and enriched uranium, radium, cobalt-60, and strontium-90), and barium (LANL 1994, 39440, p. 5-486). In the 1997 TA-16 RFI report, potential contaminants were listed as metals, SVOCs, HE, and radionuclides (LANL 1997, 56660.289, p. 162).

SWMU 16-034(b) is potentially contaminated surface soil associated with the footprint of a decommissioned laboratory and office building (building 16-490) that was built in late summer 1944 (LANL 1994, 39440, p. 5-479) (Figure 6.0-1). Operations in 16-490 consisted of x-ray radiography of HE charges and film developing of the resulting x-ray films (LANL 1994, 39440, p. 5-479). Building 16-490 was a wood-frame L-shaped building with a transecting internal radiation/explosion barrier. Two drainage troughs exited from the south side of the building. The dimensions of the two wings of the building were 72 ft × 18 ft × 12 ft and 93 ft × 18 ft × 12 ft (LANL 1994, 39440, p. 5-477). Additions to the building included the septic tank (structure 16-504 [SWMU 16-005(j)]) and sump (structure 16-507 [SWMU 16-005(m)] in late 1944, two darkrooms, and two x-ray rooms in early 1945 (LANL 1994, 39440, p. 5-479). In 1946, a fire destroyed a darkroom (LANL 1994, 39440, p. 5-480). Building 16-490 was rebuilt and modified in 1947 to include a concrete slab to stabilize an instrument, and the large west wing was added in 1948 to provide vault storage for developed x-ray films (LANL 1994, 39440, p. 5-480). The building housed x-ray radiography of HE, photoprocessing, electron microscopy, office space, and storage. The building was found to be contaminated with HE before it was burned in 1960 (LANL 1994, 39440, p. 5-483). Chemicals identified in addendum 1 of the OU 1082 RFI work plan as associated with the operation of 16-490 included silver and solvents, such as amyl acetate, ethylene dichloride, and dioxane (LANL 1994, 39440, p. 5-483). Potential contaminants identified in addendum 1 of the OU 1082 RFI work plan were HE, radionuclides (depleted and enriched uranium, radium, and cobalt-60), metals, barium, SVOCs, and cyanide (LANL 1994, 39440, p. 5-486).

SWMU 16-034(c) is potentially contaminated surface soil associated with the footprint of a decommissioned warehouse hut (structure 16-491) that was built in 1945 (LANL 1997, 56660.289, p. 176) (Figure 6.0-1). The hut, a 24 ft × 6 ft × 9 ft wood-frame structure with a wooden floor, was used to store tools during WWII (LANL 1994, 39440, pp. 5-477, 5-483). By 1950, structure 16-491 was the site of x-ray exposure experiments on rabbits and rats (LANL 1994, 39440, p. 5-483). The structure had no sumps or plumbing (LANL 1997, 56660.289, p. 176). Before it was burned in 1960, structure 16-491 was found to be contaminated with HE (LANL 1994, 39440, p. 5-483). Addendum 1 of the OU 1082 RFI work plan identified potential contaminants as HE and barium (LANL 1994, 39440, p. 5-486). In the 1997 TA-16 RFI report, the listed potential contaminants included metals, SVOCs, and HE (LANL 1997, 56660.289, p. 176).

SWMU 16-034(d) is potentially contaminated surface soil associated with the footprint of a decommissioned wood-frame machine shop (building 16-492) that was built in 1945 (LANL 1994, 39440, pp. 5-479, 5-484) (Figure 6.0-1). It measured 16 ft × 16 ft × 9 ft and had a wooden floor (LANL 1994, 39440, pp. 5-477, 5-484). No HE machining was performed in the shop (LANL 1994, 39440, p. 5-484). The building had no sumps or plumbing, and operations ceased in December 1959 (LANL 1997, 56660.289, p. 183). The shop was shown to be HE-contaminated before it was burned in 1960 (LANL 1994, 39440, p. 5-484). Addendum 1 of the OU 1082 RFI work plan identified potential contaminants as HE, metals, barium, and SVOCs (LANL 1994, 39440, p. 5-486). In the 1997 TA-16 RFI report, potential contaminants were listed as metals, SVOCs, and HE (LANL 1997, 56660.289, p. 183).

SWMU 16-034(e) is potentially contaminated surface soil associated with the footprint of a former storage building (16-496). The building was a 16 ft × 32 ft × 9 ft wood-frame building with a wooden floor (LANL 1997, 56660.289, p. 189). The building was moved from Anchor Ranch Site to T-Site in 1948 (LANL 1994, 39440, p. 5-480). The building had no sumps or plumbing (LANL 1997, 56660.289, p. 189). It was shown to be contaminated with HE during the preburning inspection in 1959 (LANL 1994, 39440, p. 5-484). Addendum 1 of the OU 1082 RFI work plan identified potential contaminants as HE and barium (LANL 1994, 39440, p. 5-486). In the 1997 TA-16 RFI report, potential contaminants were listed as metals, SVOCs, and HE (LANL 1997, 56660.289, p. 189).

SWMU 16-034(f) is the footprint of a decommissioned laboratory (building 16-498) that was built in 1945 (LANL 1994, 39440, pp. 5-480, 5-484) (Figure 6.0-1). The building measured 16 ft × 42 ft × 9 ft and had wood-frame construction with wooden floors (LANL 1994, 39440, pp. 5-477, 5-480). Initially, the laboratory was used for storage and as an eating area (LANL 1994, 39440, p. 5-480). By 1950, it was used by draftsmen in the western end, by site photographers in its center, and for plutonium autoradiography experiments in its eastern end (LANL 1997, 56660.289, p. 195). Small-scale photoprocessing was conducted in the building to support the plutonium autoradiography experiments (LANL 1997, 56660.289, p. 195). Building 16-498 had no sumps, and it was not in use after December 1959 (LANL 1997, 56660.289, p. 195). It was found to be contaminated with HE during the survey that preceded demolition by burning in 1960 (LANL 1994, 39440, p. 5-484). Addendum 1 of the OU 1082 RFI work plan identified potential contaminants as HE, radionuclides (depleted and enriched uranium and plutonium), metals, barium, VOCs, SVOCs, and cyanide (LANL 1994, 39440, p. 5-486). In the 1997

TA-16 RFI report, potential contaminants were listed as metals, SVOCs, HE, and radionuclides (LANL 1997, 56660.289, p. 196).

6.1.1.1 Land Use

Present and future land use is industrial at TA-16.

6.1.1.2 Relationship to Other SWMUs and AOCs

Thirty-three SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft of these laboratories, offices, and warehouses (counting 11 SWMUs in 3 consolidated units), including water and steam manholes, a fuel storage tank, HE magazines, laboratories, HE-machining buildings and sumps, x-ray buildings, outfalls, and an electrical switch box (Figure 6.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 6.0-1) are described elsewhere in this document. All of the surface structures have been removed. Most of the subsurface structures have also been removed, but a few are abandoned and still in place. Four SWMUs are located in Subaggregate 1 (section 2); four sites (one SWMU and three AOCs) are located in Subaggregate 4; three SWMUs are located in Subaggregate 5 (section 6); and seven sites (six SWMUs and 1 AOC) are located in Subaggregate 6 (section 7). Six surrounding AOCs included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005.

No sites are within 750 ft of the laboratories, offices, and warehouses that are topographically upgradient. Therefore, none of the sites summarized above could have contributed any contamination to the laboratories, offices, and warehouses.

6.1.1.3 Waste Inventory

According to the operational history, potential wastes could include HE, radionuclides (depleted and enriched uranium, radium, cobalt-60, plutonium, and strontium-90), metals, barium, VOCs, SVOCs, and cyanide. Most structures were burned in 1960, and the debris was removed in 1966 (LANL 1994, 39440, p. 5-481).

6.1.1.4 Historical Releases

Before all of the buildings were burned in 1960, radionuclide and HE surveys performed in 1959 showed building 16-495 [SWMU 16-025(m)] was contaminated with HE and uranium-239; building 16-499 [SWMU 16-025(n)] was contaminated with HE and alpha activity; and building 16-500 [SWMU 16-025(o)] was contaminated with HE LANL 1994, 39440, pp. 5-480–5-483).

6.1.1.5 Summary of Historical Investigations

The results of the 1959 radionuclide and HE surveys are provided in the following sections on the individual SWMUs. The residual debris and remaining subsurface structures were removed in 1966 when they were resurveyed and found to be free of residual radioactivity (LANL 1994, 39440, p. 5-481).

The footprints of most of the structures removed in 1960/1966 were investigated during RFI activities in 1997 (LANL 1997, 56660.289). Not included in the 1997 RFI report are SWMUs 16-005(j,m) and 16-034(b). Details of the samples collected are presented in Table 6.1-1, and sampling locations are shown in Figure 6.1-1. Results of this RFI investigation are also presented by SWMU in the following sections.

The frequency of detected inorganic chemicals, organic chemicals, and radionuclides is presented in Tables 6.1-2, 6.1-3, and 6.1-4, respectively.

SMWU 16-005(j)

No details are available on the results of the 1959 or 1966 surveys. The SWMU was not investigated during the 1997 RFI investigation.

SWMU 16-005(m)

This sump, structure 16-507, was shown to be contaminated with HE before its removal in 1960 (LANL 1994, 39440, p. 5-481); however, this SWMU was not sampled during the 1997 RFI investigation.

SWMU 16-025(m)

The 1959 survey found this building was contaminated with uranium-238 at 500 counts per minute and HE (LANL 1994, 39440, p. 5-482).

Five surface soil samples from six locations were field screened for HE and radionuclides during the 1997 RFI activities. The field-screening results are presented in Appendix D. All five samples were negative for HE (HE spot test), and radioactivity levels were less than local background. One sample was positive for RDX, and all five samples were negative for TNT (D TECH kit).

During the 1997 RFI investigation, two surface soil samples were collected (Figure 6.1-1) from within the former building footprint (LANL 1997, 56660.289, p. 149) and analyzed for gamma emitters, HE, isotopic plutonium, isotopic radium, isotopic uranium, inorganic chemicals, strontium-90, and SVOCs (Table 6.1-1).

The frequency of detected inorganic chemicals, organic chemicals and radionuclides is presented in Tables 6.1-2, 6.1-3, and 6.1-4, respectively.

Antimony, lead, silver, and zinc were detected greater than BVs (Table 6.1-5, Figure 6.1-2) in one of the two samples. The DL for cadmium was greater than BVs in both samples (Table 6.1-5), and the DL for antimony was greater than BV in one sample. No organic chemicals (HE or SVOCs) were detected in either sample (Tables 6.1-3. No radionuclides were detected greater than BV. (Table 6.1-4)

SWMU 16-025(n)

The 1959 survey found this building was contaminated with HE (LANL 1994, 39440, p. 5-483). A shelf in the building was also found to be contaminated with alpha emitters during the 1959 survey (LANL 1994, 39440, p. 5-483).

Five surface soil samples from six locations were field screened for HE and radionuclides during the 1997 RFI activities. The field-screening results are presented in Appendix D. All five samples were negative for HE (HE spot test), and radioactivity levels were less than local background. Two samples were positive for RDX, and three samples were positive for TNT (D TECH kit).

During the 1997 RFI investigation, two surface soil samples were collected (Figure 6.1-1) from within the former building footprint (LANL 1997, 56660.289, pp. 155–156) and analyzed for gamma emitters, HE, isotopic radium, isotopic uranium, inorganic chemicals, strontium-90, and SVOCs (Table 6.1-1).

The frequency of detected inorganic chemicals, organic chemicals, and radionuclides is presented in Tables 6.1-2, 6.1-3, and 6.1-4, respectively.

Antimony, lead, and zinc were each detected greater than BV in the sample collected from one location (Table 6.1-5, Figure 6.1-2). The DL for cadmium was greater than BVs in both samples (Table 6.1-5), and the DL for antimony was greater than BV in one sample. No organic chemicals were detected (Table 6.1-3). No radionuclides were detected greater than BVs. No radionuclides were detected greater than BV (Table 6.1-4).

SWMU 16-025(o)

The 1957 survey found this building was contaminated with HE, but no radioactive contamination was detected (LANL 1994, 39440, p. 5-483). The 1957 survey recommended sending the concrete floor to the low-level waste landfill at TA-54 (LANL 1994, 39440, p. 5-483).

Five surface soil samples from six locations were field screened for HE and radionuclides during the 1997 RFI activities. The field-screening results are presented in Appendix D. All five samples were negative for HE (HE spot test), and radioactivity levels were less than local background. One sample was positive for RDX, and two samples tested positive for TNT (D TECH kit).

During the 1997 RFI investigation, two surface soil samples were collected (Figure 6.1-1) from within the former building footprint (LANL 1997, 56660.289, p. 166) and analyzed for gamma emitters, HE, isotopic radium, isotopic uranium, inorganic chemicals, strontium-90, and SVOCs (Table 6.1-1).

The frequency of detected inorganic chemicals, organic chemicals, and radionuclides is presented in Tables 6.1-2, 6.1-3, and 6.1-4, respectively.

Copper was detected greater than BVs in one sample (Table 6.1-5, Figure 6.1-2). The DLs for antimony and cadmium were greater than BVs in both samples (Table 6.1-5). No organic chemicals were detected in either sample. No radionuclides were detected greater than BVs.

SWMU 16-034(b)

The 1959 survey found this building to be contaminated with HE (LANL 1994, 39440, p. 5-483).

No samples were collected during the 1997 RFI activities (LANL 1997, 56660.289).

SWMU 16-034(c)

The 1959 survey found this building was contaminated with HE (LANL 1994, 39440, p. 5-483).

Five surface soil samples from six locations were field screened for HE and radionuclides during the 1997 RFI activities. The field-screening results are presented in Appendix D. All five samples were negative for HE (HE spot test), and radioactivity levels were less than local background. One sample was positive for RDX, and one sample tested positive for TNT (D TECH kit).

During the 1997 RFI investigation, two surface soil samples were collected (Figure 6.1-1) from within the former building footprint (LANL 1997, 56660.289, p. 180) and analyzed for HE, inorganic chemicals, and SVOCs (Table 6.1-1).

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 6.1-2 and 6.1-3, respectively.

Copper, lead, and silver were detected greater than BVs one sample. Zinc was detected greater than BVs in both samples (Table 6.1-5, Figure 6.1-2). DLs in both samples were greater than BVs for cadmium and mercury, and the DL for silver was greater than BVs in one sample (Table 6.1-5, Figure 6.1-2). Three SVOCs (benzoic acid, 2-methylnaphthalene, and naphthalene) were detected in samples collected from location 16-04147 (Table 6.1-6, Figure 6.1-3).

SWMU 16-034(d)

The 1959 survey found this building was contaminated with HE (LANL 1994, 39440, p. 5-484).

Five surface soil samples from six locations were field screened for HE and radionuclides during the 1997 RFI activities. The field-screening results are presented in Appendix D. All five samples were negative for HE (HE spot test), and radioactivity levels were less than local background. All five samples were negative for RDX, and four samples tested positive for TNT (D TECH kit).

During the 1997 RFI investigation, two surface soil samples were collected (Figure 6.1-1) from within the former building footprint (LANL 1997, 56660.289, p. 187) and analyzed for HE, inorganic chemicals, and SVOCs (Table 6.1-1).

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 6.1-2 and 6.1-3, respectively.

Copper was detected greater than BVs in one sample (Figure 6.1-2); lead and zinc were detected greater than BVs in both samples (Table 6.1-5). The DLs for cadmium and silver were greater than BVs in both samples (Table 6.1-5). No organic chemicals (HE or SVOCs) were detected in either sample.

SWMU 16-034(e)

The 1959 survey found this building to be contaminated with HE (LANL 1994, 39440, p. 5-484).

Five surface soil samples from six locations were field screened for HE and radionuclides during the 1997 RFI activities. The field-screening results are presented in Appendix D. All five samples were negative for HE (HE spot test), and radioactivity levels were less than local background. Two samples were positive for RDX, and two samples were positive for TNT (D TECH kit).

During the 1997 RFI investigation, two surface soil samples were collected (Figure 6.1-1) from within the former building footprint (LANL 1997, 56660.289, p. 192) and analyzed for HE, inorganic chemicals, uranium, and SVOCs (Table 6.1-1).

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 6.1-2 and 6.1-3, respectively.

Copper, lead, and zinc were detected greater than BVs in one sample (Table 6.1-5, Figure 6.1-2). DLs for cadmium, mercury, silver, and uranium were greater than BVs in both samples (Table 6.1-5). Bis(2-ethylhexyl)phthalate was detected in both samples (Table 6.1-6, Figure 6.1-3).

SWMU 16-034(f)

The 1959 survey found this building was contaminated with HE (LANL 1994, 39440, p. 5-484).

Five surface soil samples from six locations were field screened for HE and radionuclides during the 1997 RFI activities. The field-screening results are presented in Appendix D. All five samples were negative for HE (HE spot test), and radioactivity levels were less than local background. One sample was positive for RDX, and three samples tested positive for TNT (D TECH kit).

During the 1997 RFI investigation, two surface soil samples were collected (Figure 6.1-1) from within the former building footprint (LANL 1997, 56660.289, p. 192) and analyzed for cyanide, HE, isotopic plutonium, isotopic uranium, inorganic chemicals, and SVOCs (Table 6.1-1).

The frequency of detected inorganic chemicals, organic chemicals, and radionuclides is presented in Tables 6.1-2, 6.1-3, and 6.1-4, respectively.

Lead and zinc were detected greater than BVs in both samples (Table 6.1-5, Figure 6.1-2). DLs for cadmium, cyanide (total), and silver were greater than BVs in both samples (Table 6.1-5). Bis(2-ethylhexyl)phthalate was detected in one sample.

6.1.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods

Fourteen soil samples were collected at Consolidated Unit 16-034(b)-99 in 1997 and sent to off-site analytical laboratories for analyses.

Inorganic Chemicals

Eight samples had antimony results rejected (R) because the associated sample spike recovery was less than 30%. Sample results for six samples had a subset of analytes that were reported as estimated (J) because the results were between the EQL and the MDL. Eight manganese results were reported as estimated and potentially biased high (J+) because the analyte recovery was above the upper acceptance level but less than 150% of the associated spike sample. Five antimony results and 13 selenium results were reported either as estimated and potentially biased low (J-) or not detected (UJ) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated spike sample. Two uranium and six beryllium results were reported as not detected (U) because the results are less than 5 times the amount in the preparation blank.

Radionuclides

Eight radionuclide results were reported as not detected (U) because the sample concentration was less than three times the total propagated uncertainty. Three isotopic uranium results were reported as not detected (U) because the sample concentration was less than 5 times the amount in the method blank.

Organic Chemicals

One result for bis(2-ethylhexyl)phthalate was reported as estimated (J) because the associated internal standard area counts showed less than 50% recovery or greater than 200% recovery when compared with the area counts in the applicable continuing calibration standard.

6.2 HE Magazines: AOCs 16-024(f,g,h)

Three HE magazines at T-Site and AOCs 16-024(f,g,h) are part of Subaggregate 5; they are within Consolidated Unit 16-034(b)-99.

6.2.1 Site Description and Operational History

Structures 16-493, 16-494, and 16-497 were located at T-Site, which was located northwest of the S-Site explosives manufacturing complex and currently is devoid of structures (Figure 6.0-1). T-Site was used primarily for radiographic operations and operated from 1944 to 1950 when site activities were transferred to GT-Site (TA-08). Most structures at T-Site were destroyed by burning in February 1960. Residual debris from burning and the remaining subsurface structures were removed in 1966. All structures at T-Site were free of residual radioactivity in 1966 when they were resurveyed after they were burned.

AOC 16-024(f) is the site of a former HE magazine (structure 16-493). The HE magazine was located northeast of building 16-490 [SWMU 16-034(b)] and constructed in 1945 (LANL 1994, 39440, p. 5-480) (Figure 6.0-1). HE magazines stored packaged and finished HE products before and after processing; no HE processing occurred in the magazine (LANL 1997, 56660.289, p. 51). A former site worker described an incident that occurred in 1950 in which a large chunk of baratol was dropped (and subsequently cleaned up) in the building (LANL 1994, 39440, p. 5-481). The building contained no sumps or plumbing (LANL 1997, 56660.289, p. 51). Before it was abandoned in 1959 and burned in 1960, the building was found to be contaminated with HE (LANL 1994, 39440, p. 5- 481; LANL 1997, 56660.289, p. 51). Structure 16-493 was 6 ft × 6 ft × 7 ft with a wood-frame construction. Addendum 1 to the OU 1082 RFI work plan identified potential contaminants as HE and barium (LANL 1994, 39440, p. 5-486). In the 1997 TA-16 RFI report, potential contaminants were listed as metals, SVOCs, and HE (LANL 1997, 56660.289, p. 51).

AOC 16-024(g) is the site of a former HE magazine (structure 16-494). The HE magazine was located northeast of building 16-490 [SWMU 16-034(b)] and constructed in 1945 (LANL 1997, 56660.289, p. 57). HE magazines stored packaged and finished HE products before and after processing (LANL 1997, 56660.289, p. 57). No HE processing took place in such magazines (LANL 1997, 56660.289, p. 57). Before it was abandoned in 1959 and burned in 1960, the building was found to be contaminated with HE (LANL 1994, 39440, p. 5-481). Structure 16-494 was 6 ft × 6 ft × 7 ft, a wood-frame construction, with a wooden floor with earthen barricades on three sides and the top (LANL 1997, 56660.289, p. 57). Addendum1 of the OU 1082 RFI work plan identified potential contaminants as HE and barium (LANL 1994, 39440, p. 5-486). In the 1997 TA-16 RFI report, potential contaminants were listed as metals, SVOCs, and HE (LANL 1997, 56660.289, p. 57).

AOC 16-024(h) is the location of potentially contaminated surface soil within the footprint of a decommissioned HE magazine (structure 16-497) (Figure 6.0-1). Structure 16-497 was made of wood-frame construction with earthen barricades on three sides and on top; it was 15 ft × 40 ft × 9 ft, with a concrete foundation and floor (LANL 1994, 39440, pp. 5-477, 5-482). Structure 16-497 had no sumps or drains to the external environment. Radiographic inspections at T-Site were expanded to include materials other than HE during the 5 yr after WWII. Sources containing radioactive lanthanum (half-life

1.7 days) were used for radiography of steel and contained strontium-90 as an impurity (LANL 1994, 39440, p. 5-480). A radioactive lanthanum source broke open at structure 16-497 and contaminated the building with strontium-90 (LANL 1994, 39440, p. 5-482). Before burning and demolition, strontium-90 activity up to 20 mr/h was noted on three spots on the building floor and in a floor crack (LANL 1994, 39440, p. 5-482). During a building survey in 1959, the building also was found to be contaminated with HE (LANL 1994, 39440, p. 5-482). Addendum 1 of the OU 1082 RFI work plan identified potential contaminants as HE, radionuclides (depleted and enriched uranium, radium, cobalt-60, and strontium-90), and barium (LANL 1994, 39440, p. 5-486).

6.2.1.1 Land Use

Present and future land use is industrial at TA-16.

6.2.1.2 Relationship to Other SWMUs and AOCs

Forty-one SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of these HE magazines (counting 22 SWMUs in 4 consolidated units), including water and steam manholes, a fuel storage tank, HE magazines, laboratories, HE-machining buildings and sumps, x-ray buildings, outfalls, and an electrical switch box (Figure 6.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 6.0-1) are described elsewhere in this document. All of the surface structures have been removed. Most of the subsurface structures have also been removed, but a few are abandoned and still in place. Four SWMUs are located in Subaggregate 1 (section 2); 4 sites (1 SWMU and 3 AOCs) are located in Subaggregate 4; 10 SWMUs are located in Subaggregate 5 (section 6), and 7 sites (6 SWMUs and 1 AOC) are located in Subaggregate 6 (section 7). One surrounding SWMU included in the Cañon de Valle Aggregate Area was removed from Module VIII of the Laboratory’s HWFP on December 23, 1998, and six surrounding AOCs included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005.

No sites are within 750 ft of the HE magazines that are topographically upgradient. Therefore, none of the sites summarized above could have contributed any contamination to the HE magazines.

6.2.1.3 Waste Inventory

The presence of radionuclides and HE contamination on building surfaces was confirmed during building surveys, but most structures were burned in 1960 and debris was removed in 1966 (LANL 1994, 39440, p. 481). Based on the operational histories (section 6.2.1), potential contaminants could include radionuclides (depleted and enriched uranium, radium, cobalt-60, and strontium-90), barium, metals, SVOCs, and HE.

6.2.1.4 Historical Releases

At structure 16-493 [AOC 16-024(f)], a former site worker described an incident that occurred in 1950 in which a large chunk of baratol was dropped in the building (LANL 1994, 39440, p. 5-481). A radioactive lanthanum source broke open at structure 16-497 [AOC 16-024(h)] and contaminated the building with strontium-90 (LANL 1994, 39440, p. 5-482). Before burning and demolition, strontium-90 activity up to 20 mr/h was noted on three spots on the building floor and in a floor crack (LANL 1994, 39440, p. 5-482). All structures at T-Site were free of residual radioactivity in 1966 when they were resurveyed after they were burned (LANL 1994, 39440, p. 5-481). HE contaminated building surfaces, as determined by predemolition surveys conducted in 1959 (LANL 1994, 39440, pp. 5-481, 5-482). High explosives were present in the magazines at the site, but most structures were burned in 1960, and debris was removed in 1966 (LANL 1994, 39440, p. 5-481).

6.2.1.5 Summary of Historical Investigations

Before they were burned in 1960, all of the structures were surveyed in 1959 for HE and/or radioactivity (LANL 1994, 39440, p. 5-481). The results of these surveys are provided in the following sections on the individual SWMUs. The residual debris and remaining subsurface structures were removed in 1966; then they were resurveyed and found to be free of residual radioactivity (LANL 1994, 39440, p. 5-481).

The footprints of most of the structures removed in 1960 and 1966 were investigated during RFI activities in 1997 (LANL 1997, 56660.289). Details of the collected samples are presented in Table 6.2-1. Sampling locations are shown in Figure 6.1-1. Results of this RFI investigation are presented by AOC in the following sections.

AOC 16-024(f)

The 1959 survey found this building was contaminated with HE (LANL 1994, 39440, p. 5-482).

Six surface soil samples from six locations were field screened for HE and radionuclides during the 1997 RFI activities. The field-screening results are presented in Appendix D. All six samples were negative for HE (HE spot test), and radioactivity levels were less than local background. One sample was positive for RDX, and three samples tested positive for TNT (D TECH kit.)

During the 1997 RFI investigation, two surface soil samples were collected (Figure 6.1-1) from within the former building footprint (LANL 1997, 56660.289, p. 53) and analyzed for HE, inorganic chemicals, and SVOCs (Table 6.2-1, Figure 6.1-1).

The frequency of detected inorganic chemicals is presented in Table 6.2-2.

No inorganic chemicals were detected greater than BVs (Table 6.2-2). The DL for thallium was greater than BVs (Table 6.2-3). No organic chemicals were detected.

AOC 16-024(g)

The 1959 survey found this building to be contaminated with HE (LANL 1994, 39440, p. 5-482).

Six surface soil samples from six locations were field screened for HE and radionuclides during the 1997 RFI activities. The field-screening results are presented in Appendix D. All six samples were negative for HE (HE spot test), and radioactivity levels were less than local background. One sample was positive for RDX, and all six samples tested negative for TNT (D TECH kit).

During the 1997 RFI investigation, two surface soil samples were collected (Figure 6.1-1) from within the former building footprint (LANL 1997, 56660.289, p. 58) and analyzed for HE, inorganic chemicals, and SVOCs (Table 6.2-1, Figure 6.1-1).

The frequency of detected inorganic chemicals is presented in Table 6.2-2.

No inorganic chemicals were detected greater than BVs (Table 6.2-2). No organic chemicals were detected.

AOC 16-024(h)

The 1959 survey found this building was contaminated with HE and strontium-90 (LANL 1994, 39440, p. 5-482).

Field-screening sample results were not available for AOC 16-024(h).

During the 1997 RFI investigation, two surface soil samples were collected (Figure 6.1-1); however, these results were not reported in the 1997 RFI report, (LANL 1997, 56660). Both samples were analyzed for gamma emitters, HE, inorganic chemicals, strontium-90, and SVOCs, and one sample was analyzed for isotopic uranium (Table 6.2-1, Figure 6.1-1).

The frequency of detected inorganic chemicals is presented in Table 6.2-2.

No inorganic chemicals were detected greater than BVs (Table 6.2-2). DLs for cadmium, mercury, and silver were greater than BVs (Table 6.2-3). No radionuclides or organic chemicals were detected in either sample.

6.2.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods

Samples were collected at AOCs 16-024(f,g,h) in 1997 and sent to off-site analytical laboratories for analyses.

Inorganic Chemicals

In AOC 16-024(h), two samples had results for antimony rejected (R) because the associated sample spike recovery was less than 30%. Sample results for four samples had a subset of analytes that were reported as estimated (J) because the results were between the EQL and the MDL. Two manganese results were reported as estimated and potentially biased high (J+) because the analyte recovery was above the upper acceptance level but less than 150% of the associated sample spike. Four antimony results and two selenium results were reported as not detected (UJ) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated spike sample. Three beryllium results and one thallium result were reported as not detected (U) because the results were less than 5 times the amount in the preparation blank.

Radionuclides

Two radionuclide results were reported as not detected (U) because the sample concentration was less than three times the total propagated uncertainty. Two isotopic uranium results were reported as not detected (U) because the sample concentration was less than 5 times the amount in the method blank.

Organic Chemicals

No data-quality issues were identified.

7.0 SUBAGGREGATE 6, WWII GMX-3 SITE

This aggregate consists of sites associated with activities in WWII-era S-Site buildings that were equipped with HE sumps and were operated by GMX-3 Group, High Explosives and Implosion Systems (LANL 1994, 39440, p. 5-305). The decommissioned GMX-3 Area is located in the central portion of the current S-Site Complex (Figure 7.0-1). (The terms S-Site and WWII-era S-Site are both used to refer to the portion of TA-16 used for HE processing from 1944 to the early 1950s.) These structures were primarily occupied by the production explosives groups such as GMX-3 and its predecessors, Groups X-3 (Explosives Development and Production), E-10 (Ordnance Division), and S-Site plant (LANL 1994, 39440, p. 5-305). HE was subjected to disruptive processes, such as casting or machining in most of these structures. All of the buildings had HE sumps and associated drainlines and outfalls; therefore, potential subsurface contamination exists (LANL 1994, 39440, p. 5-305). Most buildings were decommissioned, destroyed by intentional burning, and removed to the MDA P landfill. Sumps and drainlines were removed, and associated HE-contaminated soil was cleaned up to a residual level of 3% HE (LANL 1994, 39440, p. 5-305).

Operations within the GMX-3 Area were devoted to developing techniques for production of HE lenses (the explosives component of a nuclear weapon) with high chemical purity and accurate shapes (LANL 1994, 39440, p. 5-307). Specific operations performed in individual buildings changed between 1944 when S-Site was first fitted for HE operations and the early 1950s when these operations were transferred into the modern S-Site Complex (LANL 1994, 39440, p. 5-311). At any time, an individual building was likely to be devoted to a single type of operation. The sequence of HE-processing operations—powder sorting, followed first by casting, then by machining, and finally by x-ray examination—remained fairly constant throughout this time period.

Large quantities, up to 100,000 lb of HE per month, were processed through the area during the waning stages of WWII (LANL 1994, 39440, p. 5-311). The two principal explosives used in WWII-era lenses were Composition B and baratol; the former contained the primary explosives TNT and RDX, and the latter contained TNT and the inert material, barium nitrate (LANL 1994, 39440, p. 5-311). Casting and machining were the operations most likely to produce contamination of buildings, their sumps, and drainlines. Casting operations consisted of melting powdered HE and pouring the melts into shaped molds. Cooling protocols were carefully controlled during the casting stage because this was how most imperfections (especially bubbles) in the HE lenses were segregated to ridge regions in the molds (called risers). To control cooling, casting buildings were generally equipped with piping arrays that provided water and steam at various temperatures and pressures to cooling jackets surrounding the molds (LANL 1994, 39440, p. 5-311). HE vapor, produced during melting of cast HE, tended to coat the interiors of casting buildings, particularly their ductwork. This widely dispersed HE was removed daily with high-pressure steam/hot water mixtures. The wash-down water was drained through troughs in floors into sumps or leaked out through cracks in the building floors and walls, potentially contaminating both the sumps with their drainage systems and the ground around the casting buildings (LANL 1994, 39440, p. 5-311). After casting, risers were sawed off and then the HE charges were machined under a stream of water, and lathes, drill presses, and other machine tools were used to remove imperfect surface material and to establish a final shape (LANL 1994, 39440, p. 5-311). Fine HE powder in machining buildings, produced during riser sawing and machining, also was washed into sump systems and may have collected or passed through cracks in the buildings' floors.

Other HE operations in the GMX-3 Area, such as powder inspection, x-ray radiography, and HE product storage, are likely to have produced smaller amounts of HE contamination of buildings and sumps than HE machining or casting (LANL 1994, 39440, p. 5-312). HE powders were inspected before casting to remove contaminants. X-ray radiography did not disrupt HE, but small chips from the charges were occasionally produced in the x-ray buildings. HE was normally held in magazines and rest houses between operations. Spillage of HE occasionally occurred in these magazines and rest houses. Buildings associated with these operations were also hosed down periodically to remove HE contamination with wash-down water discharged to sumps and drainage systems. HE collected in sumps was regularly shoveled out and taken to the burning ground. However, some HE washed through the sumps, and in many cases this runoff water flowed into a secondary sump before it discharged into a surface outfall or subsurface French drain. Although the sump systems were designed to collect all of the waste HE, they functioned inefficiently. HE contamination frequently occurred adjacent to sumps due to spillage during sump cleaning, beneath the bottom of sumps due to leaks, at leaks or clogged points in the drainlines or French drains, or in the sump outfalls. During the cleanup of GMX-3 Area in the 1960s, the highest levels of HE contamination in soils were usually located within 20 ft of the sumps.

The first two process buildings at S-Site, building 16-25 (the casting building) and building 16-24 (an inspection building), were completed during spring 1944. At this time, HE machining was done in 16-38. As need for HE lenses increased in late 1944 and early 1945, two major expansions of S-Site occurred. The S-2 expansion, completed in February 1945, included construction of buildings 16-41 (control), 16-42 (casting), building 16-43 (machining), 16-44 (inspection), 16-45 (x-ray), and 16-46 (storage). The S-3 expansion, completed in June 1945, included construction of buildings 16-27 (casting) and 16-31, 16-32, and 16-33 (machining).

After WWII, HE-processing activities decreased markedly. Machining buildings 16-95, 16-96, 16-97, 16-98, and 16-99 were constructed in 1948. HE processing continued until the early 1950s when casting and machining activities were transferred to buildings 16-300 and 16-302 (the 300 Line) and building 16-260, respectively. Most of the structures at the GMX-3 Area were destroyed by burning in February 1960. The residual debris from burning and the subsurface structures such as sumps and drainlines was cleaned up in 1967. The buildings in the 20s Line, such as 16-24, 16-25, and 16-26, were not burned until 1968, and building 16-27 was decommissioned in 1998.

7.1 Septic Tank: SWMU 16-005(n)

7.1.1 Site Description and Operational History

SWMU 16-005(n) is a 600-gal. septic tank (structure 16-173) associated with a latrine (structure 16-162) that was put in service in 1949 (LANL 1993, 20948, p. 6-16) (Figure 7.0-1). The latrine was removed in 1971. The latrine and septic tank were north of the 90s Line HE-machining buildings. The septic tank was removed from service in 1971. A contamination survey conducted in 1971 found that gross-alpha and gross-beta activities in the tank's water were below DLs that were in place at the time of the survey (LANL 1993, 20948, p. 6-16).

7.1.1.1 Land Use

Present and future land use is industrial at TA-16.

7.1.1.2 Relationship to Other SWMUs and AOCs

Forty-six SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft of this septic tank (counting 28 SWMUs and 1 AOC in 3 consolidated units), including water and steam manholes, a fuel storage tank, HE magazines, laboratories, offices, HE rest houses, HE-machining buildings, sumps, drainlines, and associated outfalls, radiography buildings, outfalls, HE-settling ponds, source hutments, storage buildings and structures, warehouses, steam manholes, and a surface disposal area (Figure 7.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 7.0-1) are described elsewhere in this document. All of the surface structures have been removed. Most of the subsurface structures have also been removed, but a few are abandoned and still in place. Four sites (3 SWMUs and 1 AOC) are located in Subaggregate 1 (section 2); 12 sites (9 SWMUs and 3 AOCs) are located in Subaggregate 5 (section 6); and 4 sites (2 SWMUs and 2 AOCs) are located in Subaggregate 6 (section 7). Two surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory's HWFP on December 23, 1998, and two surrounding AOCs included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005.

Based upon the topography, none of the sites within 750 ft of the septic tank are topographically upgradient. Therefore, none of the sites summarized above could have contributed any contamination to the septic tank.

7.1.1.3 Waste Inventory

Wastes for this septic tank would have derived from the sanitary effluent from the latrine to which it was connected.

7.1.1.4 Historical Releases

No releases were noted in the documents reviewed.

7.1.1.5 Summary of Historical Investigations

No samples have been collected from this SWMU.

7.1.2 Historical Data-Quality Interpretation

No samples have been collected from this SWMU.

7.2 HE Storage Magazines: SWMU 16-017(g)-99 and AOCs 16-024(b,c)

Consolidated SWMU 16-017(g)-99 and AOCs 16-024(b,c) are former magazines used to store HE or HE components during intermediate processing stages in the production of HE lenses for weapons (Figure 7.0-1).

7.2.1 Site Description and Operational History

AOCs 16-024(b,c) are the locations of potentially contaminated surface soil associated with former HE magazines (former structures 16-74 and 16-30, respectively), which were located in the historical GMX-3

Area (LANL 1994, 39440, pp. 5-356–5-357) (Figure 7.0-1). Operations at GMX-3 were devoted to developing techniques to produce HE lenses (the explosives component of a nuclear weapon) with high chemical purity and accurate shapes. HE was subjected to disruptive processes like casting and machining. HE normally was held in magazines and rest houses between operations. Spillage occasionally occurred in the magazines and rest houses. The potential contaminant at these sites is HE.

Structure 16-74 [AOC 16-024(b)] was made of wood and had a concrete floor. It was 11 ft × 9 ft × 7 ft, bermed on three sides and on the top, and had no plumbing. It was located north of the casting rest house (structure 16-88) (Figure 7.0-1). Structure 16-74 was built in 1946 to store HE in transit to the machining buildings (buildings 16-31, 16-32, and 16-33), but it was later used with the 20s Line casting operation and held cast HE after (and perhaps before) sawing of risers. Structure 16-74 had no sumps or drainlines; it was removed in 1949 (LANL 1994, 39440, pp. 5-356–5-357). No information is available that indicates raw HE powder was stored at any time in this magazine.

Structure 16-30 [AOC 16-024(c)] was made of wood and had a concrete floor. It was 17.5 × 12 × 8 ft, bermed on three sides and on the top, and had no plumbing (Figure 7.0-1). It was located within the 30s Line. Structure 16-30 was built in 1946 to store HE in transit to the machining buildings (buildings 16-31, 16-32, and 16-33). Structure 16-74 had no sumps or drainlines that would provide a pathway to the environment; it was burned in 1960 (LANL 1994, 39440, p. 5-356–5-357). According to the 1997 RFI report (LANL 1997, 56660.289, p. 38), raw HE powder or finished HE was stored in this magazine.

SWMU 16-017(g)-99 (structure 16-80) is a former HE storage magazine (12 ft × 24 ft × 7 ft) built before 1950 (Figure 7.0-1). Its use was discontinued in 1951. No other details were found in the documents reviewed.

7.2.1.1 Land Use

Present and future land use is industrial at TA-16.

7.2.1.2 Relationship to Other SWMUs and AOCs

Sixty SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of these HE magazines (counting 48 SWMUs and 5 AOCs in 6 consolidated units), including water and steam manholes, a fuel storage tank, HE magazines, laboratories, offices, HE rest houses, HE-machining buildings, sumps, drainlines, and associated outfalls, radiography buildings, outfalls, HE-settling ponds, storage buildings and structures, warehouses, shops, and a cooling tower (Figure 7.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 7.0-1) are described elsewhere in this document. All of the surface structures have been removed. Most of the subsurface structures have also been removed, but a few are abandoned and still in place. Eight sites (7 SWMUs and 1 AOC) are located in Subaggregate 5 (section 6); 17 sites (16 SWMUs and 1 AOC) are located in Subaggregate 6 (section 7). One surrounding AOC included in the Cañon de Valle Aggregate Area was approved for NFA by EPA on January 21, 2005.

Based upon the topography, sites in GMX-3 West are topographically upgradient (Figure 7.0-1, section 7.4) and could possibly have contributed contamination to the areas occupied by the former HE magazines.

7.2.1.3 Waste Inventory

All of these former structures were used to store HE or HE components. The types of HE stored in these magazines, based upon the time period of use, could have included (but may not be limited to) RDX, baratol, and TNT (LANL 1994, 39440, p. 5-311).

7.2.1.4 Historical Releases

No releases were described in any of the documents reviewed.

7.2.1.5 Summary of Historical Investigations

The ER Project conducted an RFI at SWMU 16-024(c) in 1997. A total of 10 field-screening samples were collected from five locations in the building footprint (LANL 1997, 56660.289, p. 40). The samples were collected from near the four corners of the building footprint and near the location of the door (LANL 1997, 56660.289, p. 40). These samples were screened for HE (HE spot test), RDX and TNT (D TECH kits), and radionuclides. TNT was detected in two samples. One surface soil sample was submitted to an off-site analytical laboratory (LANL 1997, 56660.289, p. 38) and analyzed for HE, inorganic chemicals, and SVOCs (Table 7.2-1).

The frequency of detected inorganic chemicals is presented in Table 7.2-2.

Cobalt was detected greater than BV (Table 7.2-3, Figure 7.2-2). The DL for thallium was greater than BV (Table 7.2-3). No organic chemicals were detected.

No samples have been collected from SWMU 16-017(g)-99 or AOC 16-024(b).

7.2.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods

One sample was collected at AOC 16-024(c) in 1997 and sent to off-site analytical laboratories for analyses.

Inorganic Chemicals

Four inorganic chemical results were reported as estimated (J) because the results were between the EQL and the MDL. One antimony result was reported as not detected (UJ) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated spike sample. One result for thallium was reported as not detected (U) because the associated sample concentration was less than or equal to 5 times the amount in the preparation blank.

Organic Chemicals

No data-quality issues were identified.

7.3 Radiography Buildings: SWMUs 16-025(a,b)

SWMUs 16-025(a,b) are former radiography buildings used to image HE lenses for QC purposes. They were located in the former GMX-3 Area (Figure 7.0-1). Operations at GMX-3 were devoted to developing techniques to produce HE lenses, the explosives component of a nuclear weapon with high chemical purity and accurate shapes.

7.3.1 Site Description and Operational History

SWMU 16-025(a) is the location of potentially contaminated surface soil associated with a former radiography building (building 16-39) south of T-Site in the former GMX-3 Area (LANL 1994, 39440, pp. 5-356–5-357) (Figure 7.0-1). T-Site was formerly part of TA-24. Building 16-39 was built in early 1945 west of the 30s Line machining buildings. It was 16 ft × 16 ft × 9 ft and had no sumps or drains to the external environment. Building 16-39 was a radiography building where source radiography and x-ray radiography were used to determine the quality of HE lenses during the 1940s (LANL 1994, 39440, pp.5-356–5-357). It is unclear from historical documents whether building 16-39 was used for radiography or for storing sources or for both. Most GMX-3 buildings, including 16-39, were decommissioned, destroyed by intentional burning, and removed to MDA P (SWMU 16-018) during the early 1960s (LANL 1994, 39440, pp. 5-356–5-357). All decommissioned buildings were surveyed for radiation, HE, and toxic chemicals before they were burned. Surveys in the 1950s showed building 16-39 was contaminated with HE, cobalt-60, radium-226, and uranium-238. The building was burned in 1960. In 1966, the debris of building 16-39 was checked for radioactivity before cleanup. No radioactivity was found (LANL 1994, 39440, pp. 5-356–5-357).

SWMU 16-025(b) is the location of potentially contaminated surface soil associated with a radiography building (former building 16-40) at T-Site in the former GMX-3 Area (Figure 7.0-1). In 1950, building 16-40 was constructed west of building 16-39 [SWMU 16-025(a)] to provide gamma radiography within the GMX-3 Area. It was about 20 ft × 20 ft with earthen barricades on two sides (LANL 1994, 39440, pp.5-356–5-357). Building 16-40 contained a lead-lined pit in the floor for radioactive sources and had no sumps or drains to the external environment. Surveys in the 1950s showed building 16-40 was contaminated with HE, cobalt-60, radium-226, and uranium-238 (LANL 1994, 39440, pp. 5-356–5-357). A survey in 1957 showed building 16-40 was contaminated with cobalt-60 at a spot on the floor and on a source plug. The Zia Company removed the radioactively contaminated materials. Most GMX-3 buildings, including building16-40, were decommissioned, destroyed by intentional burning, and removed to MDA P (SWMU 16-018) in the early 1960s (LANL 1994, 39440, pp. 5-356–5-357). All decommissioned buildings were surveyed for radiation, HE, and toxic chemicals before they were burned. In 1966, the debris of building 16-40 was checked for radioactivity before cleanup. No radioactivity was found (LANL 1994, 39440, pp. 5-356–5-357).

7.3.1.1 Land Use

Present and future land use is industrial at TA-16.

7.3.1.2 Relationship to Other SWMUs and AOCs

Sixty SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of these radiography buildings (counting 48 SWMUs and 5 AOCs in 6 consolidated units), including water and steam manholes, a fuel storage tank, HE magazines, laboratories, offices, HE rest houses, HE-machining buildings, sumps, drainlines, and associated outfalls, radiography buildings, outfalls, HE-settling ponds, storage buildings and structures, warehouses, shops, and a cooling tower (Figure 7.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 7.0-1) are described elsewhere in this document. All of the surface structures have been removed. Most of the subsurface structures have also been removed, but a few are abandoned and are still in place. Eight sites (7 SWMUs and 1 AOC) are located in Subaggregate 5 (section 6), and 17 sites (16 SWMUs and 1 AOC) are located in Subaggregate 6 (section 7). One surrounding AOC included in the Cañon de Valle Aggregate Area was approved for NFA by EPA on January 21, 2005.

Based upon the topography, sites in GMX-3 West are topographically upgradient (Figure 7.0-1, section 7.4) and could possibly have contributed contamination to the areas occupied by the former radiography buildings.

7.3.1.3 Waste Inventory

The waste associated with these two SWMUs would primarily consist of HE and also radioactivity (from the sources employed to image the devices). Based upon the time period of use, the types of HE could have included (but may not be limited to) RDX, baratol, and TNT (LANL 1994, 39440, p. 5-311). Radioactive [SWMU 16-025(a), structure 16-39] contamination may include cobalt-60 (LANL 1994, 39440, p. 5-358).

7.3.1.4 Historical Releases

No releases were described in any of the documents reviewed.

7.3.1.5 Summary of Historical Investigations

No samples have been collected from SMWU 16-025(a).

The ER Project conducted an RFI at SWMU 16-025(b) in 1997. One surface soil sample was submitted to an off-site analytical laboratory and analyzed for gamma emitters, HE, isotopic radium, isotopic uranium, inorganic chemicals, strontium-90, and SVOCs (Table 7.3-1, Figure 7.2-1).

The frequency of detected inorganic chemicals, organic chemicals, and radionuclides is presented in Tables 7.3-2, 7.3-3, and 7.3-4, respectively.

No inorganic chemicals were detected greater than BVs (Table 7.3-2). DLs for antimony, and cadmium were greater than BVs (Table 7.3-5).

Fluoranthene and pyrene were the only organic chemicals detected (Table 7.3-6, Figure 7.2-3).

7.3.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods

One sample was collected at SWMU 16-025(b) in 1997 and sent to off-site analytical laboratories for analyses.

Inorganic Chemicals

Four inorganic chemical results were reported as estimated (J) because the results were between the EQL and the MDL. Antimony and selenium results were reported as not detected (UJ), and one manganese result was reported as estimated and potentially biased low (J-) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated spike sample. One result for beryllium was reported as not detected (U) because the associated sample concentration was less than or equal to 5 times the amount in the preparation blank.

Organic Chemicals

Two SVOCs were reported as not detected (U) because the associated sample concentration was less than 5 times the amount in the method blank (or 10 times the amount in the method blank for common laboratory contaminants).

Radionuclides

No data-quality issues were identified.

7.4 HE-Machining Buildings and Associated Structures: Consolidated Units 16-029(h2)-99 and 16-029(q)-99

The structures associated with these two consolidated units were used for various processes tied to the production of lenses for nuclear devices.

7.4.1 Site Description and Operational History

Consolidated Units 16-029(h2)-99 and 16-029(q)-99 are buildings and structures associated with the former GMX-3 HE production area (Figure 7.0-1).

Consolidated Unit 16-029(h2)-99

Consolidated Unit 16-029(h2)-99 is potential soil contamination at SWMUs 16-025(d,g,h,i,j) and 16-029 (h2,m,n,o,p) (Figure 7.0-1). The consolidated unit includes the footprints of former HE-machining buildings (buildings 16-95, 16-96, 16-97, and 16-98), including their sumps and drainlines, at the GMX-3 Area (LANL 1994, 39440, pp. 5-322–5-323). Operations within the GMX-3 Area were devoted to developing techniques to produce HE lenses, the explosives components of a nuclear weapon, with high chemical purity and with accurate shapes. The HE-machining buildings in this consolidated unit were respectively known as West, North, East, and South, and they were located east of the 30s Line (LANL

1994, 39440, pp. 5-322–5-323). They were of wood-frame construction on a concrete slab. Each building was 20 ft × 12 ft with a 20 ft × 6 ft porch and equipped with garbage cans to collect HE pieces for disposal at the burning ground. All of the buildings were built in 1948 and closed in 1959 (LANL 1994, 39440, pp. 5-322–5-323). Intentional burning in 1960 destroyed the buildings. Explosive residues were removed to TA-54, and noncombustibles were disposed of at MDA P (SWMU 16-018). The sumps and drainlines were removed in 1967 (LANL 1994, 39440, pp. 5-322–5-323).

SWMU 16-025(d) is former building 16-94, the footprint of the decommissioned equipment control building, which sat in the center of the west-north-east-south configuration (Figure 7.0-1). Wooden-walled earthen barricades separated the other buildings from building 16-94. The 30 ft × 30-ft building with a 10- × 10-ft extension was almost identical in structure and removed at the same time as the other structures in this consolidated unit. The former building had no sump or plumbing (LANL 1994, 39440, p. 5-360).

SWMU 16-025(g) is the footprint of an HE-machining building (former 16-95) (Figure 7.0-1). It was the western building in the consolidated unit configuration (LANL 1997, 56660.289, p. 118).

SWMU 16-025(h) is the footprint of an HE-machining building (former building 16-96) (Figure 7.0-1). Building 16-96 was the northern building in the consolidated unit configuration. The building was used for HE machining until building 16-260, another machining building, was completed in the early 1950s (LANL 1994, 39440, p. 5-323).

SWMU 16-025(i) is the footprint of an HE-machining building (former building 16-97), the eastern building in the consolidated unit configuration (LANL 1994, 39440, p. 5-323; LANL 1997, 56660.289, p. 125) (Figure 7.0-1).

SWMU 16-025(j) is the footprint of an HE-machining building (former building 16-98) (Figure 7.0-1). Building 16-98 was the southern building in the consolidated unit configuration and stored containers for disposal of pieces of HE at the burning ground. The building was decommissioned as a machining building and converted to a coffee and smoking room (LANL 1994, 39440, p. 5-323; LANL 1997, 56660.289, p. 125).

SWMU 16-029(h2) is the footprint of the drainage system that connected many of the drainlines described above (Figure 7.0-1). A drainline flowed from the building 16-98 sump to the sump for building 16-97, then to the sump for building 16-96, and finally to a manhole (structure 16-801). A second drainline exited the sump for building 16-95 and flowed into the manhole (structure 16-801) and trended north beneath the 90s Line. The drainlines eventually discharged north of the site (LANL 1994, 39440, p.5-323).

SWMU 16-029(m) is the footprint of the sump, drainline, and outfall that served building 16-95 (LANL 1994, 39440, p. 5-323) (Figure 7.0-1).

SWMU 16-029(n) is the footprint of the sump, drainline, and outfall that served building 16-96 (LANL 1994, 39440, p. 5-323) (Figure 7.0-1).

SWMU 16-029(o) is the footprint of the sump, drainline, and outfall that served building 16-97 (LANL 1994, 39440, p. 5-323) (Figure 7.0-1).

SWMU 16-029(p) is the footprint of the sump, drainline, and outfall that served building 16-98 (LANL 1994, 39440, p. 5-323) (Figure 7.0-1).

Consolidated Unit 16-029(q)-99

Consolidated Unit 16-029(q)-99 consists of SWMUs 16-017(f)-99, 16-017(u)-99, 16-029(q), and AOC C-16-064 (Figure 7.0-1). Consolidated Unit 16-029(q)-99 was part of the 90s Line. Operations in the buildings at this site initially were part of HE-processing operations in the post-WWII-era S-Site Complex that involved large quantities of HE.

SWMU 16-017(f)-99 is a former HE-machining building (building 16-99) (Figure 7.0-1). The 892-ft^2 building was made of wood on a concrete slab and was surrounded on three sides by an earthen berm that was packed against steel pilings. The building was completed in 1948. Sometime during the late 1950s or early 1960s, building 16-99 was converted to a storage facility. The building was taken out of service by 1991 and removed in 1996.

SWMU 16-017(u)-99 is former storage building 16-164 (Figure 7.0-1). No further information is available from the documents reviewed.

SWMU 16-029(q) consists of the locations of an HE sump, drainlines, and an outfall associated with former building 16-99 (Figure 7.0-1). The sump was approximately 5 ft × 15 ft × 5 ft (LANL 1996, 62537, p. 50). The drainlines were buried VCP leading from the sumps to the road, to depressions next to the road where the pipes daylighted, and to an open-air drainage channel. In the mid- to late 1960s, the sump was filled with gravel. Building 16-99, the sump, drainlines, and berms around building 16-99 were removed during D&D operations in 1996 (LANL 1996, 62537, p. 50).

AOC C-16-064 is the former location of a drum storage platform 50 ft southwest of a former HE-machining building (16-99) (Figure 7.0-1). The platform (structure 16-183) was built in April 1945 (LANL 1996, 62537, p. 57). It was an 8-ft square wooden structure elevated a few feet above ground surface on steel legs. The platform was used to store containers of HE scrap from building 16-99. Structure 16-183 was decommissioned and flashed at the burning ground in 1968 (LANL 1996, 62537, p. 57).

7.4.1.1 Land Use

Present and future land use is industrial at TA-16.

7.4.1.2 Relationship to Other SWMUs and AOCs

GMX-3 West: Consolidated Unit 16-029(q)-99

Fifty-two SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of Consolidated Unit 16-029(q)-99 (counting 29 SWMUs and 7 AOCs in 5 consolidated units), including water and steam manholes, septic tanks, HE magazines, laboratories, offices, HE-machining buildings, sumps, drainlines, and associated outfalls, radiography buildings, outfalls, HE-settling ponds, storage buildings and structures, warehouses, and shops (Figure 7.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 7.0-1) are described elsewhere in this document. All of the surface structures have been removed. Most of the subsurface structures have also been removed, but a few are abandoned and still in place. One SWMU is located in Subaggregate 4 (section 5) and eight sites (six SWMUs and three AOCs) are located in Subaggregate 5 (section 6). Nine sites (16 SWMUs and 1 AOC) are located in Subaggregate 6 (section 7). Two surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from

Module VIII of the Laboratory's HWFP on December 23, 1998, and seven surrounding AOCs included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005.

Two sites (a septic system and its associated outfall) are topographically upgradient of this consolidated unit. Contamination from the septic system and outfall is possible, although it is unlikely that HE-related materials (the contaminants of concern at Consolidated Unit 16-029(q)-99) would have been released from the septic system. The HE-related structures at the 20s Line (Consolidated Unit 16-026(q)-99) are at a higher elevation than Consolidated Unit 16-029(q)-99, but the topography would result in surface water runoff from the 20s Line flowing to the south of Consolidated Unit 16-029(q)-99.

GMX-3 East: Consolidated Unit 16-029(h)-99

Twenty-nine SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft of Consolidated Unit 16-029(h)-99 (counting 17 SWMUs and 4 AOCs in 4 consolidated units), including HE magazines, laboratories, HE-machining buildings, sumps, drainlines, and associated outfalls, radiography buildings, outfalls, HE-settling ponds, storage buildings and structures, warehouses, and shops (Figure 7.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 7.0-1) are described elsewhere in this document. All of the surface structures have been removed. Most of the subsurface structures have also been removed, but a few are abandoned and still in place. Two AOCs are located in Subaggregate 6 (section 7) and three sites (two SWMUs and one AOC). Two surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory's HWFP on December 23, 1998, and two surrounding AOCs included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005. One surrounding SWMU included in the Cañon de Valle Aggregate Area has been proposed for NFA and is pending.

Consolidated Unit 16-029(h)-99 is at a lower elevation than most of the surrounding sites; however, based upon the topography, it is unlikely than any of these sites would have contributed any contamination to Consolidated Unit 16-029(h)-99.

7.4.1.3 Waste Inventory

Potential wastes are HE, inorganic chemicals, and organic chemicals (LANL 1997, 56660.289).

7.4.1.4 Historical Releases

No releases were detailed in any of the documents reviewed.

7.4.1.5 Summary of Historical Investigations

Consolidated Unit 16-029(h2)-99

SWMU 16-025(d)

The ER Project conducted an RFI at SWMU 16-025(d) in 1997. Eight surface and near-surface soil samples were screened for HE and radiation from four locations (Figure 7.4-1) in the building footprint (LANL 1997, 56660.289, p. 114). One surface soil sample from the southwest corner of the building footprint screened positive for RDX, and all samples contained only background radiation activity. The sample with the highest concentration of HE was submitted for laboratory analysis of HE, inorganic chemicals, and SVOCs (Table 7.4-1).

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 7.4-2 and 7.4-3, respectively.

Zinc was detected greater than BV (Table 7.4-4, Figure 7.4-2). No organic chemicals were detected

SWMU 16-025(g)

The ER Project conducted an RFI at SWMU 16-025(g) in 1997. Twelve surface and near-surface soil samples were screened for HE and radioactivity from six locations (Figure 7.4-1) in and adjacent to the building footprint (LANL 1997, 56660.289, p. 119). One sample screened positive for TNT, and all samples contained only background radiation activity. Three surface soil samples, including the sample that screened positive for HE, were submitted for laboratory analyses of inorganic chemicals, organic chemicals, and HE (Table 7.4-1).

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 7.4-2 and 7.4-3, respectively.

Copper was detected at greater than BV (Table 7.4-4, Figure 7.4-2). No organic chemicals were detected.

SWMU 16-025(h)

The ER Project conducted an RFI at SWMU 16-025(h) in 1997. Eleven surface and near-surface soil samples were screened from six locations (Figure 7.4-1) in and adjacent to the building footprint (LANL 1997, 56660.289, p. 128). One sample screened positive for TNT and RDX, and all samples contained only background radiation activity. One surface soil, one subsurface soil, and two surface fill samples, including the surface fill sample that screened positive for HE, were submitted for laboratory analysis of HE, inorganic chemicals, and SVOCs (Table 7.4-1). In addition, the subsurface soil sample was also submitted for analyses of VOCs.

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 7.4-2 and 7.4-3, respectively.

The following inorganic chemicals (Table 7.4-4, Figure 7.4-2) were detected greater than BVs (number of detects greater than BVs in parentheses after the chemical name).

- Surface soil/fill: lead (2) and zinc (2). DLs for cadmium (3), mercury (3), and silver (3) were greater than BVs.
- Subsurface soil: Only uranium (1) was detected greater than BVs. DLs for antimony (1) and cadmium (1) were greater than BVs.

The following organic chemicals (Table 7.4-5, Figure 7.4-3) were detected (number of detects in parentheses after the chemical name).

- Surface soil/fill: benzo(a)anthracene (2), benzo(a)pyrene (1), benzo(b)fluoranthene (2), benzo(g,h,i)perylene (1), benzo(k)fluoranthene (1), chrysene (1), fluoranthene (2), indeno(1,2,3-cd)pyrene (1), phenanthrene (1), and pyrene (2)
- Subsurface soil: RDX (1)

SWMU 16-025(i)

Two subsurface tuff samples were collected in May 1998 and analyzed for HE, inorganic chemicals, SVOCs, and VOCs (Table 7.4-1, Figure 7.4-1). Both samples were flagged as excavated in the ERDB record, indicating that the tuff from which the samples were collected was subsequently removed at some point postsampling. No documents were located that discussed the collection of these two samples or the subsequent excavation of the sampled media.

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 7.4-2 and 7.4-3, respectively.

The following inorganic analytes (Table 7.4-4, Figure 7.4-2) were detected greater than BVs (number of detects greater than BVs in parentheses after the chemical name): aluminum (1), arsenic (1), barium (2), calcium (1), copper (1), and magnesium (1). DLs for the following analytes in both samples were greater than BVs: selenium, thallium, and uranium.

The following organic chemicals (Table 7.4-5, Figure 7.4-3) were detected (number of detects in parentheses after the chemical name): RDX (1), 1,3,5-trinitrobenzene (2), and TNT (2).

SWMU 16-025(j)

The ER Project conducted an RFI at SWMU 16-025(j) in 1997. Ten surface and near-surface soil samples were screened for HE and radiation from five locations in the building footprint (LANL 1997, 56660.289, p. 136). All samples screened negative for HE and contained background radioactivity. Three surface soil samples were submitted for laboratory analysis of HE, inorganic chemicals, and SVOCs (Table 7.4-1, Figure 7.4-1). In addition, one subsurface soil and two tuff samples were collected in May 1998 and submitted to an off-site laboratory (Table 7.4-1, Figure 7.4-1). The subsurface soil sample was analyzed for HE, inorganic chemicals, SVOCs, and VOCs (Table 7.4-1). Both tuff samples were analyzed for HE, inorganic chemicals, and SVOCs. One of the tuff samples was also analyzed for VOCs. Both tuff samples were flagged as excavated in the ERDB record, indicating that the tuff from which the samples were collected was subsequently removed at some point postsampling. No documents were located that discussed the collection of these May 1998 samples or the subsequent excavation of the sampled media.

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 7.4-2 and 7.4-3, respectively.

The following inorganic analytes (Table 7.4-4, Figure 7.4-2) were detected greater than BVs (number of detects greater than BVs in parentheses after the chemical name).

- Surface soil: cobalt (1), lead (1), and zinc (1)
- Subsurface soil: No inorganic chemicals were detected greater than BVs. DLs for the following analytes were greater than BVs (number of samples in parentheses after chemical name): antimony (1), thallium (1), and uranium (1) were greater than BVs.
- Tuff, excavated: barium (2). DLs for the following analytes in both samples were greater than BVs: selenium, thallium, and uranium.

The following organic chemicals (Table 7.4-5, Figure 7.4-3) were detected (number of detects in parentheses after the chemical name).

- Surface soil: No organic chemicals were detected.

- Subsurface soil: 2,4-dinitrotoluene (1), HMX (1), RDX (1), and TNT (1)
- Tuff, excavated: bis(2-ethylhexyl)phthalate (2)

SWMU 16-029(h2)

In 1997, one surface soil sample was collected and analyzed for inorganic chemicals; nine subsurface samples were collected and analyzed for HE, inorganic chemicals, SVOCs, and VOCs; and one subsurface soil sample was collected (flagged as excavated in the ERDB record, indicating that the soil from which the sample was collected was subsequently removed at some point postsampling) and analyzed for metals (Table 7.4-1, Figure 7.4-1). In addition, in 1998 two subsurface soil samples were collected and analyzed for HE, inorganic chemicals, SVOCs, and VOCs (Table 7.4-1, Figure 7.4-1). No documents were located that discussed the collection of any of these samples or the subsequent excavation of the sampled media.

The frequency of detected for inorganic chemicals and organic chemicals is presented in Tables 7.4-2 and 7.4-3, respectively.

The following inorganic chemicals (Table 7.4-4, Figure 7.4-2) were detected greater than BVs (number of detects greater than BVs in parentheses after the chemical name).

- Surface soil: cobalt (1), thallium (1), and uranium (1)
- Subsurface soil: aluminum (1), barium (2), beryllium (1), cobalt (2), lead (3), manganese (2), selenium (1), sodium (1), thallium (3), and uranium (8). DLs for the following analytes were greater than BVs (number of samples in parenthesis): antimony (5), cadmium (5), mercury (2), silver (2), thallium (2), and uranium (3)
- Subsurface soil, excavated: thallium (1), uranium (1), and zinc (1)

The following organic chemicals (Table 7.4-5, Figure 7.4-3) were detected (number of detects in parentheses after the chemical name).

- Subsurface soil: 4-amino-2,6-dinitrotoluene (3), 2-amino-4,6-dinitrotoluene (3), benzo(b)fluoranthene (1), bis(2-ethylhexyl)phthalate (1), di-n-butylphthalate (3), HMX (2), RDX (6), and TNT (1)

Consolidated Unit 16-029(q)-99

SWMU 16-017(f)-99

In 1996, two subsurface soil samples were collected and analyzed for cyanide, HE, inorganic chemicals, SVOCs, and VOCs (Table 7.4-1, Figure 7.2-1).

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 7.4-2 and 7.4-3, respectively.

The following inorganic analytes (Table 7.4-4, Figure 7.2-2) were detected greater than BVs (number of detects greater than BVs in parentheses after the chemical name): cobalt (1), lead (2), and manganese (1). DLs for the following analytes were greater than BVs (number of samples with DLs greater than BVs in parentheses after the chemical name): antimony (2), cadmium (2), cyanide (2), and silver (2).

The following organic chemicals (Table 7.4-5, Figure 7.2-3) were detected (number of detects in parentheses after the chemical name): carbon disulfide (1) and 1,1,1-trichloroethane (1).

SWMU 16-029(q)

In April 1996, after removal of surface and subsurface structures and contaminated soils within 2 ft of the sumps and drainlines by D&D (using the HE spot test to guide soil removal), the ER Project field screened 35 samples within the building and drainage area footprint (LANL 1997, 62537, p. 50) associated with SWMU 16-029(q). Six samples were lateral bounding and six were vertical bounding. All samples were field screened for HE, inorganic chemicals, organic chemicals, and radionuclides. The following samples were collected and submitted for off-site laboratory analyses of cyanide, HE, inorganic chemicals, SVOCs, VOCs: two surface soil, six subsurface soil, two subsurface fill, and four tuff (Table 7.4-1, Figure 7.2-1). One surface soil sample was collected and analyzed for cyanide, HE, inorganic chemicals, SVOCs, VOCs (flagged as excavated in the ERDB record, indicating that the soil from which the sample was collected was subsequently removed at some point postsampling). After the confirmation sampling analysis results were received, trenches from the excavated drainlines and sumps and the cleanup sites were backfilled with clean soil, compacted, and contoured to blend with the surrounding topography. The area was reseeded with native grasses.

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 7.4-2 and 7.4-3, respectively.

The following inorganic chemicals (Table 7.4-4, Figure 7.2-2) were detected greater than BVs (number of detects greater than BVs in parentheses after the chemical name).

- Surface soil: antimony (1), barium (4), copper (1), and zinc (2). DLs for the following analytes were greater than BVs: antimony (3), cadmium (4), cyanide (4), and silver (4).
- Subsurface soil/fill: aluminum (1), antimony (1), barium (3), cadmium (1), chromium (1), chromium hexavalent ion (1), iron (1), manganese (1), nickel (1), and thallium (1). DLs for the following analytes were greater than BVs (number of samples with DLs greater than BVs in parentheses after the chemical name): antimony (6), cadmium (7), cyanide (8), selenium (2), and silver (7).
- Tuff: aluminum (1), barium (3), calcium (1), and copper (2). DLs for the following analytes were greater than BVs (number of samples with DLs greater than BVs in parentheses after the chemical name): antimony (4), cyanide (4), selenium (4), and silver (3).
- Surface soil, excavated: arsenic (1), barium (1), copper (1). DLs for the following analytes were greater than BVs: antimony (1), cadmium (1), cyanide (1), and silver (1).

The following organic chemicals (Table 7.4-5, Figure 7.2-3) were detected (number of detects in parentheses after the chemical name).

- Surface soil: toluene (4), trichloroethene (4), trichlorofluoromethane (4)
- Subsurface soil/fill: 4-amino-2,6-dinitrotoluene (2), 2-amino-4,6-dinitrotoluene (2), carbon disulfide (1), di-n-butylphthalate (1), dichlorodifluoromethane (1), HMX (1), methylene chloride (3), RDX (7), trichlorofluoromethane (2), 1,3,5-trinitrobenzene (1), and TNT (7)
- Tuff: bis(2-ethylhexyl)phthalate (1), HMX (1), methylene chloride (1), RDX (1), trichlorofluoromethane (1), and TNT (3)
- Surface soil, excavated: 4-amino-2,6-dinitrotoluene (1), 2-amino-4,6-dinitrotoluene (1), HMX (1), RDX (1), 1,1,1-trichloroethane (1), and TNT (1)

AOC C-16-064

The ER Project conducted a VCA at AOC C-16-064 in August 1996 (LANL 1996, 62537). Eight field-screening samples were taken and screened for RDX/TNT, HE, organic chemicals, and radionuclides. Because elevated levels of HE were detected, two samples were taken for laboratory analysis. Those samples were analyzed for inorganic chemicals, organic chemicals, and HE. RDX was found at elevated levels, and the contaminated soil was excavated. Two confirmation samples were taken after the VCA (LANL 1996, 63537). Samples were analyzed for inorganic chemicals, organic chemicals, and HE (Table 7.4-1, Figure 7.2-1). The AOC was backfilled with clean soil, compacted, and contoured to blend with surrounding topography. The area was reseeded with native grasses.

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 7.4-2 and 7.4-3, respectively.

The following inorganic chemicals (Table 7.4-4, Figure 7.2-2) in subsurface soil were detected greater than BVs (number of detects greater than BVs in parentheses after the chemical name): manganese (1) and zinc (1). DLs for the following analytes were greater than BVs (number of samples with DLs greater than BVs in parentheses after the chemical name): antimony (2), cadmium (2), cyanide (2), mercury (2), silver (2), and thallium (2).

The following inorganic chemicals (Table 7.4-4, Figure 7.2-2) in excavated surface soil were detected greater than BVs (number of detects greater than BVs in parentheses after the chemical name): barium (2), lead (1), zinc (2). DLs for the following analytes were greater than BVs (number of samples with DLs greater than BVs in parentheses after the chemical name): antimony (2), cadmium (2), cyanide (2), selenium (1), and silver (2).

The following organic chemicals (Table 7.4-5, Figure 7.2-3) were detected in excavated surface soil (number of detects in parentheses after the chemical name): 4-amino-2,6-dinitrotoluene (2) 2-amino-4,6-dinitrotoluene (2), HMX (1), methylene chloride (1), RDX (2), and TNT (1).

SWMU 16-017(u)-99

No samples have been collected from this SWMU.

7.4.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods for Consolidated Unit 16-029(h2)-99

Twenty-one soil and fill samples were collected at Consolidated Unit 16-029(h2)-99 in 1997, and three more soil samples were collected in 1998 and sent to off-site analytical laboratories for analyses.

Inorganic Chemicals

Eleven antimony results and three arsenic results were rejected (R) because the associated spike sample recovery was less than 30%. Multiple inorganic chemical results were reported as estimated (J) because the results were between the EQL and the MDL. Five manganese results and three barium results were reported as estimated and potentially biased high (J+) because the analyte recovery was above the upper acceptance level but less than 150% of the associated spike sample. Multiple results were reported as not detected (UJ) or estimated and potentially biased low (J-) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated spike sample. Two results for beryllium were reported as not detected (U) because the associated sample concentration was less than or equal to 5 times the amount in the preparation blank.

Organic Chemicals

Seven HE analytes were reported as estimated and potentially biased high (J+) because the associated laboratory control sample recovery was greater than the upper acceptance limit. Four VOCs were reported as not detected (U) because the associated sample concentration was less than 5 times the amount in the method blank (or 10 times the amount in the method blank for common laboratory contaminants).

Sample Collection and Analytical Methods for Excavated Samples for Consolidated Unit 16-029(h2)-99

One soil sample was collected at Consolidated Unit 16-029(h2)-99 in 1997, and four tuff samples were collected in 1998 and sent to off-site analytical laboratories for analyses. The locations of these samples were later excavated, and the results are screening-level data.

Inorganic Chemicals

Multiple inorganic chemical results were reported as estimated (J) because the results were between the EQL and the MDL. Four barium results were reported as estimated and potentially biased low (J-) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated spike sample.

Organic Chemicals

Two TNT results were reported as estimated and potentially biased high (J+) because the associated laboratory control sample recovery was greater than the upper acceptance limit. Four VOCs were reported as not detected (U) because the associated sample concentration was less than 5 times the amount in the method blank (or 10 times the amount in the method blank for common laboratory contaminants).

Sample Collection and Analytical Methods for Consolidated Unit 16-029(q)-99

Eighteen soil, fill, and tuff samples were collected at Consolidated Unit 16-029(q)-99 in 1996 and sent to off-site analytical laboratories for analyses.

Inorganic Chemicals

Multiple inorganic chemical results were reported as estimated (J) because the results were between the EQL and the MDL. Ten barium results, two nickel results, two beryllium results, and two copper results were reported as estimated and potentially biased high (J+) because the analyte recovery was above the upper acceptance level but less than 150% of the associated sample spike. Six analytes had results that were reported as not detected (UJ) or estimated and potentially biased low (J-) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated spike sample.

Organic Chemicals

Three samples had multiple VOCs reported as not detected (UJ) because the associated internal standard area counts are less than 50% but greater than 10% of the previous continuing calibration standard. Acetone and methylene chloride were reported as not detected (U) in multiple samples because the associated sample concentration was less than 10 times the amount in the method.

Sample Collection and Analytical Methods for Excavated Samples for Consolidated Unit 16-029(q)-99

Three soil samples were collected at Consolidated Unit 16-029(q)-99 in 1996 and sent to off-site analytical laboratories for analyses. The locations of these samples were later excavated, and the results are screening-level data.

Inorganic Chemicals

Multiple inorganic chemical results were reported as estimated (J) because the results were between the EQL and the MDL. One barium result was reported as estimated and potentially biased high (J+) because the analyte recovery was above the upper acceptance level but less than 150% of the associated sample spike. Four analytes had results that were reported as not detected (UJ) or estimated and potentially biased low (J-) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated spike sample..

Organic Chemicals

Acetone and methylene chloride were reported as not detected (U) in one sample because the associated sample concentration was less than 10 times the amount in the method.

8.0 SUBAGGREGATE 7, TA-16-280/260 COMPLEX

The TA-16-280/260 Complex Subaggregate consists of two consolidated units, five SWMUs, and five AOCs (Figure 8.0-1). This subaggregate largely consists of sumps, drainlines, outfalls, and associated contaminated soil for HE-processing buildings 16-260 (exclusive of the main HE-machining outfall) and 16-280. This complex includes the 16-280 Outfalls [Consolidated Unit 16-003(h)-99, containing SWMU 16-003(h) and AOC 16-030(d) and SWMU 16-026(g)], the 16-260 Outfalls [Consolidated Unit 16-029(j)-99, containing SWMUs 16-026(k2) and 16-029(j) and SWMUs 16-003(i,j)], the Cooling Tower [SWMU 16-031(b) and AOC C-16-002], USTs [AOCs 16-033(g,h)], and a miscellaneous structure [AOC 16-027(a)].

8.1 16-280 Outfalls: Consolidated Unit 16-003(h)-99 and SWMU 16-026(g)

Building 16-280 is a physical inspection and metrology laboratory for HE and other weapons components (Figure 8.0-1). Building 16-280 is also a staging facility for assembling test-device components (LANL 1993, 20948, p. 5-30). The 16-280 Outfall consists of Consolidated Unit 16-003(h)-99 [SWMU 16-003(h) and AOC 16-030(d)] and SWMU 16-026(g).

8.1.1 Site Description and Operational History

Consolidated Unit 16-003(h)-99 consists of SWMU 16-003(h) and AOC 16-030(d) (Figure 8.0-1). This consolidated unit contains one inactive HE sump [SWMU 16-003(h)] and a drainline and outfall [AOC 16-030(d)] associated with inspection building 16-280, which was a physical inspection and metrology laboratory for HE and other weapons components associated with the S-Site Complex (LANL 1993, 20948, p. 5-30). Building 16-280, built in 1951, was a physical inspection and metrology laboratory for HE and other weapon and nonweapon components (LANL 1993, 20948, p. 5-30). Both natural and depleted uranium were handled and inspected on the first floor (LANL 1995, 57225, p. 6-15). Dimensional and other physical characteristics were measured. It also served as a staging facility for test device components to be assembled in building 16-410. No mechanical processing (e.g., machining) occurred, and no explosive or radioactive scrap was produced (LANL 1993, 20948, p. 5-30). Potential chemicals of concern (PCOCs) include HE, solvents, and uranium.

Each building in the S-Site Complex was designed with a specific role in the HE-component fabricating process. In general, unless specified otherwise, operations within a specific building have not changed materially since the early 1950s. What has changed are the nature and quantity of explosives used in each building. The principal change in HE formulation is a decreased emphasis on cast explosives, such as Composition B, and an increased reliance on plastic-bonded explosives since the 1950s. Volumes of HE that were processed have also decreased significantly since the 1950s (LANL 1993, 20948, p. 5-18).

SWMU 16-003(h) was a single sump located at building 16-280, and at the time of the 1993 RFI work plan, the sump was not plugged (LANL 1993, 20948, p. 5-17) (Figure 8.0-1). It has subsequently been plugged. The sump was constructed in the early 1950s and was modified in 1966 (engineering drawing ENG-C 34240, LANL 1993, 20948, p. 5-18). HE sumps removed suspended solids from process wastewater before discharge to an outfall. HE manufacturing processes, such as machining, produce scrap of various sizes (<0.5 µm to 1 in.). Process water is used as a coolant-lubricant in machining HE to clean contaminated parts and equipment and to wash down processing bays. HE-contaminated water is routed to the sumps through drain troughs in the floor of the process bay. Scrap was collected from the sumps and treated at the S-Site burning ground; the water was filtered and tested before it was discharged to an outfall. HE sumps are rectangular, concrete tanks with removable 0.25-in. aluminum lids.

The typical sump is approximately 12 ft × 4 ft × 5 ft. The walls and bottom are 8-in.-thick steel-reinforced concrete. As initially constructed, HE fines (scrap) were collected in a cloth filter bag secured inside a metal filter basket. The baskets and filter bags were periodically collected and cleaned at the basket washing facility (building 16-390), which was located at the burning ground. HE fines too small to be collected by the filter bags settled to the bottom of the sump. To assist separation of the suspended solids, the water flowed under an aluminum baffle and over a concrete weir before it discharged to an outfall. HE in the bottom of the sump was periodically removed and burned (LANL 1993, 20948, p. 5-18). In the mid-1960s, water-tight aluminum tanks were installed in the sumps, eliminating the filter baskets and cloth bags. Each tank has two baffle and weir separation stages on the long axis of the sump. Waste products in the sumps were periodically removed and burned in the sand beds at the TA-16 Burning Ground, SWMU 16-010 (LANL 1993, 20948, p. 5-19).

The sump [SWMU 16-003(h)] received effluent from a room in which HE testing (density measurement) was conducted and from two roof drains (LANL 1993, 20948, p. 5-28). Solvents may have been discharged to the sump (LANL 1993, 20948, p. 5-20). SWMU 16-003(h) connected to the outfall [AOC 16-030(d)] by a 117-in.-long VCP 15-in. in diameter (engineering drawing 13Y-192113 ENG-R870, LANL 1993, 20948, p. 5-20). The 1990 SWMU report lists the dimensions of SWMU 16-003(h) as 117 × 41 × 31 in. (LANL 1990, 07512, p. 16-003).

The outfall was NPDES-permitted, number 05A 061, and was removed from the LANL NPDES permit effective July 31, 1996. Solvents historically may have been discharged to the sump but when the OU 1082 RFI work plan was written, solvents were containerized for off-site disposal. No other effluent sources were discharged to the outfall (LANL 1993, 20948, p. 5-30).

SWMU 16-026(g) is soil associated with an outfall from building 16-280 (Figure 8.0-1). The outfall received effluent from four equipment room drains and five floor drains in the basement (LANL 1995, 57225, p. 6-15). The floor drains are plugged. The basement has always been used as a utility room for pumps and compressors and was also used as an emergency fallout shelter (LANL 1995, 57225, 6-16). The first floor and the basement are not connected to each other and have separate entrances. No hazardous materials are stored in the basement (LANL 1995, 57225, p. 6-15). According to addendum 2 of the OU 1082 RFI work plan, the only potential contaminant that could enter the drain is pump oil, which is typically mineral oil that contains no hazardous constituent (LANL 1995, 57225, p. 6-15). There is no record of oil spills from the basement drain. The 6-in. vitrified clay drainline daylights 300 ft northeast of building 16-280.

8.1.1.1 Land Use

Present and future land use is industrial at TA-16.

8.1.1.2 Relationship to Other SWMUs and AOCs

Nineteen SWMUs (hereafter, “sites”) are within approximately 750 ft (counting 10 SWMUs in three consolidated units) of Consolidated Unit 16-003(h)-99 and SWMU 16-026(g) (Figure 8.0-1), including HE-machining buildings, associated structures, and settling ponds; container storage (rest houses); sumps, drainlines, and outfalls; PCB transformer; underground tanks; and septic systems.

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 8.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 8.0-1 and identified in the legend) is described in detail in other documents. One SWMU is located in Subaggregate 6 (section 7). Four surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory’s HWFP on December 23, 1998. Two surrounding SWMUs included in the Cañon de Valle Aggregate Area have been proposed for NFA and are pending. Two surrounding consolidated units are included in other investigations.

Based upon review of the topography (Figure 8.0-1), Consolidated Units 16-007(a)-99 and 16-008(a)-99 are at a higher elevation. However, it does not appear that based upon the topography that any contaminants from these surrounding sites would have impacted SWMUs or AOCs in Consolidated Unit 16-003(h)-99 and SWMU 16-026(g).

8.1.1.3 Waste Inventory

Based upon operations at building 16-280, the sump [SWMU 16-003(h)] and the drain and outfall [AOC 16-030(d)] would have received HE, uranium, and solvents (LANL 1993, 20948, p. 5-40). Some chemicals delivered to TA-16 include acetone, chlorinated solvents, and methyl ethyl ketone (2-butanone) (LANL 1993, 20948, p. 5-54). The only potential waste listed for SWMU 16-026(g) is pump oil.

8.1.1.4 Historical Releases

At building 16-280, solvents, uranium, and HE historically may have been discharged to the sump, but when the OU 1082 RFI work plan was written, solvents were containerized for off-site disposal (LANL 1993, 20948, p. 5-30). No other effluent sources, other than the sump [SWMU 16-003(h)], were discharged to the outfall [AOC 16-030(d)]. No spills or releases are associated with SWMU 16-026(g).

8.1.1.5 Summary of Historical Investigations

Twenty-four samples from 16 locations, from the surface to a depth of 5.5 ft, were collected from SWMU 16-030(d) and field screened for gross-gamma radiation (NaI detector) during 1995 RFI activities (ICF Kaiser 1995, 91135, pp. 66–67, Tables 5.23.1 and 5.23.2). Details of the field calibration and background gamma radiation levels are not available. The field-screening results are presented in Appendix D.

Based upon these screening samples, a total of 11 samples (6 soil, 3 sediment, and 2 tuff) were collected from Consolidated Unit 16-003(h)-99 during the 1995 RFI activities and analyzed for inorganic chemicals (10), total cyanide (10), and organic chemicals (HE [10], SVOC [10], and VOC [4]) (Table 8.1-1, Figure 8.1-1).

The following inorganic chemicals (Table 8.1-4, Figure 8.1-2) were detected greater than BVs (number of detects greater than BVs in parentheses after the chemical name).

- Surface soil: cadmium (1), chromium (1), copper (5), lead (5), mercury (1), uranium (6), and zinc (6). DLs for the following analytes were greater than BVs (number of samples with DLs greater than BVs in parentheses after the chemical name): antimony (6), cadmium (4), cyanide (6), mercury (1), and silver (1).
- Sediment: arsenic (1), cadmium (1), cobalt (1), copper (1), lead (1), uranium (2), and zinc (1). DLs for the following analytes were greater than BVs (number of samples with DLs greater than BVs in parentheses after the chemical name): antimony (2), cadmium (1), cyanide (1), mercury (1), and selenium (2).
- Tuff: barium (1), chromium (2), and nickel (1). DLs for the following analytes were greater than BVs (number of samples with DLs greater than BVs in parentheses after the chemical name): antimony (2) and cyanide (2).

The following organic chemicals (Table 8.1-5, Figure 8.1-3) were detected (number of detects in parentheses after the chemical name).

- Surface soil: anthracene (5), 2-amino-4,6-dinitrotoluene (1), anthracene (5), benzo(a)anthracene (5), benzo(a)pyrene (5), benzo(b)fluoranthene (5), benzo(g,h,i)perylene (5), benzo(k)fluoranthene (5), benzoic acid (3), chrysene (5), dibenz(a,h)anthracene (5), dibenzofuran (5), d-n-butylphthalate (1), 1,3-dinitrobenzene (1), 2,4-dinitrotoluene (3), fluoranthene (5), fluorene (5), indeno(1,2,3-cd)pyrene (5), 2-methylnaphthalene (3), naphthalene (5), nitrobenzene (1), phenanthrene (5), pyrene (5), tetryl (4), 1,3,5-trinitrobenzene (1), and TNT (1)

- Sediment: anthracene (1), anthracene (1), benzo(a)anthracene (2), benzo(a)pyrene (2), benzo(b)fluoranthene (2), benzo(g,h,i)perylene (2), benzo(k)fluoranthene (2), chrysene (2), dibenz(a,h)anthracene (2), dibenzofuran (1), fluoranthene (2), indeno(1,2,3-cd)pyrene (2), methylene chloride (1), 2-methylnaphthalene (1), naphthalene (1), phenanthrene (2), pyrene (2), tetryl (1), and trichlorofluoromethane (1)
- Tuff: anthracene (1), anthracene (1), benzo(a)anthracene (1), benzo(a)pyrene (1), benzo(b)fluoranthene (1), benzo(g,h,i)perylene (1), benzo(k)fluoranthene (1), chrysene (1), dibenz(a,h)anthracene (1), fluoranthene (1), fluorene (1), indeno(1,2,3-cd)pyrene (1), phenanthrene (1), and pyrene (1)

8.1.2 Historical Data- Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods

Samples were collected at Consolidated Unit 16-003(h)-99 in 1995 and sent to off-site analytical laboratories for analyses. For Consolidated Unit 16-003(h)-99, 11 samples were collected in 1995 from soil (6 samples), sediment (3 samples), and tuff (2 samples).

Inorganic Chemicals

Ten inorganic chemicals had results considered estimated (J) because the result was between the EQL and the MDL. Some of the results for chromium, copper, lead, and manganese were reported as estimated and potentially biased low (J-) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated sample spike. Three sodium results were reported as estimated and potentially biased high (J+) because the associated laboratory control sample recovery was below the lower warning limit but greater than the lower acceptable limit. Two mercury results were reported as not detected U) because the results were less than 5 times the amount in the preparation blank.

Organic Chemicals

One sediment sample had all of the VOC results rejected (R) because of quality deficiencies in the reported data. One sample had results for methylene chloride and trichlorofluoromethane reported as estimated (J) because the sample surrogate recovery was less than the lower acceptance limit but greater than 10%. Seven results for bis(2-ethylhexyl)phthalate, two results for di-n-butylphthalate, two results for acetone, and two results for methylene chloride were qualified as nondetected (U) concentrations because the results were less than 5 times the amount in the method blank (or 10 times the amount in the method blank for common laboratory contaminants). Two results for di-n-octylphthalate, one result for azobenzene, one result for 4-chlorotoluene, and one result for 1,3-dichlorobenzene were reported as not detected (UJ) because the associated internal standard area counts were less than 50% but greater than 10% recovery of the previous continuing calibration. Multiple VOCs for one sample were reported as not detected (UJ) because the sample surrogate recovery was less than the lower acceptance limit but greater than 10%.

8.2 16-260 Outfalls: Consolidated Unit 16-029(j)-99 and SWMUs 16-003(i,j)

Building 16-260 is an HE-machining building, constructed in the early 1950s, located in the northeast quadrant of historical S-Site (Figure 8.0-1). S-Site was used for HE processing from 1944 to the early 1950s.

8.2.1 Site Description and Operational History

Consolidated Unit 16-029(j)-99 consists of SWMUs 16-026(k2) and 16-029(j) (Figure 8.0-1). The SWMUs are areas of potentially contaminated soil associated with outfalls from inactive sumps and drainlines that serviced Bay 25 at building 16-260, an HE-machining building located in the northeast quadrant of historical S-Site (LANL 1995, 57225, p. 5-28-17). S-Site was used for HE processing from 1944 to the early 1950s. In a 1971 sampling effort, barium contamination was found 200 ft northeast of building 16-260. Potential contaminants at these SWMUs are HE, organic chemicals, and inorganic chemicals.

SWMU 16-026(k2) was an outfall that received wash-down water contaminated with HE from a floor drain and associated drainline in the hallway between the machining room in Bay 25 and the control room for Bay 25 in the southern portion of building 16-260 (Figure 8.0-1) (LANL 1995, 57225, p. 5-28-17). The floor drain is located directly below a water hose that is used to wash down the bays. No other drains are located near bays in building 16-260. The drain was not plugged when the addendum 2 to the OU 1082 Work Plan was published (LANL 1995, 57225, p. 5-28-19). The drainline, made of 4-in.-diameter VCP, daylights in a drainage ditch about 15 ft south of building 16-260. The drainage ditch is connected by two culverts to the drainage ditches on the north side of a walkway (structure 16-271) and to the drainage ditch on the east side of the road. The ditches drain rainwater away from building 16-260, but the drainage ditch is heavily silted, and the corrugated metal culvert is barely visible (LANL 1995, 57225, p. 5-28-17).

SWMU 16-029(j) was an outfall that received wash-down water from cleaning activities in the control cubicle of machining Bay 25 (Figure 8.0-1) (LANL 1995, 57225, p. 5-28-19). The wash-down water was discharged from a concrete sump that was added to building 16-260 in 1961. The sump measured 4 ft^3 and contained a 1-ft^3 filter basket for collecting HE. The drain from the sump is a 2-in. cast-iron pipe. The drainline extends about 10 ft south from building 16-260 and daylights into a grassy ditch 15 ft south of building 16-260, the same ditch into which the drainline from SWMU 16-026(k2) discharges. Use of the sump was discontinued in 1970. Although the drainline is not plugged, the cubicle was no longer used for HE-patching operations when addendum 2 to the OU 1082 Work Plan was published (LANL 1995, 57225, p. 5-28-19).

SWMU 16-003(i) is an inactive, plugged HE sump and outfall associated with building 16-265 (LANL 1993, 20948, pp. 5-17, 5-31) (Figure 8.0-1). The sump received effluent from a sink and a drinking fountain (LANL 1993, 20948, p. 5-31). It discharged to an NPDES-permitted outfall, numbered 05A 057 (LANL 1993, 20948, Table 5-4), which was removed from the LANL NPDES permit sometime before 1994. According to the OU 1082 RFI work plan, the concrete trench was 76 ft × 16 ft × 6 in. (LANL 1993, 20948, p. 5-31). According to the OU 1082 RFI work plan, two chemicals (1,1,1-trichloroethane and chloromaleic anhydride) were in building 16-265 (LANL 1993, 20948, p. 5-31).

SWMU 16-003(j) is an inactive, plugged HE sump and sump associated with building 16-267 (LANL 1993, 20948, pp. 5-17, 5-31) (Figure 8.0-1). The sump received effluent from a janitorial sink and discharged to an NPDES-permitted outfall, numbered 05A 149 (LANL 1993, 20948, Table 5-4), which was removed from the LANL NPDES permit some time before 1994. According to the OU 1082 RFI work plan, the concrete trench was 76 ft × 16 ft × 6 in. (LANL 1993, 20948, p. 5-31). Uranium particulate matter may have been discharged from this sump (LANL 1993, 20948, p. 5-30).

8.2.1.1 Land Use

Present and future land use is industrial at TA-16.

8.2.1.2 Relationship to Other SWMUs and AOCs

Thirteen SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft (counting one SWMU and one AOC in one consolidated unit) of Consolidated Unit 16-029(j)-99 and SWMUs 16-003(i) and 16-003(j) (Figure 8.0-1). These sites include a satellite accumulation area; MDA R; industrial or sanitary wastewater treatment; container storage (rest houses); sumps, drainlines, and outfalls; PCB transformer; underground tanks; and septic systems.

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 8.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 8.0-1 and identified in the legend) is described in detail in other documents. One SWMU is located in Subaggregate 2 (section 3). Five surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory's HWFP on December 23, 1998. Two surrounding SWMUs included in the Cañon de Valle Aggregate Area have been proposed for NFA and are pending. Two surrounding consolidated units are included in other investigations.

Based upon review of the topography (Figure 8.0-1), Consolidated Unit 16-003(h)-99 is at a higher elevation than Consolidated Unit 16-029(j)-99 and SWMUs 16-003(i) and 16-003(j). However, it does not appear, based upon the topography, that any contaminants from these surrounding sites would have impacted SWMUs or AOCs in Consolidated Unit 16-029(j)-99 and SWMUs 16-003(i) and 16-003(j) due to surface runoff.

8.2.1.3 Waste Inventory

Potential wastes at this consolidated unit are HE, uranium, organic chemicals, and inorganic chemicals. At SWMU 16-003(i), the potential contaminant is HE; at SWMU 16-003(j), the potential contaminants in the sump are 1,1,1-trichloroethane, chloromaleic anhydride, and HE.

8.2.1.4 Historical Releases

No records of spills or release from the consolidated unit or the individual SWMUs were found. SWMUs 16-003(i,j) discharged to NPDES-permitted outfalls, which were removed from the Laboratory's NPDES permit some time before 1994.

8.2.1.5 Summary of Historical Investigations

During 1995 RFI activities (ICF Kaiser 1995, 91135, pp. 68–70), 21 samples from 12 locations from the surface to a depth of 16 ft were collected from SWMU 16-003(i) and field screened for gross-gamma radiation (NaI detector). Details of the field calibration and background gamma radiation levels are not available. The field-screening results are presented in Appendix D.

Based upon these 1995 RFI field-screening results, samples were collected from two of the SWMUs associated with the 16-260 outfalls (ICF Kaiser 1995, 91135, pp. 68–70), SWMUs 16-003(i,j). No samples have been collected from Consolidated Unit 16-029(j)-99. Details of the historical samples collected from this area during the 1995 RFI activities are presented in Table 8.2-1, and sampling locations are shown in Figure 8.2-1. The following samples were collected from each SWMU during these 1995 RFI activities.

- SWMU 16-003(i):
    - ♦ Surface: 4 soil, 2 sediment, and 1 tuff samples— Inorganic chemicals: total cyanide, HE, and SVOCs
    - ♦ Subsurface: 1 fill, and 3 tuff samples— Inorganic chemicals: total cyanide, HE, SVOCs, and VOCs
- SWMU 16-003(j):
    - ♦ Surface: 4 soil, 1 fill, and 2 sediment samples— Inorganic chemicals: total cyanide, HE, and SVOCs
    - ♦ Subsurface: 2 soil and 2 tuff samples— Inorganic chemicals: total cyanide, HE, SVOCs, and VOCs

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 8.2-2 and 8.2-3, respectively.

The results of the RFI sampling are presented in Table 8.2-4 and Figure 8.2-2 for inorganic chemicals and in Table 8-2-5 and Figure 8.2-3 for organic chemicals; they are discussed below.

SWMU 16-003(i)

The following inorganic chemicals (Table 8.2-4, Figure 8.2-2) were detected greater than BVs (number of detects greater than BVs in parentheses after the chemical name).

- Surface soil/fill: cobalt (1), uranium (5), and zinc (4). DLs for the following analytes were greater than BVs (number of samples with DLs greater than BVs in parentheses after the chemical name): antimony (5), cadmium (5), and cyanide (5).
- Sediment: barium (2), cobalt (2), lead (1), manganese (1), vanadium (2), and zinc (1). DLs for the following analytes were greater than BVs (number of samples with DLs greater than BVs in parentheses after the chemical name): antimony (2), cadmium (2), and cyanide (2).
- Tuff: aluminum (1), arsenic (1), barium (2), chromium (2), cobalt (1), copper (1), and lead (1). DLs for the following analytes were greater than BVs (number of samples with DLs greater than BVs in parentheses after the chemical name): antimony (4), cyanide (4), and selenium (1).

The following organic chemicals (Table 8.2-5, Figure 8.2-3) were detected (number of detects in parentheses after the chemical name).

- Surface soil/fill: benzo(a)pyrene (1), benzo(b)fluoranthene (1), benzo(k)fluoranthene (1), benzoic acid (1), chrysene (1), fluoranthene (2), indeno(1,2,3-cd)pyrene (1), and pyrene (2)
- Sediment: benzoic acid (1), fluoranthene (1), and pyrene (1)
- Tuff: diethylphthalate (1)

SWMU 16-003(j)

The following inorganic chemicals (Table 8.2-4, Figure 8.2-2) were detected greater than BVs (number of detects greater than BVs in parentheses after the chemical name).

- Surface soil/fill: lead (3), uranium (5), and zinc (5). DLs for the following analytes were greater than BVs (number of samples with DLs greater than BVs in parentheses after the chemical name): antimony (7), cadmium (7), and cyanide (7).
- Sediment: cobalt (1), copper (1), lead (1), uranium (1), and zinc (2). DLs for the following analytes were greater than BVs (number of samples with DLs greater than BVs in parentheses after the chemical name): antimony (2), cadmium (2), cyanide (2), and selenium (1).
- Tuff: arsenic (1), and chromium (2). DLs for the following analytes were greater than BVs (number of samples with DLs greater than BVs in parentheses after the chemical name): antimony (2) and cyanide (2).

The following organic chemicals (Table 8.2-5, Figure 8.2-3) were detected (number of detects in parentheses after the chemical name).

- Surface soil/fill: benzo(a)anthracene (1), benzo(a)pyrene (2), benzo(b)fluoranthene (2), benzoic acid (2), chrysene (2), fluoranthene (4), phenanthrene (2), and pyrene (2)
- Sediment: benzoic acid (1), chrysene (1), fluoranthene (2), phenanthrene (1), and pyrene (2)

8.2.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods

Samples were collected at SWMUs 16-003(i,j) in 1995 and sent to off-site analytical laboratories for analyses. For SWMU 16-003(i), 11 samples were collected in 1995 from soil (4 samples) and fill (1 sample), sediment (2 samples), and tuff (samples). For SWMU 16-003(j), 11 samples were collected in 1995 from soil (6 samples) and fill (1 sample), sediment (2 samples), and tuff (2 samples).

Inorganic Chemicals

Eleven inorganic chemicals had results considered estimated (J) because the result was between the EQL and the MDL. Three mercury results were reported as estimated and potentially biased low (J-), and three mercury results and three selenium results were reported as not detected (UJ) because the analyte recovery was below the lower acceptance level but greater than 30% in the associated sample spike.

Organic Chemicals

Four samples from SWMU 16-003(i) had at least one result rejected (R). One soil sample had all of the nondetected SVOC results rejected (R) because the associated internal standard area counts show less than 10% recovery when compared with the area counts in the applicable continuing calibration standard. The same soil sample also had results for bis(2-ethylhexyl)phthalate and benzo(b)fluoranthene rejected (R) because of quality deficiencies. One fill sample and two tuff samples had all of the SVOC results rejected (R) because of quality deficiencies.

Six samples from SWMU 16-003(j) had at least one result rejected (R). One soil sample and one sediment sample had all of the nondetected SVOC results rejected (R) because the associated internal standard area counts show less than 10% recovery when compared with the area counts in the applicable continuing calibration standard. The same soil sample and sediment sample had the result for bis(2-ethylhexyl)phthalate rejected (R) because of quality deficiencies. Two soil samples, one sediment sample and one fill sample, had SVOC results rejected (R) because of quality deficiencies in the reported data that were identified by the data validator.

The samples from SWMU 16-003(i) had multiple results reported with qualification. One sample had multiple SVOC results reported as not detected (UJ) and one result for pyrene reported as estimated (J) because the associated internal standard area counts are less than 50% but greater than 10% recovery of the previous continuing calibration. Eleven results for bis(2-ethylhexyl)phthalate, three results for di-n-butylphthalate, two results for acetone, four results for methylene chloride, and four results for trichlorofluoromethane were qualified as nondetected concentrations (U) because the results were less than 5 times the amount in the method blank (or 10 times the amount in the method blank for common laboratory contaminants).

The samples from SWMU 16-003(j) had multiple results reported with qualification. Seven results for SVOCs were reported as estimated (J) because the associated internal standard area counts are less than 50% but greater than either 10% or 200% recovery of the previous continuing calibration. Eleven results for bis(2-ethylhexyl)phthalate, four results for di-n-butylphthalate, two results for acetone, four results for methylene chloride, and four results for trichlorofluoromethane were qualified as nondetected concentrations (U) because the results were less than 5 times the amount in the method blank (or 10 times the amount in the method blank for common laboratory contaminants). Three samples had multiple results for SVOCs reported as not detected (UJ) because the associated internal standard area counts are less than 50% but greater than 10% recovery of the previous continuing calibration. One result for di-n-octylphthalate was reported as not detected (UJ) because at least two sample surrogate recoveries in the same fraction were less than the lower acceptance limit but greater than 10% recovery.

8.3 Cooling Tower: SWMU 16-031(b) and AOC C-16-002

SWMU 16-031(b) and AOC C-16-002 are sites associated with a demolished cooling tower, structure 16-262 (LANL 1995, 57225, p. 5-28-17). The cooling tower was built in 1946 at building 16-42 and relocated to building 16-260 in 1951; its purpose is unknown, but is associated with building 16-260 (LANL 1995, 57225, p. 5-28-17). The cooling tower was located about 50 ft north of a walkway (structure 16-269) and 12 ft west of building 16-260 (Figure 8.0-1). It was made of wood and sat on a 3-ft high concrete base and was removed in 1957. Chemicals commonly associated with the cooling towers are algae growth inhibitors, such as chromates; however, there is no documentation that such chemicals were used (LANL 1995, 57225, p. 5-28-15). Remains of the tower include a pile of rubble and two 2-in. cast-iron pipes that discharge into a drainage ditch. The use of the cooling tower, time period of use, and chemicals used are unspecified.

8.3.1 Site Description and Operational History

SWMU 16-031(b) is an area of potentially contaminated soil associated with the structure 16-262 Outfall (LANL 1995, 57225, p. 5-28-1) (Figure 8.0-1).

AOC C-16-002 is potentially contaminated soil and rubble in the footprint of a demolished cooling tower (structure 16-262) that served an HE-machining building (building 16-260) (LANL 1995, 57225, p. 5-28-1) (Figure 8.0-1).

8.3.1.1 Land Use

Present and future land use is industrial at TA-16.

8.3.1.2 Relationship to Other SWMUs and AOCs

Thirteen SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of SWMU 16-031(b) and AOC C-16-002 (counting one SWMU and one AOC in one consolidated unit), including a satellite accumulation area, MDA R, industrial or sanitary wastewater treatment, container storage (rest houses), sumps, drainlines, and outfalls, PCB transformer; underground tanks, and septic systems (Figure 8.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 8.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 8.0-1 and identified in the legend) is described in detail in other documents. One SWMU is located in Subaggregate 2 (section 3). Two surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory’s HWFP on December 23, 1998. One surrounding consolidated unit is included in other investigations.

Based upon review of the topography (Figure 8.0-1), none of the sites are at a higher elevation than SWMU 16-031(b) and AOC C-16-002. Therefore, contaminants from surrounding sites should not impact SWMU 16-031(b) and AOC C-16-002 due to surface runoff.

8.3.1.3 Waste Inventory

No historical waste inventories have been documented for this SWMU and AOC. However, suspected wastes are chromates, given the age and nature of the unit (e.g., cooling tower), although no documentation exists stating that chromates were used. The 1995 RFI work plan lists metals as the potential contaminant of concern (LANL 1995, 57225, p. 5-28-20).

8.3.1.4 Historical Releases

No documentation of spills or releases was found for this SWMU and AOC.

8.3.1.5 Summary of Historical Investigations

No samples have been collected from this SWMU and AOC.

8.3.2 Historical Data-Quality Interpretation

No samples have been collected from this SWMU and AOC.

8.4 Underground Storage Tanks: AOCs 16-033(g,h)

Both tanks are listed as in progress in section 1, Table 1.1-1.

8.4.1 Site Description and Operational History

AOC 16-033(g) was an oil tank of unknown capacity, structure 16-1138, that served building 16-260 (Figure 8.0-1). The tank was installed in February 1951 and removed at an unknown date, possibly 1967 (LANL 1995, 57225, p. 5-38). The tank was used for only a short period and abandoned in place in July 1951 when building 16-260 was connected to the main steam line (LANL 1995, 57225, p. 5-39). The tank was presumably used temporarily for heating during the construction of building 16-260. The tank was found to be free of radioactivity and toxic contamination before removal (Buckland 1967, 05342). No evidence of the tanks was visible during preparation of addendum 2 of the OU 1082 RFI work plan, and a preliminary site screening with a metal detector did not show the presence of a tank (LANL 1995, 57225, p. 5-39).

AOC 16-033(h) was an oil tank of unknown capacity, structure 16-1139, that served building 16-260 (Figure 8.0-1). The tank was installed in February 1951 and removed at an unknown date, possibly 1967. The tank was used for only a short period and abandoned in place in July 1951 when building 16-260 was connected to the main steam line (LANL 1995, 57225, p. 5-39). The tank was presumably used temporarily for heating during the construction of building 16-260. The tank was found to be free of radioactivity and toxic contamination before removal (Buckland 1967, 05342). No evidence of the tanks was visible during preparation of addendum 2 of the RFI work plan for OU 1082, and a preliminary site screening with a metal detector did not show the presence of a tank (LANL 1995, 57225, p. 5-39).

8.4.1.1 Land Use

Present and future land use is industrial at TA-16.

8.4.1.2 Relationship to Other SWMUs and AOCs

Thirteen SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of SWMUs 16-033(g) and 16-033(h) (counting one SWMU and one AOC in one consolidated unit) including a satellite accumulation area; MDA R, industrial or sanitary wastewater treatment, container storage (rest houses); sumps, drainlines, and outfalls; PCB transformer; underground tanks, and septic systems (Figure 8.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 8.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 8.0-1 and identified in the legend) is described in detail in other documents. One SWMU is located in Subaggregate 2 (section 3). Three surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory’s HWFP on December 23, 1998. One surrounding SWMU included in the Cañon de Valle Aggregate Area has been proposed for NFA and is pending. One surrounding consolidated unit is included in other investigations.

Based upon review of the topography (Figure 8.0-1), none of the sites are at a higher elevation than SWMUs 16-033(g) and 16-033(h). Therefore, contaminants from surrounding sites should not impact SWMUs 16-033(g) and 16-033(h) due to surface runoff.

8.4.1.3 Waste Inventory

No known wastes are associated with these AOCs.

8.4.1.4 Historical Releases

No historical releases have been documented for these two AOCs.

8.4.1.5 Summary of Historical Investigations

No samples have been collected from these AOCs.

8.4.2 Historical Data-Quality Interpretation

No samples have been collected from theses AOCs.

8.5 Miscellaneous Structure: AOC 16-027(a) (PCB Transformer)

8.5.1 Site Description and Operational History

AOC 16-027(a) is the site of a leak from a transformer in building 16-260, an HE-processing building (Figure 8.0-1). The transformer was located in equipment room 110 (PCB ID #5607, 5608) (LANL 1995, 57225, p. 6-44). The transformer contained 100 to 500 gal. of PCB-containing dielectric oil listed at concentrations greater than 500,000 ppm. The 1990 SWMU report characterized the transformer as 31 to 35 yr old with a moderate leak (LANL 1990, 07512, p. 16-027). On May 17, 1990, a spill involving a nonreportable release occurred; this spill is discussed in greater detail in section 8.5.1.4 (LANL 1995, 57225, p. 6-44). The transformer was drained, removed, and replaced with a non-PCB-containing unit on July 9, 1990 (LANL 1995, 57225, p. 6-44).

8.5.1.1 Land Use

Present and future land use is industrial at TA-16.

8.5.1.2 Relationship to Other SWMUs and AOCs

Thirteen SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of SWMU 16-027(a) (counting one SWMU and one AOC in one consolidated unit), including a satellite accumulation area; MDA R; industrial or sanitary wastewater treatment; container storage (rest house); sumps, drainlines, and outfalls; PCB transformer; underground tanks; and septic systems (Figure 8.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 8.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 8.0-1 and identified in the legend) is described in detail in other documents. One SWMU is located in Subaggregate 2 (section 3). Two surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory’s HWFP on December 23, 1998. One surrounding consolidated unit is included in other investigations.

Based upon review of the topography (Figure 8.0-1), none of the sites are at a higher elevation than SWMU 16-027(a); therefore, contaminants from these surrounding sites should not impact SWMU 16-027(a) due to surface runoff.

8.5.1.3 Waste Inventory

Other than the PCBs in the transformer, no wastes are associated with this AOC.

8.5.1.4 Historical Releases

On May 17, 1990, a spill occurred that was characterized as a high-concentration spill involving a nonreportable release (LANL 1995, 57225, p. 6-44). Contaminated materials were solid surfaces: the concrete floor, a concrete sump, and a metal sump cover. Cleanup was initiated immediately through the double-wash/double-rinse method and was completed the next day through the scabbler concrete removal system (LANL 1995, 57225, p. 6-44). Four additional cleanup efforts were completed in 1990 with the final one on November 13, 1990. During the cleanup process, the concrete floor under the transformer was scabbled, sampled, and encapsulated. The concrete floor and sump under the pump and drums were cleaned using various cleaning agents. The sump lid was taken to Area G at TA-54. After cleanup, the floor was encapsulated using two-part epoxy coating. Confirmatory wipe samples were taken, and results indicated that the cleanup was successful (LANL 1995, 57225, p. 6-44). The transformer was drained, removed, and replaced with a non-PCB-containing unit on July 9, 1990 (LANL 1995, 57225, p. 6-44).

8.5.1.5 Summary of Historical Investigations

No samples have been collected from this AOC.

8.5.2 Historical Data-Quality Interpretation

No samples have been collected from this AOC.

9.0 SUBAGGREGATE 8, TA-14 FIRING SITES

The TA-14 firing sites subaggregate consists of those SWMUs and AOCs located at TA-14 that drain into Cañon de Valle. The subaggregate includes two consolidated units containing 8 SWMUs and 2 AOCs, 2 individual SWMUS, and 14 individual AOCs (Figure 9.0-1). These sites are further organized into areas or related sites, such as active firing site, former firing sites, HE sump and drainline, septic system, removed buildings, former HE magazines, electrical pull boxes, and central and eastern drainage areas. Known as Q-Site, TA-14 has been used since 1944 for explosives development and testing, including testing that involves radioactive materials. In 1952, the firing site was renovated, structures were removed, and a new firing site was constructed (LANL 1996, 54086, p. 1-1).

9.1 Active Firing Site: AOC 14-001(g)

9.1.1 Site Description and Operational History

The active firing site, AOC 14-001(g), is a 5 ft × 5 ft × 2 ft reinforced concrete firing pad (structure 14-35) with a three-sided blast shield; the shield directs the force of detonation away from the nearby control building (building 14-23) (LANL 1990, 07512, p. 14-001; LANL 1994, 34755, p. 5.4-16) (Figure 9.0-1). At the base, the shield is a 6 ft × 6 ft × 2 ft concrete pad overlaid by a neoprene shock pad, a 4.5-in. steel plate, and several inches of sand. Wastes are placed on the pad and detonated from the control building (LANL 1994, 34755, p. 5.4-16). According to the 1990 SWMU report, AOC 14-001(g) was completed in

1964, and scrap HE was detonated on the pad (LANL 1990, 07512, p. 14-001). In the 1996 RFI report, corrective action was deferred until decommissioning (LANL 1996, 54086, p. 5-37).

9.1.1.1 Land Use

Present and future land use is industrial at TA-14.

9.1.1.2 Relationship to Other SWMUs and AOCs

Twenty-nine SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft of SWMU 14-001(g) (counting six SWMUs and two AOCs in two consolidated units). These sites include active and former firing sites, including the bullet test facility; storage areas; open burning grounds; active incinerator; removed buildings; HE sump, drainline, and outfall; former HE magazines; electrical pull boxes; and a septic system.

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 9.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 9.0-1 and identified in the legend) is described in detail in other documents. One surrounding SWMU included in the Cañon de Valle Aggregate Area was removed from Module VIII of the Laboratory's HWFP on December 23, 1998, and one surrounding AOC included in the Cañon de Valle Aggregate Area was approved for NFA by EPA on January 21, 2005. One surrounding SWMU included in the Cañon de Valle Aggregate Area has been proposed for NFA and is pending. One surrounding SWMU is a permitted RCRA unit. Two SWMUs in the consolidated units are deferred.

Based upon review of the topography (Figure 9.0-1), none of the sites are at a higher elevation than SWMU 14-001(g); therefore, contaminants from these surrounding sites should not have any impact on SWMU 14-001(g) due to surface runoff.

9.1.1.3 Waste Inventory

According to the 1990 SWMU report, wastes could include explosives (including but not limited to HMX, RDX, TNT, baratol), explosive residues, metals (including but not limited to iron, lead, beryllium, copper, zinc), and radionuclides (including but not limited to lathanum, uranium, and strontium) (LANL 1990, 07512, p. 14-001).

9.1.1.4 Historical Releases

Releases at the site would have resulted from the test explosions conducted at the site since 1944 and would include HE (and residues), radionuclides, and metals.

9.1.1.5 Summary of Historical Investigations

The ER Project issued an RFI report in 1996 that included AOC 14-001(g), although it was not sampled during the RFI (LANL 1996, 54086). No samples have been collected from this AOC. The RFI report stated that any corrective action at this AOC would be deferred until the site is decommissioned (Table 1.1-2, LANL 1996, 54086, p. 5-37).

9.1.2 Historical Data-Quality Interpretation

No samples have been collected from this AOC.

9.2 Former Firing Sites: Consolidated Units 14-002(a)-99 and 14-002(c)-99

Consolidated Unit 14-002(a)-99 (former firing sites) consists of SWMUs 14-002(a,b,f), 14-009, 14-010, and AOCs 14-001(f) and C-14-008 (Figure 9.0-1). Consolidated Unit 14-002(c)-99, also former firing sites, consists of SWMUs 14-002(c,d,e) (Figure 9.0-1).

9.2.1 Site Description and Operational History

Consolidated Unit 14-002(a)-99 is referred to as the western area at TA-14 in the OU 1085 RFI work plan and consists of SWMUs 14-002(a,b,f), 14-009, and 14-010 and AOCs 14-001(f) and C-14-008 (LANL 1994, 34755, p. 5.3-1) (Figure 9.0-1).

AOC 14-001(f) is described as the bullet test facility and is associated with structure 14-34 in both the 1990 SWMU report (LANL 1990, 07512, p. 14-001) and the OU 1085 RFI work plan (LANL 1994, 34755, p. 5-3-3) (Figure 9.0-1). However, in the 1996 VCA plan (LANL 1996, 53825.3, p. 2, Annex 7.3) and the 1996 VCA completion report (LANL 1996, 55049, p. 1, Figure 2), AOC 14-001(f) is described as the bullet test facility but associated with building 14-39. To resolve this discrepancy, a telephone interview was conducted with a former worker at the site (Brenner 2006, 92459). The following operational description is based upon that interview.

AOC 14-001(f) is a gun-firing site that is referred to as a bullet test facility (LANL 1994, 34755, p. 5-3-3) (Figure 9.0-1). The facility was constructed in 1957 and is located in the center of the western portion of Q-Site on level ground that drains to the southwest (LANL 1994, 34755, p. 5-3-1). The following buildings and structures are associated with the bullet test facility.

- Building 14-30 is a firearms storage building. All firearms used to fire projectiles were stored here.
- Building 14-34 is a building containing a control room and a reloading room. This building was the control room and also housed a room used to load projectiles (i.e., add propellant to a case and affix projectile) according to the requirements of the test being conducted. Building 14-34 is a reinforced concrete structure that is 13.3 ft × 13.6 ft × 8 ft.
- Structure 14-39 is a target tube. Targets were typically placed on a table within the tube. The tube was used to contain the debris from the explosive force of the projectile hitting a target, typically metal and/or explosives. The tube is 10 ft in diameter and approximately 15 ft long.
- Building 14-40 is a radiography/photography building. This building, adjacent to the target tube (structure 14-39), was used for the flash radiography and high-speed photography equipment used to record tests.
- Building 14-43 is a gas gun building. It was constructed to house a gas gun, but the project terminated before the gas gun was installed. It subsequently housed equipment (band saw, drill press, machining tools) used to construct non-HE components such as target-mounting brackets required for tests. The building was also used for storing non-HE materials.

A gun stand was on a pad just outside building 14-34 at the southeast end of the building where all weapons were set up and oriented to the southeast toward the target tube (structure 14-39). During the 1970s, small handguns were fired from within building 14-34 toward targets in structure 14-39, but any weapon larger than a handgun was always fired from the pad outside the building. After the late 1970s, all tests were conducted from the pad outside building 14-34. Sand was placed inside the target tube so that personnel could walk on a flat surface. A table was typically set up in the target tube (structure 14-39), upon which targets were placed. Targets were typically explosives or explosive devices. Depleted uranium was used as both a projectile and as a target. Projectile weapons ranged from a .22-caliber pellet gun to a 30-mm smooth bore gun.

The firing at the bullet test facility, AOC 14-001(f), was done from the firing pad outside building 14-34 into targets in structure 14-39 so that the test material, which was usually contained in the tube, was vaporized or was contained in the underlying sump (LANL 1994, 34755, p. 5-3-3; LANL 1996, 55049, p. 1) (Figure 9.0-1). If these residuals were believed to be contaminated with uranium, they were placed in 55-gal. drums for disposal (LANL 1994, 34755, p. 5-3-3). According to the 1990 SWMU report, some uranium-238 from the test shots flew into the nearby woods (LANL 1990, 07512, p. 14-001). Any HE-contaminated scrap or fragments were placed in 55-gal. drums for pickup and treatment as HE-contaminated waste (LANL 1994, 34755, p. 5-3-3). Scrap that was neither HE- nor uranium-contaminated was sent to the sanitary landfill (LANL 1994, 34755, p. 5-3-3). Sandbags were used for shielding from blast pressure; when removed, the bags were used to control erosion at the site (LANL 1994, 34755, p. 5-3-3). The underlying sump is made of reinforced concrete and is 13 × 13 × 4.5 ft (LANL 1996, 55049, p. 1). Potential contaminants of concern (PCOCs) include radionuclides and metals (LANL 1994, 34755, p. 5-3-5).

SWMU 14-002(a) is the site of a former HE firing chamber (structure 14-2) that was located on the west end of Q-Site; the chamber was removed in 1973 (LANL 1994, 34755, pp. 5-3-1, 5-3-3) (Figure 9.0-1). Completed in 1944, it was made of heavily reinforced concrete with steel plate lining and was 16 × 21.6 × 13 ft (LANL 1994, 34755, p. 5-3-3). According to the 1994 OU 1085 RFI work plan, some time in the 1940s, the chamber failed structurally (LANL 1994, 34755, p. 5-3-1). Later, structure 14-2 was used as a bullet-impact firing chamber; low-order detonations were common and frequently involved radioactive materials (LANL 1994, 34755, p. 5-3-1). In the early 1970s, structure 14-2 was removed. A radiation survey showed that structure 14-2 was contaminated with alpha radiation (LANL 1994, 34755, p. 5-3-3). Radioactively contaminated materials were removed and disposed of at TA-54, and the building was burned on the site in 1973 (LANL 1994, 34755, p. 5-3-3). The noncombustible building materials contaminated with both HE and radionuclides were placed in MDA P (SWMU 16-018). HE-contaminated debris was disposed of at MDA J (SWMU 54-005), and radioactive pieces were disposed of at MDA G [Consolidated Unit 54-013(b)-99]. When structure 14-2 was burned, an HE sump (structure 14-10) associated with the building was removed (LANL 1994, 34755, p. 5-3-3). Uranium-contaminated asphalt in the surrounding area also was removed and taken to MDA G [Consolidated Unit 54-013(b)-99].

A water line installed in 1960 may have been used when a new firing chamber was built (LANL 1994, 34755, p. 5-3-3). An HE test facility (building 14-39) and an instrumentation building (building 14-40) were constructed on the site formerly occupied by the chamber [structure 14-2, SWMU 14-002(a)] in the 1970s (LANL 1994, 34755, p. 5-3-3). PCOCs include HE, radionuclides, and metals (LANL 1994, 34755, p. 5-3-5). Investigation of SWMU 14-002(a) may be deferred under the Consent Order until it is no longer within the testing hazard zone of the active firing sites [14-001(f) and firing pads south of structure 14-023 (Figure 9.0-1)] at TA-14.

SWMU 14-002(b) is the site of a former HE-firing pedestal (structure 14-17) (Figure 9.0-1). Built in 1945, it was made of reinforced concrete and was 4 ft × 4 ft × 2 ft with a steel-plate top and an 8-ft-high earthen barricade (LANL 1994, 34755, p. 5-3-4). Structure 14-17 was located in the west-central portion of the western TA-14 firing site. The open, horseshoe-shaped, steel-firing chamber was 10 ft in diameter × 30 ft long with a 40-in.-thick wall (LANL 1994, 34755, p. 5-3-4). The firing chamber faced south (away from surrounding structures). The targets were planar cross sections of weapons that contained HE (LANL

1996, 54086, p. 5-30). Projectiles from a .22-caliber pellet gun to a 30-mm smooth bore gun were fired into the HE targets and detonated, burned, or shattered the target (Brenner 2006, 92459). Occasionally, natural or depleted uranium was used in the target. Small shape-charge tests were performed; linear shape-charge tests were routinely performed. Line cutter-shape charges were fired into weapon cross section targets containing lithium hydride; and light armor weapons were demilitarized and the warheads fired into reactive armor targets containing explosives (LANL 1994, 34755, p. 5-3-4). These activities likely resulted in low-order detonations.

Sandbags were used to protect x-ray film and equipment from the blast and shrapnel. When the bags were torn, the sand and shot debris were shoveled into a wheelbarrow and dumped over the edge of the canyon (LANL 1994, 34755, p. 5-3-4). The OU 1085 RFI work plan stated that the area was contaminated with uranium, lead, copper, and explosives (LANL 1994, 34755, p. 5-3-4). The copper came from the small guiding metal jackets on the bullets. Some antimony was alloyed into the bullet lead to increase hardness (LANL 1994, 34755, p. 5-3-4). Barium nitrate is in the area because inerts as well as baratol were used (LANL 1994, 34755, p. 5-3-4). After a series of shots, the area was swept; HE, fragments, and debris were picked up. The surface soil was not removed. Former structure 14-17 was removed in 1952 (LANL 1994, 34755, p. 5-3-4). Investigation of SWMU 14-002(b) may be deferred under the Consent Order until it is no longer within the testing hazard zone of the active firing sites [14-001(f) and firing pads south of structure 14-023 (Figure 9.0-1)] at TA-14.

SWMU 14-002(f), former structure 14-12, is the site of a former junction box shelter that was associated with SWMU 14-002(b) (LANL 1996, 54086, p. 5-30). Built in 1945, it had wood-frame construction and was 6 × 6 × 6 ft with an earthen berm on three sides. Structure 14-12 was removed in 1952 (LANL 1994, 34755, p. 5-3-4).

SWMU 14-009 is a 45 ft × 50 ft × 1 ft surface disposal area on the southwest slope of the western firing area (LANL 1994, 34755, p. 5-3-4) (Figure 9.0-1). It is a pile of ruptured sandbags. When explosives were tested, sandbags were placed around a firing site to contain the detonation (LANL 1994, 34755, p. 5-3-4). When the pressure of a blast ruptured the sandbags, the sand was used to control erosion around the firing site. Sandbags used at firing sites could be contaminated with uranium, lead, beryllium, and HE compounds. Uranium has been noted in soils in some areas at TA-14 (LANL 1994, 34755, p. 5-3-4). Whether the source of the uranium was the surface disposal of sandbags, storage, and/or firing activities is not known (LANL 1994, 34755, p. 5-3-5). According to the OU 1085 RFI work plan, the pile was included in the 1987 DOE environmental survey; the survey indicated radioactivity levels greater than BVs at the site (LANL 1994, 34755, p. 5-3-5). During the 1996 RFI, depleted uranium was visible at the surface, and HE spot tests were positive (LANL 1996, 54086, p. 5-31).

SWMU 14-010 is a decommissioned explosive waste sump located south of and adjacent to building 14-2 (LANL 1994, 34755, p. 5-3-5) (Figure 9.0-1). A drain extended from the sump across the road (LANL 1994, 34755, p. 5-3-5). After Group WX-2 removed and disposed of the sump's contents, the sump and drainline around the base of the floor slab at building 14-2 were manually excavated and removed (LANL 1994, 34755, p. 5-3-5). The remainder of the building was then burned (LANL 1990, 07512, p. 14-010). The area was paved over or replaced by the bullet test facility. The sump may have contained HE and toxic chemicals (LANL 1994, 34755, p. 5-3-5). During the 1995 RFI, the existing drainline was sampled, and uranium and HE were detected (LANL 1996, 54086, p. 5-29).

AOC C-14-008, former structure 14-11, is the site of a former magazine that was located about 75 ft northeast of the current magazine (structure 14-30) in the west complex (Figure 9.0-1). It was of wooden construction and measured 5 ft × 5 ft × 5 ft, with an earthen berm on three sides and the top. The former magazine was built in 1945 and removed in 1952 (LANL 1994, 34755, p. 5-3-5). The former site of the building was cleared and scraped, and dirt was heaped in a long, low pile along the north edge of the pavement. No sign of structure 14-11 remains, and the site is contoured to drain toward the north ditch that borders the entrance road to the site (LANL 1994, 34755, p. 5-3-5).

Consolidated Unit 14-002(c)-99 consists of SWMUs 14-002(c,d,e) (Figure 9.0-1).

SWMU 14-002(c) was built in 1944 as a control building (building 14-5) for small-scale explosive tests (Figure 9.0-1). It is 11 ft × 18 ft × 10 ft and originally had a concrete bunker faced with 0.5-in. steel plate. The building was converted from a control building to a storage site in 1961 and then to toxic gas (cyanogen) storage in 1965 until the 1970s. In the mid-1950s, the concrete blocks were removed from the south end of the building and pushed about 50 ft south to the side of the small drainage that drops to the south. Debris is scattered about on this slope to the drainage channel. In 1980, a 5-ft-diameter metal sphere was placed on the south side of building 14-5 in the position previously occupied by the concrete blocks. Slow combustion experiments were conducted inside the sphere. These tests continued until 1985. Building 14-5 has not been used since then and was supposed to be destroyed, but the destruction was delayed while a discussion was held about putting the building on the Laboratory's historical buildings list. It was decided not to list building 14-5, but by that time funds for the destruction were not available and it still stands (LANL 1994, 34755, p. 5.6-2).

SWMUs 14-002(d,e) are the former sites of two firing pads that were located on a gravel area adjacent to the south end of building 14-5 (LANL 1994, 34755, p. 5.6-2) (Figure 9.0-1). These sites are associated with former structures 14-14 and 14-15, respectively. The pads were used from 1944 to the mid-1950s for small-scale explosives tests (LANL 1994, 34755, p. 5.6-2). The pads were checked for radiation in 1957 and none was found (LANL 1994, 34755, p. 5.6-2). The firing pads are no longer at the site. Investigation of SWMUs 14-002(d,e) may be deferred under the Consent Order until they are no longer within the testing hazard zone of the active firing sites [14-001(f) and firing pads south of structure 14-023 (Figure 9.0-1)] at TA-14.

9.2.1.1 Land Use

Present and future land use is industrial at TA-14.

9.2.1.2 Relationship to Other SWMUs and AOCs

Twenty-one SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft of Consolidated Units 14-002(a)-99 and 14-002(c)-99 (Figure 9.0-1). These sites include active firing sites, including the bullet test facility; storage areas; open burning grounds; active incinerator; removed buildings; HE sump, drainline, and outfall; former HE magazines; electrical pull boxes; and a septic system.

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 9.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 9.0-1 and identified in the legend) is described in detail in other documents. One surrounding SWMU included in the Cañon de Valle Aggregate Area was removed from Module VIII of the Laboratory's HWFP on December 23, 1998, and one surrounding AOC included in the Cañon de Valle Aggregate Area was approved for NFA by EPA on January 21, 2005. One surrounding SWMU included in the Cañon de Valle Aggregate Area has been proposed for NFA and is pending. One surrounding SWMU is a permitted RCRA unit.

Based upon review of the topography (Figure 9.0-1), none of the sites are at a higher elevation than Consolidated Units 14-002(a)-99 and 14-002(c)-99; therefore, contaminants from the surrounding sites should not have any impact on Consolidated Units 14-002(a)-99 or 14-002(c)-99 due to surface runoff.

9.2.1.3 Waste Inventory

The materials from the former firing sites included HE and uranium. The OU 1085 RFI work plan stated that the area around 14-002(b) was contaminated with uranium, lead, copper, and HE (LANL 1994, 34755, p. 5-3-4). The copper came from the small guiding metal jackets on the bullets. Some antimony was alloyed into the bullet lead to increase hardness. Barium nitrate is in the area because of the use of inerts as well as baratol. The waste characterization strategy form included in the 14-001(f) VCA plan (LANL 1996, 53825.3) stated that a broad range of solvents was used to degrease target plates and to clean guns. These solvent included acetone, gasoline, dichloroethylene, methylene chloride, dimethyl sulfoxide, Freon (type not specified), and HOPPES #9 (a nitrated hydrocarbon-based solvent). In addition, the x-ray machine used various dielectric fluids including mineral oil, sulfur hexafluoride, and Freon (type not specified).

9.2.1.4 Historical Releases

The bullets and explosives that were fired at Consolidated Unit 14-002(a)-99 would have resulted in residuals that may have been either contained or vaporized. Contamination from the testing was found on various structures associated with these sites. Sandbags used for shielding and for protecting equipment may have been ruptured during a blast and resulted in contaminated sand that may be present at the sites. Pieces of debris, shrapnel, and HE may also have contaminated the surrounding areas after these tests. According to the waste characterization strategy form included in the 14-001(f) VCA plan (LANL 1996, 53825.3), the dielectric reservoir in the x-ray machine was punctured during one experiment, and 40–50 gal. of mineral oil leaked out.

9.2.1.5 Summary of Historical Investigations

The results of the historical sampling are presented below for each individual SWMU or consolidated unit, as appropriate. The samples taken are summarized in Table 9.2-1 and locations are shown in Figure 9.2-1.

The frequency of detected inorganic chemicals, organic chemicals, and radionuclides is presented in Tables 9.2-2, 9.2-3, and 9.2-4, respectively.

Consolidated Unit 14-002(a)-99

As part of the 1996 RFI, a sample (0214-95-0075) was collected at location 14-01051 and associated with SWMU 14-009 (LANL 1996, 54086, Appendix E). However, as shown in Figure 9.2-1, this location is too far removed from SWMU 14-009 to be associated with SWMU 14-009. This sample is also associated with Consolidated Unit 14-002(a)-99 in the ERDB. Based upon the sampling location shown in Figure 9.2-1 and the association of this sample to Consolidated Unit 14-002(a)-99 in the ERDB, the sample is better associated with the consolidated unit and is best evaluated in the context of representing potential upgradient contamination.

One sediment sample was collected and analyzed for gamma emitters, HE, isotopic uranium, and inorganic chemicals (Table 9.2-1). No analytes were detected or detected greater than BVs.

AOC 14-001(f)

On June 25, 1993, HE spot-test kits were used to survey for explosives near the bullet test facility. The data were inconclusive; the results were described as false positives (LANL 1994, 34755, p. 5.3-6). The

ER Project conducted an RFI at AOC 14-001(f) in 1995. Three samples were collected: two from within the bullet test facility and one from the underlying sump (LANL 1996, 55049, p. 1). These samples were field screened for lead and uranium (XRF) and for radionuclides (NaI detector). The field-screening results are presented in Appendix D. These samples were subsequently submitted to an off-site laboratory for analyses.

The ER Project conducted a VCA at AOC 14-001(f) in 1996 based on the COPCs determined during the Phase I RFI and because pieces of HE were visible within the sand on the site (LANL 1996, 55049, p. 1). During the VCA, all sand contained in the bullet test facility and beneath the sump was removed. After the sand was removed, a radiological survey was conducted of the interior surfaces of the steel tube and the sump. Readings above background were found on both structures. Uranium was removed from the surfaces of the sump and some areas of the steel tube; however, uranium was incompletely removed from the steel tube interior (LANL 1996, 55049, p. 4). The radioactivity in the steel tube was determined to be fixed radioactivity, and those areas were painted in accordance with the Laboratory's ESH-1 requirements (LANL 1996, 55049, pp. 4–5). A sign was placed in the bullet test facility indicating fixed radioactivity. Pieces of depleted uranium were found and were segregated and disposed of (LANL 1996, 55049, p. 4). No pieces of HE were found during the VCA (LANL 1996, 55049, p. 4). At the request of the operating group, the sump drain was plugged after the VCA using quick-dry cement (LANL 1996, 55049, p. 5). Confirmation sampling was not conducted because all sand was removed, and sealing the drain eliminated any potential for environmental release (LANL 1996, 55049, p. 5).

In 1997, three samples were collected (Figure 9.2-1) from the RFI sampling locations. The samples taken are summarized in Table 9.2-1, and the frequency of detected inorganic chemicals, organic chemicals, and radionuclides is presented in Tables 9.2-2, 9.2-3, and 9.2-4, respectively.

Two surface and one subsurface soil sample were collected during 1995 RFI activities and analyzed for gamma emitters, HE (subsurface sample only), isotopic uranium, inorganic chemicals (subsurface sample only), SVOCs, uranium, and VOCs (subsurface sample only). These samples are all classified AN95 screening-level data because the samples were submitted directly to the off-site laboratory without first going through the SMO. The samples collected are summarized in Table 9.2-1, and the sampling locations are shown in Figure 9.2-1. After the 1996 VCA, three subsurface soil samples were collected in 1997 and analyzed for HE, inorganic chemicals, and uranium (Table 9.2-1). These 1997 samples are all decision-level data.

Uranium was detected greater than BVs in all three screening-level data samples (Table 9.2-5, Figure 9.2-2). Antimony, cadmium, copper, lead, manganese, nickel, and zinc were detected greater than BVs in one sample. The following inorganic chemicals were detected greater than BVs in decision-level data surface soil samples (number of detects greater than BVs in parentheses after the chemical name): aluminum (2), barium (2), cobalt (1), thallium (2), uranium (3), and zinc (2) (Table 9.2-5). The DL for the following inorganic chemical was greater than BV in screening-level data samples (number of samples where the DL was greater than BV in parentheses after the chemical name): thallium (1) (Table 9.2-5). DLs for the following inorganic chemicals were greater than BVs in decision-level data samples (number of samples where the DL was greater than BVs in parentheses after the chemical name): antimony (3), cadmium (3), mercury (3), and silver (3) (Table 9.2-5).

Acetone, bis(2-ethylhexyl)phthalate, HMX, methylene chloride, RDX, trichlorofluoromethane, and TNT were detected in the 1995 RFI subsurface soil screening-level data samples (Table 9.2-6, Figure 9.2-3). The two 1995 RFI surface soil screening-level data samples were submitted for VOC analyses, but none were detected. The three 1997 surface soil samples were submitted for HE analyses, but no HE was detected.

The following radionuclides (Table 9.2-7, Figure 9.2-4) were detected in screening-level data samples (number of detects and sample depth in parentheses after the chemical name): protactinium-231 (3), protactinium-234M (1 subsurface sample), and thorium-234 (3). The following radionuclides (Table 9.2-7, Figure 9.2-4) were detected greater than BVs in screening-level data samples (number of detects greater than BVs and sample depth in parentheses after the chemical name): uranium-235 (1 subsurface sample), and uranium-238 (2 surface and 1 subsurface). The 1997 samples were not submitted for radionuclide analysis.

SWMU 14-002(a)

The notice of deficiency (NOD) response (October 31, 1994) to the RFI work plan (LANL 1994, 43545) describes ruptured sandbags southeast of building 14-38. In response to the NOD, the sandbags, which are all that remain of SWMU 14-002(a), were sampled. During the 1995 RFI activities one surface soil sample was field screened for lead and uranium (XRF) and for radionuclides (NaI detector). The field-screening results are presented in Appendix D. Also during the ER Project's 1995 RFI at SWMU 14-002(a), one ruptured sandbag, presumably associated with the firing chamber, was sampled. Based upon the detected uranium concentrations, the RFI report recommended development of a VCA plan (LANL 1996, 54086, p. 5-30). RFI results, conclusions, and recommendations were included in the VCA plan that was submitted to DOE in 1997 (LANL 1997, 55678). The results of the Phase I sampling, as presented In the VCA plan (LANL 1997, 55678, Table 4.2.2-1), indicated that depleted uranium was present.

The samples taken are summarized in Table 9.2-1. The frequency of detected inorganic chemicals, organic chemicals, and radionuclides is presented in Tables 9.2-2, 9.2-3, and 9.2-4, respectively.

Two surface soil samples were collected during 1995 RFI activities and analyzed for gamma emitters, isotopic uranium, and uranium. All of these samples are classified AN95, screening-level data, because the samples were submitted directly to the off-site laboratory without first going through the SMO. One of these samples was collected from a location that was subsequently excavated during the 1997 VCA activities (sample ID marked by an asterisk in Table 9.2-1). The samples collected are summarized in Table 9.2-1, and the sampling locations are shown in Figure 9.2-1. As part of the 1997 VCA activities, two surface soil and one sediment confirmation samples were collected (Table 9.2-1, Figure 9.2-1). One of the soil samples and the sediment sample were analyzed for HE and isotopic uranium. The second surface soil sample was analyzed for HE, inorganic chemicals, and uranium.

Uranium was detected greater than BVs in both of the 1995 RFI screening-level data surface soil samples; in sample 0214-95-0058, the uranium concentration was 2010 mg/kg (Table 9.2-5, Figure 9.2-2). Aluminum, barium, beryllium, chromium, iron, nickel, potassium, thallium, uranium, and zinc were detected greater than BVs in one of the 1997 VCA confirmation decision-level data surface soil samples (Table 9.2-5, Figure 9.2-2). DLs for antimony, cadmium, mercury, and silver were greater than BVs in one decision-level data sample (Table 9.2-5).

No organic chemical analyses were requested for the 1995 RFI screening-level data samples. HMX was detected in one soil and one sediment decision-level data VCA confirmation samples, and TNT was detected in two of the 1997 VCA confirmation decision-level data surface samples (Table 9.2-6, Figure 9.2-3).

The following radionuclides were detected in the two 1995 RFI screening-level data surface soil samples (number of detects in parentheses after the chemical name; a detect with an asterisk is from the excavated sample): protactinium-231 (2), protactinium-234 (1), protactinium-234M (1), thorium-231 (1*), thorium-234 (2) (Table 9.2-7 and Figure 9.2-4), The following radionuclides were detected greater than

BVs in the two 1995 RFI screening-level data surface soil samples (number of detects greater than BVs in parentheses after the chemical name): uranium-235 (1) and uranium-238 (2) (Table 9.2-7, Figure 9.2-4). Samples collected from soil that was subsequently removed as part of the 1997 VCA activities no longer represent current site conditions. Uranium-234 and uranium-235 were detected greater than BVs in the one decision-level data sample (Table 9.2-7, Figure 9.2-4), and uranium 238 was detected greater than BVs in both decision-level data samples (Table 9.2-7, Figure 9.2-4).

SWMU 14-002(b)

SWMU 14-002(b) was not sampled during the ER Project's 1995 RFI because efforts to locate the site of the former HE-firing pedestal were unsuccessful (LANL 1996, 54086, p. 5-30). The RFI report recommended NFA at the site. The alleged location of the shelter, based on a 1946 photograph, was checked with an NaI beta-gamma meter and no radioactivity was detected. HE spot-test results were negative (LANL 1996, 54086, p. 5-30). Discussions with a contractor who built structures at TA-14 indicated the chamber was located where the current fire road is now, and the firing chamber was removed in 1952, mounded next to the assembly and storage building (building 14-43), and paved over with asphalt (LANL 1996, 54086, p. 5-30).

SWMU 14-002(f)

SWMU 14-002(f) was not sampled during the ER Project's 1995 RFI because efforts to locate the site of the structure were unsuccessful (LANL 1996, 54086, pp. 5-30–5-31). The RFI report recommended NFA for the site. The alleged location of the shelter, based on a 1946 photograph, was checked with an NaI beta- gamma-meter, and no radioactivity was detected (LANL 1996, 54086, p. 5-31). HE spot-test results were negative (LANL 1996, 54086, p. 5-31). Discussions with a contractor indicated the shelter was located where the current fire road is now. No evidence of the shelter exists at this location (LANL 1996, 54086, p. 5-31).

SWMU 14-009

Visual surface contamination by depleted uranium and a positive HE spot test prompted the RFI report's recommendation to conduct a VCA at this SWMU (LANL 1996, 54086, p. 5-31). In addition, eight surface and two subsurface samples were field screened for lead and uranium (XRF) and for radionuclides (NaI detector). The field-screening results are presented in Appendix D. However, it does not appear that a VCA plan was ever published.

The samples taken are summarized in Table 9.2-1, and the frequency of detected inorganic chemicals, organic chemicals, and radionuclides is presented in Tables 9.2-2, 9.2-3, and 9.2-4, respectively.

As part of the 1995 RFI activities, seven surface soil and two subsurface soil samples were collected (Table 9.2-1, Figure 9.2-1). All of these samples are classified AN95, screening-level data, because the samples were submitted directly to the off-site laboratory without first going through the SMO. The surface soil samples were analyzed for the following (number of analyses in parentheses): gamma-emitting radionuclides (5), HE (7), isotopic uranium (5), inorganic chemicals (7), SVOC (5), and uranium (3). The two surface soil samples were analyzed for HE, inorganic chemicals, and SVOC. As part of the 1997 VCA confirmation sampling, four surface soil samples were collected and analyzed for HE, inorganic chemicals, and uranium (Table 9.2-1, Figure 9.2-1).

The following inorganic chemicals were detected greater than BVs in the 1995 RFI screening-level data soil samples (number of detects greater than BVs and sample depth in parentheses after the chemical name): copper (5 surface, 1 subsurface), lead (6 surface), mercury (2 surface), nickel (1 surface), and uranium (3 surface) (Table 9.2-5, Figure 9.2-2). The following inorganic chemicals were detected greater than BVs in the 1997 VCA confirmation decision-level data surface soil samples (number of detects greater than BVs in parentheses after the chemical name): barium (2), silver (2), and uranium (2) (Table 9.2-5, Figure 9.2-1). The following inorganic chemicals had DLs greater than BVs in the 1997 decision-level data samples (number of samples in parentheses): antimony (4), cadmium (4), and uranium (2).

Bis(2-ethylhexyl)phthalate was detected in one 1995 RFI surface soil screening-level data sample (Table 9.2-6, Figure 9.2-3), and HMX was detected in six surface and one subsurface screening-level data in the 1995 RFI soil samples (Table 9.2-6, Figure 9.2-3). Both 2-amino-4,6-dinitrotoluene and TNT were detected in the 1997 VCA surface soil confirmation sample (Table 9.2-6, Figure 9.2-3).

The following radionuclides were detected in the 1995 RFI screening-level data surface soil samples (number of detects in parentheses after the chemical name): protactinium-231 (5), protactinium-234 (1), protactinium-234M (5), thorium-231 (1), and thorium-234 (3 (Table 9.2-7, Figure 9.2-4). The following radionuclides were detected greater than BVs in the 1995 RFI screening-level data surface soil samples (number of detects greater than BVs in parentheses after the chemical name): uranium-235 (2), uranium-238 (5) (Table 9.2-7, Figure 9.2-4). The 1997 VCA surface soil confirmation samples were not analyzed for radionuclides (Table 9.2-1).

SWMU 14-010

During the ER Project's 1995 RFI at SWMU 14-010, surface-soil, subsurface-soil and sediment samples were collected. Four surface and one subsurface sample were screened for lead and uranium (XRF) and for radionuclides t (NaI detector). The field-screening results are presented in Appendix D. RFI analytical results indicated that uranium and HE were present in concentrations (LANL 1996, 54086, p. 5-29). The RFI report recommended development of a VCA plan for SWMU 14-010 (LANL 1996, 54086, p. 5-29). RFI conclusions and recommendations were included in the VCA plan submitted to DOE in 1997 (LANL 1997, 56611). A corrective action for SWMU 14-010 included the excavation and removal of contaminated surface soil from the drainage area.

The samples collected are summarized in Table 9.2-1; the frequency of detected inorganic chemicals, organic chemicals, and radionuclides is presented in Tables 9.2-2, 9.2-3, and 9.2-4, respectively.

As part of the 1995 RFI activities, one surface soil, one subsurface soil, and two sediment samples were collected and analyzed for gamma-emitting radionuclides, isotopic uranium, and uranium (Table 9.2-1, Figure 9.2-1). All of these samples are classified AN95, screening-level data, because the samples were submitted directly to the off-site laboratory without first going through the SMO. The surface soil and sediment from which these samples were collected were subsequently removed as part of the 1997 VCA activities; therefore, these sample results no longer represent current site conditions. During the 1997 VCA activities, six sediment samples were collected and analyzed for HE and isotopic uranium; in addition, one surface soil sample was collected and analyzed for HE, inorganic chemicals, and uranium (Table 9.2-1, Figure 9.2-1).

Uranium was detected greater than BVs in the four 1995 RFI samples (Table 9.2-5, Figure 9.2-2). Barium, thallium, and uranium were detected in the 1997 VCA confirmation surface soil sample (Table 9.2-5, Figure 9.2-2). In addition, the DLs for antimony, cadmium, mercury, and silver were greater than BVs in this 1997 VCA surface soil confirmation sample (Table 9.2-5).

None of the 1995 RFI samples were analyzed for HE, SVOC, or VOC. HMX was detected in six 1997 VCA confirmation sediment samples, and TNT was detected in three 1997 VCA sediment confirmation samples (Table 9.2-6, Figure 9.2-3).

The following radionuclides were detected greater than BVs in the 1995 RFI screening-level data samples (number of detects, sample media, and depth in parentheses after the chemical name; a detect with an asterisk is from the excavated sample): protactinium-231 (1* surface soil, 2* sediment), protactinium-234M (1* surface soil, 1* sediment), thorium-231 (1* sediment), thorium-234 (1* surface soil, 1 subsurface soil, 2* sediment), uranium-235 (1* surface soil, 1* sediment), and uranium-238 (1* surface soil, 1 subsurface soil, 2* sediment) (Table 9.2-7, Figure 9.2-4). Uranium-234 was detected greater than BV in one 1997 VCA confirmation sediment sample; uranium-235 was detected greater than BV in two 1997 VCA confirmation sediment samples; uranium-238 was detected greater than BV in four 1997 VCA confirmation sediment samples (Table 9.2-7, Figure 9.2-4).

AOC C-14-008

During the 1995 ER Project's RFI at AOC C-14-008, two surface soil samples were collected from the footprint of structure 14-11 and screened for lead and uranium (XRF) and radionuclides (NaI detector). The field-screening results are presented in Appendix D. These samples were subsequently submitted for analysis of gamma emitters, HE, inorganic chemicals, and uranium (Table 9.2-1, Figure 9.2-1).

The frequency of detected inorganic chemicals, organic chemicals, and radionuclides is presented in Tables 9.2-2, 9.2-3, and 9.2-4, respectively.

All of these samples are classified AN95, screening-level data, because the samples were submitted directly to the off-site laboratory without first going through the SMO.

Uranium was detected greater than BVs in both samples (Table 9.2-5, Figure 9.2-2). DLs for antimony, cadmium, and silver were greater than BVs in both samples (Table 9.2-5).

No HE was detected in either sample (Tables 9.2-3 and 9.2-6).

No radionuclides were detected greater than BVs in either sample (Tables 9.2-4 and 9.2-7).

Consolidated Unit 14-002(c)-99

This consolidated unit consists of two firing pads [SWMUs 14-002(d,e)] and a control building [SWMU 14-002(c)] (Figure 9.0-1). As part of the 1995 RFI activities, five surface soil samples were field screened for lead and uranium (XRF) and for radionuclides (NaI detector). The field-screening results are presented in Appendix D. Four surface soil samples were subsequently collected during the 1995 RFI from the soil covering the sides of the control building that faced the firing sites (Figure 9.2-5 and LANL 1996, 54086, p. 5-84). These samples were analyzed for gamma emitters, isotopic uranium, and uranium (Table 9.2-1). In addition, two surface soil samples were also collected from the drainage area immediately to the south of the two firing sites (Figure 9.2-5). These two samples were analyzed for gamma emitters, HE, isotopic uranium, inorganic chemicals, and uranium (Table 9.2-1). All six 1995 RFI samples are classified AN95, screening-level data, because the samples were submitted directly to the off-site laboratory without first going through the SMO.

The frequency of detected inorganic chemicals, organic chemicals, and radionuclides is presented in Tables 9.2-2, 9.2-3, and 9.2-4, respectively.

Uranium was detected in the four surface soil samples collected from the soil on the sides of the control building greater than BVs (Table 9.2-5, Figure 9.2-6). The following inorganic chemicals were detected greater than BVs in the 1995 RFI screening-level data surface soil samples collected in the drainage south of the firing sites (number of detects greater than BVs in parentheses after the chemical name): copper (2), lead (2), mercury (1), uranium (2), and zinc (2).

The following radionuclides were detected in the 1995 RFI screening-level data surface soil samples collected from the soil on the sides of the control building (number of detects greater than BVs): protactinium-234M (2), thorium-231 (4), and thorium-234 (4) (Table 9.2-7, Figure 9.2-7). The following radionuclides were detected greater than BVs in the 1995 RFI screening-level data surface soil samples collected from the soil on the sides of the control building (number of detects greater than BVs in parentheses after the chemical name): uranium-235 (2), uranium-238 (3) (Table 9.2-7, Figure 9.2-7). The DL for uranium-235 in one of these samples was greater than BVs (Table 9.2-7). The following radionuclides were detected in the 1995 RFI screening-level data surface soil samples collected from the drainage to the south of the firing sites (number of detects in parentheses after the chemical name): protactinium-231 (1) and thorium-234 (2) (Table 9.2-7, Figure 9.2-7).The following radionuclides were detected greater than BVs in the 1995 RFI screening-level data surface soil samples collected from the drainage to the south of the firing sites (number of detects greater than BVs in parentheses after the chemical name): uranium-238 (1) (Table 9.2-7, Figure 9.2-7). In addition, the DLs were greater than BV for uranium-235 and uranium-238 in one sample.

9.2.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods for Decision-Level Data Samples

Fourteen sediment samples and 11 soil samples were collected at Consolidated Unit 14-002(a)-99 in 1997 and sent to off-site analytical laboratories for analyses.

Inorganic Chemicals

Four results for sodium were reported as estimated (J) because the results were between the EQL and the MDL. Two results for uranium were reported as not detected (U) because the associated sample concentration was less than or equal to 5 times the amount in the method blank.

Radionuclides

No data-quality issues were identified.

Organic Chemicals

No data-quality issues were identified.

Sample Collection and Analytical Methods for Screening-Level Data Samples

In 1995, 14 soil samples and 1 sediment sample collected from Consolidated Unit 14-002(a)-99 and 6 soil samples collected from Consolidated Unit 14-002(c)-99 were shipped directly to analytical laboratories from the field. An additional two soil samples and two sediment samples were also collected from Consolidated Unit 14-002(a)-99 from a location that was later excavated. The results for these 25 samples are screening-level data.

These sample results were reported by the laboratory as detected values, estimated values (J), or nondetected concentrations (U). No further Laboratory validation was performed.

9.3 HE Sump and Drainline: SWMU 14-006

9.3.1 Site Description and Operational History

SWMU 14-006 consists of an HE sump (structure 14-31), associated drainline, and unpermitted outfall for a control building (14-23) built in 1944 or 1945 (Figure 9.0-1). The sump is made of steel and concrete and is 8.3 ft × 4.5 ft × 4.8 ft. The sump outlet is plugged. Two floor drains and an asphalt roof drain bypass the sump in a metal-covered concrete culvert and discharge to the outfall. Sludge in the sump is collected for burning (LANL 1994, 34755, p. 5.4-3).

9.3.1.1 Land Use

Present and future land use is industrial at TA-14.

9.3.1.2 Relationship to Other SWMUs and AOCs

Twenty-nine SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of SWMU 14-006 (counting six SWMUs and two AOCs in two consolidated units), including active and former firing sites, including the bullet test facility, storage areas, open burning grounds, active incinerator, removed buildings, former HE magazines, electrical pull boxes, and a septic system (Figure 9.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 9.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 9.0-1 and identified in the legend) is described in detail in other documents. One surrounding SWMU included in the Cañon de Valle Aggregate Area was removed from Module VIII of the Laboratory’s HWFP on December 23, 1998, and one surrounding AOC included in the Cañon de Valle Aggregate Area was approved for NFA by EPA on January 21, 2005. One surrounding SWMU included in the Cañon de Valle Aggregate Area has been proposed for NFA and is pending. One surrounding SWMU is a permitted RCRA unit. Two SWMUs in the consolidated units are deferred.

Based upon review of the topography (Figure 9.0-1), none of the sites are at a higher elevation than SWMU 14-001(g), therefore, contaminants from the surrounding sites should not have an impact on this SWMU due to surface runoff.

9.3.1.3 Waste Inventory

High explosives are the primary wastes that would be associated with this sump and drainline.

9.3.1.4 Historical Releases

No information is available concerning releases from this SMWU in any of the documents reviewed.

9.3.1.5 Summary of Historical Investigations

The ER Project conducted an RFI at SWMU 14-006 in 1995 to determine the presence or absence of contamination. Nine samples were collected from seven locations. The samples were field screened for HE, and no HE was detected. Six of these samples were also screened for lead and uranium (XRF) and for radionuclides (NaI detector). The field-screening results are presented in Appendix D.

As detailed in Table 9.3-1 and Figure 9.2-5, during the 1995 RFI activities the following samples were collected (number of analyses in parentheses after the chemical name):

- Surface soil: gamma emitters (4), isotopic uranium (4), SVOC (3), and uranium (4)
- Subsurface soil: gamma emitters (3), isotopic uranium (3), SVOC (3), and uranium (3)
- Sediment: gamma emitters (2), isotopic uranium (2), and uranium (2)

All of these samples are classified AN95, screening-level data, because the samples were submitted directly to the off-site laboratory without first going through the SMO.

The frequency of detected inorganic chemicals and radionuclides is presented in Tables 9.3-2 and 9.3-3, respectively.

Uranium was detected in all of the samples greater than BVs (Table 9.3-4, Figure 9.2-6).

No SVOCs were detected in any of the samples collected.

The following radionuclides were detected in the surface soil samples (number of detects in parentheses after the chemical name): protactinium-231 (2), thorium-231 (2), and thorium-234 (4) (Table 9.3-5, Figure 9.2-7). The following radionuclides were detected greater than BVs in the surface soil samples (number of detects greater than BVs in parentheses after the chemical name): uranium-235 (1), and uranium-238 (1) (Table 9.3-5, Figure 9.2-7). The following radionuclides were detected in the subsurface soil samples (number of detects in parentheses after the chemical name): thorium-231 (1) and thorium-234 (3). Thorium-234 was detected in both of the sediment samples (Table 9.3-5, Figure 9.2-7).

9.3.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods for Screening-Level Data Samples

In 1995, seven soil samples and two sediment samples collected from SWMU 14-006 were shipped directly to analytical laboratories from the field. The results for these nine samples are screening-level data.

The Laboratory reported these sample results as detected values or nondetected concentrations (U). No further Laboratory validation was performed.

9.4 Septic System: SWMU 14-007

SWMU 14-007 is an inactive septic tank (structure 14-19) and its associated drain field.

9.4.1 Site Description and Operational History

The septic tank (structure 14-19) at SWMU 14-007 was built in 1944 to serve the restrooms in a shop building (building 14-6) (Figure 9.0-1). Building 14-6 was later a darkroom where photoprocessing chemicals were used and then converted to a storage facility in 1965. Made of reinforced concrete, the tank is 4 ft × 7 ft × 6 ft and has a capacity of 640 gal. Structure 14-19 was connected to an overflow drainline that ran northeast for 130 ft before daylighting into an outfall about 1 ft wide (LANL 1994, 34755, p. 5-5-1). A leach field was installed in 1988, replacing the drainline from the septic tank. The septic tank was disconnected in 1992 when building 14-6 was connected to the Sanitation Wastewater Systems Consolidation Plant.

9.4.1.1 Land Use

Present and future land use is industrial at TA-14.

9.4.1.2 Relationship to Other SWMUs and AOCs

Twenty-nine SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of SWMU 14-006 (counting six SWMUs and two AOCs in two consolidated units), including active and former firing sites, including the bullet test facility, storage areas, open burning grounds, active incinerator, removed buildings, HE sump, drainline, and outfall, former HE magazines, and electrical pull boxes (Figure 9.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 9.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 9.0-1 and identified in the legend) is described in detail in other documents. One surrounding SWMU included in the Cañon de Valle Aggregate Area was removed from Module VIII of the Laboratory’s HWFP on December 23, 1998, and one surrounding AOC included in the Cañon de Valle Aggregate Area was approved for NFA by EPA on January 21, 2005. One surrounding SWMU included in the Cañon de Valle Aggregate Area has been proposed for NFA and is pending. One surrounding SWMU is a permitted RCRA unit. Two SWMUs in the consolidated units are deferred.

Based upon review of the topography (Figure 9.0-1), none of the sites are at a higher elevation than SWMU 14-007; therefore, contaminants from these surrounding sites should not have any impact on SWMU 14-007 due to surface runoff.

9.4.1.3 Waste Inventory

The septic system served restrooms in building 14-6 originally constructed as shop but later was used as a darkroom and for storage. No further details are available on the types of chemicals used or stored in the building.

9.4.1.4 Historical Releases

The septic tank was connected to an overflow drainline that daylighted into an outfall about 130 ft northeast of the septic tank. Later the drainline was replaced by a drain field, which was used until the septic tank was disconnected. No further details on releases from this system were available in the documents reviewed.

9.4.1.5 Summary of Historical Investigations

The ER Project conducted an RFI at SWMU 14-007 in 1995 to determine the presence of contamination. Six soil samples were collected from the drain field. They were field screened for radiation and HE; no HE was detected, and radiation levels were below background. The samples were also screened for lead and uranium (XRF). The field-screening results are presented in Appendix D.

As detailed in Table 9.4-1 and Figure 9.2-5, during the 1995 RFI activities, three surface and three subsurface soil samples were collected and analyzed for cyanide, gamma emitters, isotopic uranium, and SVOC. One sample was also collected during the 1995 RFI activities from the sludge within the septic tank and analyzed for cyanide, gamma emitters, HE, isotopic uranium, and SVOC.

All of these samples are classified AN95, screening-level data, because the samples were submitted directly to the off-site laboratory without first going through the SMO.

The frequency of detected inorganic chemicals and radionuclides is presented in Tables 9.4-2 and 9.4-3, respectively.

Cyanide was not detected greater than BVs in the soil samples and was not detected in the sludge sample. DLs for cyanide were greater than BVs in two of the subsurface soil samples (Table 9.4-4).

No SVOCs were detected in any of the 1995 RFI soil samples. SVOCs and HE were not detected in the sludge sample from the septic tank.

The following radionuclides were detected in the soil samples (number of detects and sample depth in parentheses after the chemical name): protactinium-231 (1 subsurface), thorium-231 (3 surface, 3 subsurface), and thorium-234 (3 surface, 3 subsurface) (Table 9.4-5, Figure 9.2-7). The following radionuclides were detected greater than BVs in the soil samples (number of detects greater than BVs and sample depth in parentheses after the chemical name): uranium-235 (2 surface, 1 subsurface) and uranium-238 (2 surface, 2 subsurface) (Table 9.4-5, Figure 9.2-7). All of the radionuclide analysis results for the sludge sample were rejected.

9.4.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods for Screening-Level Data Samples

In 1995, six soil samples and two sludge samples collected from SWMU 14-007 were shipped directly to analytical laboratories from the field. The results for these eight samples are screening-level data.

These sample results were reported by the Laboratory as detected values (not qualified), estimated values (J) or nondetected concentrations (U). No further Laboratory validation was performed.

9.5 Buildings (Removed): AOCs C-14-002. C-14-003, C-14-004, C-14-005, and C-14-007

9.5.1 Site Description and Operational History

AOC C-14-002 is a former control building (structure 14-3) for firing chamber 14-2 [SWMU 14-002(a)]. It was built in 1944 and removed in 1952, along with a 2-ft-thick concrete pad (LANL 1996, 54086, p. 5-31) (Figure 9.0-1). The wood-frame building was 14 ft long × 8 ft wide × 8 ft high with an attached addition 6 ft wide × 6 ft long × 8 ft high (LANL 1996, 54086, p. 5-31). This structure was located in the western portion of TA-14, approximately 50 ft east of magazine 14-30 (LANL 1994, 34755, Figure 1-6). This location is currently beneath the paved access road to the western portion of TA-14. Although this site is not known to have managed explosives or other hazardous constituents, the RFI work plan for OU 1085 indicated that this site may have residual contamination because of its location near the firing sites in the western portion of TA-14. AOC C-14-002 is not listed in Module VIII of the Laboratory's Hazardous Waste Facility Permit. If any releases had occurred, they would be characterized by the investigations of the firing sites in Subaggregate 8 because AOC C-14-002 is located in the footprint of these other sites.

AOC C-14-003 is the former site of a decommissioned HE-preparation building (structure 14-4) (LANL 1996, 54086, p. 5-50) (Figure 9.0-1). Made of wood, it was 25 ft × 12 ft × 8 ft and built in 1944 and removed in 1952 (LANL 1996, 54086, p. 5-50). AOC C-14-003 is north of the current magazine (structure 14-22) in the central part of TA-14 within the loop made by the paved road that circles the magazine [LANL 1996, 54086, p. 5-50]).

AOC C-14-004 is the former site of an electronics shop (building 14-7) that was built in 1945 and removed in 1952 (LANL 1996, 54086, p. 5-53). The wooden structure was located 75 ft west of a control building (building 14-23), in the central part of TA-14. It was 24 ft × 15 ft × 9 ft. The concrete foundation for building 14-7 remains in place (LANL 1996, 54086, p. 5-54)

AOC C-14-005 is the former site of a decommissioned storage building (building 14-8) that was built in 1944 and removed in 1952 (LANL 1996, 54086, p. 5-57) (Figure 9.0-1). The wooden structure was located on the east side of the TA-14 access road about 80 ft north of building 14-6 in the central part of TA-14 (LANL 1996, 54086, p. 5-57). It was 16 ft × 6 ft × 9 ft. No signs of the former building remain (LANL 1996, 54086, p. 5-57).

AOC C-14-007 is the former site of a decommissioned storage building (14-10) that was built in 1945 and removed in 1952 (LANL 1996, 54086, p. 5-65) (Figure 9.0-1). The wooden structure was located 160 ft west of a control building (building 14-23) in the central part of TA-14 (LANL 1996, 54086, p. 5-65). Former building 14-10 was 10 ft × 10 ft × 8 ft. All that remains of this structure is a small pile of bricks and mortar (LANL 1996, 54086, p. 5-65).

9.5.1.1 Land Use

Present and future land use is industrial at TA-14.

9.5.1.2 Relationship to Other SWMUs and AOCs

Twenty-seven SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft of AOCs C-14-003, C-14-004, C-14-005, and C-14-007 (counting six SWMUs and two AOCs in two consolidated units), including active and former firing sites, including the bullet test facility, storage areas, open burning grounds, active incinerator; removed buildings, HE sump, drainline, and outfall, former HE magazines, electrical pull boxes, and a septic system (Figure 9.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 9.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 9.0-1 and identified in the legend) is described in detail in other documents. One surrounding SWMU included in the Cañon de Valle Aggregate Area was removed from Module VIII of the Laboratory's HWFP on December 23, 1998, and one surrounding AOC included in the Cañon de Valle Aggregate Area was approved for NFA by EPA on January 21, 2005. One surrounding SWMU included in the Cañon de Valle Aggregate Area has been proposed for NFA and is pending. One surrounding SWMU is a permitted RCRA unit. Two SWMUs in the consolidated units are deferred.

Based upon review of the topography (Figure 9.0-1), none of the sites are at a higher elevation than AOCs C-14-003, C-14-004, C-14-005, and C-14-007; therefore, contaminants from the surrounding sites should not have an impact on these AOCs due to surface runoff.

9.5.1.3 Waste Inventory

No information on the chemicals used or the type of materials stored in any of these formed buildings was available in any of the documents reviewed.

9.5.1.4 Historical Releases

No information on releases at any of these former building locations was presented in any of the documents reviewed.

9.5.1.5 Summary of Historical Investigations

The results of the 1996 RFI sampling are presented below for each individual AOC (LANL 1996, 54086). The samples collected are summarized in Table 9.5-1, and the results of the frequency of detection analyses for inorganic chemicals and radionuclides are presented in Tables 9.5-2 and 9.5-3, respectively.

These samples are classified AN95, screening-level data, because the samples were submitted directly to the off-site laboratory without going through the SMO.

AOC C-14-002

No sampling has been conducted at AOC C-14-002.

AOC C-14-003

Two surface soil samples were collected. These samples were initially field screened for lead and uranium (XRF) and radionuclides(NaI detector). The field-screening results are presented in Appendix D. Both samples were submitted for off-site analysis for gamma emitters and isotopic uranium (Table 9.5-1, Figure 9.2-5). One sample was analyzed for uranium (Table 9.5-1).

Uranium was not detected greater than BVs in the surface soil sample (Table 9.5-2).

Thorium-234 was detected in both samples (Table 9.5-4, Figure 9.2-7).

AOC C-14-004

Two surface soil samples were collected. These samples were initially field screened for lead and uranium (XRF) and radionuclides(NaI detector). The field-screening results are presented in Appendix D. Both samples were submitted for off-site analyses for SVOCs (Table 9.5-1, Figure 9.2-5).

No SVOCs were detected in either sample.

AOC C-14-005

Two surface soil samples were collected. These samples were field screened for lead and uranium (XRF) and for radionuclides (NaI detector). The field-screening results are presented in Appendix D. Both samples were submitted for off-site analysis of uranium (Table 9.5-1, Figure 9.2-5).

Uranium was detected greater than BVs in both samples (Table 9.5-5, Figure 9.2-6).

AOC C-14-007

Three samples were field screened for lead and uranium (XRF) and for radionuclides (NaI detector). The field-screening results are presented in Appendix D. Two surface soil samples were collected and submitted for off-site analysis for SVOCs and uranium (Table 9.5-1, Figure 9.2-5).

Uranium was detected greater than BVs in both samples (Table 9.5-5, Figure 9.2-6).

No SVOCs were detected in either sample.

9.5.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods for Screening-Level Data Samples

In 1995, eight soil samples collected from AOCs C-14-003, C-14-004, C-14-005, and C-14-007 were shipped directly to analytical laboratories from the field. The results for these eight samples are screening-level data.

These sample results were reported by the Laboratory as detected values (not qualified) or nondetected concentrations (U). No further Laboratory validation was performed.

9.6 Former HE Magazines: AOCs C-14-001, 14-004(a), and C-14-009

9.6.1 Site Description and Operational History

AOC C-14-001 is the former site of a decommissioned magazine (structure 14-1) that was built in 1944 to serve the TA-14 firing sites (Figure 9.0-1). Structure 14-1 was located in a wooded area 300 ft west of the western complex at TA-14. Made of wood, it was 11 ft × 9 ft × 8 ft, with a soil berm on three sides and the top. It was burned in 1963 (LANL 1996, 54086, p. 5-93).

AOC 14-004(a) is a storage magazine (structure 14-22) that was converted for use as a satellite accumulation area for scrap HE (LANL 1996, 54086, p. 5-81) (Figure 9.0-1). This structure is constructed of reinforced concrete with an earthen floor and is 12 ft × 8 ft × 10 ft. It is surrounded by earthen berms on three sides.

AOC C-14-009 is the site of a former magazine (structure 14-13), which was built in 1945 to temporarily store explosives for use at the two firing pads at building 14-5 (Figure 9.0-1). It is located at the eastern end of TA-14, about 50 ft northeast of building 14-5. Made of wood, it was 4 ft × 3 ft × 3 ft with a soil berm on three sides and on the top. Structure 14-13 was used until the firing pads were inactivated in the mid-1950s and was burned in 1960 (LANL 1996, 54086, pp. 5-97–5-98).

9.6.1.1 Land Use

Present and future land use is industrial at TA-14.

9.6.1.2 Relationship to Other SWMUs and AOCs

Twenty SWMUs, AOCs, and consolidated units (hereafter, "sites") are within approximately 750 ft of SWMU 14-004(a) and AOCs C-14-001 and C-14-009 (Figure 9.0-1). These sites include active and former firing sites, including the bullet test facility; storage areas; open burning grounds; active incinerator; removed buildings; HE sump, drainline, and outfall; former HE magazines, electrical pull boxes; and a septic system.

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 9.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 9.0-1 and identified in the legend) is described in detail in other documents. One surrounding SWMU included in the Cañon de Valle Aggregate Area was removed from Module VIII of the Laboratory's HWFP on December 23, 1998, and one surrounding AOC included in the Cañon de Valle Aggregate Area was approved for NFA by EPA on January 21, 2005. One surrounding SWMU included in the Cañon de Valle Aggregate Area has been proposed for NFA and is pending. One surrounding SWMU is a permitted RCRA unit. Two SWMUs in the consolidated units are deferred.

Based upon review of the topography (Figure 9.0-1), none of the sites are at a higher elevation than SWMU 14-004(a) and AOCs C-14-001 and C-14-009; therefore, contaminants from the surrounding sites should not have an impact on these AOCs due to surface runoff.

9.6.1.3 Waste Inventory

HE is the primary waste associated with these magazines.

9.6.1.4 Historical Releases

No releases were reported in any of the documents reviewed.

9.6.1.5 Summary of Historical Investigations

The results of the historical sampling are presented below for each individual AOC. The samples taken are summarized in Table 9.6-1, and the frequency of detected inorganic chemicals is presented in Table 9.6-2.

All of these samples are classified AN95, screening-level data, because the samples were submitted directly to the off-site laboratory without going through the SMO.

AOC C-14-001

Initially three surface samples were field screened for lead and uranium (XRF) and for radionuclides (NaI detector). The field-screening results are presented in Appendix D. Two subsurface soil samples were subsequently collected and submitted for off-site analysis of HE and inorganic chemicals (Table 9.6-1, Figure 9.2-1).

Calcium, copper, lead, and zinc were detected greater than BVs in one sample (Table 9.6-3, Figure 9.2-2). The DL for thallium was greater than BVs in one sample, and the DL for antimony was greater than BV in the second sample (Table 9.6-3).

HE was not detected in either sample.

AOC 14-004(a)

No samples were collected from this AOC.

AOC C-14-009

Initially two subsurface samples were field screened for lead and uranium (XRF) and for radionuclides (NaI detector). The field-screening results are presented in Appendix D. One subsurface soil and one subsurface fill sample were subsequently collected and submitted for off-site analysis of HE and inorganic chemicals (Table 9.6-1, Figure 9.2-5).

Lead was detected greater than BV in the subsurface soil sample (Table 9.6-3, Figure 9.2-6).

HE was not detected in either sample.

9.6.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods for Screening-Level Data Samples

In 1995, three soil samples and one fill sample collected from AOCs C-14-001 and C-14-009 were shipped directly to analytical laboratories from the field. The results for these four samples are screening-level data.

These sample results were reported by the Laboratory as detected values (not qualified), estimated values (J), or nondetected concentrations (U). No further Laboratory validation was performed.

9.7 Electrical Pull Boxes: AOCs 14-001(a,b,c,d,e)

9.7.1 Site Description and Operational History

AOCs 14-001(a,b,c,d,e) are small (26 ft × 32 ft × 32-in.) steel pull boxes located in the ground and covered with metal lids (Figure 9.0-1). Pull boxes are associated with active firing sites and are used for detonator and diagnostic hookups. These AOCs are associated with active firing sites at TA-14 and used to hold capacitor discharge units (LANL 1996, 54086, p. 5-35).

9.7.1.1 Land Use

Present and future land use is industrial at TA-14.

9.7.1.2 Relationship to Other SWMUs and AOCs

Twenty-five SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft of SWMUs 14-001(a), 14-001(b), 14-001(c), 14-001(d) and 14-001(e) (counting six SWMUs and two AOCs in two consolidated units) including former firing sites, including the bullet test facility, storage areas, open burning grounds, active incinerator, removed buildings, HE sump, drainline, and outfall, former HE magazines, and a septic system (Figure 9.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 9.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 9.0-1 and identified in the legend) is described in detail in other documents. One surrounding SWMU included in the Cañon de Valle Aggregate Area was removed from Module VIII of the Laboratory's HWFP on December 23, 1998, and one surrounding AOC included in the Cañon de Valle Aggregate Area was approved for NFA by EPA on January 21, 2005. One surrounding SWMU included in the Cañon de Valle Aggregate Area has been proposed for NFA and is pending. One surrounding SWMU is a permitted RCRA unit. Two SWMUs in the consolidated units are deferred.

Based upon review of the topography (Figure 9.0-1), none of the sites are at a higher elevation than SWMUs 14-001(a), 14-001(b), 14-001(c), 14-001(d) and 14-001(e); therefore, contaminants from the surrounding sites should not have an impact on these AOCs due to surface runoff.

9.7.1.3 Waste Inventory

Personal communication supports the conclusion that no wastes can be associated these boxes (LANL 1996, 54086, p. 5-35).

9.7.1.4 Historical Releases

The function of the pull boxes is detonator and diagnostic hookups. No releases from these pull boxes are documented.

9.7.1.5 Summary of Historical Investigations

No samples have been collected from these AOCs.

9.7.2 Historical Data-Quality Interpretation

No samples have been collected from these AOCs.

10.0 SUBAGGREGATE 9, TA-15 WEST

The TA-15 west subaggregate consists of those SWMUs and AOCs located at TA-15 that drain into Cañon de Valle. The subaggregate includes four consolidated units containing 13 SWMUs, five individual SWMUs, and three AOCs (Figure 10.0-1). These sites are further organized into areas or related sites, such as Firing Site G, the Gulch Firing Site, the MDA Z waste disposal area, debris disposal area, the Hollow, septic systems, and outfalls.

10.1 Firing Site G: Consolidated Unit 15-004(g)-00 and AOC C-15-001

Firing Site G or Consolidated Unit 15-004(g)-00 consists of SWMUs 15-004(g) and 15-008(c), which are an inactive firing site and a surface disposal site, respectively (Figure 10.0-1). This consolidated unit is located on the southern side of TA-15. AOC C-15-001 is a soil pile near inactive Firing Site G [Consolidated Unit 15-004(g)-00], which is located on the south side of TA-15 (LANL 1993, 20946, p. 8-17).

10.1.1 Site Description and Operational History

SWMU 15-004(g) is part of inactive Firing Site G (Figure 10.0-1). This firing site operated from 1949 to 1953 (LANL 1993, 20946, p. 8-17) and was used for somewhat larger tests than the 10 to 20 lb of HE used in the explosive tests conducted at nearby Consolidated Unit 15-004(b)-99, Firing Sites A and B (LANL 1993, 20946, pp. 8-5, 8-17). These tests would have included the detonation of explosives devices comprising HE and metallic components, including natural and depleted uranium, and inorganic chemicals (LANL 1993, 20946, p. 8-17). Structures present at Firing Site G consisted of a control chamber known as structure 15-9, a GX unit chamber, designated structure 15-28, and a barricade known as structure 15-16, to the south of the control chamber. Structure 15-28 and the barricade were removed in 1967, and only the control chamber remains. Firing Sites E and F operated during the same time as Firing Site G (DOE 1987, 08663, p. TA15-7). The following materials were used at Firing Sites E and F: aluminum, lithium hydride, iron, mercury, lead, beryllium, boron, cadmium, gold, tritium, HMX, RDX, TNT, pentaerythritol tetranitrate (PETN), cycotol, and baratol (DOE 1987, 08663, p. TA15-7). These same materials may have been used, although in lesser quantities, in the explosive tests conducted at Firing Site G. The firing site has a hazard radius of 2000 ft and tested explosive devices thought to have contained up to 40 lb of HE. Investigation of SWMU 15-004(g) may be deferred under the Consent Order until it is no longer within the testing hazard zone of the Dual-Axis Radiographic Hydrodynamic Test and Pulsed High-Energy Radiographic Machine Emitting X-rays (PHERMEX) active firing sites

SWMU 15-008(c) consists of several small surface disposal areas used to dispose of residues from tests conducted at SWMU 15-004(g) (Figure 10.0-1). These areas are located near structure 15-233, which was a carpenter shop south of structure 15-9. The exact nature of the materials disposed of at these sites and the period of operation are unknown (LANL 1993, 20946, p. 8-17).

AOC C-15-001 is a pile of soil near inactive Firing Site G [Consolidated Unit 15-004(g)-00], which is located on the south side of TA-15 (Figure 10.0-1). This AOC is located south of the firing site, northwest of a carpenter shop (building 15-233). Previous investigations have not addressed AOC C-15-001 specifically, although they have addressed the general area that could have been impacted by SWMU 15-004(g), including the area occupied by AOC C-15-001 (LANL 1993, 20946, p. 8-17). This soil pile was contaminated with radioactivity in 1988 (section 10.1.1.4).

10.1.1.1 Land Use

Present and future land use is industrial at TA-15.

10.1.1.2 Relationship to Other SWMUs and AOCs

Three SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of Consolidated Unit 15-004(6)-00 and AOC C-15-001(Figure 10.0-1). These sites include a former firing site, material disposal area landfill, surface disposal areas, and a septic tank.

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 10.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 10.0-1 and identified in the legend) is described in detail in other documents. One AOC is not included in the Cañon de Valle Aggregate Area because it does not drain into Cañon de Valle.

Based upon review of the topography (Figure 10.0-1), none of the sites are at a higher elevation than consolidated unit 15-004(6)-00 and AOC C-15-001; therefore, contaminants from the surrounding sites should not have any impacts on this consolidated unit and AOC due to surface runoff.

10.1.1.3 Waste Inventory

Materials used in tests at SWMU 15-004(g) are believed to have included natural and/or depleted uranium, other inorganic chemicals, and HE. These same materials would have comprised the wastes present at SWMU 15-008(c) and AOC C-15-001.

10.1.1.4 Historical Releases

Based upon information for Firing Sites E and F (LANL 1993, 38409, TA15-3), the types of HE used at this site could have included HMX, RDX, TNT, PETN, cycotol, and baratol. The metallic components may have included steel, aluminum, lithium hydride, uranium, mercury, lead, beryllium, boron, cadmium, and gold. Each of these components could have been released over the entire explosives arc of the test.

Residues from the explosive tests at the explosion site itself were removed and deposited at SWMU 15-008(c) and AOC C-15-001 (section 10.1.1). No releases have been documented for this SWMU and AOC; however, any release of material would have included some of the components of the explosive test residues.

10.1.1.5 Summary of Historical Investigations

An aerial radiological survey of SWMU 15-004(g) performed in 1982 did not identify radiation levels above background at the firing site or nearby disposal areas. However, small pieces of metallic uranium were observed on top of structure 15-9 during a 1986 field survey (LANL 1993, 20946, p. 8-17). As part of 1995 RFI activities, 14 surface and 9 subsurface samples were field screened for lead and uranium (XRF) and radionuclides (NaI detector) (LANL 1996, 54977, Table D-1). Results are presented in Appendix D.

A radiological survey and soil sampling were performed near SWMU 15-008(c) in 1987 as part of the DOE CEARP field survey (DOE 1989, 15365, p. 5.26-7) and detected elevated radiation and elevated levels of uranium in soil. No HE was detected in this area. As part of 1995 RFI activities, two surface samples were field screened for lead and uranium (XRF) and for radionuclides (NaI detector) (LANL 1995, 54977, Table D-1). The field-screening results are presented in Appendix D.

Also, in 1988 soil contaminated with radionuclides at the AOC C-15-001 was documented during a field survey (LANL 1993, 20946, p. 8-17). The source of the soil comprising this AOC is unknown. An aerial radiological survey in 1982 did not identify radiation above background at the firing site or adjacent areas (LANL 1993, 20946, p. 8-17). However, several areas of radiological surface contamination at the firing site were identified during surface surveys conducted during 1991 and 1996. During 1995 RFI activities at AOC C-15-001, two surface samples were field screened for lead and uranium (XRF) and for radionuclides (NaI detector) (LANL 1995, 54977, Table D-1). Results are presented in Appendix D. HE spot tests were also conducted before sample collection. All results were negative (LANL 1997, 56917.4, p. 5-1).

Three analytical surface soil samples were collected from Firing Site G during 1989 CEARP field activities (DOE 1989, 15265, p. 4.26-3). These samples were analyzed for HE, metals, VOCs, and radionuclides. No HE was detected, and methylene chloride was the only VOC detected (one sample). Numerous metals and radionuclides were detected greater than BVs/fallout values (FVs). Excerpts from the 1989 CEARP report and the associated analytical results are provided in Appendix E.

Details of the 1995 RFI historical samples collected from this area are presented in Table 10.1-1, and samping locations are shown in Figure 10.1-1. The frequency of detected inorganic chemicals and radionuclides is presented in Tables 10.1-2 and 10.1-3, respectively.

<u>SWMU 15-004(g):</u> Four surface and four subsurface samples were collected from six locations during 1995 RFI activities and analyzed for inorganic chemicals and uranium (Table 10.1-1, Figure 10.1-1). None of the samples were submitted through the SMO and are screening-level data.

<u>SWMU 15-008(c):</u> Two surface soil samples from two locations were collected during 1995 RFI activities and analyzed for uranium (Table 10.1-1, Figure 10.1-1). None of the samples were submitted through the SMO and are designated AN95, screening-level data.

<u>AOC C-15-001:</u> A total of six samples, four surface and two subsurface samples, were collected at AOC C-15-001 in 1995 and 1997. Two surface soil samples from two locations were collected in 1995 and analyzed for uranium (Table 10.1-1, Figure 10.1-1). Neither of these samples were submitted through the SMO and are screening-level data. In 1997, two surface and two subsurface (tuff) samples from two locations were collected and analyzed for isotopic uranium.

The frequency of detected inorganic chemicals and radionuclides is presented in Tables 10.1-2 and 10.1-3, respectively.

Inorganic sample results are detailed in Table 10.1-4 and plotted in Figure 10.1-2. Barium was detected greater than BV in one subsurface sample at SWMU 15-004(g). Cadmium was detected greater than BV in one surface soil sample greater than BV in SWMU 15-004(g). Copper was detected greater than BV in three surface and one subsurface samples collected from SWMU 15-004(g). Lead was detected in one surface sample collected from SWMU 15-004(g). Sodium was detected greater than BVs in two subsurface soil. Uranium was detected greater than BVs in all soil samples collected from the three SWMUs and AOCs. Zinc was detected greater than BV in one surface and one subsurface soil sample collected from SWMU 15-004(g).

Radionuclide sample results are detailed in Table 10.1-5 and plotted in Figure 10.1-3. Radionuclide data were collected only at AOC C-15-001. Uranium-234 was detected greater than BVs in two surface soil samples from AOC C-15-001. Uranium-235 was detected in one surface soil sample from AOC C-15-001. Uranium-238 was detected in two surface soil and one tuff sample collected from AOC C-15-001 greater than BVs.

10.1.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods for Decision-Level Data Samples

Samples were collected at AOC C-15-001 in 1997 and sent to off-site analytical laboratories for analyses. For AOC C-15-001, four samples were collected in 1997 from soil (two samples) and tuff (two samples).

Radionuclides

No data-quality issues were identified.

Sample Collection and Analytical Methods for Screening -Level Data Samples

In 1995, 2 samples collected from AOC C-15-001 and 10 samples collected from Consolidated Unit 15-004(g)-00 were shipped directly to off-site analytical laboratories from the field. The results for these 12 samples are screening-level data.

These sample results were reported by the Laboratory as detected values (not qualified), estimated values (J), or nondetected concentrations (U). No further Laboratory validation was performed.

10.2 Gulch Firing Site: SWMU 15-004(i)

10.2.1 Site Description and Operational History

SWMU 15-004(i) is an inactive firing site that was reportedly used to conduct two test explosions in 1944. This site, identified in a historical document (LANL 1993, 20946, p. 5-13), was referred to as the Gulch. The location of this site was described as approximately 1 mi below R-Site, but the precise location is unknown (LANL 1993, 20946, p. 5-13). The test explosions consisted of up to 300 lb of HE and 500 lb of ammonium picrate (LANL 1990, 07512, p. 15-004), each being detonated approximately 10 ft from a canyon wall to observe the damage to the canyon wall.

Field reconnaissance was conducted on February 10, 2006, to locate SWMU 15-004(i). The team entered a tributary to Cañon de Valle at the Hollow and walked the canyon bottom down to the confluence with Water Canyon (Figure 10.0-1), a distance of approximately 1 mi. The search for the location of SWMU 15-004(i) focused on exposed cliff-forming tuff on both sides of the canyon adjacent to or visible from the canyon bottom. No signs of explosives testing (e.g., cratering in the canyon wall) were observed during the field reconnaissance (LANL 2006, 91692).

10.2.1.1 Land Use

Present and future land use is industrial at TA-15.

10.2.1.2 Relationship to Other SWMUs and AOCs

This SWMU could not be located in the canyon during the field reconnaissance. No other SWMUs are known to be in the canyon, nor are any SWMUs or AOCs within 750 ft of the estimated SWMU location "approximately one mile below R site" (section 10.2.1)

10.2.1.3 Waste Inventory

The test explosions consisted of up to 300 lb of Composition B (the standard ratio of ingredients is approximately a 60:40 mixture of RDX and TNT, with 1% wax) and 500 lb of ammonium picrate (DOE 1987, 08663, p. TA15-6).

10.2.1.4 Historical Releases

During the two explosions, HE may have been released to the surrounding soil.

10.2.1.5 Summary of Historical Investigations

Because the location of this site is unknown, no previous environmental investigations have been conducted. The RFI work plan recommended NFA for this site based on its unknown location and the limited tests performed at the site (LANL 1993, 20946, p. 5-13).

10.2.2 Historical Data-Quality Interpretation

No samples have been collected from this SWMU.

10.3 MDA Z Landfill: SWMU 15-007(b)

MDA Z [SWMU 15-007(b)] is an inactive disposal area located south of the side road leading to building 15-233 (LANL 1993, 20946, p. 9-7) (Figure 10.0-1).

10.3.1 Site Description and Operational History

SWMU 15-007(b) is a disposal area known as MDA Z (Figure 10.0-1). This disposal area is located northwest of inactive Firing Site G in the south central portion of TA-15 and operated from 1965 to 1981 (Figure 10.1-1). MDA Z is roughly triangular, with dimensions approximately 200 ft × 50 ft, and appears to have been constructed in a natural depression (LANL 1995, 50294, p. 4-58). Thus, one face grades to native soil, and one face is approximately 15 ft high and is easily visible (LANL 1995, 50294, p. 4-58).

The landfill received construction debris, used sandbags filled with concrete and steel blast matting from the PHERMEX facility (LANL 1993, 20946, p. 9-7). The PHERMEX facility is used to x-ray photograph test explosions. Partially burned wood was noted as being visible during the 1995 RFI activities (LANL 1995, 50294, p. 4-58). When the site was surveyed after the Cerro Grande fire, only minor burning of ground cover was noted (LANL 2000, 63370.1, p. 17).

During the 1995 RFI activities, a geophysical survey was conducted to estimate the volume of the disposal area (LANL 1995, 50294, p. 4-58). The survey found a roughly triangular surface area, with a wedge-shape grading from about 10 ft deep at the face to surface level landward edge. When the rough dimensions are found, a triangle 225 ft long × 50 ft wide yields a surface area of 11, 250 ft^2. If the depth were a uniform 10 ft, then the volume would be about 4000 yd^3. However, the shape tapers from the face to the opposite boundary, so it is probably no more than half this amount, or approximately 2000 yd^3 (LANL 1995, 50294, p. 4-60).

10.3.1.1 Land Use

Present and future land use is industrial at TA-15.

10.3.1.2 Relationship to Other SWMUs and AOCs

Four SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of SWMU 15-007(b) (Figure 10.0-1). These sites include a former firing site, surface disposal areas, and a septic tank.

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 10.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 10.0-1 and identified in the legend) is described in detail in other documents. One SWMU in the consolidated units is deferred. One AOC is not included in the Cañon de Valle Aggregate Area because it does not drain into Cañon de Valle.

Based upon review of the topography (Figure 10.0-1), none of the sites are at a higher elevation than SWMU 15-007(b); therefore, contaminants from the surrounding sites should not have an impact on this SWMU due to surface runoff.

10.3.1.3 Waste Inventory

At the time of the Phase I RFI in 1994 (LANL 1995, 50294, p. 4-58), waste materials observed at the site included concrete, steel reinforcing bars, and partially burned wood. Used sandbags filled with concrete were apparently used to form a retaining wall along one side of the landfill, and waste was placed behind this wall. The used sandbags were likely previously used as protective shielding during dynamic testing at the PHERMEX facility. Steel matting from the PHERMEX facility was also disposed of at MDA Z (LANL 1995, 50294, p. 4-58). Because the dynamic tests conducted at the PHERMEX facility involved the detonation of explosives related to test devices, all of the PHERMEX-related debris could be contaminated with residues from HE (e.g., HMX, RDX, TNT), various metals (e.g., beryllium, copper, lead, mercury, uranium), and radionuclides (DOE 1987, 08664, p. MDA Z-1). The waste materials disposed of at this site have not been covered with soil and are exposed to precipitation (LANL 1993, 20946, p. 9-7).

10.3.1.4 Historical Releases

No releases are documented from the site; however, the site is not capped so surface runoff and leaching of contaminants to the subsurface are possible. These releases could contain any of the wastes discussed in section 10.3.1.3.

10.3.1.5 Summary of Historical Investigations

Previous investigations at this site include an aerial radiological survey in 1982 that did not identify radiation above background (LANL 1995, 50294, p. 4-58). The 1987 CEARP field reconnaissance indicated the presence of uranium contamination (DOE 1987, 08664, p. MDA Z-1).

Sampling of the site, as part of a DOE environmental study in 1989, resulted in the detection of levels of metals above background (LANL 1993, 20946, p. 9-7). The 1989 CEARP sampling study (DOE 1989.15365, pp. 4.23-3–4.23-4) included samples from MDA Z for various metals. The metals barium, beryllium, cadmium, chromium, copper, lead, nickel, silver, and, zinc were analyzed (DOE 1989, 15365, p. 4.23-9). For some of the metals, elevated readings were obtained when compared with the overall background levels for the Laboratory in use at that time (DOE 1989, 15265, pp. 4.23-3—4.23-4). For example, five samples for beryllium had values ranging from 4.0 to 29.4 mg/kg while the average background level for the Laboratory at that time was 2.4 mg/kg (LANL 1995, 50294, p. 4-58). Excerpts from the 1989 CEARP report, as well as the associated analytical sampling results, are provided in Appendix E.

The ER Project conducted a Phase I RFI for SWMU 15-007(b) in 1994 to determine whether potential contaminants were present at concentrations above screening-action levels in surface and near-surface soils at the site and to determine their extent.

A list of the historical samples collected at MDA Z is shown in Table 10.3-1, and sampling locations are plotted in Figure 10.3-1. Seventeen surface and 12 subsurface soil samples were collected and analyzed for inorganic chemicals (10 surface and 6 subsurface, analyzed by both ChemVan and off-site laboratories), uranium (7 surface and 6 subsurface samples analyzed by off-site laboratory), radionuclides (6 surface and 12 subsurface analyzed in RADVan), SVOCs (7 surface and 6 subsurface analyzed by off-site laboratory), and VOCs (6 subsurface samples analyzed by off-site laboratory). The off-site analytical results are screening-level data because the data validation packages were not available. Also, both the CST ChemVan and CST RADVan results are screening-level data.

The frequency of detected inorganic chemicals, organic chemicals, and radionuclides is presented in Tables 10.3-2, 10.3-3, and 10.3-4, respectively.

Most of the samples collected were analyzed for inorganic chemicals in the ChemVan as well as being sent to an off-site laboratory for analyses. These historical inorganic sample results are summarized in Table 10.3-5 and plotted in Figure 10.3-2. The results of these analyses are summarized separately, below:

<u>Inorganic CST Offsite</u>: All of the antimony analyses had DLs greater than BV. Beryllium was detected greater than BV in four surface and one subsurface sample. Cadmium was detected greater than BV in one surface and one subsurface sample. In addition, six surface and five subsurface cadmium samples had DLs greater than BV. Calcium was detected greater than BV in six surface and two subsurface samples. Copper was detected greater than BV in seven surface and three subsurface samples. Lead was detected greater than BV in four surface and one subsurface samples. Mercury was detected in four surface and two subsurface samples greater than BV. One surface and one subsurface sample that had

DLs for mercury were also greater than BV. Silver was detected greater than BV in one subsurface sample, and one surface sample had a DL greater than BV. Uranium was detected greater than BV in seven surface and four subsurface samples.

Inorganic CST ChemVan: Antimony was detected in three surface and two subsurface samples greater than BV. In addition, the DL for antimony was greater than BV in four surface and four subsurface samples. Barium was detected greater than BVs in seven surface and five subsurface samples. Cadmium was detected greater than BV in one subsurface sample. The DL for cadmium was greater than BV in seven surface and five subsurface samples. Chromium was detected in six surface and five subsurface samples greater than BV. Copper was detected greater than BV in seven surface and four subsurface samples. Manganese was detected in one surface and one subsurface sample greater than BV. Lead was detected at concentrations greater than BV in six surface and four subsurface samples. Mercury was detected greater than BV in one subsurface sample. In addition, seven surface and five subsurface mercury samples had DLs greater than BV. Nickel was detected in one subsurface sample greater than BV. All of the selenium samples had DLs greater than BV. Thorium was detected in four surface and five subsurface samples. Titanium was detected in all of the samples. Uranium was detected greater than BV in six surface and five subsurface samples. One uranium surface and one subsurface sample had a DL greater than BV. Zinc was detected greater than BV in five surface and three subsurface samples.

The results of the two analytical procedures differed. Principal among these differences were the following.

- Beryllium, calcium, and silver were detected greater than BV in the CST Offsite analyses but not in the CST ChemVan analyses.
- Barium, chromium, manganese, selenium, and thorium were detected greater than BV in the CST ChemVan analyses but not in the CST Offsite analyses.
- The DL for mercury in the CST ChemVan is significantly higher than the DL for the CST Offsite analyses.
- Numerical agreement between the two analyses for samples from the same location and depth is inconsistent. For example, results for samples AAB3424, 3429, and 3444 are similar for uranium, but results for samples 3433 and 3442 differ by almost an order of magnitude.

Ten PAHs and two SVOCs were detected in the five surface and two subsurface samples collected (Table 10.3-6, Figure 10.3-3). The detected PAHs included the following (number of detects and depth in parentheses after the chemical name): anthracene (1 subsurface), benzo(a)anthracene (1 surface, 1 subsurface), benzo(a)pyrene (1 surface), benzo(b)fluoranthene (1 surface), benzo(g,h,i)perylene (1 surface), chrysene (1 surface, 1 subsurface), fluoranthene (3 surface, 1 subsurface), indeno(1,2,3-cd)pyrene (1 surface), phenanthrene (1 surface, 1 subsurface), and pyrene (3 surface and 1 subsurface), The two SVOCs detected were bis(2-ethyhexyl)phthalate (3 surface and 1 subsurface) and di-n-butylphthalate (1 surface).

One surface sample (AAB3533) had detectable levels of gross-gamma radiation greater than BV (Table 10.3-7, Figure 10.3-4).

10.3.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The

SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods for Screening-Level Data Samples

In 1994, 26 samples were collected from SWMU 15-007(b) and analyzed at off-site analytical laboratories. Data packages are currently not available for these samples to perform validation for these sample results. Therefore, the results for these 26 samples are screening-level data.

The Laboratory reported these sample results as detected values (not qualified), estimated values, or nondetected concentrations. No further Laboratory validation was performed.

Sample Collection and Analytical Methods for On-Site Screening-Level Data Samples

In 1994, samples were collected at SWMU 15-007(b) and screened at mobile laboratories. Eighteen samples were screened at the CST RADVan, and 13 samples were screened at the ChemVan. The sample results are screening-level data.

These sample results were reported as detected values (not qualified) or nondetected concentrations (U). No further Laboratory validation was performed.

10.4 Debris Disposal Area: SWMU 15-008(d)

SWMU 15-008(d) consists of building debris located south of building 15-22 (LANL 1993, 20946, p. 6-10) (Figure 10.0-1).

10.4.1 Site Description and Operational History

Building 15-22 is located on the west side of TA-15 in an area referred to as the Hollow (Figure 10.0-1). This building was originally constructed in the 1970s as a control center for an experimental accelerator in nearby building 15-203. This control center was never needed to operate the accelerator, and the building was used only for storage (LANL 1993, 20946, p. 6-10).

10.4.1.1 Land Use

Present and future land use is industrial at TA-15.

10.4.1.2 Relationship to Other SWMUs and AOCs

Four SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of SWMU 15-008(d) (Figure 10.0-1). These sites include a surface disposal area, former structures, outfalls, drains, dry well, septic tanks, and an industrial or sanitary wastewater treatment area.

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 10.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 10.0-1 and identified in the legend) are described in detail in other documents. One surrounding AOC included in the Cañon de Valle Aggregate Area was approved for NFA by EPA on January 21, 2005.

Based upon review of the topography (Figure 10.0-1), none of the sites are at a higher elevation than SWMU 15-008(d); therefore, contaminants from the surrounding sites should not have an impact on this SWMU due to surface runoff.

10.4.1.3 Waste Inventory

The nature and quantity of the building debris comprising this SWMU are unknown. The OU 1086 RFI work plan did indicate that activities involving hazardous materials were not conducted in building 15-22 and that the building debris was not present in 1992 when the work plan was prepared (LANL 1993, 20946, p. 6-10)

10.4.1.4 Historical Releases

No previous environmental investigations were identified for this site (LANL 1993, 20946, p. 6-10).

10.4.1.5 Summary of Historical Investigations

No samples have been collected from this SWMU.

10.4.2 Historical Data-Quality Interpretation

No samples have been collected from this SWMU.

10.5 The Hollow: Consolidated Unit 15-009(a)-00, SWMU 15-014(g), and AOCs C-15-007 and C-15-010

Consolidated Unit 15-009(a)-00 consists of SWMUs 15-009(a), 15-011(a,b,c), and 15-014(i,j,k), which include a septic tank, concrete trench drains, an unlined drainage channel, outfalls to Cañon de Valle, and a roof drain (Figure 10.0-1). The SWMUs in this consolidated unit are associated with liquid waste disposal from a set of buildings in the northwest corner of TA-15, which are known as the Hollow (LANL 1996, 54977, pp. 5-24, 5-28, 5-31, 5-35, 5-45).

SWMU 15-014(g) is a former outfall located east of the northeast corner of a laboratory building (building 15-203) (LANL 1993, 20946, p. 5-3) (Figure 10.0-1).

AOC C-15-007 is stained soil outside the west corner of a pulsed-power laboratory in building 15-194 (LANL 1993, 20946, p. 10-4) (Figure 10.0-1).

AOC C-15-010 is the former site of an underground fuel tank (structure 15-52) that was removed in 1989. This tank was located 15 ft south of the southeast corner of building 15-20 (LANL 1993, 20946, p. 10-8) (Figure 10.0-1).

All of the structures in the Hollow were removed by D&D in 2005 (Border Demolition and Environmental, Inc. 2005, 92461).

10.5.1 Site Description and Operational History

The Hollow was a series of buildings (buildings 15-20, 15-50, 15-194, and 15-203) connected by a common roof structure (LANL 1993, 20946, p. 10-2) that had been assembled over the years beginning in 1949 (15-20) (Figure 10.0-1). These buildings had various uses, including as assembly buildings (documentation of what was assembled was not available but the buildings were likely devices tested elsewhere at TA-15), laboratories, and shops (LANL 1993, 20946, p. 10-2). In the 1960s, building 15-194 had a vapor degreaser (solvent not specified but likely was a halogenated hydrocarbon like trichloroethene, tetrachloroethene, or 1,1,1-trichlorethane). The vapor degreaser was removed in 1987 (LANL 1993, 20946, p. 10-2). Building 15-194 also contained stripping tanks, which used sulfuric, chromic, and/or hydrochloric acids (LANL 1993, 20946, p. 10-2).

The Hollow received moderate to severe damage in the Cerro Grande fire, including several burned structures. Ground cover and canopy surrounding the site were extensively damaged (LANL 2000, 67370, p. 16).

SWMU 15-009(a) is an inactive septic tank (structure 15-51) that received sanitary wastes from a shop, laboratory (building 15-20), sink, and drinking fountain discharges from a shop building (building 15-50) (Figure 10.0-1). This reinforced-concrete septic tank was constructed in 1949 (LANL 1993, 20946, p. 5-3). The OU 1086 RFI work plan (LANL 1993, 20946, p. 5-3) says that there is no evidence of any hazardous materials being disposed of through this septic tank. The work plan also states that the tank was sampled for HE in 1981; none were found.

SWMU 15-011(a) consists of a group of concrete trench drains that formerly received discharges from a shop and laboratory building (building 15-20) during the early years of its operation (Figure 10.0-1). These discharges were reportedly routed to SWMU 15-011(a) through another trench drain [SWMU 15-014(k)] and two manholes (structures 15-150 and 15-151). The effluent from SWMU 15-011(a) was then discharged through a drainpipe to an outfall near the edge of Cañon de Valle [SWMU 15-011(c)]. One of the manholes (structure 15-150) was reportedly removed in the past, and the drainpipe to the outfall was plugged (LANL 1993, 20926, p. 10-2). The RFI work plan (LANL 1993, 20926, p. 10-2) did not identify the types of materials that might have been discharged to SWMU 15-011(a). The description and drawings in the RFI work plan, however, indicate that discharges from SWMU 15-011(a) went to the septic tank [SWMU 15-009(a)] through the remaining manhole (structure 15-151), rather than to the outfall [SWMU 15-011(c)]. No environmental investigations before the 1995 RFI have been performed at SWMU 15-011(a) (LANL 1993, 20946, p. 10-8)

SWMU 15-011(b) is an unlined drainage channel from a former pulsed power laboratory (building 15-194) that leads to an outfall at the edge of Cañon de Valle [SWMU 15-011(c)] (Figure 10.0-1). According to the 1990 SWMU report (LANL 1990, 07512, p. 15-011), a dry well (4 in. in diameter and 50 ft deep) was installed next to the canyon edge in 1978 to receive the effluent from building 15-194. The plans for this dry well (LASL 1978, 05526) indicated that it was approximately 80 ft from the southwest corner of building 15-194, directly north of the oil storage tank (Figure 10.0-1). A copy of these plans was titled "Acid Rinse Tank," indicating that the dry well was directly connected to a rinse tank associated with the acid tanks in this building (LASL 1978, 05526). The RFI work plan indicated that building 15-194 had a vapor degreaser and acid stripping tanks and that SWMU 15-011(b) may have received discharges containing solvents and acid solutions containing sulfuric, chromic, and/or hydrochloric acids (LANL 1993, 20946, p. 10-2). The vapor degreaser was reportedly removed from building 15-194 around 1987, and the source of discharges when the OU 1086 RFI work plan was written was limited to a sink (LANL 1993, 20946, p. 10-2). The 1990 SWMU report (LANL 1990, 07512, p. 15-011) indicates that the dry well is covered with soil and is difficult to locate. No environmental investigations before the 1995 RFI have been performed at this SWMU (LANL 1993, 20946, p. 10-82).

SWMU 15-011(c) is an outfall on the edge of Cañon de Valle where many of the drainages associated with discharges in the Hollow converge (Figure 10.0-1). These discharges include those from SWMUs 15-011(a,b) and 15-014(i,j,k). SWMU 15-011(c) is located west of and approximately 100 ft lower than the buildings in the Hollow. Materials that could have been discharged to this SWMU include acid residues from sulfuric, chromic, and hydrochloric acids; degreasing solvents; and inorganic chemicals. No environmental investigations before the 1995 RFI have been performed at this SWMU (LANL 1993, 20946, pp. 10-2–10-4).

SWMU 15-014(i) was a roof drain from a pulsed power laboratory (building 15-194) and the shelter between buildings 15-194 and 15-50 (Figure 10.0-1). The roof drain appeared to discharge to the ground surface at the northeast corner of building 15-194 and joins the surface drainage that flows to an outfall [SWMU 15-011(c)]. The RFI work plan did not identify specific materials expected to be present in roof-drain discharges. No environmental investigations before the 1995 RFI have been performed at this SWMU. (LANL 1993, 20946, pp. 10-2–10-4).

SWMU 15-014(j) consists of three outfalls from building 15-50 and an associated concrete trench drain (Figure 10.0-1). Based on the information presented in the RFI report (LANL 1996, 54977, pp. 5-25-5-39), it appears that these outfalls discharge to the ground surface north of building 15-50, and the concrete trench drain joins the surface drainage that flows to an outfall [SWMU 15-011(c)]. The trench drain is described as being partially asphalt just below the outfalls. The specific materials discharged to this SWMU were not described. Building 15-50 was a shop building that had been used to perform various activities associated with assembling experiments conducted at the TA-15 firing sites. No environmental investigations before the 1995 RFI have been performed at this SWMU (LANL 1993, 20946, pp. 10-2–10-4).

SWMU 15-014(k) is a trench drain that collected discharges from building 15-20 during the early years of its operation (Figure 10.0-1). These discharges were reportedly routed to two manholes (structures 15-150 and 15-151) and then to another trench drain [SWMU 15-011(a)]. The effluent from SWMU 15-011(a) was then discharged through a drainpipe to an outfall near the edge of Cañon de Valle, SWMU 15-011(c). One of the manholes (structure 15-150) was reportedly removed in the past (LANL 1993, 20946, p. 10-2), and the drainpipe to the outfall was plugged. The discharge from the remaining manhole (structure 15-151) was then routed to a septic tank [SWMU 15-009(a)]. The description and drawings in the RFI work plan, however, indicate that discharges from SWMU 15-014(k) went to the septic tank [SWMU 15-009(a)] through structure 15-151 rather than to SWMU 15-011(c) (LANL 1993, 20946, p. 10-8). No environmental investigations before the 1995 RFI have been performed at this SWMU (LANL 1993, 20946, p. 10-8).

SWMU 15-014(g) is a former outfall located east of the northeast corner of a laboratory building (building 15-203) that is one of the buildings in the Hollow (Figure 10.0-1). The RFI work plan reported that this outfall was used to discharge once-through cooling water from an air compressor located in building 15-203 (LANL 1993, 20946, p. 5-3). The 1990 SWMU report (LANL 1990, 07512, p. 15-014) indicated that this outfall received discharges from a pulsed-power laboratory (building 15-194) located near building 15-203. The outfall discharged to a ditch that is partially lined with asphalt and discharges to Cañon de Valle. The air compressor in building 15-203 reportedly was taken out of service and removed. The period of operation of this outfall is unknown. No hazardous materials are known to have discharged to this outfall. No environmental investigations before the 1995 RFI have been performed at this SWMU (LANL 1993, 20946, p. 5-3).

AOC C-15-007 is stained soil outside the west corner of a pulsed-power laboratory in one of the buildings (building 15-194) in the Hollow (Figure 10.0-1) (LANL 1993, 20946, p. 10-4). This soil staining was noted during an environmental restoration site reconnaissance visit in 1988. When the RFI work plan was prepared, this soil had been covered with a metal transportainer (structure 15-372). The stained soil is adjacent to an asphalt-paved parking area (LANL 1993, 20946, p. 10-4).

AOC C-15-010 is the former site of an underground fuel tank (structure 15-52) that was removed in 1989 (Figure 10.0-1). Structure 15-52 was used to store diesel fuel. This tank was located 15 ft south of the southeast corner of building 15-20. (LANL 1993, 20946, p. 10-8) The tank was approximately 15 ft to 20 ft long × 7 ft in diameter and held 4000 to 6000 gal. The top of the former tank was believed to have been 3 ft below ground surface.

10.5.1.1 Land Use

Present and future land use is industrial at TA-15.

10.5.1.2 Relationship to Other SWMUs and AOCs

Four SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft of Consolidated Unit 15-009(a)-00 and AOCs C-15-007 and C-15-010 (Figure 10.0-1). These sites include a surface disposal area, storage areas and a nonintentional release area.

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 10.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 10.0-1 and identified in the legend) is described in detail in other documents. Three surrounding AOCs included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005.

Based upon review of the topography (Figure 10.0-1), none of the sites are at a higher elevation than Consolidated Unit 15-009(a)-00 and AOCs C-15-007 and C-15-010; contaminants from the surrounding sites should not have any impacts on this consolidated unit and AOCs due to surface runoff.

10.5.1.3 Waste Inventory

The OU 1086 RFI work plan (LANL 1993, 20946, p. 5-3) states that the septic tank [SWMU 15-009(a)] was sampled for HE in 1981 (type of HE was not specified); none was found. No documentation is available that indicates a possible source for HE, other than the use of building 15-50 to assemble experiments for use at the TA-15 firing sites.

SWMU 15-011(a) is a group of concrete drains that received sanitary discharges from buildings 15-20 and 15-50 (LANL 1993, 20946). Building 15-50 was used to assemble experiments for testing at the TA-15 firing sites, but no details are available on the types of operations conducted in Building 15-20. The presence of HE in the effluents from building 15-50 is possible, although unlikely, because it appears the building was only used to assemble devices; no machining or casting of HE occurred in the building.

SWMU 15-011(b) is an unlined drainage channel that received liquids from an industrial line from building 15-194. Building 15-194 contained a vapor degreaser and stripping tanks (LANL 1993, 20946, p. 10-2). Based upon the operational description in the OU 1086 RFI work plan (LANL 1993, 20946, p. 10-2), this drainage channel likely received wastes from the vapor degreaser (likely halogenated hydrocarbon solvents) and acids (sulfuric, chromic, and hydrochloric) from the stripping tanks.

SWMU 15-011(c) is an outfall that likely received waste from SWMUs 15-011(a,b) and 15-014(i,j,k). SWMU 15-011(c) is located west of and approximately 100 ft lower than the buildings in the Hollow. Materials that could have been discharged to this SWMU included acid residues from sulfuric, chromic, and hydrochloric acids; degreasing solvents; and inorganic chemicals. The presence of HE in the effluents from building15-50 is possible, although unlikely, because it appears the building was only used to assemble devices; no machining or casting of HE occurred in the building.

SWMU 15-014(i) is a roof drain associated with building 15-194. No documented wastes are associated with this roof drain.

SWMU 15-014(j) consists of three outfalls and a trench drain associated with 15-50. No documented wastes are associated with this SWMU. The presence of HE in the effluents from building15-50 is possible, although unlikely, because it appears the building was only used to assemble devices; no machining or casting of HE occurred in the building.

SWMU 15-014(k) is a trench drain that served building 15-20. No documented wastes are associated with this SWMU.

SWMU 15-004(g) is an outfall for once-through cooling water for an air compressor in building 15-203. No documented wastes are associated with this outfall.

AOC C-15-007 is an area of stained soil adjacent to an asphalt parking lot. The nature and source of the stain are not documented.

AOC C-15-010 is the location of a former underground storage tank that held diesel fuel. Likely contaminants include petroleum hydrocarbons, VOCs, and SVOCs.

10.5.1.4 Historical Releases

Effluent-containing sanitary waste, vapor-degreasing solvents, acids (sulfuric, chromic, and hydrochloric), and possibly HE associated with SWMUs 15-009(a), 15-011(a,b), and 15-014(i,j,k) most likely discharged into Cañon de Valle.

The source of the material comprising the stained soil at AOC C-15-007 was not detailed in any of the available documents reviewed (LANL 1993, 20946; LANL 1996, 54977).

At AOC C-15-010, no leaks from the tank have been documented (LANL 1993, 20946; LANL 1996, 54977).

10.5.1.5 Summary of Historical Investigations

Field-screening samples were initially collected at SWMUs 15-011(c) and 15-014(j) during 1995 RFI activities (LANL 1996, 54977). Two surface and two subsurface samples from SWMU 15-011(c) and three surface and two subsurface samples from SWMU 15-014(j) were screened for lead and uranium (XRF) and for radionuclides (NaI detector). The field-screening results area provided in Appendix D. Additional samples were subsequently collected from the SWMUs and AOCs in the Hollow during RFI activities in 1995, 1996, and 1997 and submitted to an off-site laboratory for analyses (LANL 1996, 54977). All of the 1995 and 1996 samples are screening-level data because the samples were submitted to off-site analytical laboratories without going through the SMO. All of the 1997 samples are decision-level data. The historical samples collected are summarized in Table 10.5-1, and sampling locations are plotted in Figure 10.5-1. The samples collected are detailed below.

The following samples were collected during the 1995 and 1996 RFI activities.

- SWMU 15-009(a): 1 sludge sample; inorganic chemicals, uranium, isotopic uranium, gamma emitters, HE, SVOCs, and VOCs
- SWMU 15-011(b): 1 surface and 1 subsurface soil sample from a single location; both analyzed for inorganic chemicals, uranium, HE, and SVOCs. The subsurface sample was also analyzed for VOCs.

- SWMU 15-011(c): 2 surface 2 two subsurface soil samples from two locations; all 4 analyzed for inorganic chemicals, uranium, SVOCs. Two subsurface samples were also analyzed for VOCs.
- SWMU 15-014(g): 2 surface; inorganic chemicals, uranium, HE, and SVOCs
- SWMU 15-014(i): 1 surface and 1 subsurface soil sample from a single location; both analyzed for inorganic chemicals, uranium, HE, and SVOCs. The subsurface sample was also analyzed for VOCs.
- SWMU 15-014(j): 2 surface soil, 2 subsurface soil, and 1 sludge from three locations; all analyzed for inorganic chemicals, uranium, SVOCs. Two subsurface samples were also analyzed for VOCs.
- AOC C-15-010: 2 subsurface from two locations; inorganic chemicals, uranium, SVOCs, VOCs.

All data from the 1995 and 1996 RFI activities are screening-level data.

During the 1997 RFI activities, the following samples (all decision-level data) were collected.

- AOC C-15-007 (number of analyses in parentheses after the chemical name)
    - ♦ 2 surface soil : inorganic chemicals (1), SVOCs (2)
    - ♦ 2 surface fill: inorganic chemicals (2), SVOCs (2)
    - ♦ 3 subsurface soil :inorganic chemicals (2), SVOCs (3), VOCs (2)
    - ♦ 4 subsurface fill: inorganic chemicals (4), SVOCs (4), VOCs (4)
    - ♦ 5 tuff: inorganic chemicals (4), SVOCs (5), VOCs (4)
- At AOC C-15-010. 19 samples were collected from three boreholes (0–6.5 ft, location 15-02517; 0–55 ft, location 15-02518; 0–33 ft, location 15-02519) and submitted for the following analyses (number of analyses in parentheses).
    - ♦ 0–6.5 ft, location 15-02517: 1 surface fill, 2 tuff samples; SVOCs (2), total petroleum hydrocarbons (TPH)-diesel range organics (DRO) (3), VOCs (3);
    - ♦ 0–55 ft, location 15-02518: 1 surface soil, 8 tuff samples; SVOCs (9), TPH-DRO (9), VOCs (9);
    - ♦ 0–33 ft, location 15-02519: 1 surface fill, 1 subsurface fill, 5 tuff; SVOCs (7), TPH-DRO (7), VOCs (7).

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 10.5-2 and 10.5-3 respectively. The results of the RFI sampling are presented in Table 10.5-4 and Figure 10.5-2 for inorganic chemicals and Table 10.5-5 and Figure 10.5-3 for organic chemicals and are discussed below according to SWMU and AOC and analytical suite.

SWMU 15-009(a)

All data for SWMU 15-009(a) are screening-level data. The following inorganic chemicals were detected in the single sludge sample collected: aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, sodium, vanadium, and zinc.

The following organic chemicals were detected in the single sludge sample collected: acetone, bis(2-ethylhexyl)phthalate, 2-butanone, chlorobenzene, methylene chloride, phenol, and toluene.

SWMU 15-011(b)

All data for SWMU 15-011(b) are screening-level data. The following inorganic chemicals were detected greater than BV in soil (number of detects and depth in parentheses): cadmium (1 subsurface), Copper (1 surface, 1 subsurface), lead (1 surface, 1 subsurface), mercury (1 surface), silver (1 surface), uranium (1 surface, 1 subsurface), zinc (1 surface, 1 subsurface). The following inorganic chemicals had DLs greater than BVs (number of samples and depth in parentheses): antimony (1 surface, 1 subsurface), thallium (1 surface, 1 subsurface).

The following VOCs were detected in the one subsurface sample analyzed for VOCs: acetone, dichlorodifluoromethane, methylene chloride, tetrachloroethene, toluene, 1,1,1-trichloroethane, and trichloroethene.

SWMU 15-011(c)

All data for SWMU 15-011(c) are screening-level data. Mercury was detected in one subsurface soil sample, and the DLs for thallium in all four soil samples were greater than BVs. Uranium was detected greater than BVs in one surface soil sample.

Acetone was detected in both subsurface soil samples. Both methylene chloride and trifluorochloro-methane were detected in one subsurface soil sample.

SWMU 15-014(g)

All data for SWMU 15-014(g) are screening-level data. Copper, lead, mercury, uranium, and zinc were detected greater than BVs in the single surface soil sample collected. DLs for antimony, cadmium, silver, and thallium in the sample were greater than BVs.

The following PAHs and SVOCs were detected in the single surface soil sample collected: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, bis(2-ethylhexyl)phthalate, chrysene, hexachlorobutadiene, phenanthrene, and pyrene.

SWMU 15-014(i)

All data for SWMU 15-014(i) are screening-level data. The following inorganic chemicals were detected greater than BVs (number of detects and depth in parentheses): antimony (1 surface), cadmium (1 surface), copper (1 surface, 1 subsurface), lead (1 surface), silver (1 surface), uranium (1 surface, 1 subsurface). The DLs for antimony, silver, and thallium were greater than BVs in one subsurface sample.

Two VOCs, acetone and methylene chloride, were detected in one subsurface soil sample.

SWMU 15-014(j)

All data for SWMU 15-014(j) are screening-level data. The following inorganic chemicals had DLs greater than BVs in the soil samples (number of samples in parentheses after the chemical name): antimony (3) and thallium (4). The following inorganic chemicals were detected at concentrations greater than BVs or were detected in the single sludge sample (number of detects in parentheses after the chemical name): aluminum (1), arsenic (1), barium (1), beryllium ([1), cadmium (4), calcium (1), chromium (1), cobalt (1), copper (4), iron (1), lead (2), magnesium (1), manganese (1], mercury (2), nickel (1), potassium (1), silver (1), sodium (1), uranium (5), vanadium (1), and zinc (4).

The following organic chemicals were detected in both subsurface samples (number of detects in parentheses after the chemical name): acetone, methylene chloride, and trichloroethene. In sample 0215-95-0142, the following organic chemicals were detected: benzene, bromodichloromethane, carbon tetrachloride, 1,4-dichlorobenzene, 1,1-dichloropropene, ethylbenzene, fluorene, isopropylbenzene, tetrachloroethene, toluene, total xylene, and 1,2-xylene. In sample 0215-95-0146, the following organic chemicals were detected: cis1,2-dichloroethene and 1,1,1-trichloroethane.

AOC C-15-007

All data for AOC C-15-007 are decision-level data.

The following inorganic chemicals (Table 10.5-4, Figure 10.5-2) were detected greater than BVs (number of detects greater than BVs in parentheses after the chemical name).

- Surface soil/fill: copper (5), lead (3), uranium (5), and zinc (5). DLs for the following analytes were greater than BVs (number of samples with DLs greater than BVs in parentheses after the chemical name): antimony (5), cadmium (5), mercury (5), and silver (5).
- Subsurface soil/fill: cadmium (1), copper (4), lead (3), uranium (4), and zinc (4). DLs for the following analytes were greater than BVs (number of samples with DLs greater than BVs in parentheses after the chemical name): antimony (4), cadmium(3), mercury (4), and silver (4).
- Tuff: copper (2), lead (3), and uranium (1). DLs for the following analytes were greater than BVs (number of samples with DLs greater than BVs in parentheses after the chemical name): antimony (4), mercury (4), selenium (4), and silver (4).

The following organic chemicals (Table 10.5-5, Figure 10.5-3) were detected (number of detects in parentheses after the chemical name).

- Surface soil/fill: acenaphthene (1), anthracene (1), benzo(a)anthracene (3), benzo(a)pyrene (3), benzo(b)fluoranthene (3), benzo(g,h,i)perylene (1), benzo(k)fluoranthene (3), carbazole (1), chrysene (3), dibenz(a,h)anthracene (1), dibenzofuran (1),fluoranthene (3), fluorene (1), indeno(1,2,3-cd)pyrene (1), 2-methylnaphthalene (1), naphthalene (1), phenanthrene (3), and pyrene (3)
- Subsurface soil/fill: acenaphthene (1), anthracene (1), benzo(a)anthracene (2), benzo(a)pyrene (3), benzo(b)fluoranthene (3), benzo(g,h,i)perylene (1), benzo(k)fluoranthene (2), bis(2-ethylhexyl)phthalate (1), chrysene (2), dibenz(a,h)anthracene (1),fluoranthene (3), fluorene (1), indeno(1,2,3-cd)pyrene (2), phenanthrene (2), and pyrene (2)
- Tuff: benzo(a)anthracene (2), benzo(a)pyrene (2), benzo(b)fluoranthene (2), benzo(g,h,i)perylene (1), benzo(k)fluoranthene (2), bis(2-ethylhexyl)phthalate (2), chrysene (2), fluoranthene (4), indeno(1,2,3-cd)pyrene (1), phenanthrene (4), pyrene (4), and tetrachloroethene (1)

AOC C-15-010

Data for AOC C-15-010 include both screening- and decision-level data. The only two samples collected and analyzed for inorganic chemicals were two subsurface soil samples collected in 1995 (AN95 screening-level data). Cadmium, copper, lead, and zinc were detected greater than BVs in one sample. Uranium was detected greater than BV in both samples. The DLs for antimony and thallium were greater than BVs in one sample.

Detected Organic Chemical Screening-Level Data

The following organic chemicals were detected in one screening-level data sample: benzo(a)anthracene, dibenz(a,h)anthracene, dibenzofuran, 2-methylnaphthalene, and trichloroethene. The following organic chemicals were detected in both screening-level data samples: acenaphthene, acetone, anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, chrysene, hexachlorobutadiene, 2-hexanone, indeno(1,2,3-cd)pyrene, methylene chloride, naphthalene, phenanthrene, and pyrene.

Detected Organic Chemical Decision-Level Data

The following organic chemicals (Table 10.5-5, Figure 10.5-3) were detected (number of detects in parentheses after the chemical name).

- Surface soil/fill: acenaphthene (1), anthracene (1), benzo(a)anthracene (3), benzo(a)pyrene (3), benzo(b)fluoranthene (2), benzo(g,h,i)perylene (1), chrysene (3), fluoranthene (3), indeno(1,2,3-cd)pyrene (1), methylene chloride (3), naphthalene (2), phenanthrene (3), pyrene (3), toluene (1), and TPH-DRO chemicals (3)
- Subsurface soil/fill: benzo(a)anthracene (1), benzo(a)pyrene (2), benzo(b)fluoranthene (2), chrysene (1), fluoranthene (1), methylene chloride (1), phenanthrene (1), pyrene (1), and toluene (1)
- Tuff: acenaphthene (1), anthracene (2), benzo(a)anthracene (2), benzo(a)pyrene (2), benzo(b)fluoranthene (2), benzo(g,h,i)perylene (1), 2-butanone (1), n-butylbenzene (10), sec-butylbenzene (8), carbazole (1), 2-chlorotoluene (1), chrysene (2), dibenzofuran (3), cis-1,2-dichloroethene (4), ethylbenzene (8), fluoranthene (2), fluorene (3), hexachlorobutadiene (1), 2-hexanone (1), indeno(1,2,3-cd)pyrene (1), isopropylbenzene (7), 4-isopropyltoluene (8), methylene chloride (15), 2-methylnaphthalene (10), naphthalene (12), phenanthrene (4), 1-propylbenzene (7), pyrene (2), tetrachloroethene (3), toluene (8), TPH diesel range organic chemicals (15), 1,2,3-trichlorobenzene (1), 1,2,4-trichlorobenzene (1), 1,1,1-trichloroethane (4), trichloroethene (6), 1,2,4-trimethylbenzene (10), 1,3,5-trimethylbenzene (9), xylene (total) (1), 1,2-xylene (5), and 1,3-xylene+1,4-xylene (5)

10.5.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods for Decision-Level Data Samples

A total of 35 samples were collected at AOCs C-15-007 and C-15-010 in 1997 and sent to off-site analytical laboratories for analyses. For AOC C-15-007, 16 samples were collected in 1997 from soil (5 samples), fill (7 samples), and tuff (5 samples). For AOC C-15-010, 19 samples were collected in 1997 from soil (1 sample) fill (3 samples), and tuff (15 samples).

Inorganic Chemicals

In AOC C-15-007, three barium results were reported as estimated and potentially biased high (J+) because the analyte recovery was above 150% in the associated spike sample. Antimony, mercury, and selenium were reported as not detected (UJ) in some samples because the analyte recovery was below the lower acceptance level but greater than 30% in the associated spike sample.

Organic Chemicals

In AOC C-15-007, two samples had multiple results for VOCs reported as not detected (UJ) because the associated internal standard area counts are less than 50% but greater than 10% recovery of the previous continuing calibration.

In AOC C-15-010, 12 samples had multiple nondetected SVOC results rejected (R) because at least one sample surrogate recovery was less than 10% recovery. In AOC C-15-010, one result for naphthalene was reported as estimated (J) because the associated internal standard area counts are less than 50% but greater than 200% recovery of the previous continuing calibration. Eleven samples had multiple SVOC results that were reported as estimated and potentially biased low (J-) because at least two sample surrogate recoveries in the same fraction were less than the lower acceptance limit. One methylene chloride result was reported as estimated and potentially biased high (J+) because the sample surrogate recovery was greater than the upper acceptance limit. Eight acetone results were reported as not detected (U) because the results were less than 10 times the amount in the method. One sample had eight VOC results reported as not detected (UJ) because the associated internal standard area counts are less than 50% but greater than 10% recovery of the previous continuing calibration. One phenanthrene result was reported as not detected (UJ) because at least two surrogate recoveries in the same fraction were less than the lower acceptance limit but greater than 10% recovery.

Sample Collection and Analytical Methods for Screening-Level Data Samples

In 1995, 14 samples were collected from Consolidated Unit 15-009(a)-00 and were shipped directly to off-site analytical laboratories from the field: one sample from SWMU 15-009(a), two samples from SWMU 15-014(g), two samples from AOC C-15-010, four samples from SWMU 15-011(c), and five samples from SWMU 15-014(j). In 1996, two samples collected from SWMU 15-011(b) and two samples collected from SWMU 15-014(i) were also shipped directly to off-site analytical laboratories from the field. All of the results for these 18 samples are screening-level data.

These sample results were reported by the Laboratory as detected values (not qualified), estimated values (J), or nondetected concentrations (U). No further Laboratory validation was performed.

10.6 Septic Systems: Consolidated Unit 15-009(f)-00 and SWMU 15-009(i)

Consolidated Unit 15-009(f)-00 consists of SWMUs 15-009(f,k), which are inactive septic tanks in the 15-183 area on the west side of TA-15 (Figure 10.0-1). SWMU 15-009(f) is a septic tank (structure 15-195) located approximately 75 ft northwest of a laboratory and office building (building 15-183). SWMU 15-009(k) is a septic tank (structure 15-423) located approximately 250 ft north of radiographic support laboratory (building 15-313).

SWMU 15-009(i) is an active septic tank at the location of inactive Firing Site G on the southwest side of TA-15 (LANL 1993, 20946, pp. 8-18, 8-20) (Figure 10.0-1).

10.6.1 Site Description and Operational History

SWMU 15-009(f, a septic tank (structure 15-195), was originally constructed as a 1280-gal. tank, distribution box and leach field in 1961 to receive sanitary waste from building 15-183 (LANL 1990, 07512, p. 15-009) (Figure 10.0-1). In 1976, the system was upgraded to a 4000-gal. tank and seepage pit (LANL 1990, 07512, p. 15-009) that was 4 ft in diameter and 50 ft deep (LANL 1993, 20946, p. 10-18).

The septic tank associated with SWMU 15-009(k), structure 15-423, has a 1000-gal. capacity and empties to a leach field (LANL 1990, 07512, p. 15-009) (Figure 10.0-1). It was constructed of reinforced concrete at an unknown date to receive sanitary waste from building 15-313 (LANL 1990, 07512, p. 15-009).

SWMU 15-009(i), a septic tank (structure 15-284) was constructed in 1979 at the location of inactive Firing Site G on the southwest side of TA-15 (Figure 10.0-1). This septic tank has a 750-gal. capacity and is constructed of reinforced concrete. The septic tank receives sanitary waste from building 15-233. The tank overflows to a drainline (LANL 1990, 07512, p. 15-009). At the time of the 1995 RFI, this septic tank was active, and sampling was deferred until decommissioning (LANL 1996, 54977, p. 5-1). Previous environmental investigations at Firing Site G have not been directed at SWMU 15-009(i) specifically (LANL 1990, 07512, p. 15-009).

10.6.1.1 Land Use

Present and future land use is industrial at TA-15.

10.6.1.2 Relationship to Other SWMUs and AOCs

Twelve SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of Consolidated Unit 15-009(f)-00 and SWMU 15-009(i) (counting six SWMUs in three consolidated units), including surface disposal areas, inactive firing sites, material disposal area (landfill, septic systems and outfalls).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 10.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area, (shown in Figure 10.0-1 and identified in the legend) is described in detail in other documents. Two surrounding AOCs included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005. One of the surrounding consolidated units in the Cañon de Valle Aggregate Area is deferred. Four of the surrounding SWMUs and AOCs are not included in the Cañon de Valle Aggregate Area because they do not drain into Cañon de Valle.

Based upon review of the topography (Figure 10.0-1), none of the sites are at a higher elevation than consolidated unit 15-009(f)-00 and SWMU 15-009(i); therefore, contaminants from the surrounding sites should not have any impacts on this consolidated unit and SWMU due to surface runoff.

10.6.1.3 Waste Inventory

SWMUs 15-009(f,k,i) received sanitary waste from buildings 15-183, 15-313, and 15-233, respectively (LANL 1993, 20946, p. 10-18, Table 10.2-5).

10.6.1.4 Historical Releases

Based on the RFI work plan, the discharge from SWMU 15-009(f) originally went to a leach field, but in 1976 the tank was expanded and the overflow diverted to a 4-ft-diameter × 50-ft-deep sump (LANL 1993, 20946, p. 10-18).

SWMU 15-009(k) overflows to a leach field (LANL 1990, 07512, p. 15-009). No releases were noted in the documents reviewed.

SWMU 15-009(i) overflows to a drainline (LANL 1990, 07512, p. 15-009). No documentation was available about where the drainline daylights.

10.6.1.5 Summary of Historical Investigations

A single sludge sample was collected from each of the two septic tanks in Consolidated Unit 15-009(f)-00 (Table 10.6-1, Figure 10.6-1) during RFI activities in 1995 (LANL 1996, 54977, p. 5-65, 6-69). The collected samples were both sludge samples. All of the samples were submitted to an off-site analytical laboratory for analysis but were not processed through the SMO. The 1995 data results are screening-level data (AN95). All of the samples were analyzed for inorganic chemicals, uranium, HE, SVOCs, and VOCs. The sample from SWMU 15-009(f) was also analyzed for inorganic chemicals. In 1996, a single sludge sample was collected from SMWU 15-009(k) and analyzed for inorganic chemicals; no other analyses were conducted on this sample. No samples were collected from SWMU 15-009(i).

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 10.6-2 and 10.6-3, respectively.

The results of the RFI sampling are presented in Table 10.6-4 and Figure 10.6-2 for inorganic chemicals and Table 10.6-5 and Figure 10.6-3 for organic chemicals and are discussed below according to SWMU and analytical suite.

SWMU 15-009(f)

Aluminum, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, sodium, uranium, vanadium, and zinc were detected in sludge.

Methylene chloride was the only organic chemical detected in sludge.

SWMU 15-009(k)

Aluminum, arsenic, barium, beryllium, calcium, cobalt, iron, magnesium, manganese, mercury, nickel, potassium, sodium, uranium, vanadium, and zinc were detected in sludge.

Methylene chloride was the only organic chemical detected in sludge.

10.6.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods for Screening-Level Data Samples

In 1995, two samples collected from Consolidated Unit 15-009(f)-00 and one sample collected from SWMU 15-009(i) were shipped directly to analytical laboratories from the field. In 1996, one more sample from Consolidated Unit 15-009(f)-00 was also shipped directly to analytical laboratories from the field. The results for these four samples are screening-level data.

These sample results were reported by the Laboratory as detected values (not qualified), estimated values (J), or nondetected concentrations (U). No further Laboratory validation was performed.

10.7 Outfalls, Buildings 15-183: Consolidated Unit 15-014(a)-00

Consolidated Unit 15-014(a)-00 consists of SWMUs 15-014(a,b), which are outfalls associated with a laboratory and office building (building 15-183) located in the southwest corner of TA-15 (LANL 1993, 20946, p. 10-14) (Figure 10.0-1).

10.7.1 Site Description and Operational History

SWMU 15-014(a) is an outfall that was used for discharges from various drains in building 15-183 (Figure 10.0-1). This outfall has been used since 1961. Before the outfall was permitted by the EPA, waste discharged to this SWMU included photographic waste (silver, cyanide, organic chemicals). The drain associated with this outfall was reportedly replaced in 1987 with a new drain installed at the same location, which had the same path as the old drain. Photographic wastes were not discharged to this outfall after it was added to the NPDES permit (EPA 06A123). This outfall is located approximately 130 ft from the edge of Cañon de Valle. Discharges from the outfall follow a surface drainage to the canyon, and the location of the drainage is marked by increased vegetation. (LANL 1993, 20946, p. 10-14) This outfall was removed from the NPDES permit on January 14, 1998. No previous investigations have been conducted at this SWMU, other than the routine monitoring required by the NPDES permit. This monitoring included sampling and analysis for pH and silver and also included analysis for cyanide before August 1994.

SWMU 15-014(b) consists of two separate outfalls from drains in building 15-183 (Figure 10.0-1). Drains discharging to these outfalls include 13 floor drains, 5 sinks, and a water fountain. Effluents from a photographic laboratory [same as SWMU 15-014(a)] may have also emptied to this outfall. Consequently, the same materials (silver, cyanide, organic chemicals) are also of concern at this SWMU (LANL 1993, 20946, p. 10-14). The dates when this SWMU was used are unknown. The two outfalls are located west of building 15-183. Discharges from the two outfalls follow surface drainages that join to create a single drainage approximately 130 ft from the edge of Cañon de Valle. This drainage then carries the combined flow of the two outfalls to the canyon. (LANL 1993, 20946, p. 10-14)

10.7.1.1 Land Use

Present and future land use is industrial at TA-15.

10.7.1.2 Relationship to Other SWMUs and AOCs

Ten SWMUs and AOCs (hereafter, "sites") are within approximately 750 ft of Consolidated Unit 15-014(a)-00 (counting six SWMUs in three consolidated units), including surface disposal areas, inactive firing sites, septic systems and outfalls.

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 10.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 10.0-1 and identified in the legend) is described in detail in other documents. Two surrounding AOCs included in the Cañon de Valle Aggregate Area were approved for NFA by EPA on January 21, 2005. Three of the surrounding SWMUs and consolidated units are not included in the Cañon de Valle Aggregate Area because they do not drain into Cañon de Valle.

Based upon review of the topography (Figure 10.0-1), none of the sites are at a higher elevation than consolidated unit 15-014(a)-00l; therefore, contaminants from the surrounding sites should not have an impact on this consolidated unit due to surface runoff.

10.7.1.3 Waste Inventory

SWMUs 15-014(a,b) are outfalls associated with past discharges of photographic wastes. Silver, cyanide, and organic chemicals are potential wastes at these locations (LANL 1993, 20496, p. 10-14).

10.7.1.4 Historical Releases

SWMU 15-014(a) is an outfall that is used for discharges from various drains in building 15-183. This outfall has been in use since 1961. Originally, discharges to this SWMU included photographic waste (silver, cyanide, organic chemicals) (LANL 1993, 20496, p. 10-14).

Discharges from the two outfalls comprising SWMU 15-014(b) follow surface drainages that join to create a single drainage approximately 130 ft from the edge of Cañon de Valle. This drainage then carries the combined flow of the two outfalls to the canyon (LANL 1993, 20496, p. 10-14).

The extent of releases to these SWMUs is unknown (LANL 1990, 07512, p. 15-014).

10.7.1.5 Summary of Historical Investigations

During 1995 RFI activities, four surface and three subsurface samples from SWMU 15-014(a) (LANL 1996, 54977, p. 5-54) and nine surface and six subsurface samples from SWMU 15-014(b) (LANL 1996, 54977, p. 5-58) were field screened for lead and uranium (XRF) and for radionuclides (NaI detector). Results are presented in Appendix D. HE spots test were performed at all locations before intrusive sampling. All results were negative (LANL 1996, 54977, pp. 5-54, 5-58). Based upon the field screening, four surface and three subsurface soil samples were collected from SWMU 15-014(a), and six surface and six subsurface soil samples were collected from SWMU 15-014(b) (Figure 10.7-1). All of the samples were submitted to an off-site analytical laboratory for analyses but were not processed through the SMO, and the results are screening-level data (AN95). The samples were all analyzed for inorganic chemicals and SVOCs, but only the subsurface samples were analyzed for VOCs (Table 10.7-1, Figure 10.7-1).

The frequency of detected inorganic chemicals and organic chemicals is presented in Tables 10.7-2 and 10.7-3, respectively.

The results of the RFI sampling are presented in Table 10.7-4 and Figure 10.7-2 for inorganic chemicals and Table 10.7-5 and Figure 10.7-3 for organic chemicals and are discussed below according to SWMU and analytical suite.

SWMU 15-014(a)

Copper and nickel were detected greater than BV in one surface soil sample. Silver was detected greater than BV in two surface and three subsurface soil samples.

The only organic chemicals detected were VOCs in the three subsurface soil samples (number of detects in parentheses after the chemical name): acetone (2), 1,3-dichlorobenzene (1), methylene chloride (2), toluene (1), xylene (total [2]).

SWMU 15-014(b)

DLs for antimony were greater than BV in two subsurface soil samples. Cadmium was detected greater than BVs in three surface samples and one subsurface soil sample. Copper in one surface soil sample was detected greater than BV. The DLs for thallium in all of the samples were greater than BVs. Zinc was detected greater than BVs in three surface soil samples.

The following organic chemicals were detected in surface and subsurface soil samples (number of detects and media in parentheses after the chemical name): acenaphthene (2 surface), acetone (6 subsurface), anthracene (2 surface), benzo(a)pyrene (4 surface, 1 subsurface), benzo(b)fluoranthene (5 surface, 1 subsurface), 2-butanone (1 subsurface), chrysene (3 surface, 1 subsurface), dibenz(a,h)anthracene (1 surface), dibenzofuran (1 surface), fluoranthene (5 surface, 1 subsurface), fluorene (1 surface), indeno(1,2,3-cd)pyrene (4 surface), methylene chloride (1 subsurface), naphthalene (1 surface), phenanthrene (5 surface, 1 subsurface), and pyrene (5 surface, 1 subsurface).

10.7.2 Historical Data-Quality Interpretation

Analytical data were reviewed and evaluated based on EPA National Functional Guidelines for inorganic and organic chemical data review, where applicable (EPA 1999, 66649; EPA 1994, 48639). A focused data validation was also performed for each data package (also referred to as request numbers). The SOPs used for data validation are listed in Table 1.2-1. As a result of the data validation and assessment efforts, qualifiers are assigned to the analytical records as appropriate. With the exception of rejected data, all of the data are useable and of good quality.

Sample Collection and Analytical Methods for Screening-Level Data Samples

In 1995, 19 samples were collected from Consolidated Unit 15-014(a)-00 and shipped directly to off-site analytical laboratories from the field. The results for these 19 samples are screening-level data.

These sample results were reported by the Laboratory as detected values (not qualified), estimated values (J), or nondetected concentrations (U). No further Laboratory validation was performed.

11.0 SUBAGGREGATE 10, TA-16-340 COMPLEX

The TA-16-340 Complex is located near the eastern end of the TA-16 mesa near the head of a small canyon known as Fishladder Canyon (Figure 11.0-1). The TA-16-340 Complex operated from 1952 to 1999 and processed large quantities of HE for the production of plastic-bonded explosives (LANL 2006, 91450, p. 2). The 340 Complex suffered minor to moderate damage as a result of the 2000 Cerro Grande fire (LANL 2000, 67370, p. 25). All of the structures in the 340 Complex were removed by D&D between October 2004 and April 2005 (LANL 2006, 91450, p. V)

The key units to be addressed in this subaggregate are the sump and outfall SWMU 16-030(a) associated with chemical storage building 16-344 and potentially contaminated soil, AOC C-16-075, located adjacent to building 16-340.

11.1 Chemical Storage Outfall: SWMU 16-030(a)

11.1.1 Site Description and Operational History

Building 16-344 was built in 1951 and is located in the southeast corner of P-Site (Figure 10.0-1). In the 1950s, P-Site (historic TA-13) was decommissioned and incorporated into TA-16. SWMU 16-030(a) is the outfall from a former chemical storage building (building 16-344) in the southeast corner of P-Site. The SWMU 16-030(a) site is located on the eastern side of the main HE processing area at TA-16, the sumps discharge to outfalls that in turn discharge to the south on a steep slope. This building had three 5 ft × 2 ft cement drain troughs projecting from the south wall into a grassy, semicircular, bermed area 45 ft in diameter. The building was divided into two rooms, and the floors were slightly sloped toward the troughs to receive floor drainage. Two troughs drained from the west room, and one trough drained the east room. The bermed pit could contain drainage from the two westernmost troughs (draining the west room) (Figure 10.0-1). The drainage from the easternmost trough (draining the east room) did not flow into the pit but drained into a grassy area within the southern portion of the SWMU boundary (LANL 1995, 57225, pp. 5-28-2, 5-28-5).

11.1.1.1 Land Use

Present and future land use is industrial at TA-16.

11.1.1.2 Relationship to Other SWMUs and AOCs

Nineteen SWMUs and AOCs (hereafter, “sites”) are within approximately 750 ft of SWMU 16-030(a) (counting 13 SWMUs and 1 AOC in 4 consolidated units), including inactive firing sites, container storage: rest houses, landfills, inactive septic systems, wastewater treatment plants; buildings, sumps, drainlines, and outfalls, and generation areas (Figure 9.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 11.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 9.0-1 and identified in the legend) is described in detail in other documents. Two surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory’s HWFP on December 23, 1998. One surrounding SWMU included in the Cañon de Valle Aggregate Area has been proposed for NFA and is pending. Two SWMUs are included in other investigations.

Based upon review of the topography (Figure 11.0-1), none of the sites are at a higher elevation than SWMU 16-030(a); therefore, surface runoff of contaminants from the surrounding sites should not have an impact on SWMU 16-030(a).

11.1.1.3 Waste Inventory

No detailed waste inventory exists for the TA-16-340 Complex (LANL 1993, 20948, pp. 5-42–5-49). The most useful historical information on the chemical usage in the TA-16-340 Complex is the 1971 GMX Group chemical inventory for TA-16 (LANL 1993, 20948, Table 5-18), which noted that 700 lb of acetone, 500 lb of ammonium sulfate, 330 lb of n-butyl-acetate, 3 lb of chloroform, 55 lb of 1,2-dichloroethane, 11 lb of ethyl acetate, 72 lb of isopropyl alcohol, 110 lb of methanol, 72 lb of methylene chloride, 750 lb of butanone[2-] and 110 lb of toluene had been used at building 16-340 between November 1970 and April 1971 (LANL 1993, 20948, p. 5-49). This inventory showed that the quantities of solvents used at building 16-340 were the largest at TA-16 (LANL 2004, 87345, p. 71). These chemicals would have been stored in building 16-344.

11.1.1.4 Historical Releases

Potential release to the outfall were the inorganic chemicals and organic chemicals stored in the building.

11.1.1.5 Summary of Historical Investigations

No previous investigations have been conducted at this SWMU.

11.1.2 Historical Data-Quality Interpretation

No samples have been collected from this SWMU.

11.2 Organic Chemical Spill: AOC C-16-075

11.2.1 Site Description and Operational History

AOC C-16-075 is a spill location near an HE-synthesis building (building 16-340) (Figure 10.0-1). This AOC was identified on January 30, 1997, during the excavation of a 15 ft × 15 ft × 2 ft concrete pad adjacent to the covered walkway of building 16-340. Organic vapors (fuel-oil odor) were detected during the excavation. The soil was sampled for VOCs. Hydrocarbons were detected in the samples collected, consistent with a kerosene or light diesel oil. This area is considered to be the site of a one-time spill. The excavated area was backfilled with the original soil.

11.2.1.1 Land Use

Present and future land use is industrial at TA-16.

11.2.1.2 Relationship to Other SWMUs and AOCs

Thirty-two SWMUs and AOCs (hereafter, “sites”) are within approximately ft of AOC C-16-075 750 (counting 13 SWMUs and 2 AOCs in 4 consolidated units), including inactive firing sites, container storage (rest houses), landfills, inactive septic systems, wastewater treatment facility, buildings, sumps, drainlines, and outfalls, and generation areas (Figure 11.0-1).

Those surrounding sites that are included in the Cañon de Valle Aggregate Area (shown in Figure 11.0-1) are described elsewhere in this document. Each of the surrounding sites not included in the Cañon de Valle Aggregate Area (shown in Figure 9.0-1 and identified in the legend) is described in detail in other documents. Two surrounding SWMUs included in the Cañon de Valle Aggregate Area were removed from Module VIII of the Laboratory's HWFP on December 23, 1998. One surrounding SWMU included in the Cañon de Valle Aggregate Area has been proposed for NFA and is pending. Two SWMUs are included in other investigations.

Based upon review of the topography (Figure 11.0-1), none of the sites are at a higher elevation than AOC C-16-075, therefore, surface runoff of contaminants from the surrounding sites should have no impact.

11.2.1.3 Waste Inventory

No documented waste inventories are associated with AOC C-16-075

11.2.1.4 Historical Releases

Organic vapors (fuel-oil odor) were detected during the 1997 excavation of the concrete pad.

11.2.1.5 Summary of Historical Investigations

The C-16-075 area is considered to be the site of a one-time spill. No investigation data are available for AOC C-16-075.

11.2.2 Historical Data-Quality Interpretation

No samples have been collected from this AOC.

12.0 SUMMARY

The following paragraphs briefly summarize each subaggregate discussed in this HIR.

Subaggregate 1, TA-16-220 Complex, consists of one consolidated unit (comprises two SWMUs), four SWMUs, and one AOC. Sixty-eight surface and subsurface decision-level data samples were collected from 37 locations in 1995 and 2000. A flood control interim action at SWMU 16-020 in 2000 resulted in the removal of 200 yds^3 of contaminated soil.

Subaggregate 2, MDA R, consists of one SWMU. Eighty-four surface and subsurface samples (79 decision and 5 screening) were collected from 54 locations within the landfill, drainage areas, and upgradient locations in 1995–2000 and 2002. In June 2000, approximately 1500 yds^3 of contaminated soil and debris was removed as part of emergency response efforts associated with the May 2000 Cerro Grande fire.

Subaggregate 3, TA-16 Burning Ground, comprises one consolidated unit (containing seven SWMUs), one SWMU, and three AOCs. Sixty-nine surface and subsurface samples (67 decision and 2 screening) were collected from 48 locations in 1995–1997 in the consolidated unit and single SWMU. No samples have been collected from the three AOCs. All structures in this subaggregate were removed by D&D in 2003, but no soil removals or other remedial activities have been conducted.

Subaggregate 4, TA-16 Administrative Area, consists of one consolidated unit (comprises 1 SWMU and 1 AOC), 4 SWMUs, and 19 AOCs. Nine surface and subsurface samples (six decision and three screening) were collected from nine locations in 1995, 1997, and 1998 at two of the SWMUs and one

AOC. Most of the structures in the Administrative Area have been removed by burning or D&D. A VCA was performed at one SWMU in 1995. No other soil removals or remedial activities have been conducted.

Subaggregate 5, T-Site, consists of 3 consolidated units (comprises 23 SWMUs and one AOC), 4 SWMUs, and 5 AOCs. A total of 20 decision-level data surface samples were collected from 20 locations within 1 consolidated unit and 3 AOCs. All surface structures at the site were removed by burning in 1960, but no soil removal or remedial activities have been conducted.

Subaggregate 6, WWII GMX-3 Site, consists of 2 consolidated units (comprises 13 SWMUs and 2 AOC), 4 SWMUs, and 2 AOCs. Fifty-four surface and subsurface samples (46 decision and 8 screening) were collected in 1995–1998 from 41 locations in the 2 consolidated units, 1 SWMU, and 1 AOC. Most of the surface structures at the site were removed by burning in 1960, and most subsurface structures such as sumps were removed in the late 1960s. A VCA was conducted in 1996 at one SWMU and one AOC within one of the consolidated units.

Subaggregate 7, TA-16-280/260 Complex, consists of two consolidated units (comprises three SWMUs and one AOC), four SWMUs, and four AOCs. Thirty-three surface and subsurface decision-level data samples were collected in 1995 from one of the consolidated units and two of the SWMUs. No soil removals or remedial activities have been conducted in Subaggregate 7.

Subaggregate 8, TA-14 Firing Sites, consists of two consolidated units (comprises 8 SWMUs and 2 AOCs), 2 SWMUs, and 14 AOCs. Seventy-six surface and subsurface samples (17 decision and 59 screening) were collected from 69 locations from the 2 consolidated units and 2 of the AOCs in 1995 and 1997. A VCA was conducted at three SWMUs and one AOC in 1996 to remove contaminated sand in a target tube and some surrounding soil.

Subaggregate 9, TA-15 West, consists of 4 consolidated units (comprises 13 SWMUs), 5 SWMUs, and three AOCs. In 1994, 1995, and 1997, 100 surface and subsurface samples (35 decision and 65 screening) were collected from 55 locations. In addition, in 1994, 15 samples from 8 locations were analyzed in the CST RADVan, and 13 samples from 10 locations were analyzed in the CST ChemVan. In 2005, all of the buildings in one portion of TA-15 West, the Hollow, were removed by D&D. No soil removals or other remedial activities have been conducted.

Subaggregate 10, TA-16-340 Complex, consists of one SMWU and one AOC. No samples have been collected from the two sites in this subaggregate.

13.0 REFERENCES AND MAP DATA SOURCES

13.1 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 (the Directorate's) Record Processing Facility and are used to locate the document at the Records Processing Facility and, where applicable, in the Directorate's master reference set.

Copies of the master reference set are maintained at the New Mexico Environment Department's Hazardous Waste Bureau; the U.S. Department of Energy–Los Alamos Site Office; the 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.

Blackwell, C.D., November 17, 1983. “Structures Removed from TA-16,” Los Alamos National Laboratory memorandum to A.J. Ahlquist (HSE-8) from C.D. Blackwell (HSE-1), Los Alamos, New Mexico. (Blackwell 1983, 05823.5)

Border Demolition and Environmental, Inc., January 2005. “Closing Documents, Los Alamos TA-15 “Hollow Complex Demolition Project, Los Alamos, NM,” report prepared for Los Alamos National Laboratory, by Border Demolition and Environmental, Inc., El Paso, Texas. (Border Demolition and Environmental, Inc., 2005, 92461)

Brenner, D., May 17, 2006. “Operations at Bullet Test Facility,” personal communication between K. Uher (DX) and D. Brenner (Neptune and Company, Inc.), Los Alamos, New Mexico. (Brenner 2006, 92459)

Brooks, M.L., February 11, 1970. “S-Site Demolition and Restoration Projects to Remove Potential Explosives Hazards,” Los Alamos Scientific Laboratory memorandum to L.P. Reinig from M.L. Brooks, Los Alamos, New Mexico. (Brooks 1970, 05785)

Buckland, C., July 10, 1967. “Radioactive Contamination Survey: S-Site Structures, TA-16,” Los Alamos Scientific Laboratory memorandum to S.E. Russo (ENG-3) from C. Buckland (H-1), Los Alamos, New Mexico. (Buckland 1967, 05342)

Buckland, C., March 4, 1970. “Contamination Survey: Buildings and Structures, TA-16,” Los Alamos Scientific Laboratory memorandum to S.E. Russo (ENG-3) from C. Buckland (H-1), Los Alamos, New Mexico. (Buckland 1970, 05788.2)

DOE (U.S. Department of Energy), October 1987. ”Comprehensive Environmental Assessment and Response Program Phase I: Installation Assessment, Los Alamos National Laboratory, Volume 1 of 2 Draft,” U.S. Department of Energy report, Albuquerque, New Mexico. (DOE 1987, 08663)

DOE (U.S. Department of Energy), October 1987. ”Comprehensive Environmental Assessment and Response Program Phase I: Installation Assessment, Los Alamos National Laboratory, Volume 2 of 2 Draft,” U.S. Department of Energy report, Albuquerque, New Mexico. (DOE 1987, 08664)

DOE (U.S. Department of Energy), November 1989. “Los Alamos National Laboratory Sampling and Analysis Data Document, Vol. 1,” U.S. Department of Energy report EGG-ES-8204, Washington, D.C. (DOE 1989, 15364)

DOE (U.S. Department of Energy), November 1989. “Los Alamos National Laboratory Sampling and Analysis Data Document, Vol. I-A,” U.S. Department of Energy report EGG-ES-8204, Washington, D.C. (DOE 1989, 15365)

EPA (U.S. Environmental Protection Agency), February 1994. “USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review,” U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response (EPA-540/R-94-013), Washington, D.C. (EPA 1994, 48639)

EPA (U.S. Environmental Protection Agency), October 1999. “USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review,” U.S. Environmental Protection Agency, Office of Emergency and Remedial Response (OSWER 9240.1-05A-P, PB99-963506, EPA540/R-99/008), Washington, D.C. (EPA 1999, 66649)

ICF Kaiser, 1995. "Field Summary Report for Field Activities at TA-16, FY 1995," report prepared for Los Alamos National Laboratory by ICF Kaiser, Los Alamos, New Mexico. (ICF Kaiser 1995, 91135)

IT Corporation (International Technology Corporation), November 1986. "Interim Status Closure and Post-Closure Care Plan, Tech Area 16 Surface Impoundment, Los Alamos National Laboratory, Los Alamos, New Mexico," plan prepared for Los Alamos National Laboratory, Los Alamos, New Mexico. (IT Corporation 1986, 91447)

IT Corporation (International Technology Corporation), October 2001. "Summary of Fiscal Year 2000 and 2001 Field Activities at TA-16, OU 1082, PRS 16-020, Silver Outfall, report prepared for Los Alamos National Laboratory, Los Alamos, New Mexico. (IT Corporation 2001, 85511)

Kelley, E.K., December 23, 1998. "Approval: Class III Permit Modification to Remove Ninety-nine Solid Waste Management Units from the Department of Energy/Los Alamos National Laboratory RCRA Permit NM 0890010515," New Mexico Environment Department memorandum to T. Taylor (Director, DOE-LAAO) and J.C. Browne (Director, LANL) from E.K. Kelley (Director, Water and Waste Management Division), Santa Fe, New Mexico. (Kelley 1998, 63042)

Kieling, J.E., September 6, 2005. "Los Alamos National Laboratory Closure Certification Report, Technical Area 16, TA-16-401 and TA-16-406 Sand Filters, Interim Status Container Storage Unit, Revision 0.0," New Mexico Environment Department letter to E. Wilmot (Manager LASO) and R.W. Kuckuck (Director, LANL) from J.E. Kieling (Manager, Permits Management Program), Santa Fe, New Mexico. (Kieling 2005, 92226)

King, L.F., January 21, 2005. "EPA's Prior Decisions on SWMU/AOC Sites at Los Alamos National Laboratory (LANL)," U.S. Environmental Protection Agency letter to J.P. Bearzi (Chief, NMED Hazardous Waste Bureau) from L.F. King (Chief, Federal Facility Section, Region 6), EPA Region 6, Dallas, Texas. (King 2005, 88464)

LANL (Los Alamos National Laboratory), October 1990. "Solid Waste Management Units Report, Los Alamos National Laboratory Revised November 1990 Vol. II of IV (TA-1 through TA-25)," Los Alamos National Laboratory document LA-UR-90-3400 Rev., Los Alamos, New Mexico. (LANL 1990, 07512)

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1082," Los Alamos National Laboratory document LA-UR-93-1196, Los Alamos, New Mexico. (LANL 1993, 20948)

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1086," Los Alamos National Laboratory document LA-UR-92-3968, Los Alamos, New Mexico. (LANL 1993, 20946.1)

LANL (Los Alamos National Laboratory), July 19, 1993. "Proposed Schedule of TA-49 Requirements for Remainder of Calendar 1961," Los Alamos National Laboratory memorandum to J. Bolton from R.W. Newman (J-6), Los Alamos, New Mexico (LANL 1993, 38409)

LANL (Los Alamos National Laboratory), May 1994. "RFI Work Plan for Operable Unit 1085, Final Draft," Los Alamos National Laboratory document LA-UR-94-1033, Los Alamos, New Mexico. (LANL 1994, 34755.1)

LANL (Los Alamos National Laboratory), July 1994. "RFI Work Plan for Operable Unit 1082, Addendum I, Final Draft," Los Alamos National Laboratory document LA-UR-94-1580, Los Alamos, New Mexico. (LANL 1994, 39440.1)

LANL (Los Alamos National Laboratory), October 31, 1994. "Notice of Deficiency (NOD) Response for Operable Unit (OU) 1085 Resource Conservation and Recovery Act Facility Investigation (RFI) Work Plan, Work Breakdown Structure Number 1.4.2.6.1.8.1.2," Los Alamos National Laboratory letter to J. Vozella (DOE) from Jorg Jansen (EM-ER), Los Alamos, New Mexico. (LANL 1994 43545.1)

LANL (Los Alamos National Laboratory), July 1995, "RFI Work Plan for Operable Unit 1082, Addendum 2," Los Alamos National Laboratory document LA-UR-95-1038, Los Alamos, New Mexico. (LANL1994, 57225.)

LANL (Los Alamos National Laboratory), July 1995. "Statement of Work—Analytical Support, Revision 2," RFP No. 9-XS1-Q4257, Los Alamos, New Mexico. (LANL 1995, 49738)

LANL (Los Alamos National Laboratory), November 1995. "RFI Report for Field Unit 2 (OU 1086), Potential Release Sites 15-004(b,c), 15-004(a,d), 15-004(f), 15-007(b), 15-008(a,b), 15-012(b), 15-009(e,j), C-15-004," Los Alamos National Laboratory document LA-UR-95-3738, Los Alamos, New Mexico. (LANL 1995, 50294.4)

LANL (Los Alamos National Laboratory), January 1996. "Voluntary Corrective Action Completion Report for Potential Release Site 16-016(b), Former Surface Disposal Area, Field Unit 3, Revision 1," Los Alamos National Laboratory document LA-UR-96-189, Los Alamos, New Mexico. (LANL 1996, 54326)

LANL (Los Alamos National Laboratory), February 1996. "RFI Report for Potential Release Sites at TA-14 and TA-12/67 (located in former Operable Unit 1085), Field Unit 2," Los Alamos National Laboratory document LA-UR-96-511, Los Alamos, New Mexico. (LANL 1996, 54086)

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, 54609.4)

LANL (Los Alamos National Laboratory), April 1996. "Voluntary Corrective Action Plan for Potential Release Site 14-001(f), Bullet Test Facility, Field Unit 2," Los Alamos National Laboratory document LA-UR-96-1017, Los Alamos, New Mexico. (LANL 1996, 53825.3)

LANL (Los Alamos National Laboratory), May 1996. "RFI Report for Potential Release Sites at TA-15, 15-001, 15-002, 15-004(g,h), 15-005(b,c), 15-006(c,d), 15-007(a), 15-008(c,g), 15-009(a,f,i,k), 15-010(a-c), 15-011(a-c), 15-012(a), 15-014(a,b,d,e,g-l), C-15-001, C-15-005, C-15-006, C-15-007, C-15-010, and C-15-011 (located in former Operable Unit 1086), Field Unit 2," Los Alamos National Laboratory document LA-UR-95-1685, Los Alamos, New Mexico. (LANL 1996, 54977.3)

LANL (Los Alamos National Laboratory), September 1996. "Voluntary Corrective Action Completion Report for Potential Release Site 14-001(f), Bullet Test Facility, Field Unit 2," Los Alamos National Laboratory document LA-UR-96-3317, Los Alamos, New Mexico. (LANL 1996, 55049.2)

LANL (Los Alamos National Laboratory), September 1996. "Voluntary Corrective Action Completion Report for Potential Release Sites at TA-16, 90s Line, 16-026(M-P), 16-029(k,l,q,s,t,u), C-16-064, C-16-067, Field Unit 3," Los Alamos National Laboratory document LA-UR-96-3285, Los Alamos, New Mexico. (LANL 1994, 62537.1)

LANL (Los Alamos National Laboratory), May 1997. "Voluntary Corrective Action Plan for Potential Release Sites 14-002(A) Firing Site 14-010 Sump Field Unit 2 May 1997," Los Alamos National Laboratory document LA-UR-97-1527, Los Alamos, New Mexico. (LANL 1997, 55678.2)

LANL (Los Alamos National Laboratory), September 1997. "Addendum RFI Report for Potential Release Sites C-15-001, Soil Pile, C-15-007, Stained Soil," Los Alamos National Laboratory document, LA-UR-97-3881, Los Alamos, New Mexico. (LANL 1997, 56917.4)

LANL (Los Alamos National Laboratory), September 1997. "RFI Report for Potential Release Sites at TA-16, 11-012(a,b), 13-013(a), 16-006(c,d), 16-010(a), 16-021(a), 16-026(c,d,v), 16-028(a), 16-030(g), Field Unit 3," Los Alamos National Laboratory document LA-UR-97-3072, Los Alamos, New Mexico. (LANL 1997, 62539.1)

LANL (Los Alamos National Laboratory), September 1997. "RFI Report for Potential Release Sites at TA-16, 16-024(c,d,f,g,k,m,o,p–s), 16-025(b2,d,g,h,j,k,m–o,y), 16-034(c–f,l,m), C-16-005, C-16-017, Field Unit 3," Los Alamos National Laboratory document LA-UR-97-3770, Los Alamos, New Mexico. (LANL 1997, 56660.289)

LANL (Los Alamos National Laboratory), September 1997. "Voluntary Corrective Action Completion Report for Potential Release Sites 14-002(A) Firing Site 14-010 Sump Field Unit 2, September 1997," Los Alamos, New Mexico. (LANL 1997, 56611.2)

LANL (Los Alamos National Laboratory), September 1998. "Decommissioning Completion Report for High-Explosive Facilities at Technical Area 16 (Buildings 27, 10, 13, and 63)," Los Alamos, New Mexico. (LANL 1998, 59602.4)

LANL (Los Alamos National Laboratory), September 1998. "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory," (draft), Los Alamos National Laboratory document LA-UR-98-4847, Los Alamos, New Mexico. (LANL 1998, 59730.2)

LANL (Los Alamos National Laboratory), September 1998. "Replacement Chapter 6 for RFI Work Plan for OU 1082, Addendum 2," enclosure to Los Alamos National Laboratory letter to T. Taylor (U.S. DOE-LAAO) from J.A. Canepa (EM-ER) EM/ER:98-317, Los Alamos, New Mexico. (LANL 1998, 59685)

LANL (Los Alamos National Laboratory), November 1999. "Closure Plan for the TA-16-394 Burn Tray," Los Alamos National Laboratory document LA-UR-99-6216, Los Alamos, New Mexico. (LANL 1999, 65311.2)

LANL (Los Alamos National Laboratory), December 2000. "University of California Los Alamos National Laboratory (LANL), I8980SOW0-8S Statement of Work for Analytical Laboratories," SOW Revision 1, Los Alamos, New Mexico. (LANL 2000, 71233)

LANL (Los Alamos National Laboratory), June 2001. "Los Alamos National Laboratory Permit Modification Request, No Further Action Proposals, Volume I," Los Alamos National Laboratory document LA-UR-01-2793, Los Alamos, New Mexico. (LANL 2001, 71096.4)

LANL (Los Alamos National Laboratory), July 21, 2000. "Status of Activities at Material Disposal Area R," Los Alamos National Laboratory letter (ER2000-0351) to J. Kieling (NMED-HWB) from J. Canepa (ER Project Program Manager) and T. Taylor (DOE-LAAO Program Manager), Los Alamos, New Mexico. (LANL 2000, 67089.1)

LANL (Los Alamos National Laboratory), August 7, 2000. "Cerro Grande Fire Aftermath: Environmental Restoration Project Activities to Reduce the Migration of Contamination from Potential Release Sites," Los Alamos National Laboratory document LA-UR-00-3767, Los Alamos, New Mexico. (LANL 2000, 67370)

LANL (Los Alamos National Laboratory), December 5, 2000. “Investigation of MDA-R at TA-16 in September 2000,” MDA-R at TA-16, Los Alamos, New Mexico. (LANL 2000, 91137.168)

LANL (Los Alamos National Laboratory), January 2001. “Project Completion Report for the Accelerated Action at TA-16 MDA R (PRS 16-019),” Los Alamos National Laboratory document LA-UR-01-522, Los Alamos, New Mexico. (LANL 2000, 69971.2)

LANL (Los Alamos National Laboratory), September 27, 2001. “Cerro Grande Fire: One Year after—An Update on ER Activities to Reduce the Potential Movement of Contamination at Potential Release Sites,” Los Alamos National Laboratory document LA-UR-01-4122, Los Alamos, New Mexico. (LANL 2001, 71342.1)

LANL (Los Alamos National Laboratory), May 2003. "Response to April 28, 2003, Notice of Deficiency, Technical Area 16 Closure Plan for the TA-16-401 and -406 Sand Filters, Revision 0.0," Los Alamos National Laboratory document LA-UR-03-3471, Los Alamos, New Mexico. (LANL 2003, 91448)

LANL (Los Alamos National Laboratory), August 2003. "TA-16-390 Basket Wash Facility Demolition Completion Report," FWO-Solid Waste Operations document number REPORT-DD-018, R.0.1, Los Alamos, New Mexico. (LANL 2003, 91865)

LANL (Los Alamos National Laboratory), November 2003. "Corrective Measures Study Report for Solid Waste Management Unit 16-021(c)-99," Los Alamos National Laboratory document LA-UR-03-7627, Los Alamos, New Mexico. (LANL 2003, 85531)

LANL (Los Alamos National Laboratory), March 2004. “Investigation Work Plan for the TA-16-340 Complex, Solid Waste Management Units 13-003(a)-99, 16-003(n)-99, 16-003(o),16-026(j2), and 16-029(f) at Technical Area 16,” Los Alamos National Laboratory document LA-UR-04-1466, Los Alamos, New Mexico. (LANL 2004, 87345.2)

LANL (Los Alamos National Laboratory), March 2005. “Investigation Work Plan for Consolidated Solid Waste Management Units 16-007(a)-99 (30s Line) and 16-008(a)-99 (90s Line) at Technical Area 16,” Los Alamos National Laboratory document LA-UR-05-1694, Los Alamos, New Mexico. (LANL 2005, 89331.4)

LANL (Los Alamos National Laboratory), August 2005. Material Disposal Area P Site Closure Certification Report, Revision 1, Volume 1 of 2, Los Alamos National Laboratory document LA-UR-05-6536, Los Alamos, New Mexico. (LANL 2005, 92251)

LANL (Los Alamos National Laboratory), January 2006. “Accelerated Corrective Action Work Plan for Area of Concern 16-024(v) and Solid Waste Management Units 16-026(r) and 16-031(f) at Technical Area 16,” Los Alamos National Laboratory document LA-UR-05-3979, Los Alamos, New Mexico. (LANL 2006, 92087)

LANL (Los Alamos National Laboratory), January 2006. “Investigation Report for the TA-16-340 Complex [Consolidated Units 13-003(a)-99 and 16-003(n)-99 and Solid Waste Management Units 16-003(o), 16 026(j2), and 16-029(f)],” Los Alamos National Laboratory document LA-UR-06-0153, Los Alamos, New Mexico. (LANL 2006, 91450)

LANL (Los Alamos National Laboratory), February 10, 2006. “Summary of TA-15 Site Visit—Search for SWMU 15-004(j),” Site Reconnaissance Performed for Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2006, 91692)

LANL (Los Alamos National Laboratory), September 2006. "Investigation Work Plan for the Cañon de Valle Aggregate Area," Los Alamos National Laboratory document LA-UR-06-4960, Los Alamos, New Mexico (LANL 2006, 91698)

LASL (Los Alamos Scientific Laboratory), June 16, 1978. "EPA Task Force Support, Building R-194, TA-15, ES 4114," Los Alamos National Laboratory memorandum to M.L. McCorkle (H-7) from T. Roybal (ENG-2), Los Alamos, New Mexico. (LASL 1978, 05526)

Martin, B., November 17, 1993. "Early S-Site History, Lee Hilton Interview," Los Alamos National Laboratory memorandum CST-6-ER/BM-93-060 from B. Martin (CST-6), Los Alamos, New Mexico. (Martin 1993, 52964.268)

Martin, B., and D. Hickmott, September 27, 1994. "Early S-Site History, Lee Hilton Interview, 16-000549" Los Alamos National Laboratory memorandum CST-ER/BM-94-08 from B. Martin and D. Hickmott, Los Alamos, New Mexico. (Martin and Hickmott 1994, 52964.594)

Miller, E., June 3, 1994. "Uses Given to Building at S-Site Held by Zia during 40s and 50s, 16-000552," Los Alamos National Laboratory memorandum CST-ER/BM-94-13 to OU 1082 File (CST-6) from E. Miller (CST-6), Los Alamos, New Mexico. (Miller 1994, 52964.598)

NMED (New Mexico Environment Department), May 2, 2001. "Approval of Class III Permit Modification to Remove Thirty (30) Solid Waste Management Units from the Department of Energy/Los Alamos National Laboratory RCRA Permit, NM 0990010515," New Mexico Environment Department letter to D.A. Gurule (Area Manager, LAAO) and J.C. Browne (Director, LANL), from G.J. Lewis (Director, NMED Water and Waste Management), Santa Fe, New Mexico. (NMED 2001, 70010)

NMED (New Mexico Environment Department), March 20, 2006. "Approval, Accelerated Corrective Action Work Plan for Area of Concern 16-024(v) and Solid Waste Management Units 16-026(r) and 16-031(f) at Technical Area 16," New Mexico Environment Department letter to D. Gregory (Federal Project Director, DOE-LASO) and D. McInroy (Deputy Project Director, LANL) from J. Bearzi (Chief, Hazardous Waste Bureau), Santa Fe, New Mexico. (NMED 2006, 91832).

Paige, K.S., July 5, 1994. "Discussion with Pete Velarde Regarding Removal of Underground Storage Tank 16-000563," Los Alamos National Laboratory memorandum CST-ER-KSP-020 from K.S. Paige, Los Alamos, New Mexico. (Paige 1994, 52964.607)

Russo, S.E., February 26, 1970. "Contamination Survey: Buildings and Structures, TA-16," Los Alamos Scientific Laboratory memorandum from S.E. Russo (Engineering Department), Los Alamos, New Mexico. (Russo 1970, 05786.2)

USAF (U.S. Air Force), November 22, 1958. "TA-9 and TA-6 Aerial Photographs," Los Alamos National Laboratory Environmental Programs Records Processing Facility, Los Alamos, New Mexico. (USAF 1958, 15855)

Watanabe, S., July 1994. "HE Spot Test at TA-16-222 and TA-16-360 16-000569," Los Alamos National Laboratory, New Mexico. (Watanabe 1994, 52964.653)

Young, J., October 10, 2001. "Approval of Class III Permit Modification," New Mexico Environment Department letter to Concerned Citizens from J. Young (Corrective Action Project Leader, Permits Management Program), Santa Fe, New Mexico. (Young 2001, 70236)

13.2 Map Data Sources

Data sources for all figures are provided below, unless otherwise indicated on the figures themselves.

Department of Energy Boundary and Technical Area Boundaries: Los Alamos National Laboratory, Site and Project Planning (PM-1), 02 January 2003, Development edition of 07 September 2004.

ER Location ID Points: Los Alamos National Laboratory, ENV Environmental Remediation and Surveillance Program; 1:2,500 Scale Data; 10 November 2005.

Gage Stations: Los Alamos National Laboratory, Water Quality and Hydrology Group; 19 October 2004.

Hypsography, 10, 20, and 100 -Foot Contour Intervals: Los Alamos National Laboratory, RRES Remediation Services Project; 1991.

Material Disposal Areas: Los Alamos National Laboratory, ENV Environmental Remediation and Surveillance Program, ER2004-0221; 1:2,500 Scale Data; 23 April 2004.

Outfalls: Los Alamos National Laboratory, ENV Environmental Remediation and Surveillance Program; 1:2,500 Scale Data; 05 January 2005.

Paved and Dirt Road Arcs, Existing and Former Structures, Security and Industrial Fences and Gates, Water and Gas Lines: Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating, and Mapping Section; 06 January 2004; Development Edition of 05 January 2005.

Potential Release Sites: Los Alamos National Laboratory, ENV Environmental Remediation and Surveillance Program, ER2005-0748; 1:2,500 Scale Data; 22 November 2005.

SMA Samplers: Los Alamos National Laboratory, Water Quality and Hydrology Group; 24 June 2005.

Springs: Los Alamos National Laboratory, ENV Environmental Stewardship Division in cooperation with the New Mexico Environment Department, Department of Energy Oversight Bureau, ER2005-0495; 1:2,500 Scale Data; 18 July 2005.

Subaggregate Boundaries: Shaw Environmental, 01 March 2006.

Watershed Boundary: Remediation Services Project, Los Alamos National Laboratory; 21 January 2003; Development Edition of 24 May 2004.

Wells: Water Quality and Hydrology Group at Los Alamos National Laboratory, Remediation Services Project at Los Alamos National Laboratory, and Hydrology, Geochemistry, and Geology Group (EES-6); Development edition of 04 November 2004.

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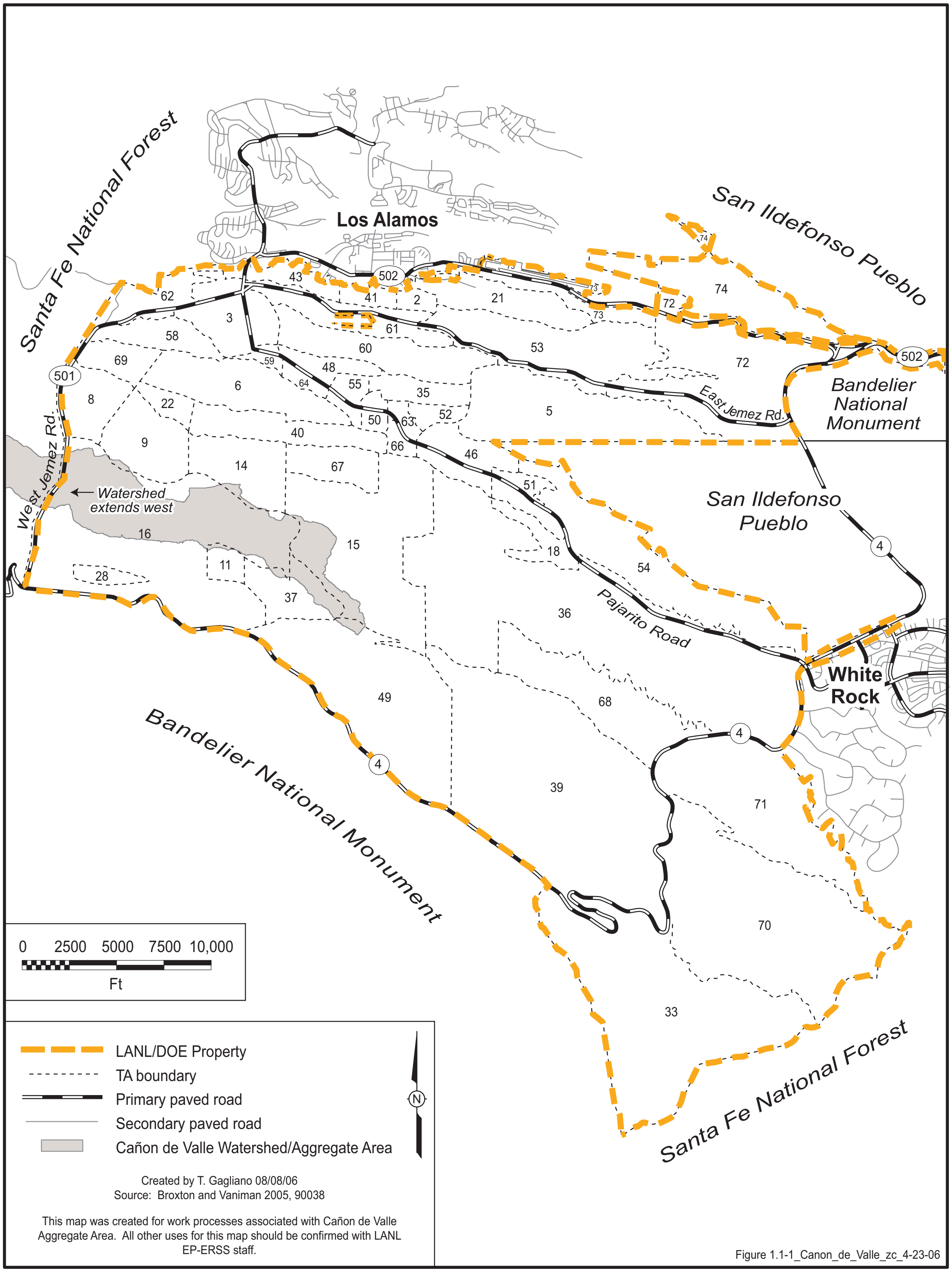

Figure 1.1-1. Location of Cañon de Valle Watershed and Aggregate Area with respect to the Laboratory TAs and surrounding land holdings

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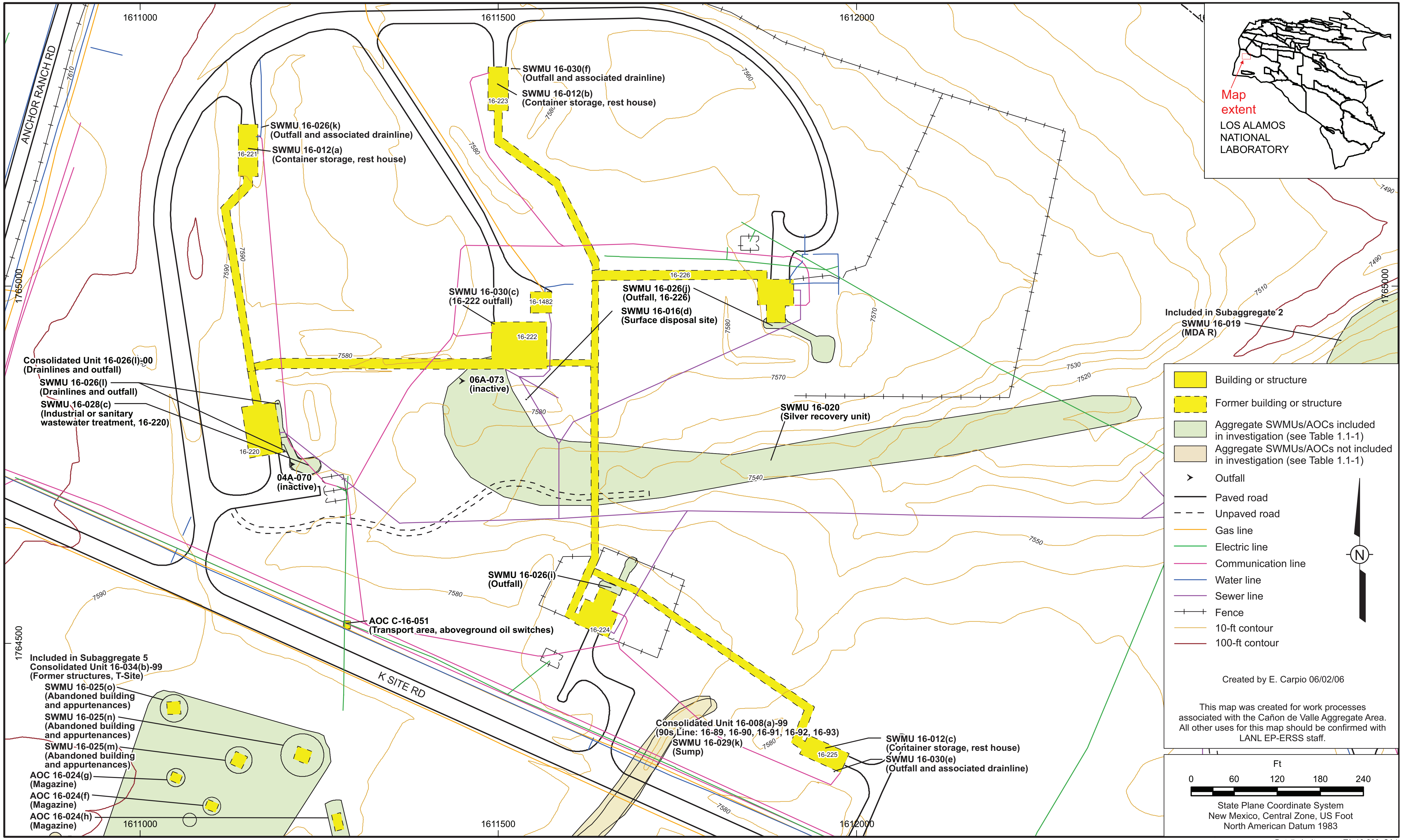


Figure 2.0-1. Detailed site map of Subaggregate 1 (TA-16-220 Complex), surrounding SWMUs and AOCs, and subsurface utility corridors

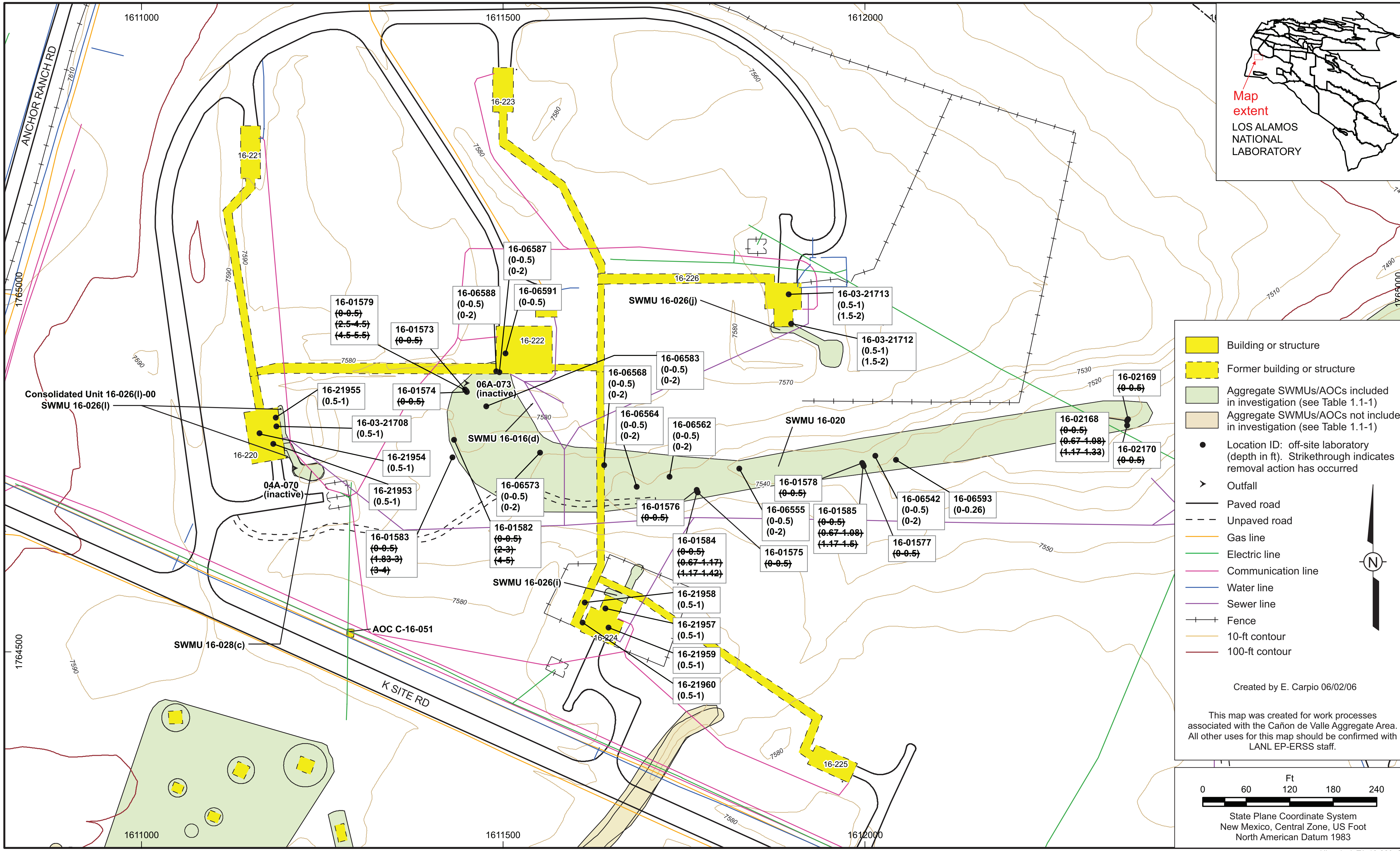


Figure 2.1-1. Subaggregate 1 (TA-16-220 Complex) historical sampling locations and depths

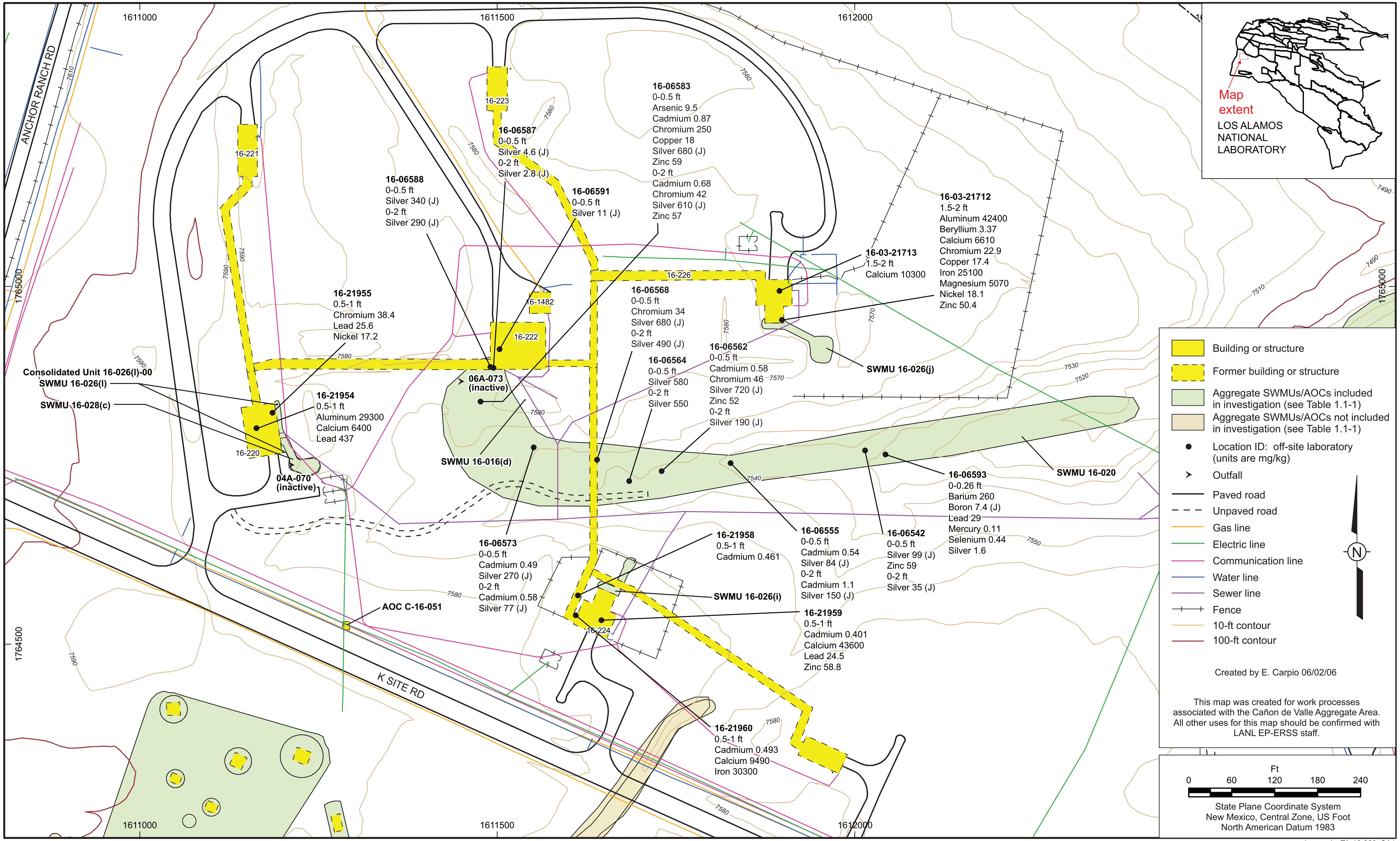
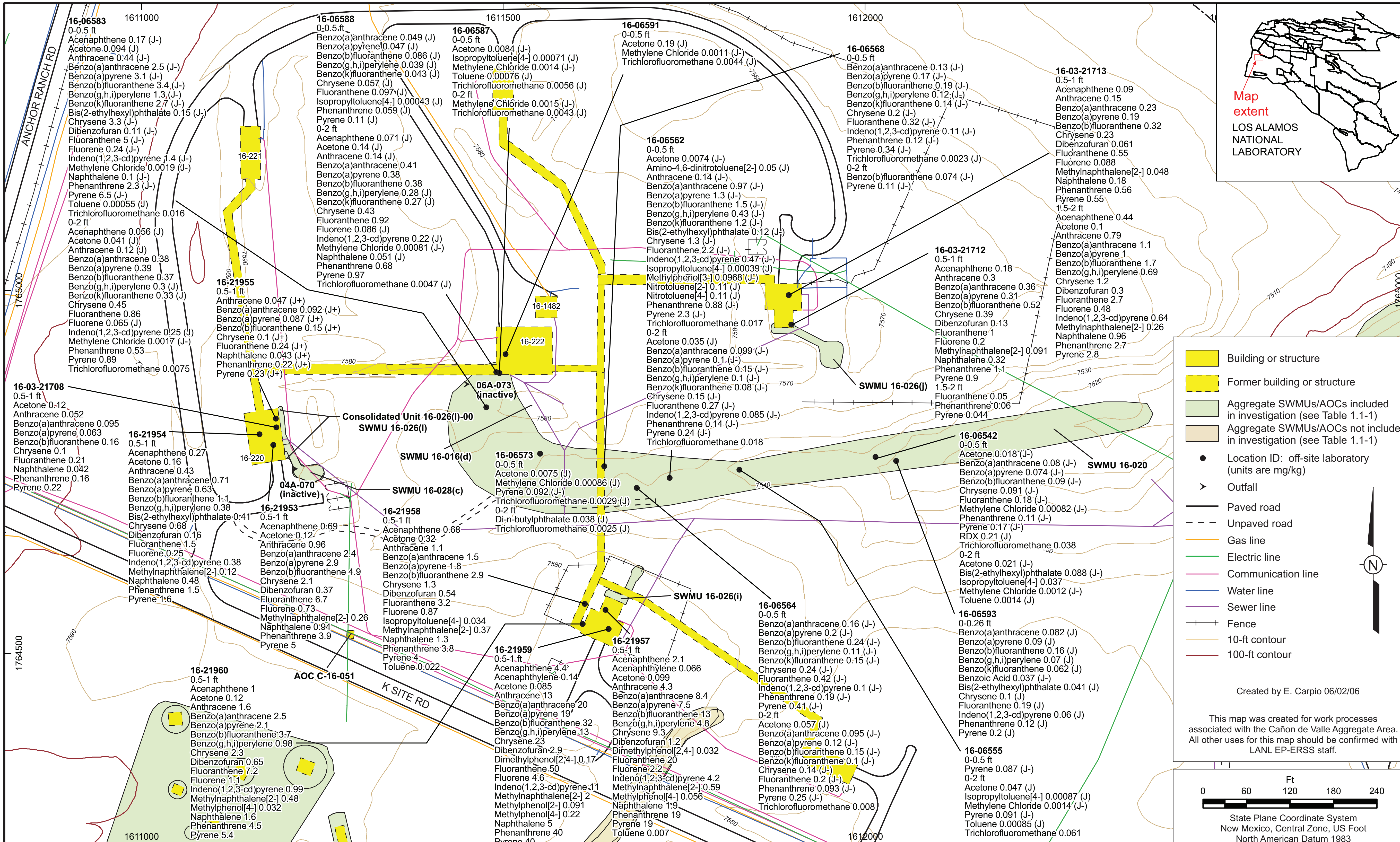


Figure 2.1-2. Subaggregate 1 (TA-16-220 Complex) historical sampling locations with inorganic chemicals detected greater than background values



Organic_TA-16-220_SA1

Figure 2.1-3. Subaggregate 1 (TA-16-220 Complex) historical sampling locations with detected organic chemicals

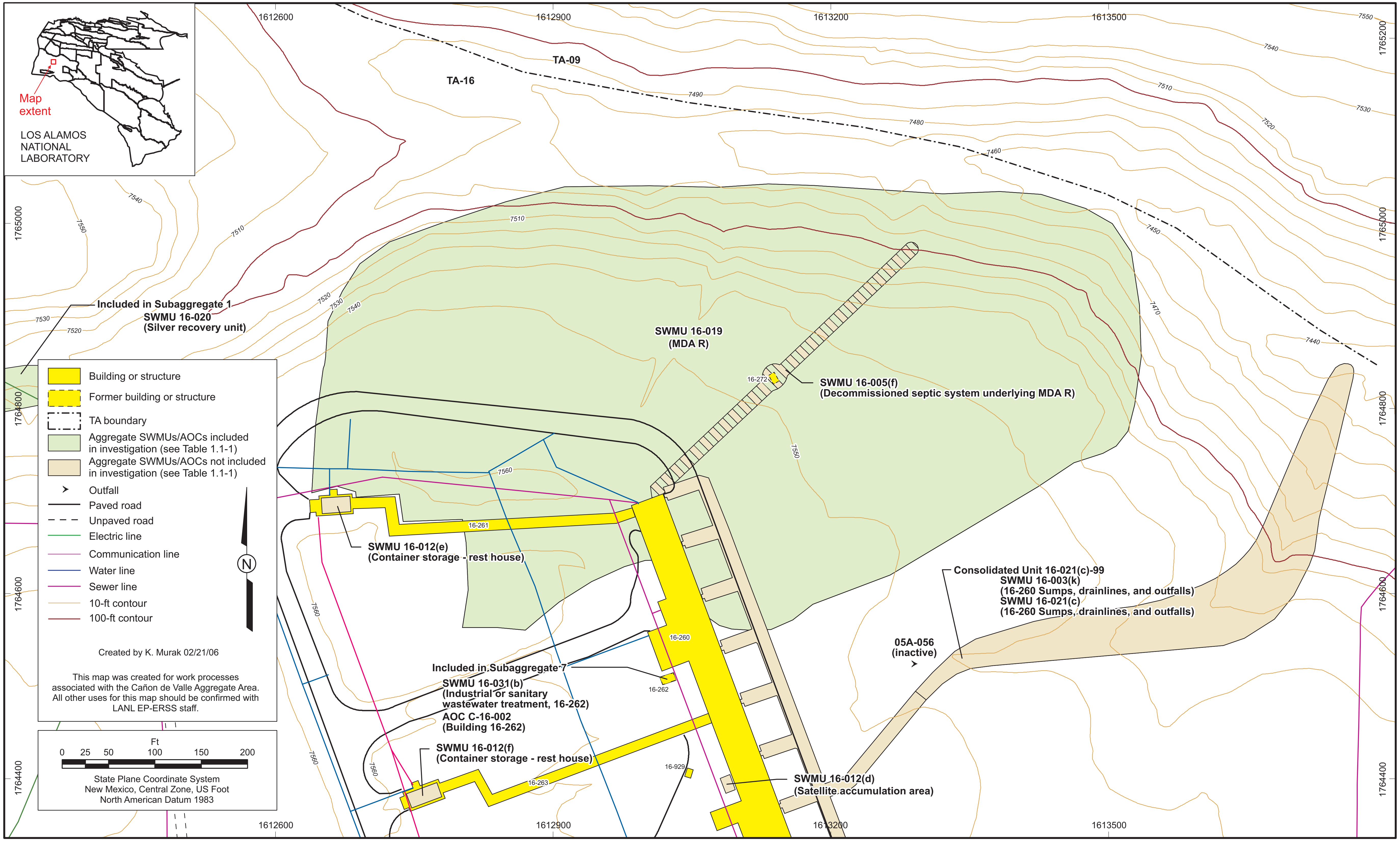


Figure 3.0-1. Detailed site map of Subaggregate 2 (MDA R), surrounding SWMUs and AOCs, and subsurface utility corridors

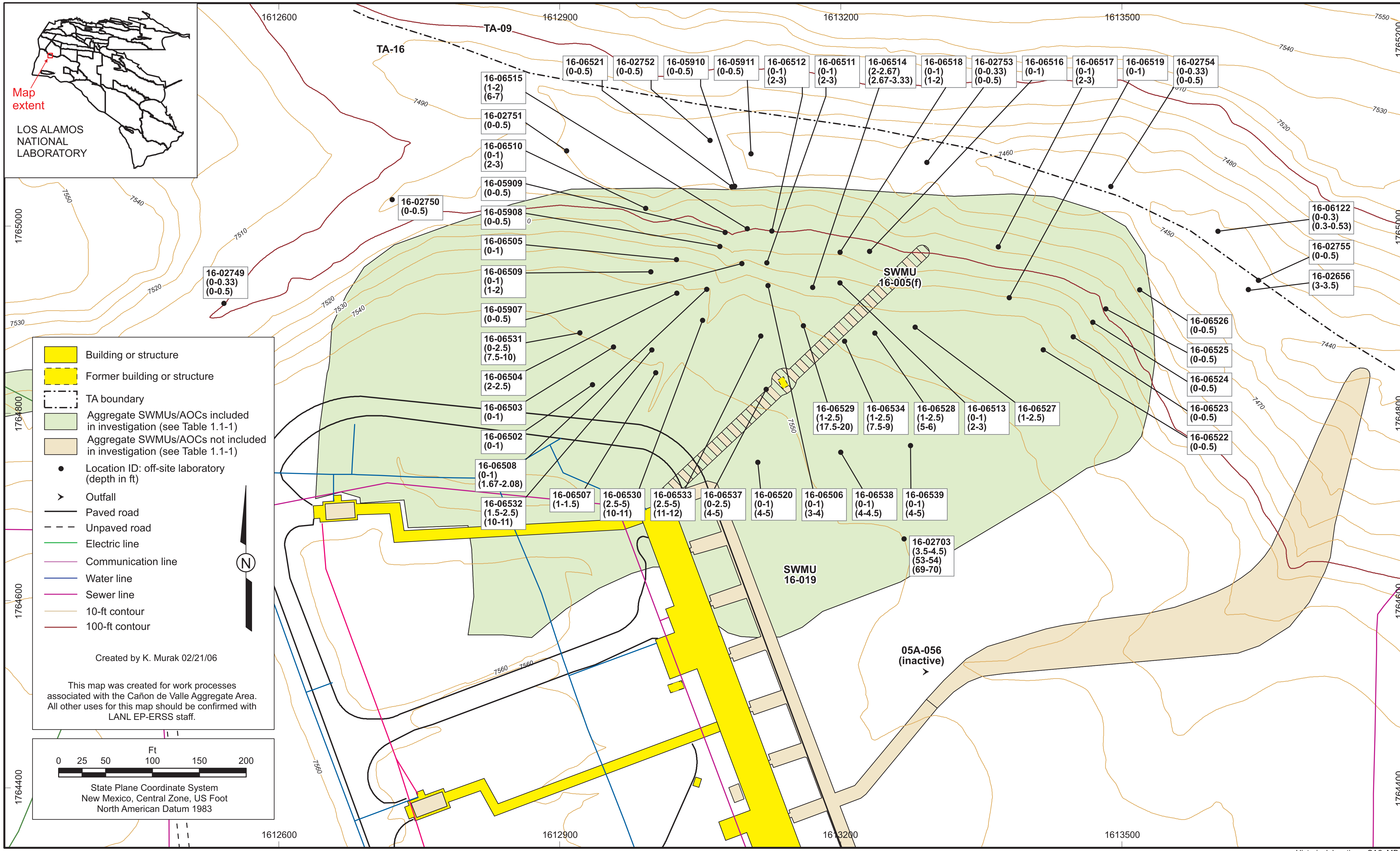


Figure 3.1-1. Subaggregate 2 (MDA R) historical sampling locations and depths

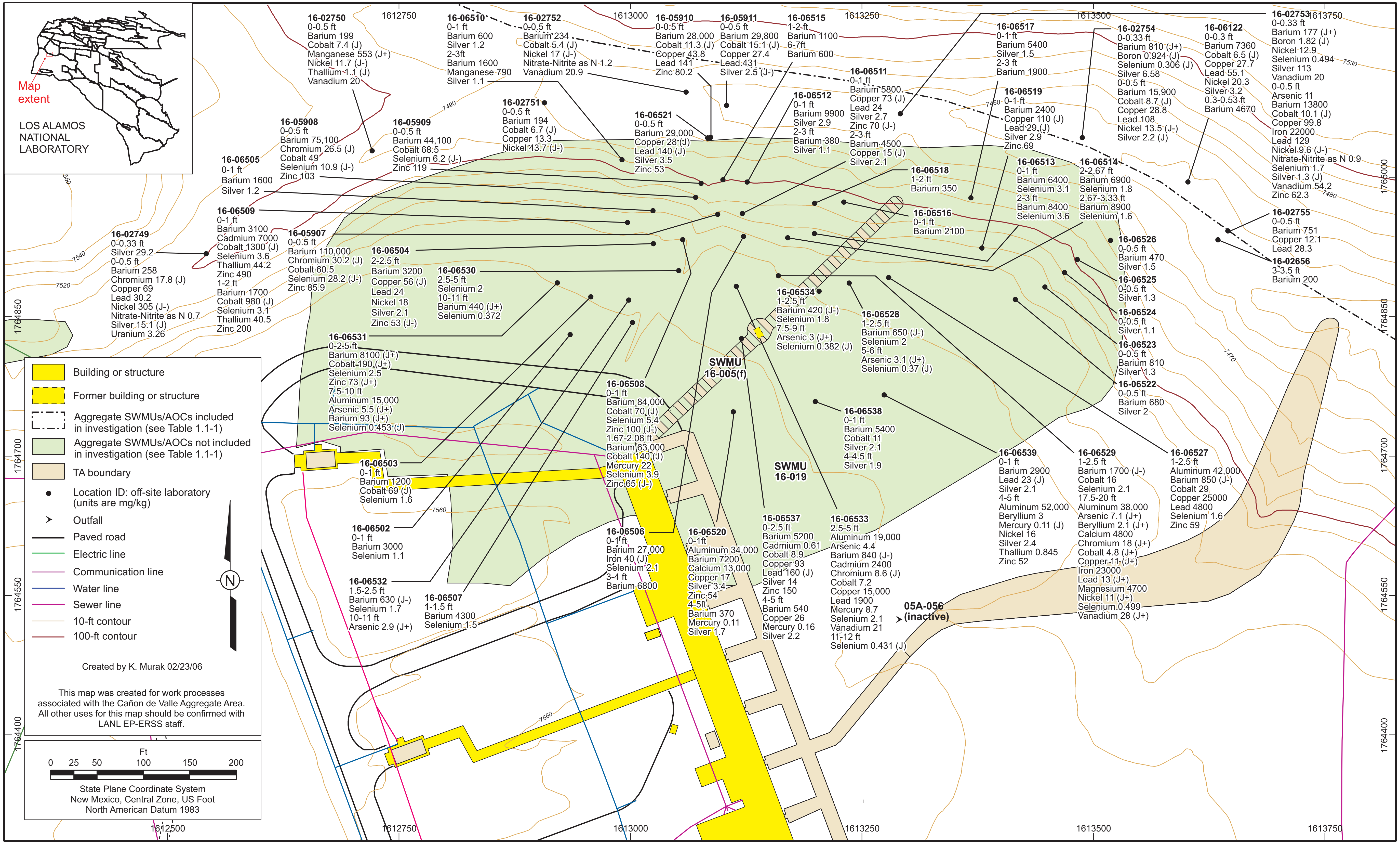


Figure 3.1-2. Subaggregate 2 (MDA R) historical sampling locations with inorganic chemicals detected greater than background values

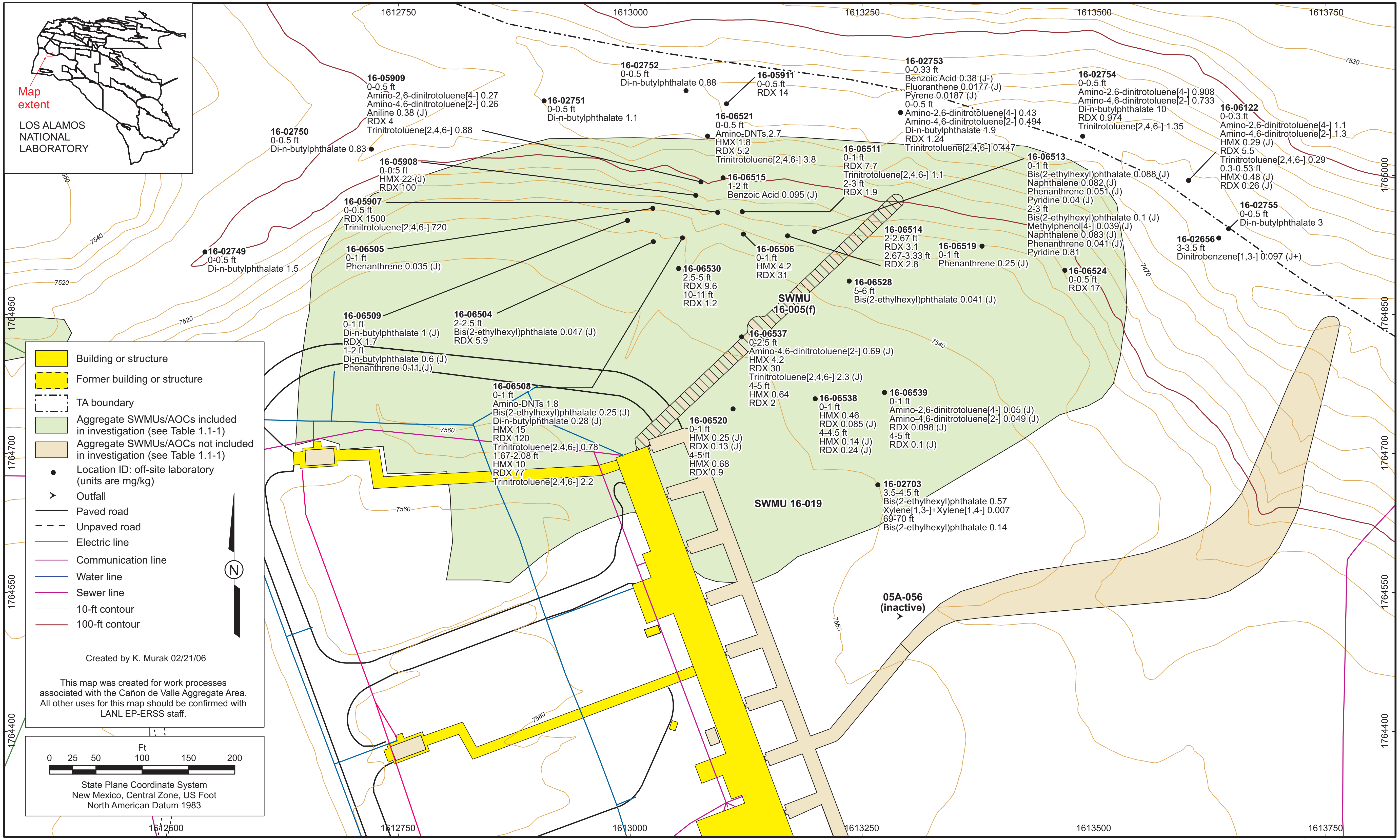


Figure 3.1-3. Subaggregate 2 (MDA R) historical sampling locations with detected organic chemicals

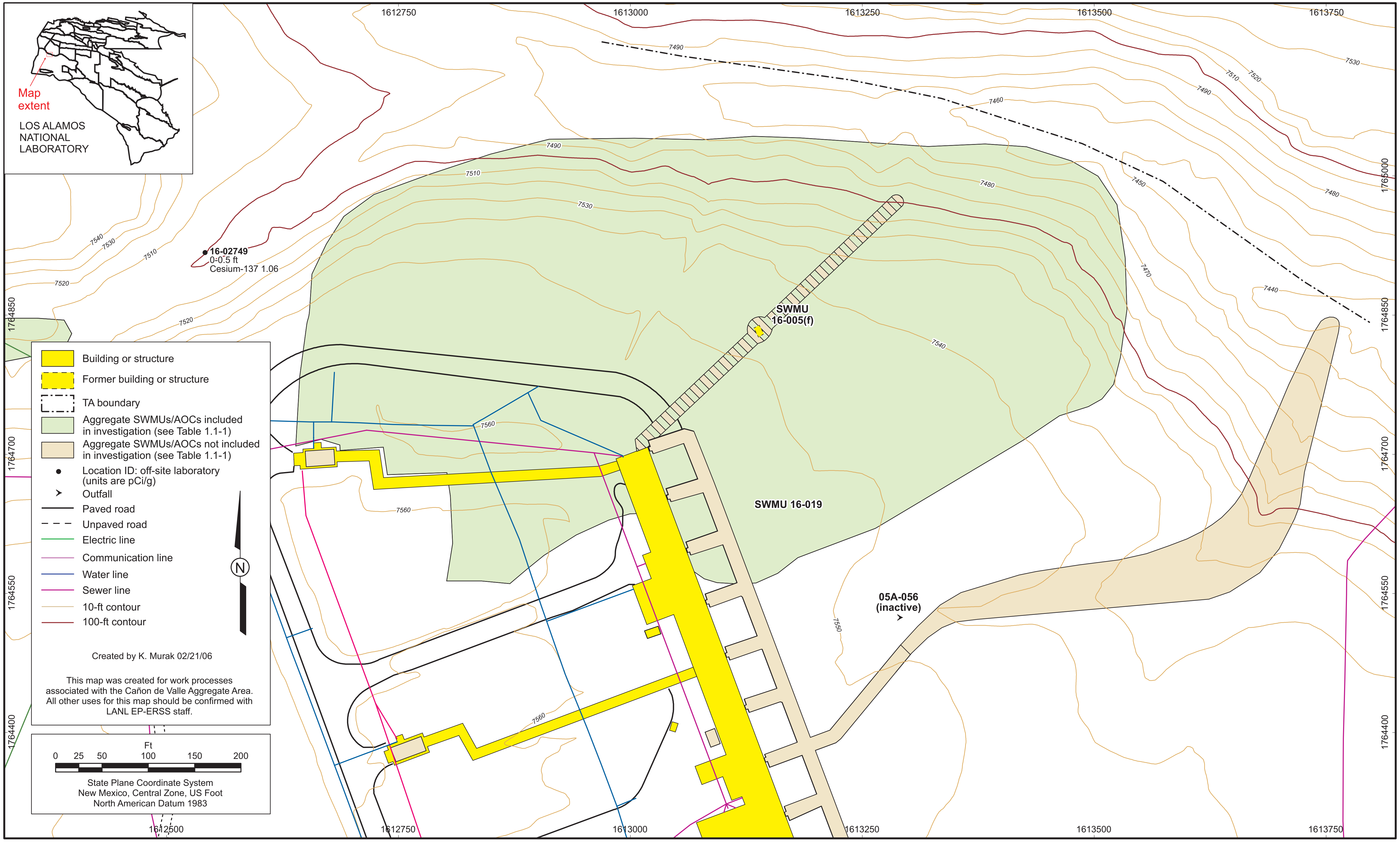


Figure 3.1-4. Subaggregate 2 (MDA R) historical sampling locations with radionuclides detected greater than fallout values

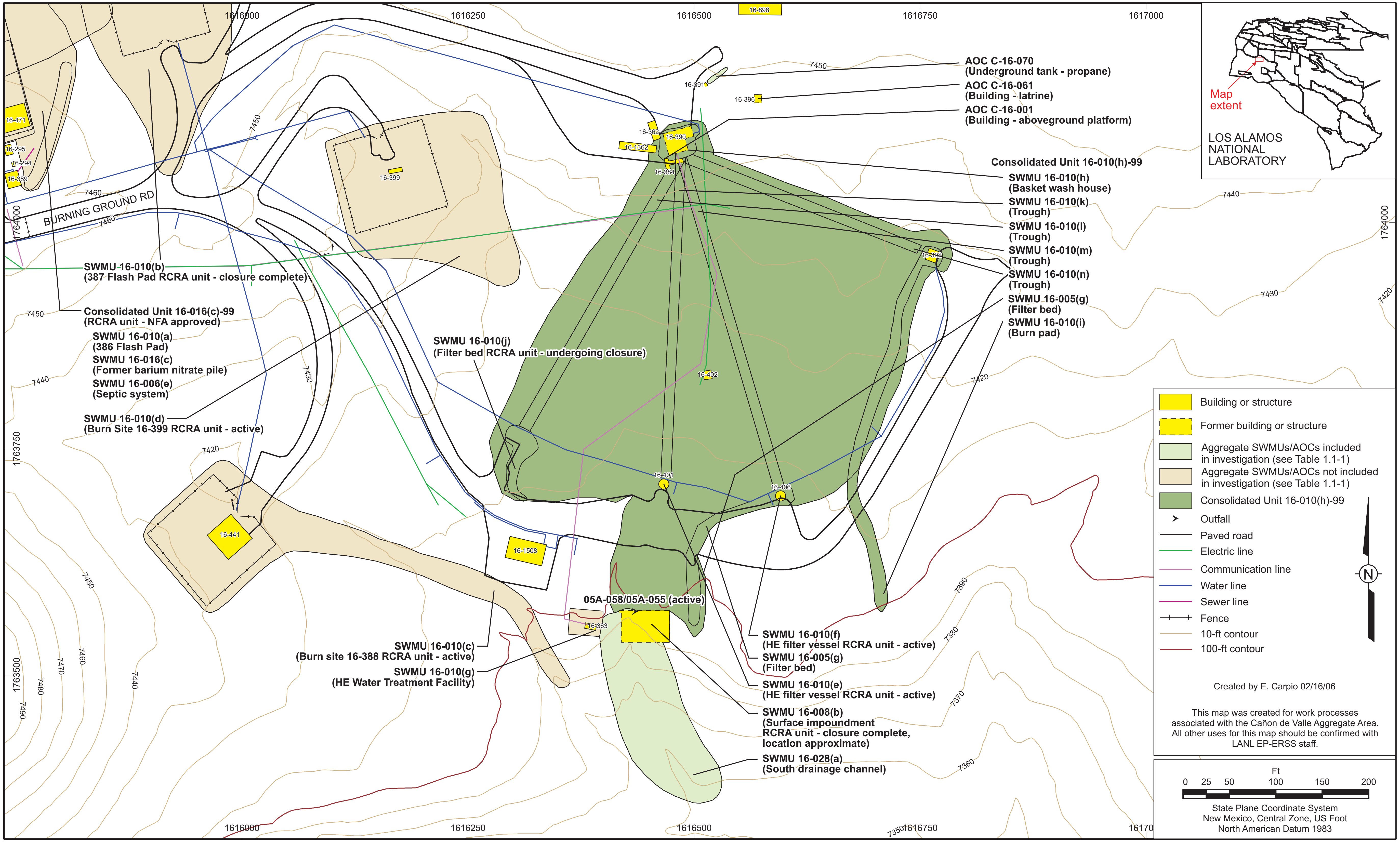


Figure 4.0-1. Detailed site map of Subaggregate 3 (Burning Ground), surrounding SWMUs and AOCs, and subsurface utility corridors

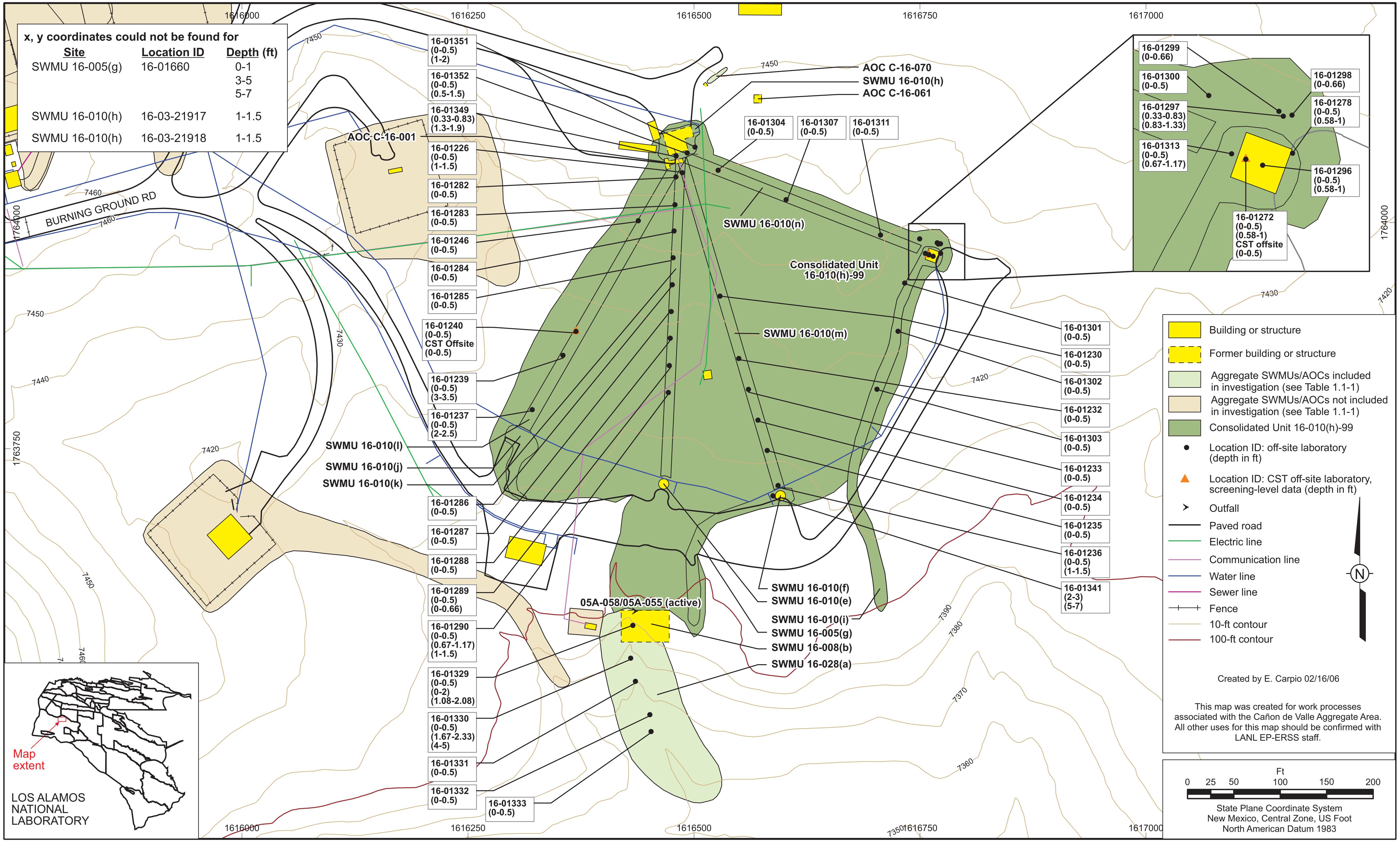


Figure 4.1-1. Subaggregate 3 (Burning Ground) historical sampling locations and depths

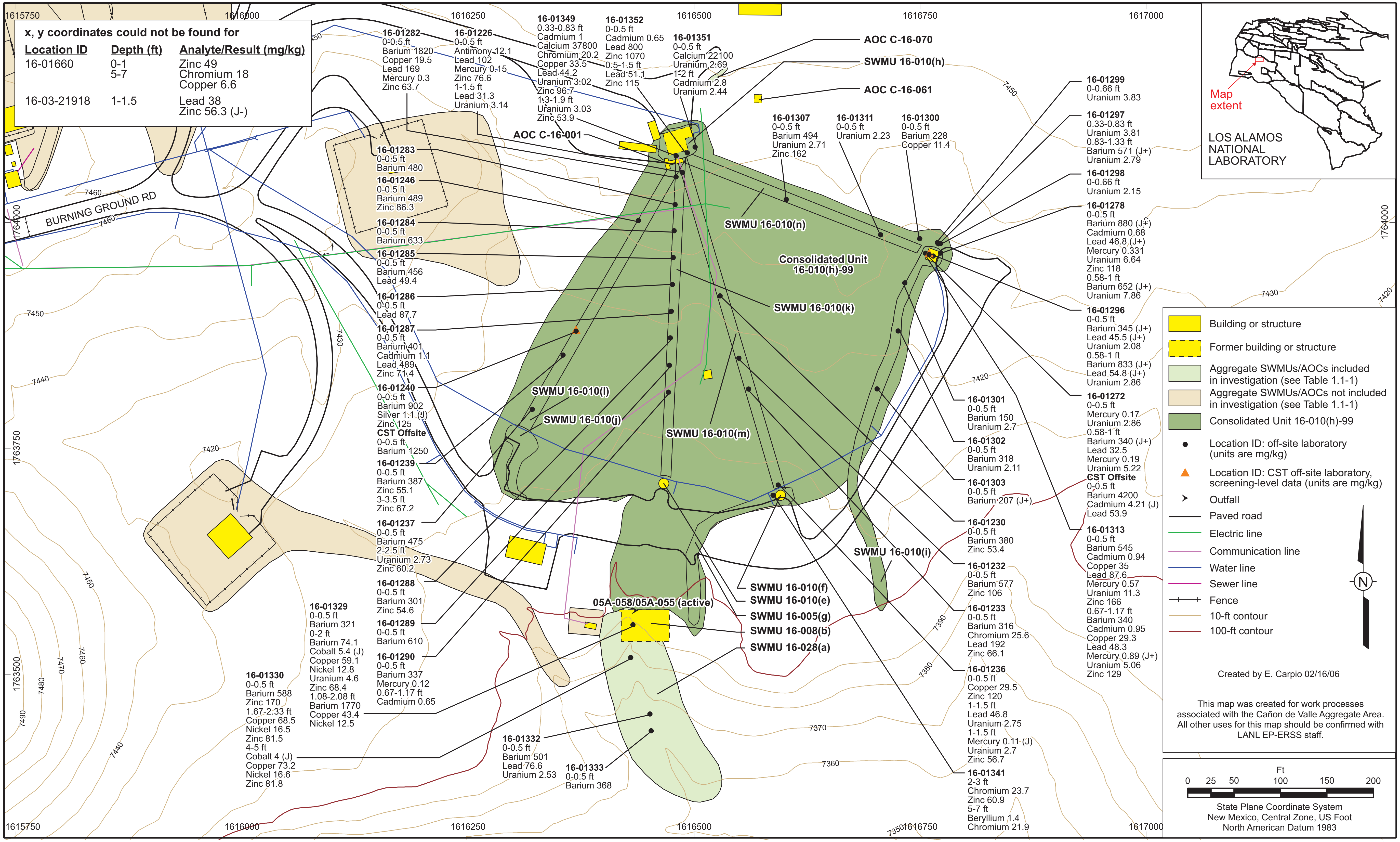


Figure 4.1-2. Subaggregate 3 (Burning Ground) historical sampling locations with inorganic chemicals detected greater than background values

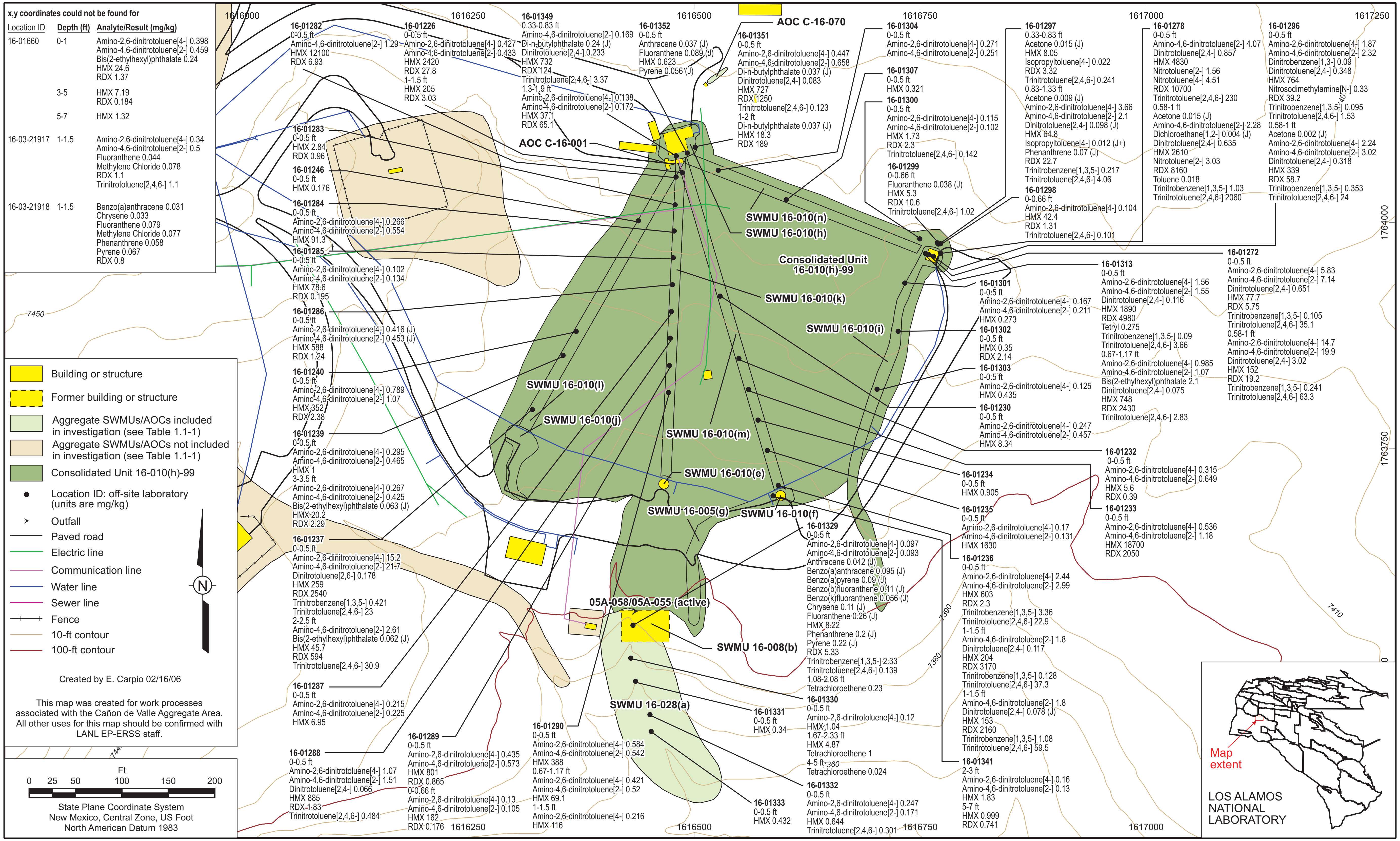


Figure 4.1-3. Subaggregate 3 (Burning Ground) historical sampling locations with detected organic chemicals

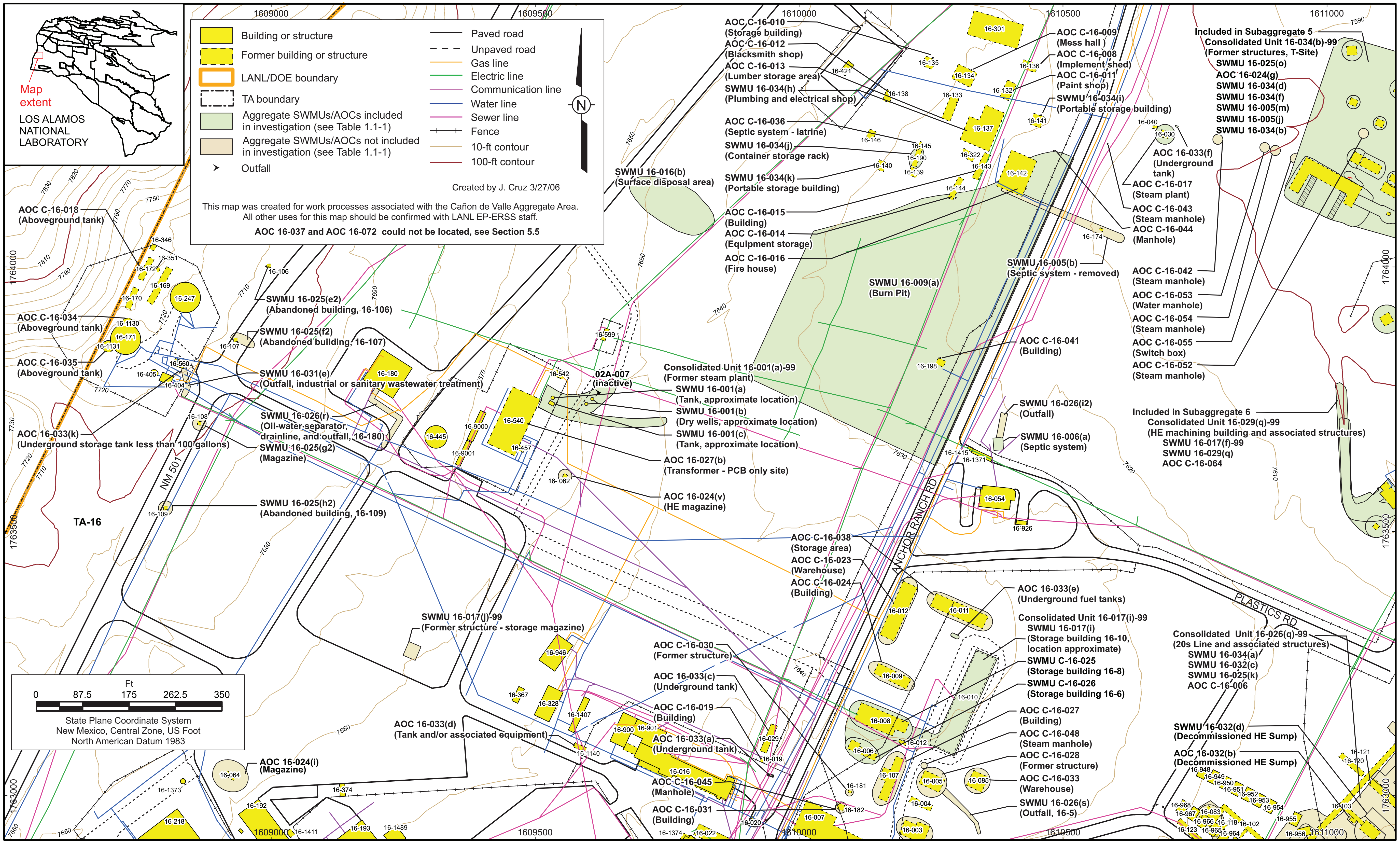


Figure 5.0-1. Detailed site map of Subaggregate 4 (TA-16 Administrative Area), surrounding SWMUs and AOCs, and subsurface utility corridors

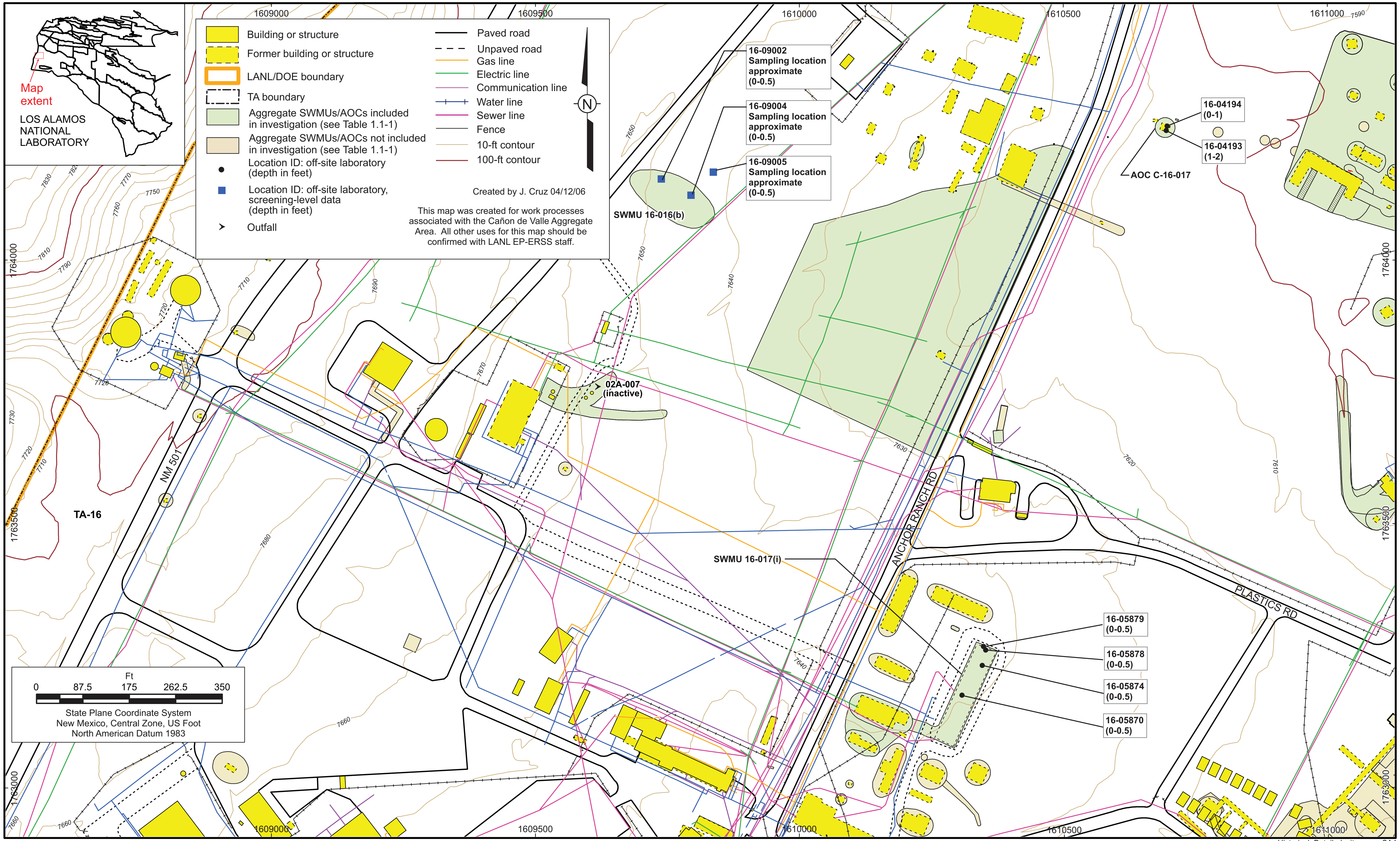


Figure 5.2-1. Subaggregate 4 (TA-16 Administrative Area) historical sampling locations and depths

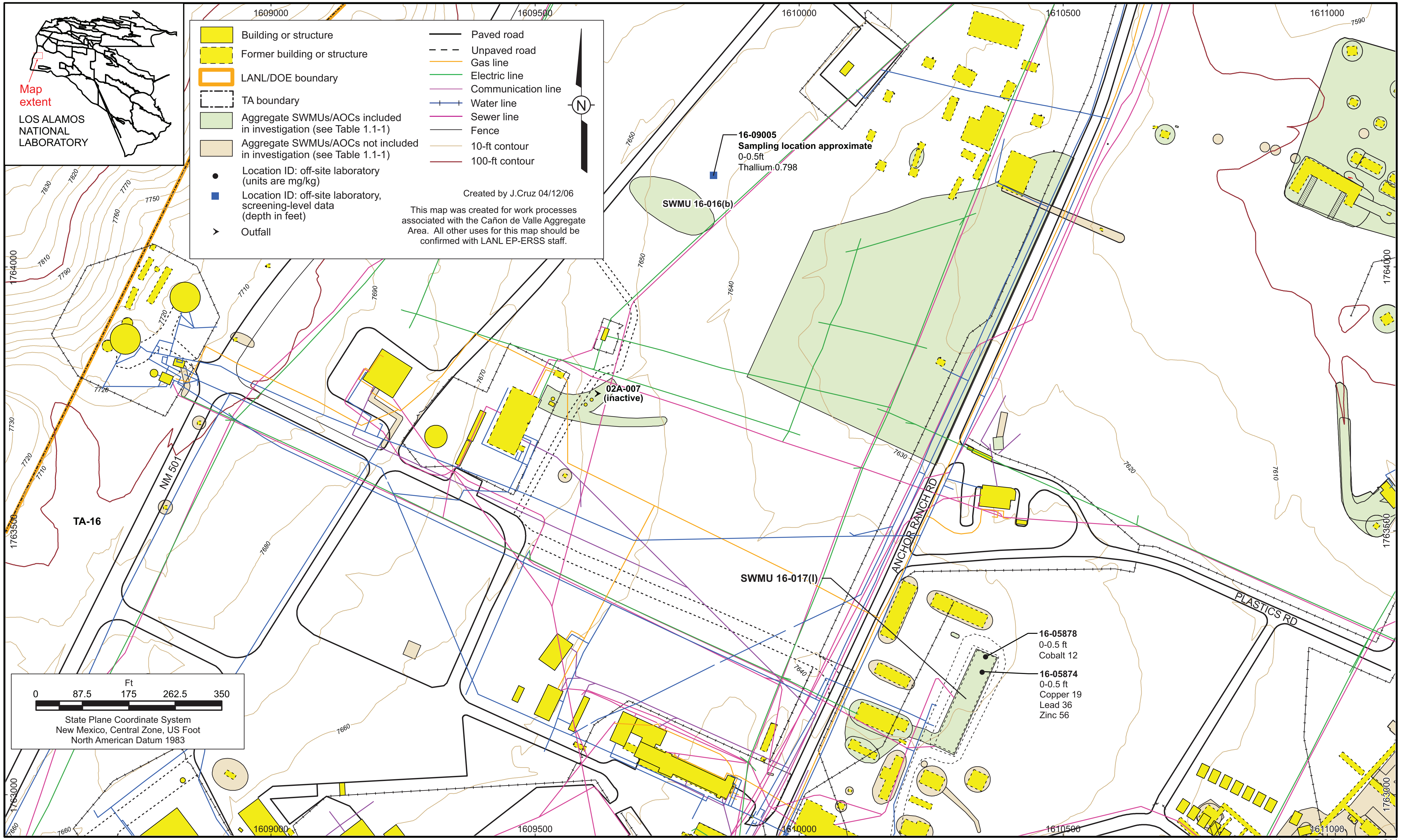


Figure 5.2-2. Subaggregate 4 (TA-16 Administrative Area) historical sampling locations with inorganic chemicals detected greater than background values

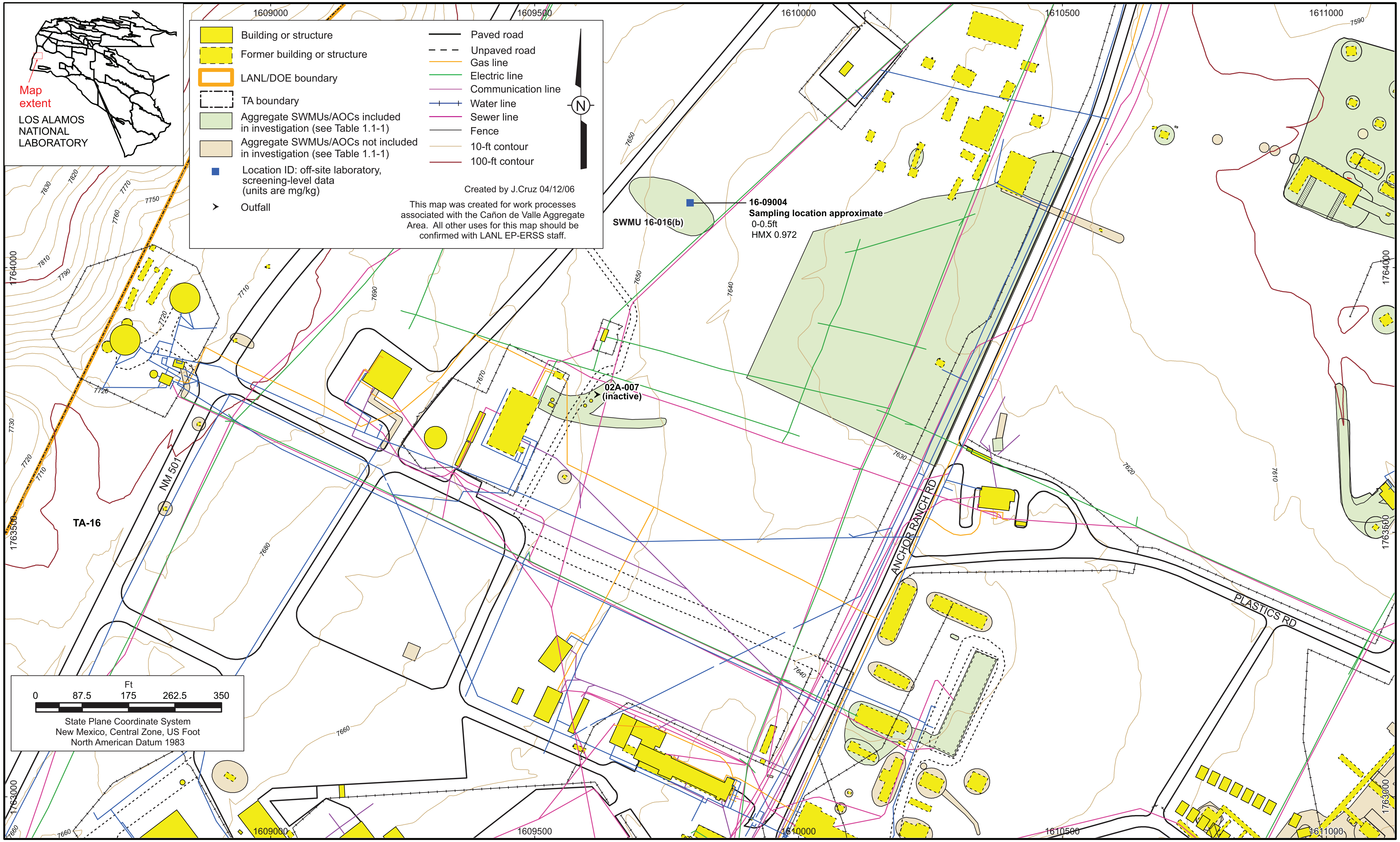


Figure 5.2-3. Subaggregate 4 (TA-16 Administrative Area) historical sampling locations with detected organic chemicals

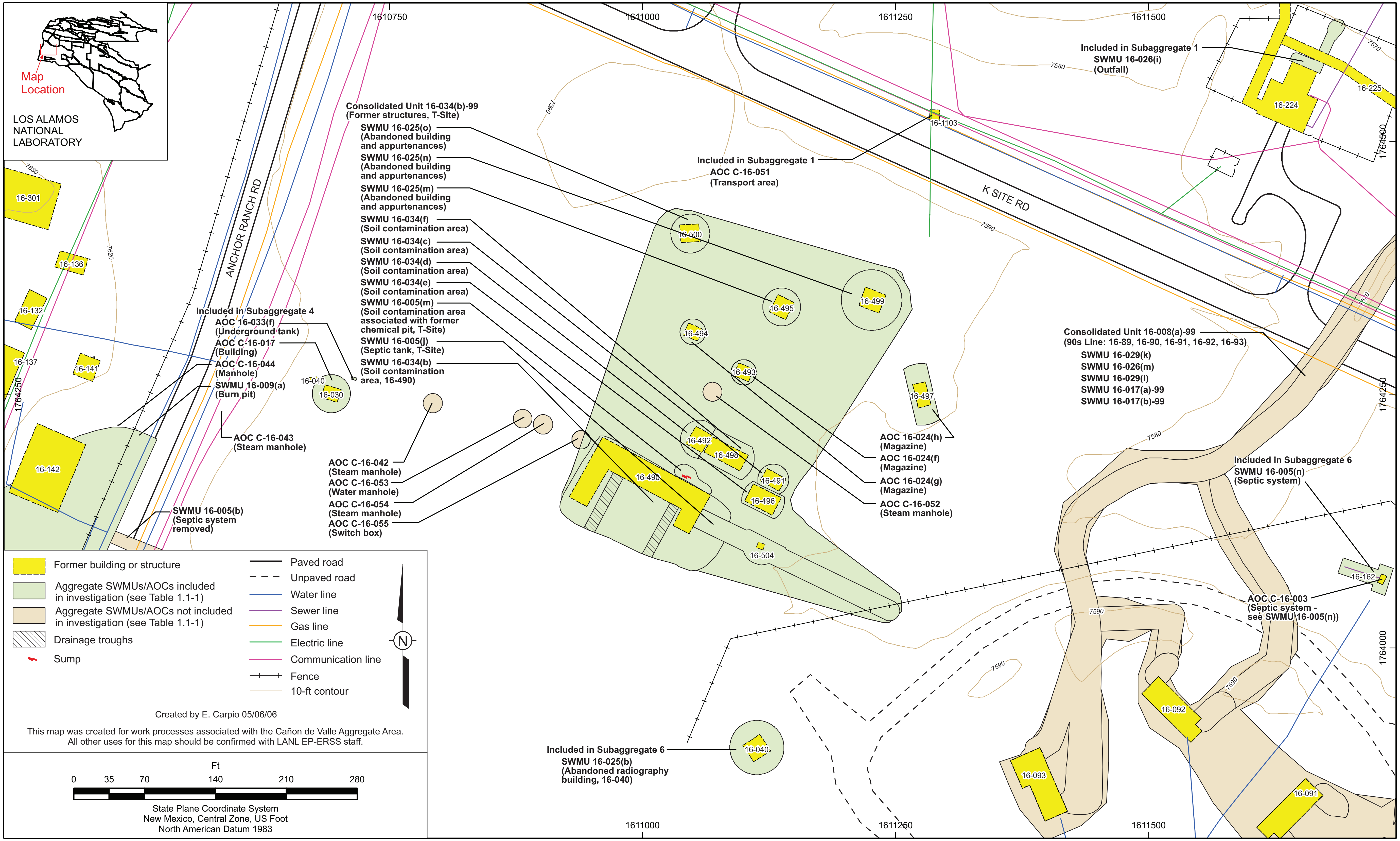
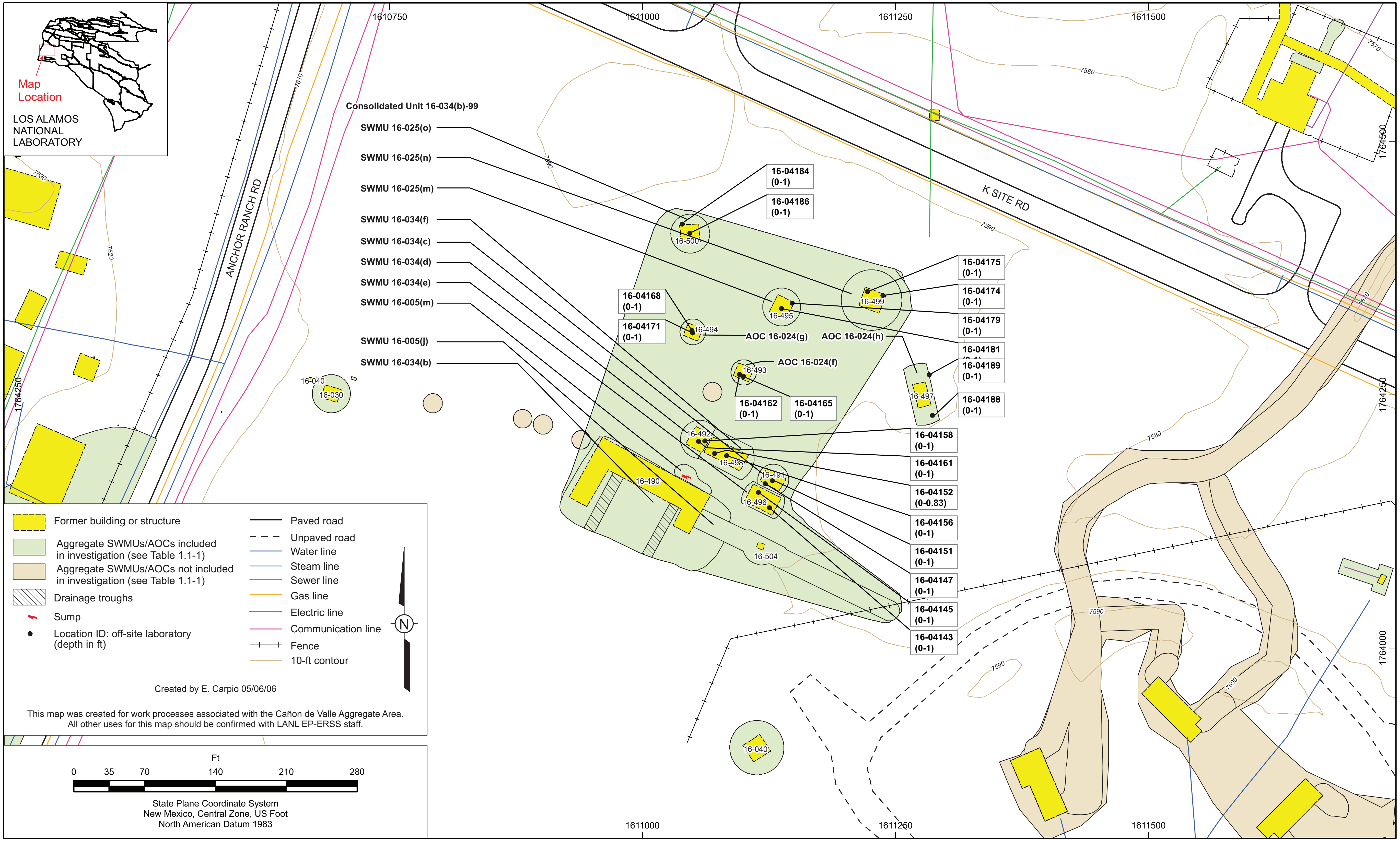


Figure 6.0-1. Detailed site map of Subaggregate 5 (T-Site), surrounding SWMUs and AOCs, and subsurface utility corridors



Historical_samples_T-site_SA5

Figure 6.1-1. Subaggregate 5 (T-Site) historical sampling locations and depths

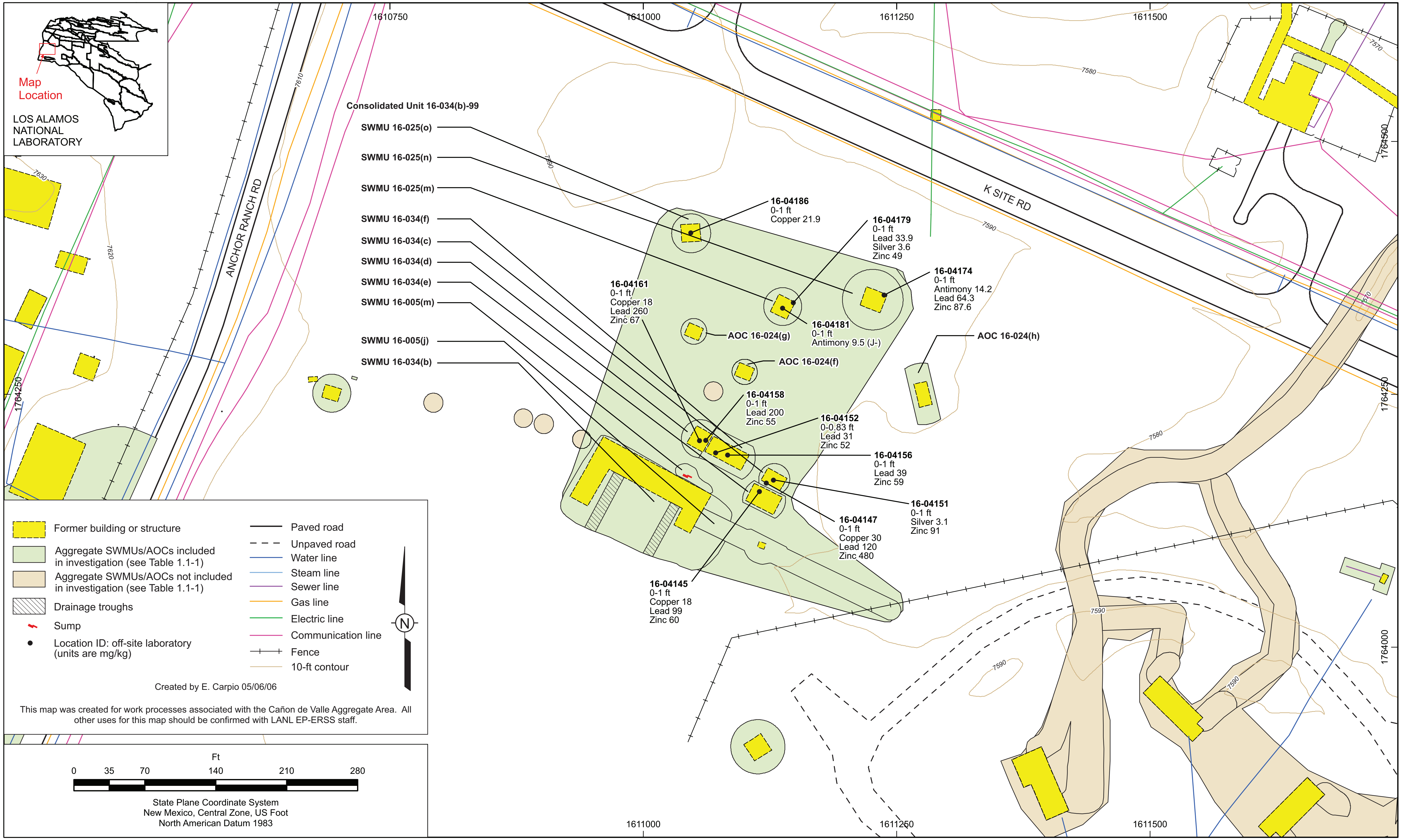


Figure 6.1-2. Subaggregate 5 (T-Site) historical sampling locations with inorganic chemicals detected greater than background values

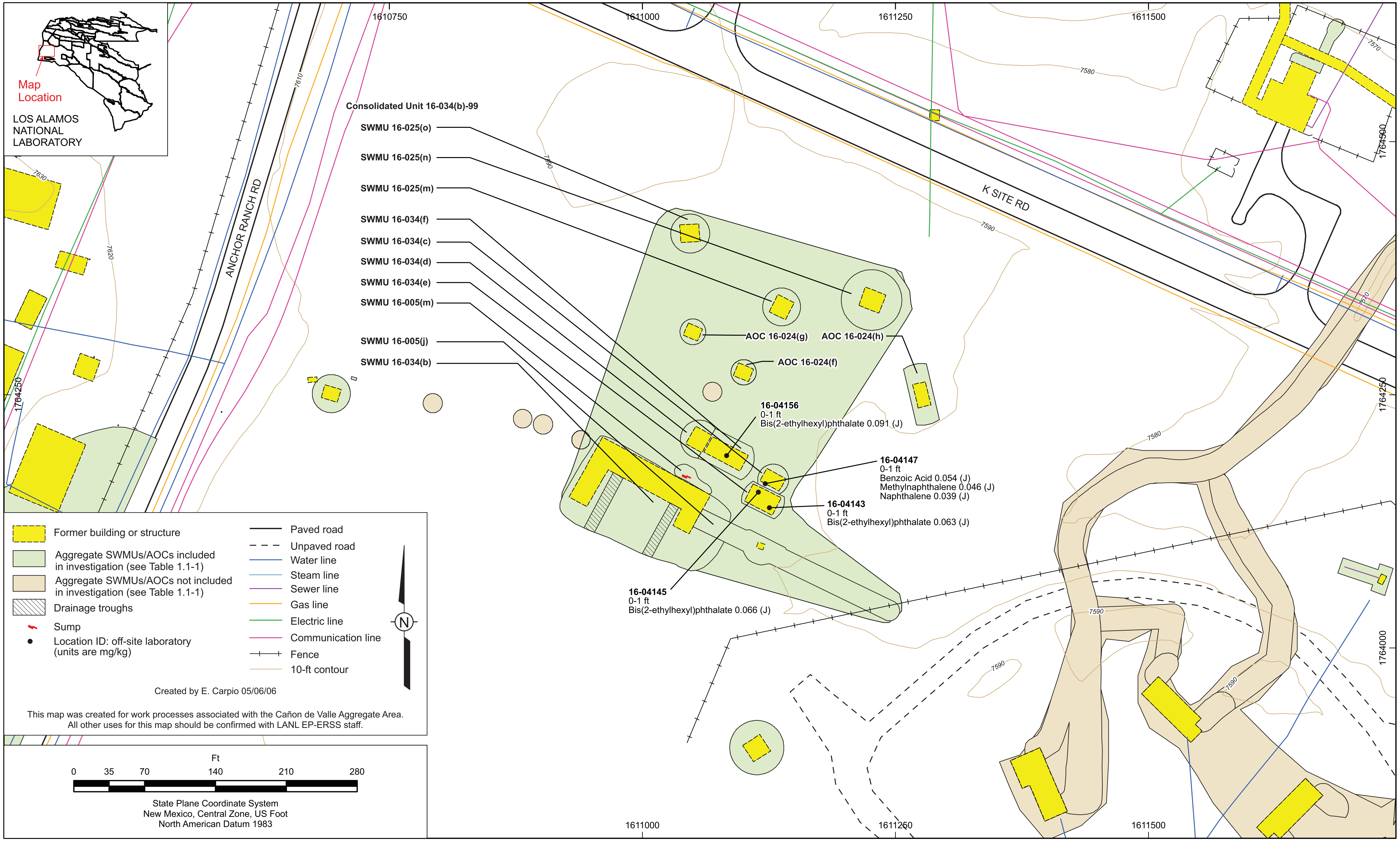


Figure 6.1-3. Subaggregate 5 (T-Site) historical sampling locations with detected organic chemicals

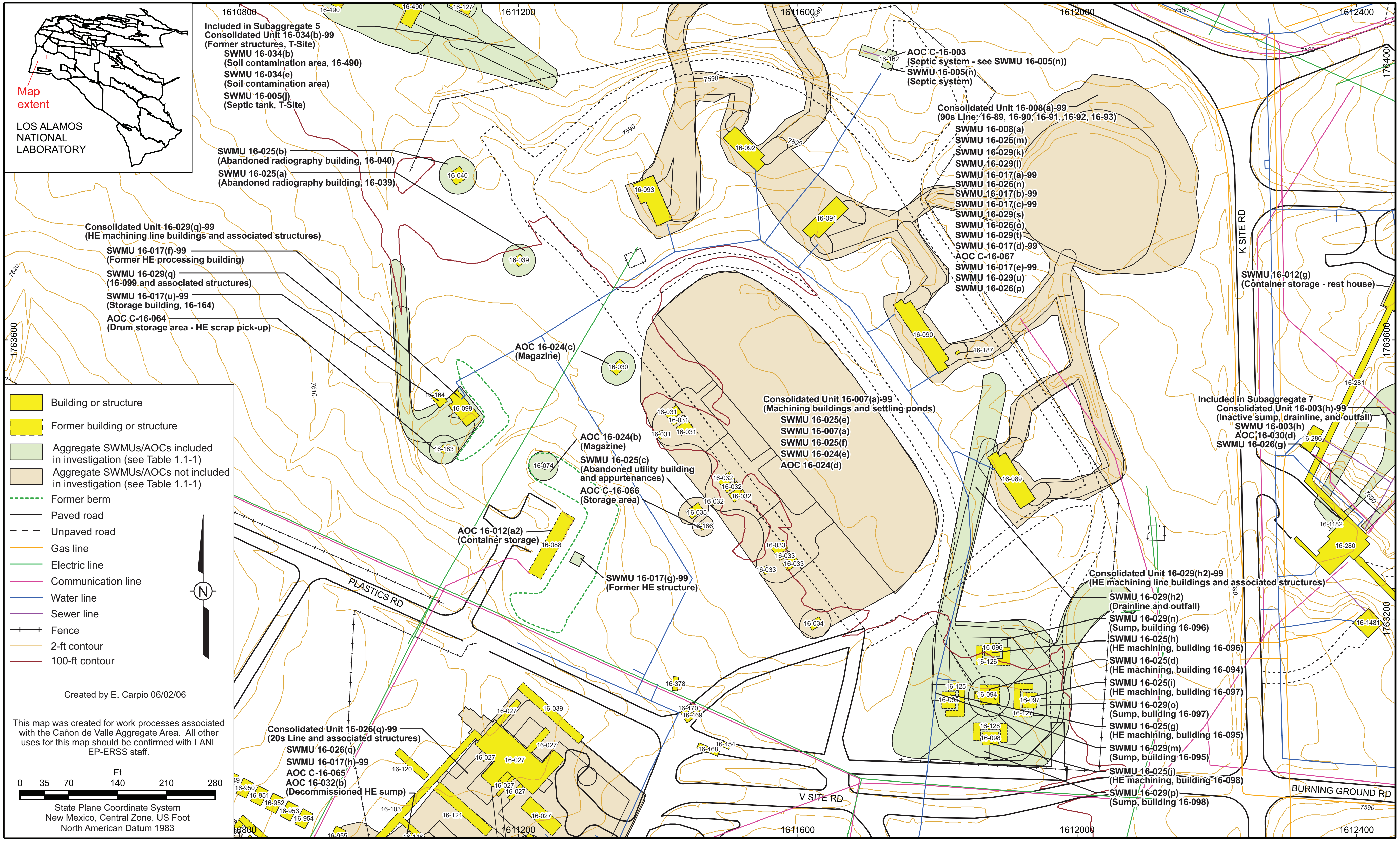


Figure 7.0-1. Detailed site map of Subaggregate 6 (WWII GMX-3 Area), surrounding SWMUs and AOCs, and subsurface utility corridors

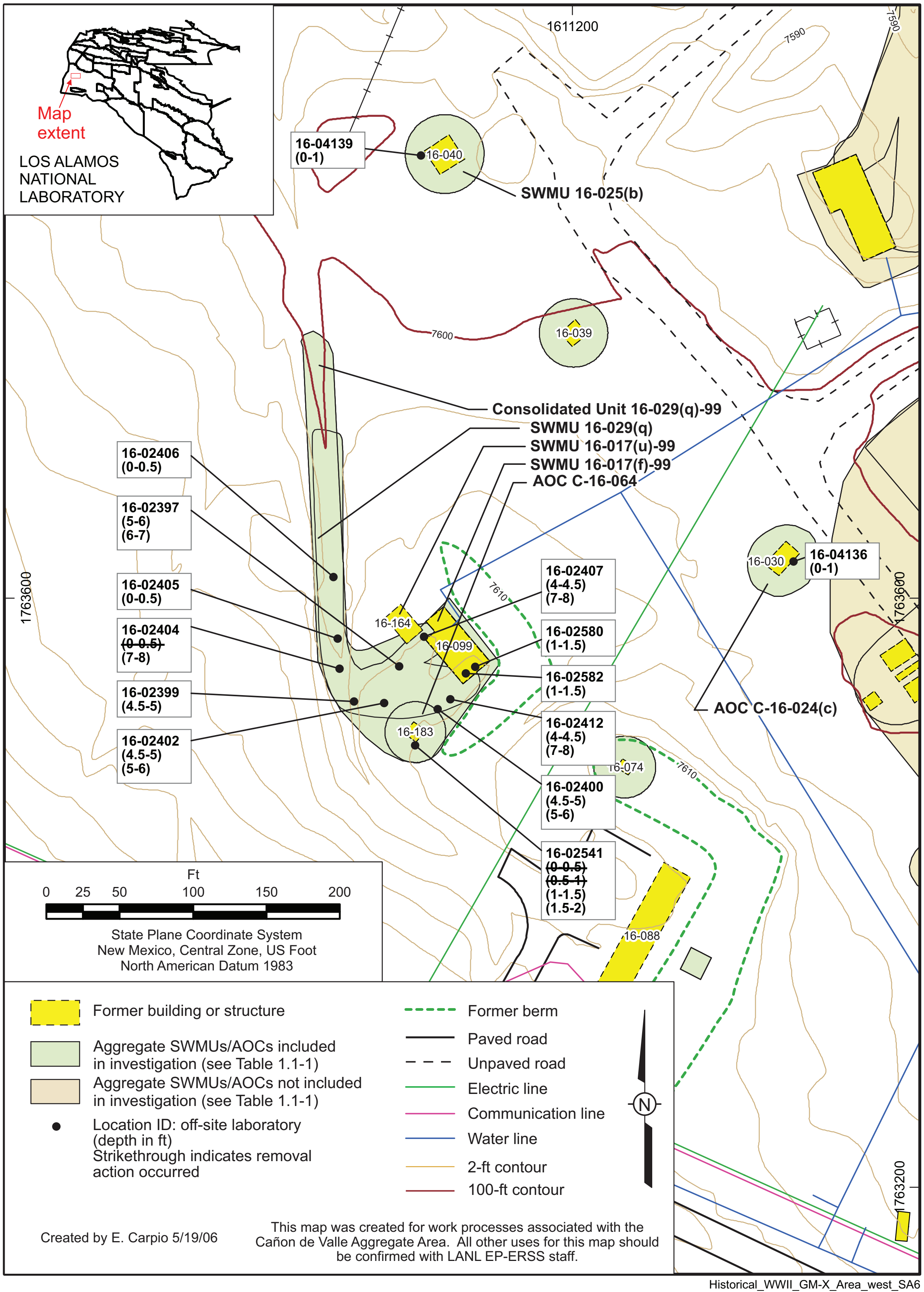


Figure 7.2-1 Subaggregate 6 (WWII GMX-3 Area West) historical sampling locations and depths

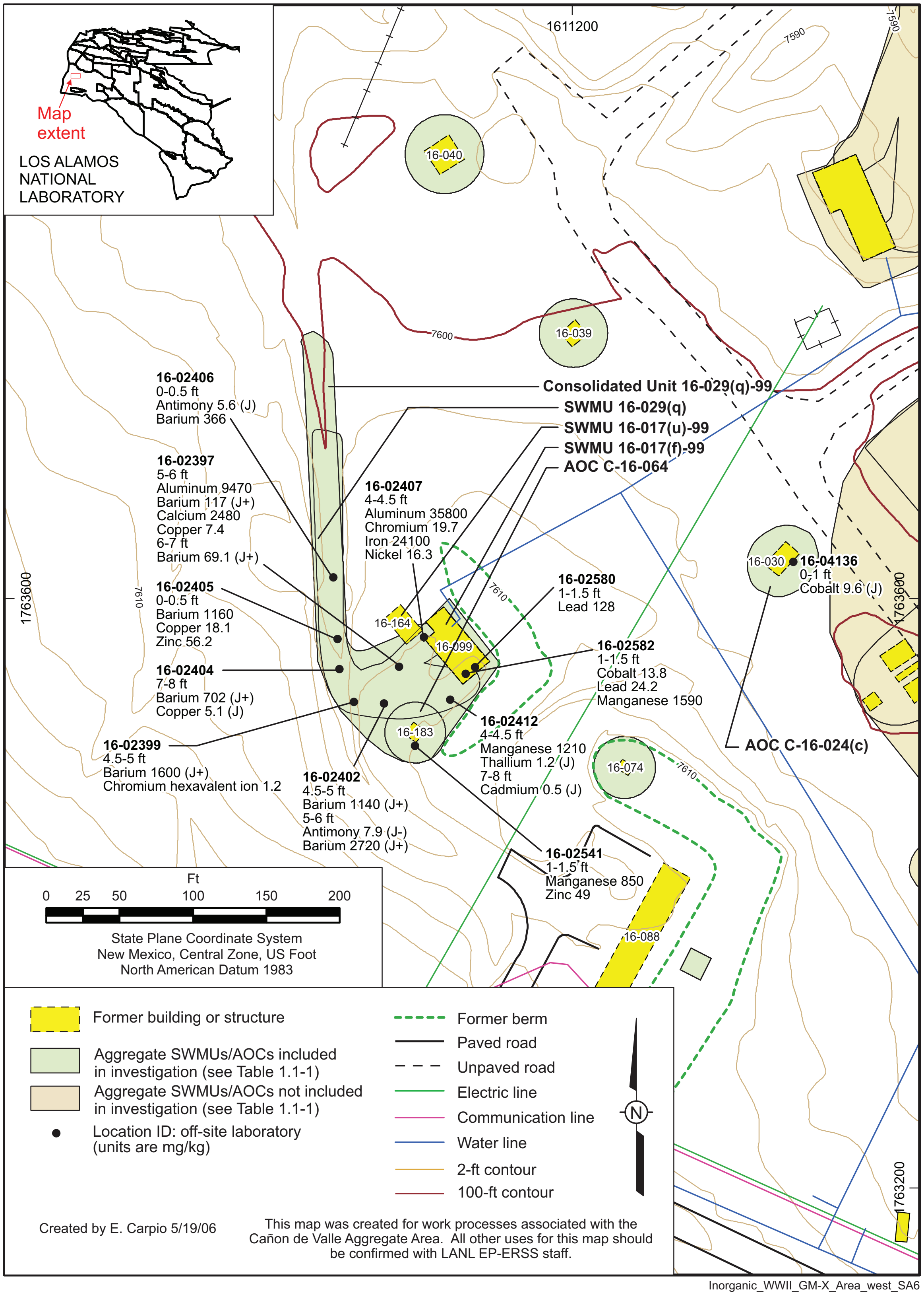
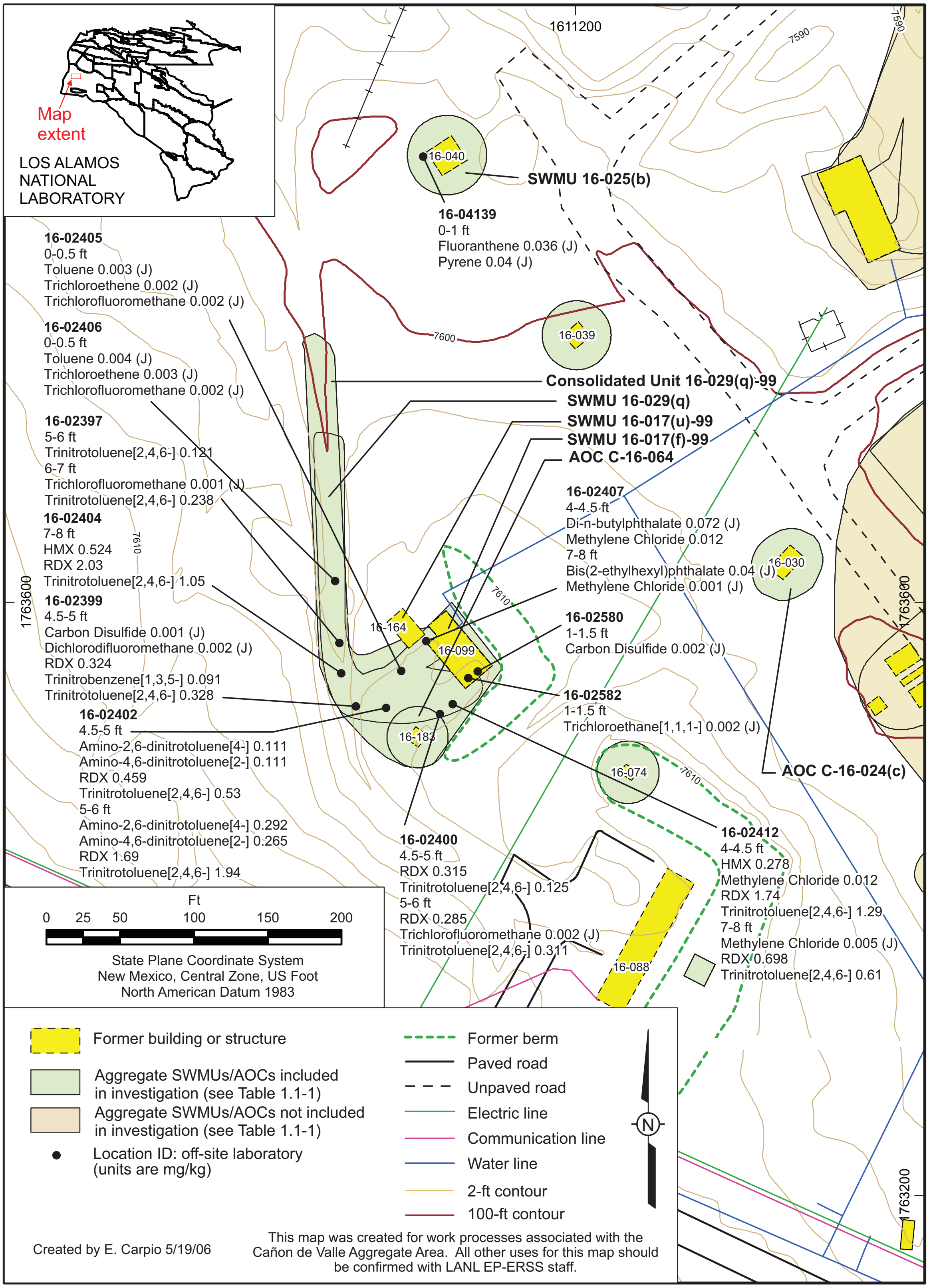
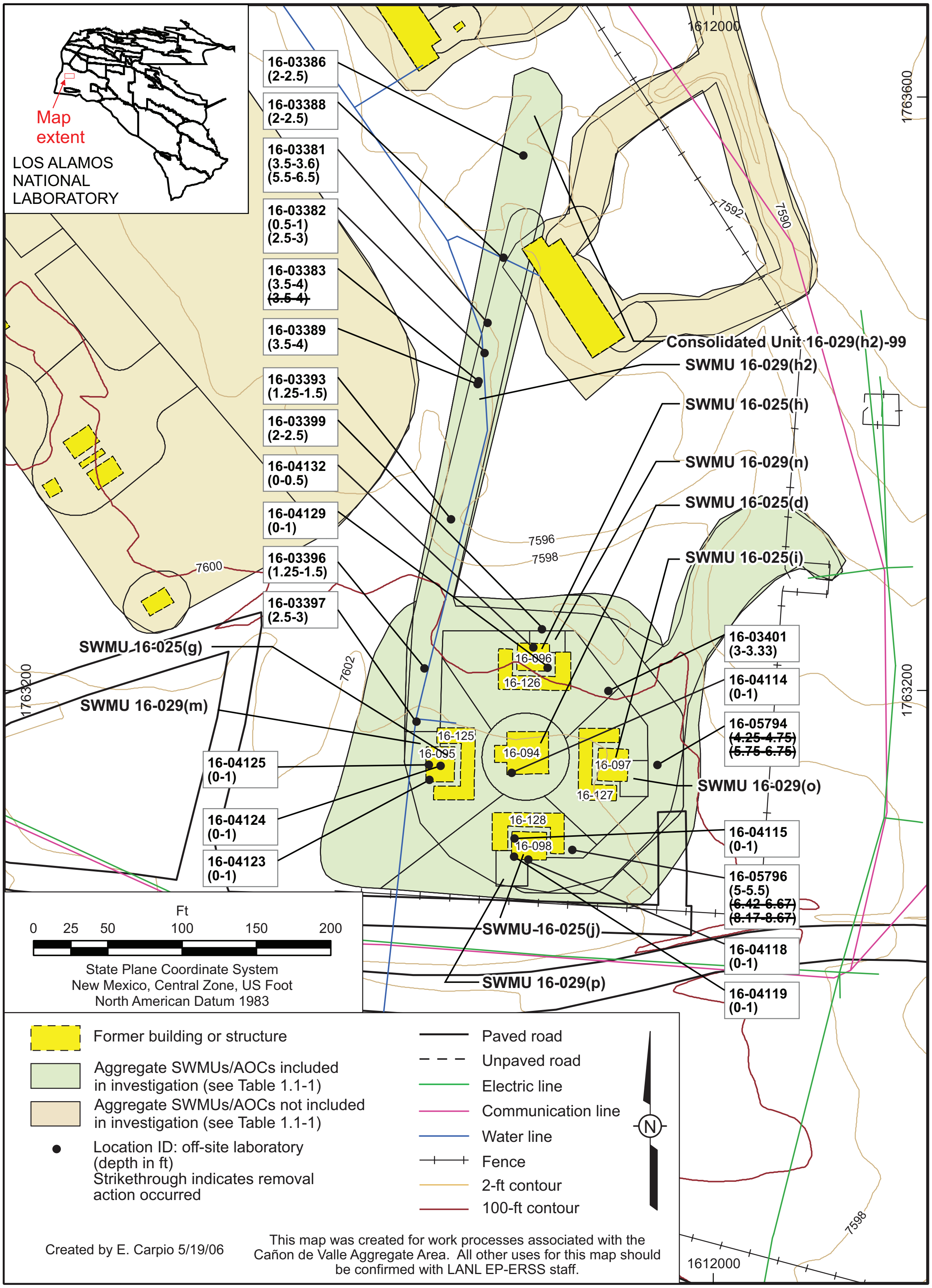


Figure 7.2-2 Subaggregate 6 (WWII GMX-3 Area West) historical sampling locations with inorganic chemicals detected greater than background values



Organic_WWII_GM-X_Area_west_SA6

Figure 7.2-3 Subaggregate 6 (WWII GMX-3 Area West) historical sampling locations with detected organic chemicals



Historical_WWII_GM-X_Area_east_SA6

Figure 7.4-1. Subaggregate 6 (WWII GMX-3 Area East) historical sampling locations and depths

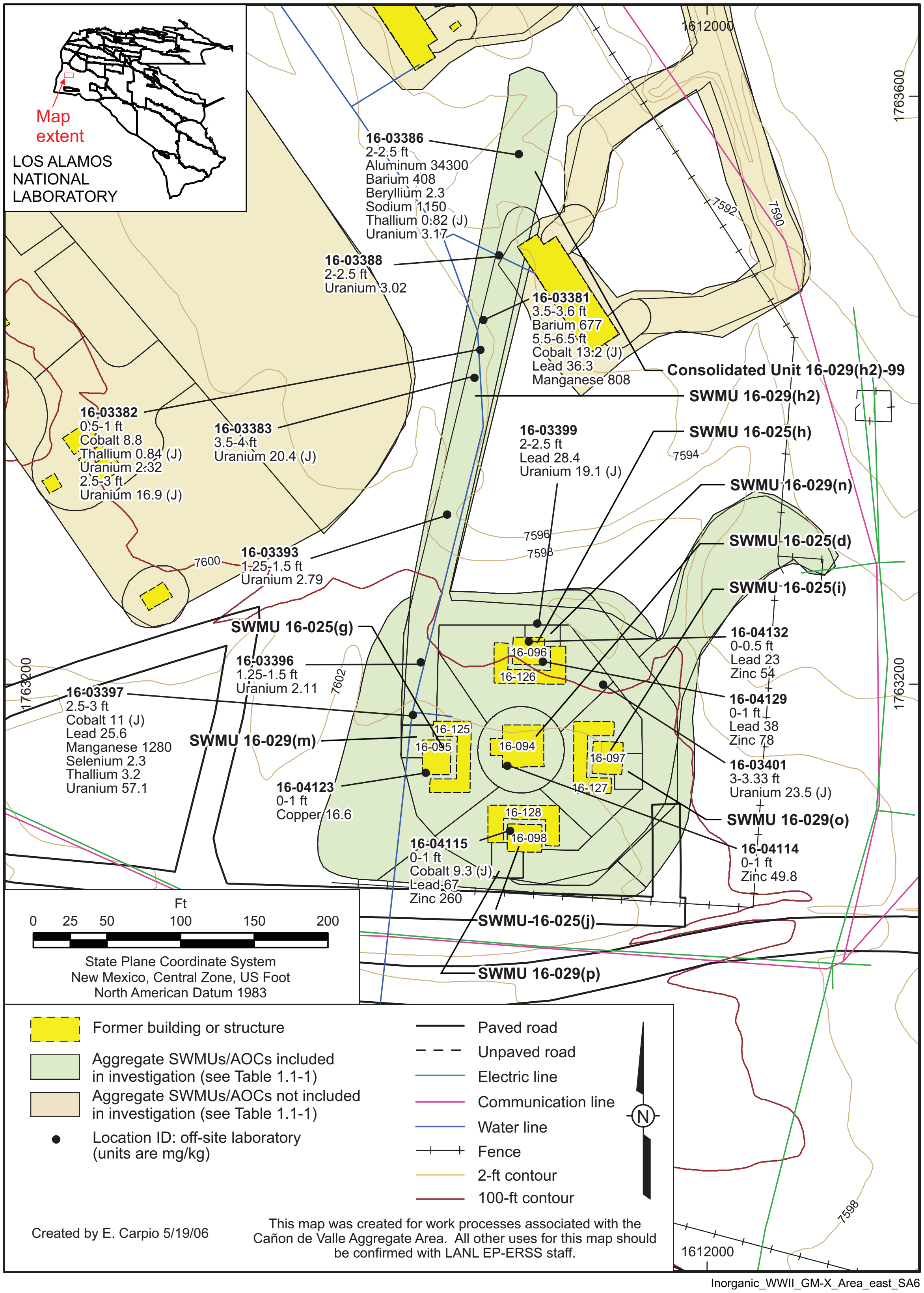


Figure 7.4-2 Subaggregate 6 (WWII GMX-3 Area East) historical sampling locations with inorganic chemicals detected greater than background values

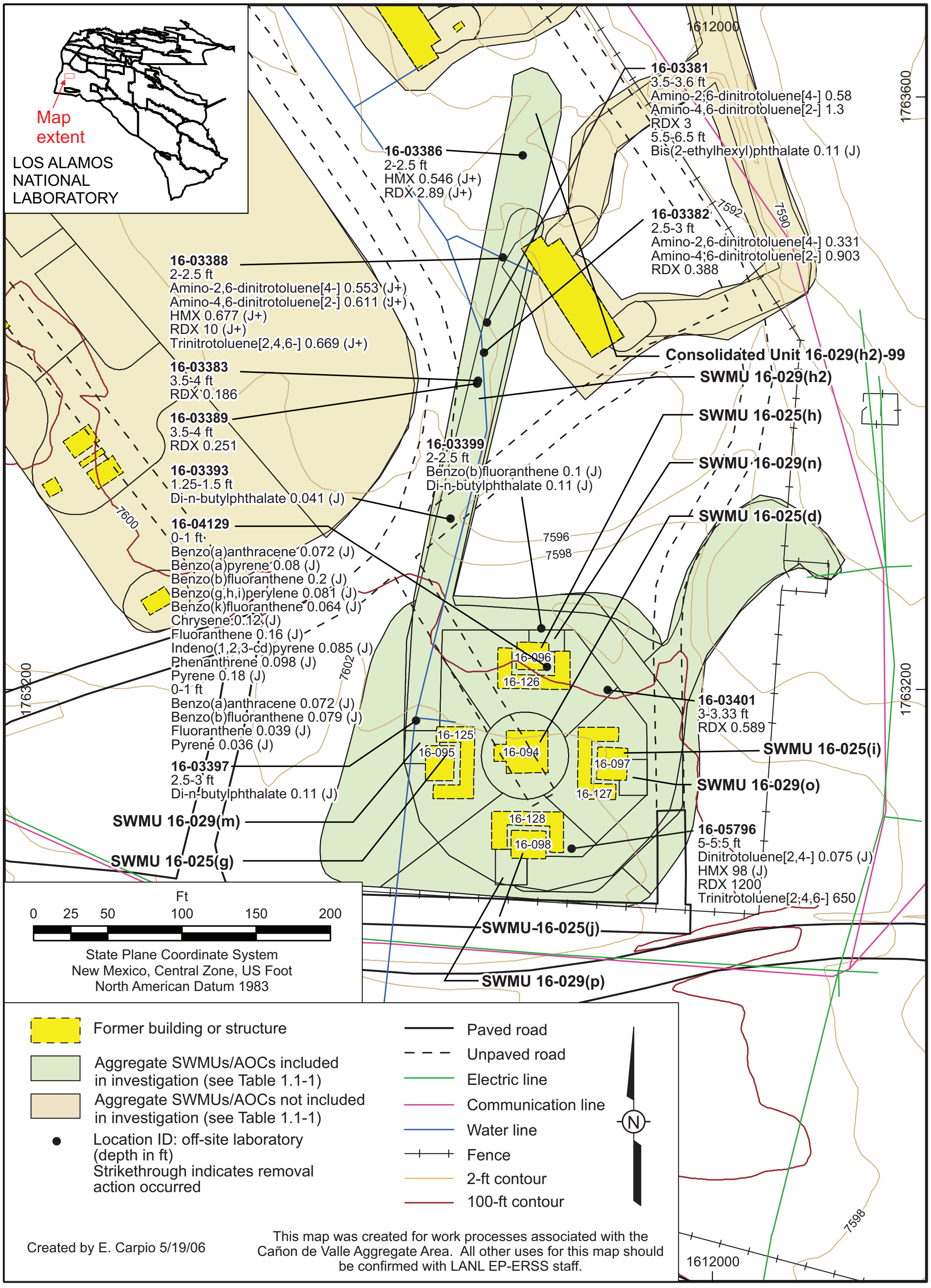


Figure 7.4-3 Subaggregate 6 (WWII GMX-3 Area East) historical sampling locations with detected organic chemicals

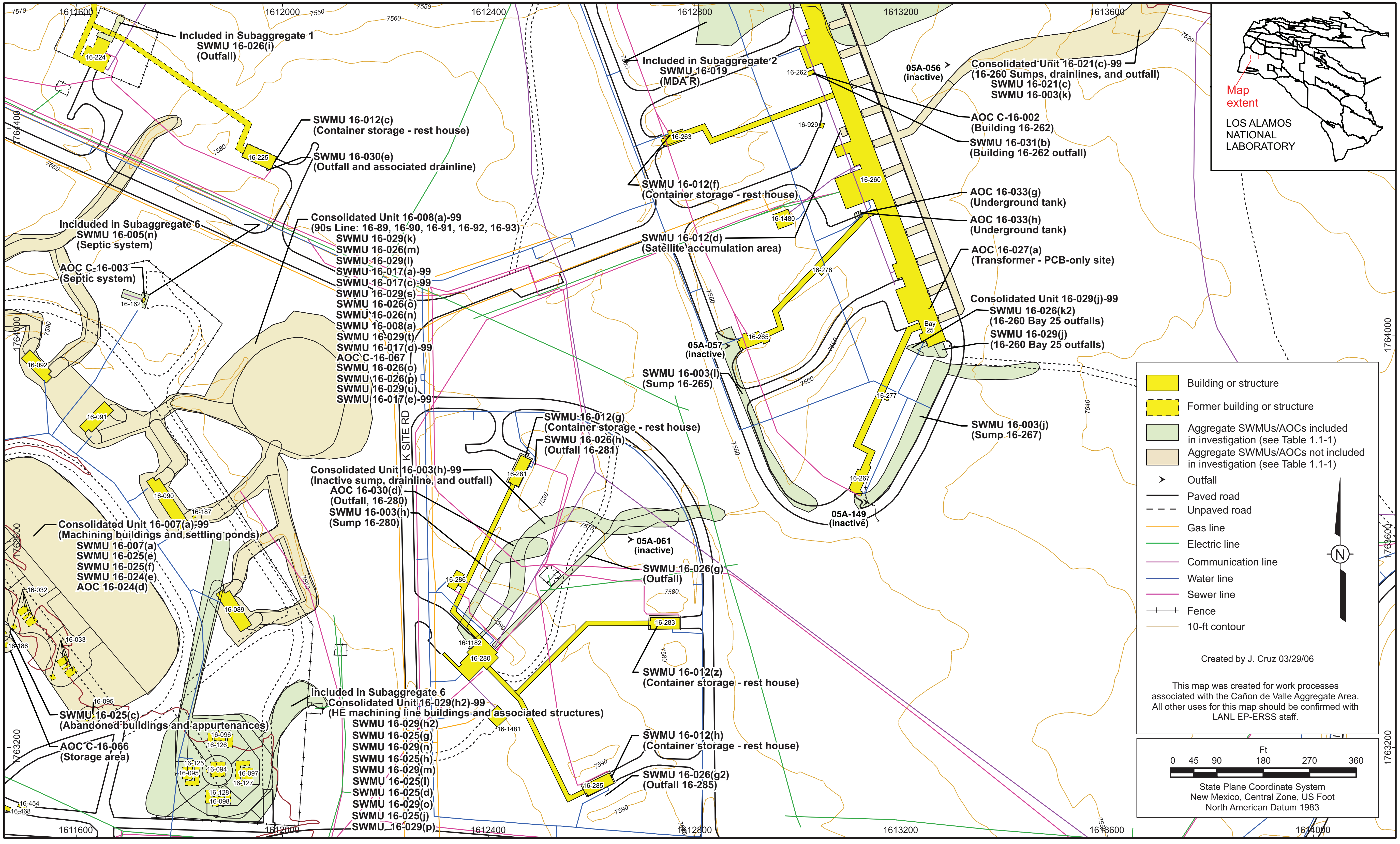


Figure 8.0-1. Detailed site map of Subaggregate 7 (TA-16-280/260 Complexes), surrounding SWMUs and AOCs, and subsurface utility corridors

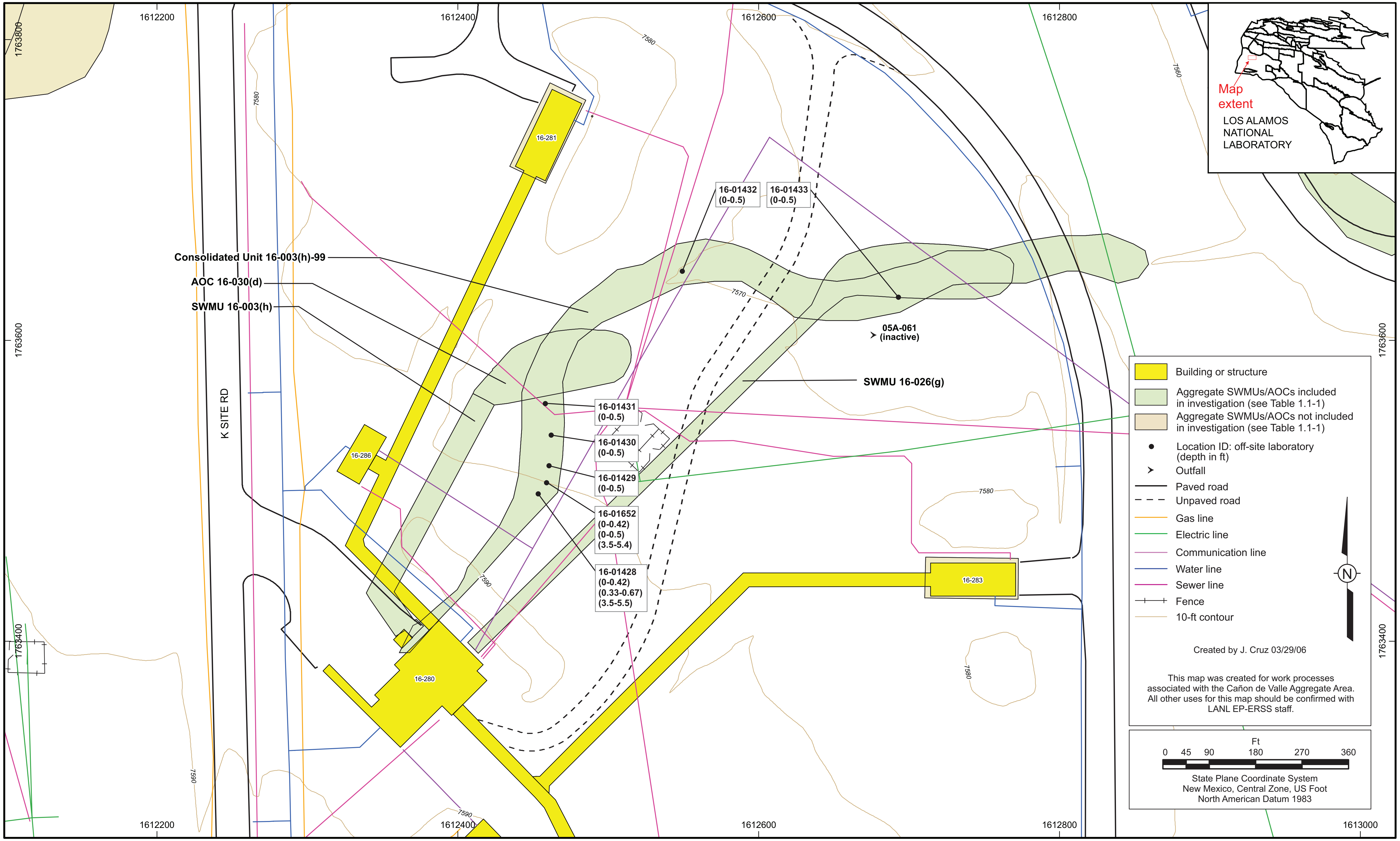


Figure 8.1-1. Subaggregate 7 (TA-16-280/260 Complexes), 16-280 Outfalls, historical sampling locations and depths

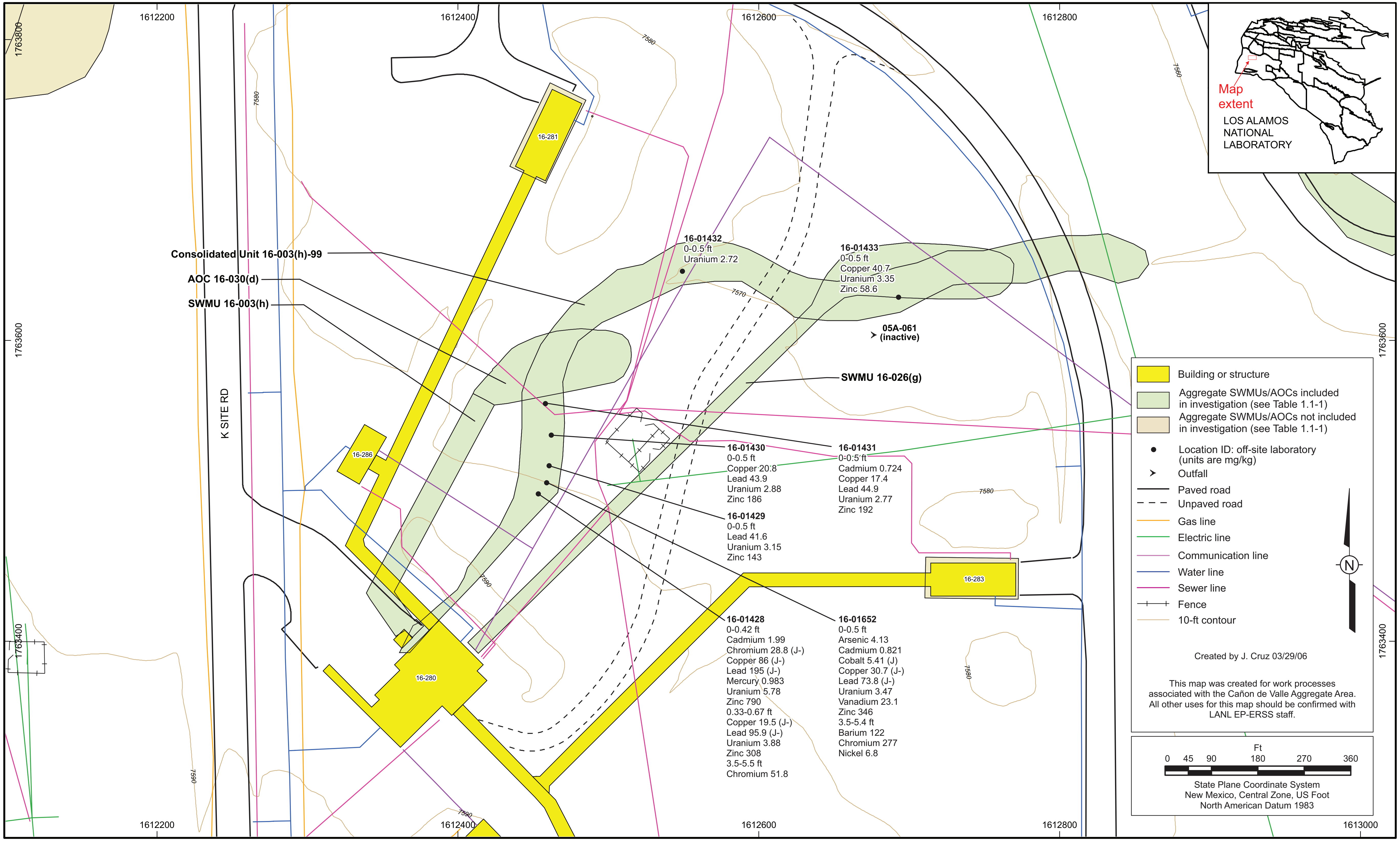


Figure 8.1-2. Subaggregate 7 (TA-16-280/260 Complexes), 16-280 Outfalls, historical sampling locations with inorganic chemicals detected greater than background values

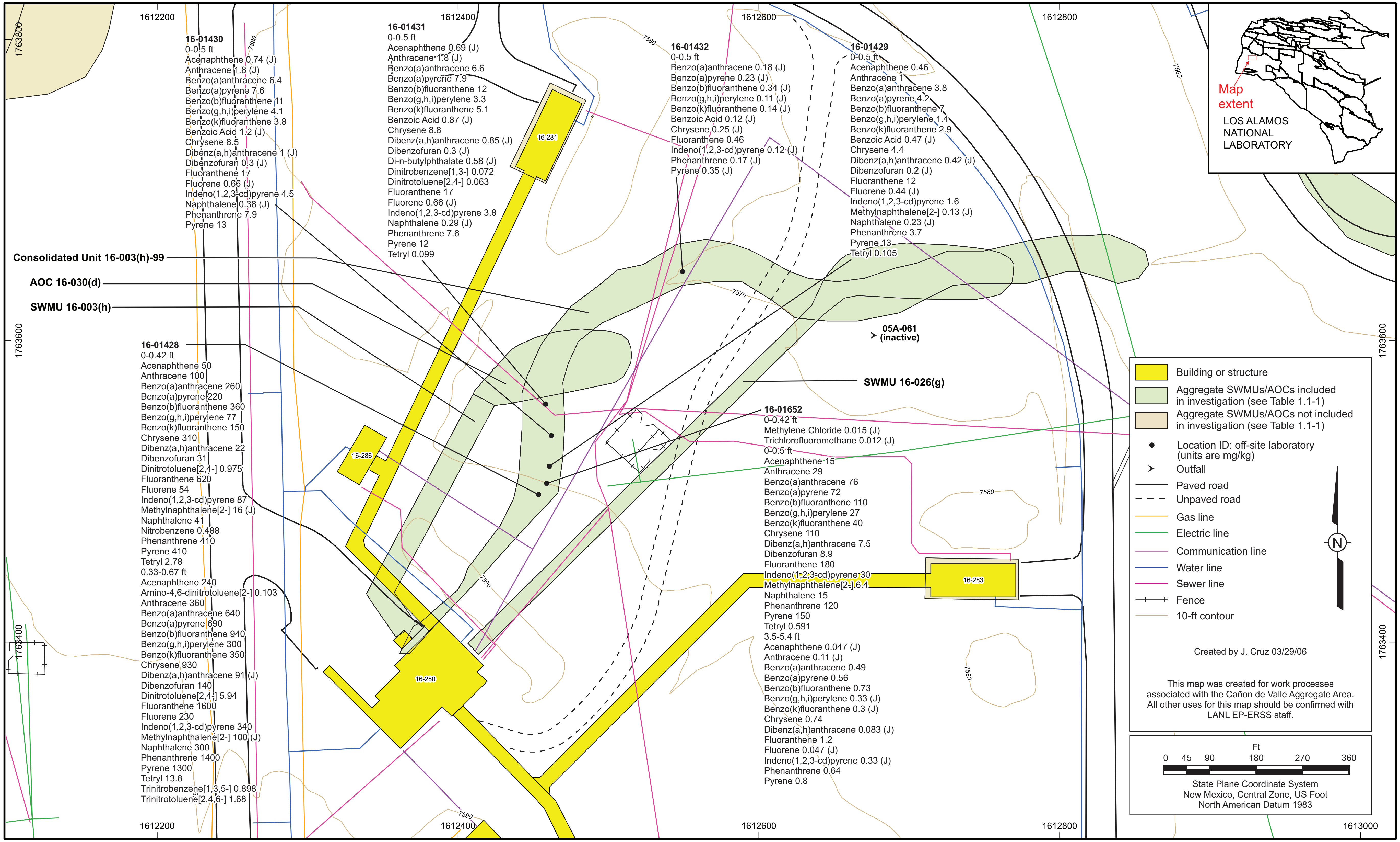
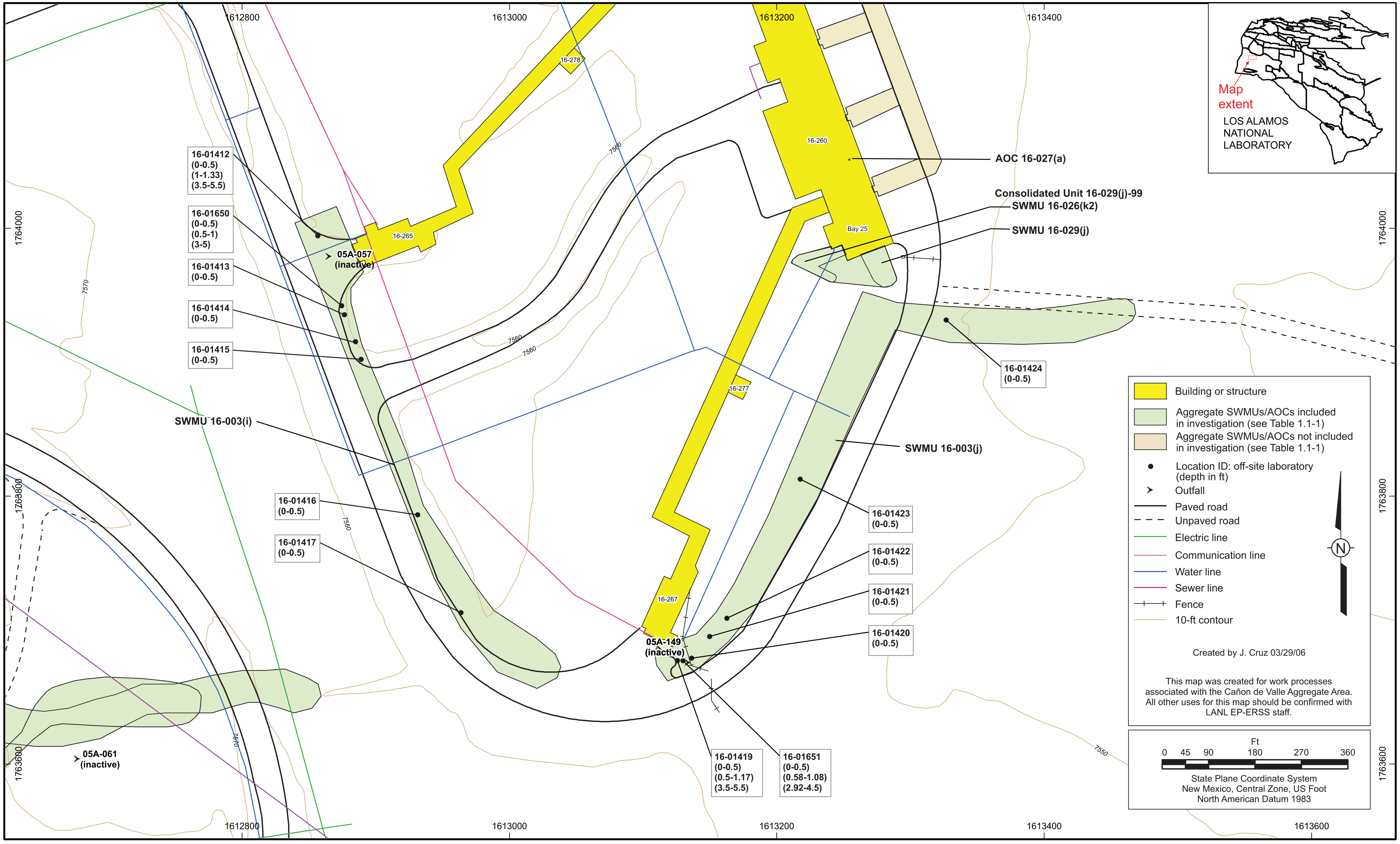


Figure 8.1-3. Subaggregate 7 (TA-16-280/260 Complexes), 16-280 Outfalls, historical sampling locations with detected organic chemicals



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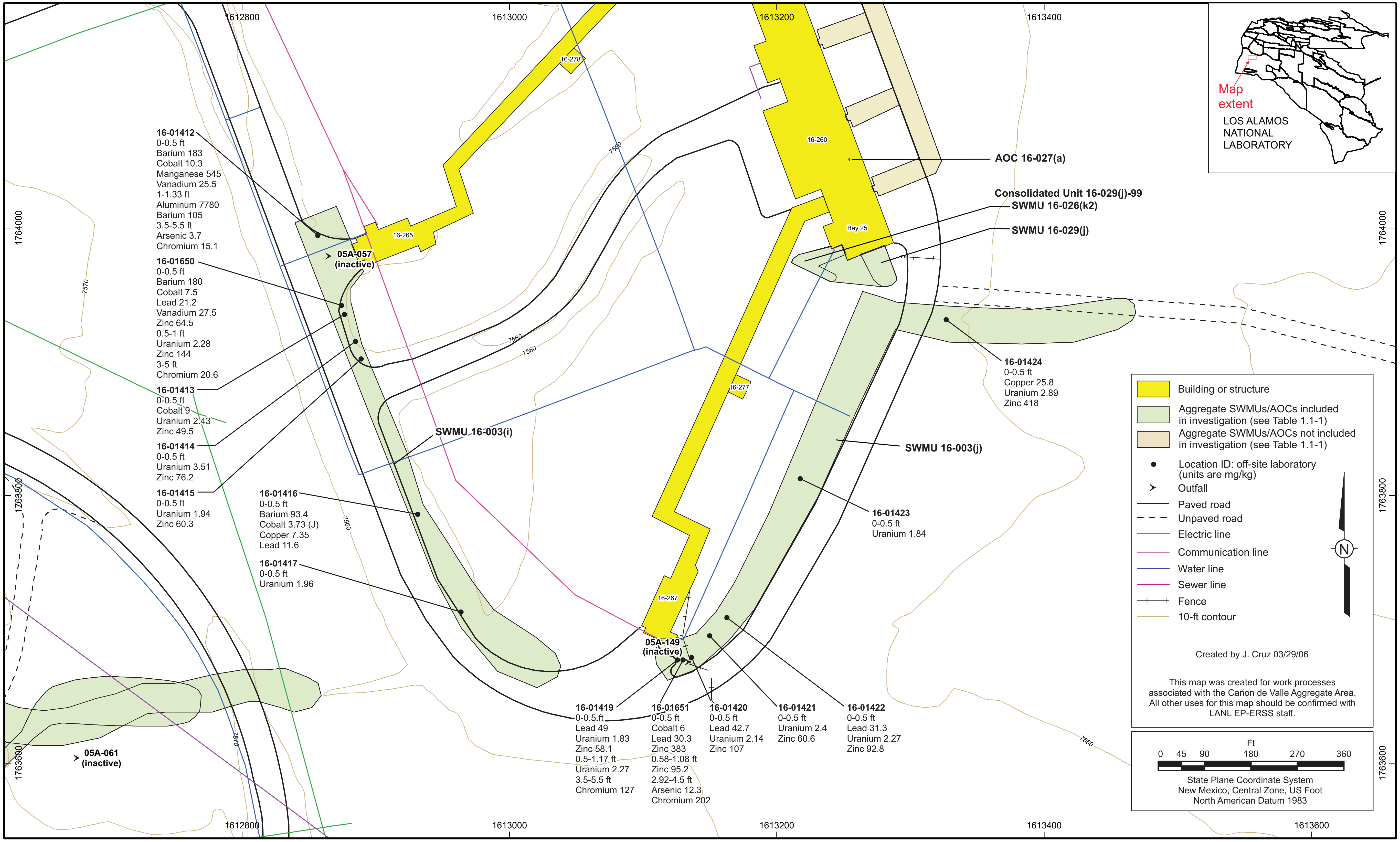
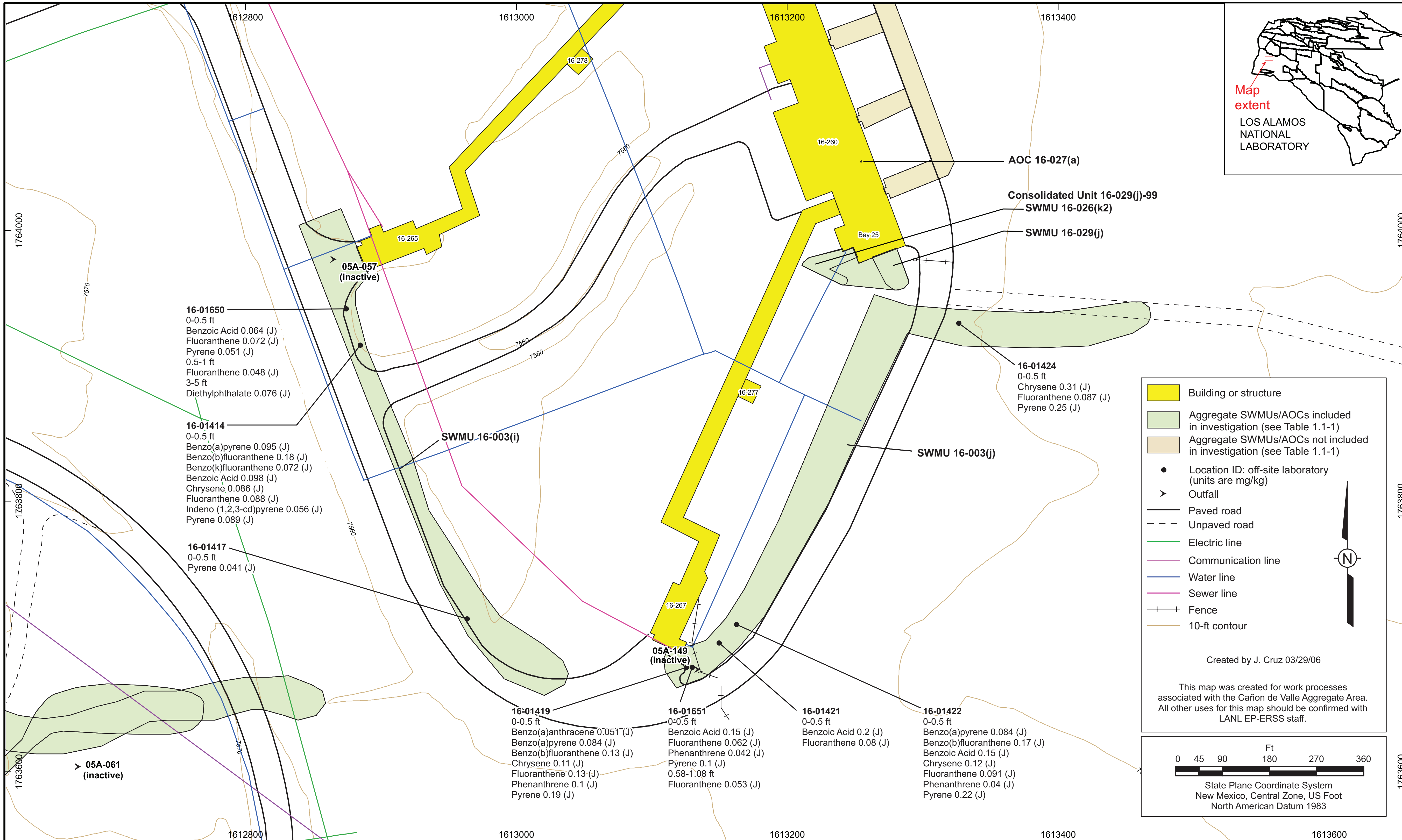


Figure 8.2-2. **Subaggregate 7 (TA-16-280/260 Complexes), 16-260 Outfalls, historical sampling locations with inorganic chemicals detected greater than background values**



Organics_16-260_outfalls_SA7

Figure 8.2-3. Subaggregate 7 (TA-16-280/260 Complexes), 16-260 Outfalls, historical sampling locations with detected organic chemicals

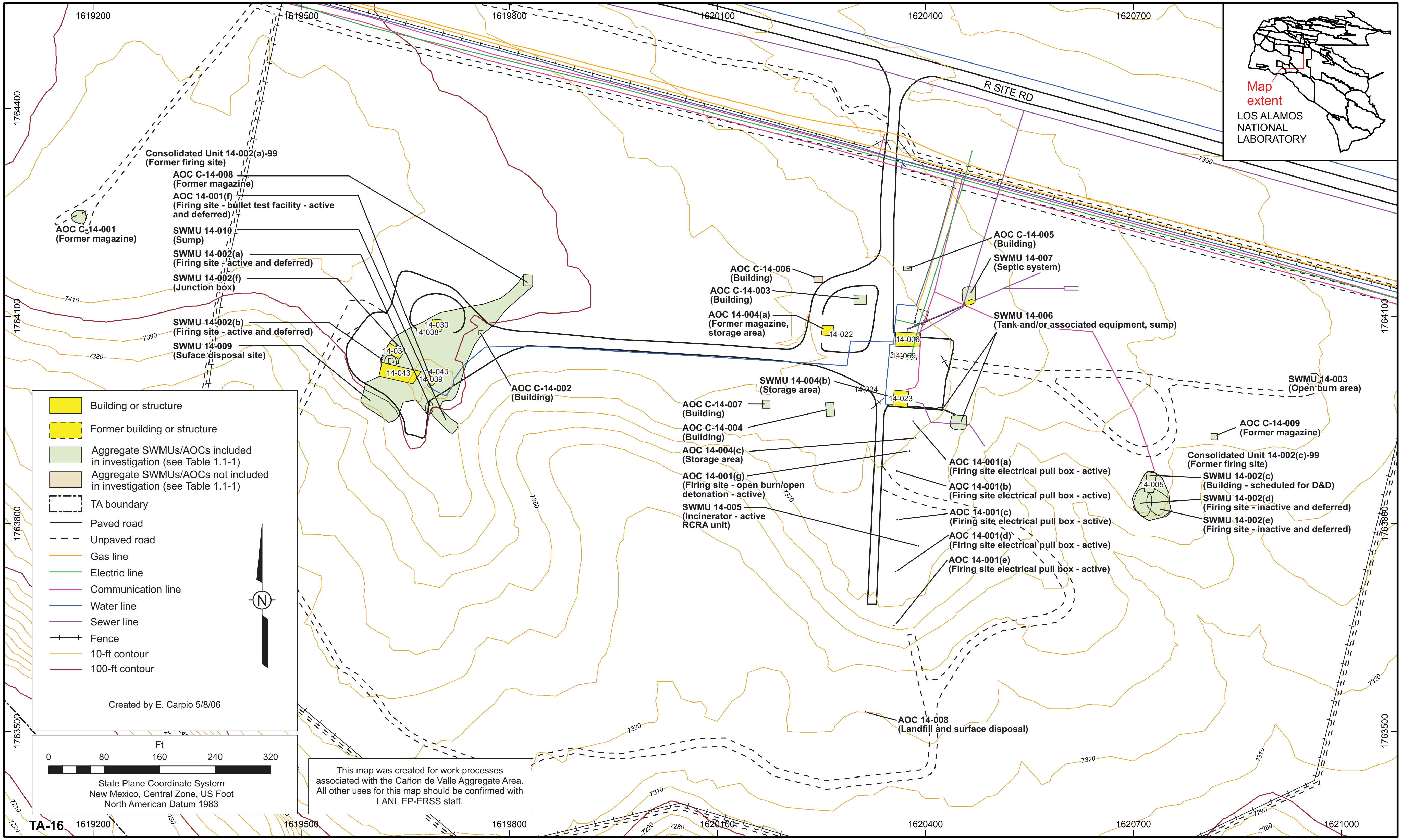


Figure 9.0-1. Detailed site map of Subaggregate 8 (TA-14 Firing Site), surrounding SWMUs and AOCs, and subsurface utility corridors

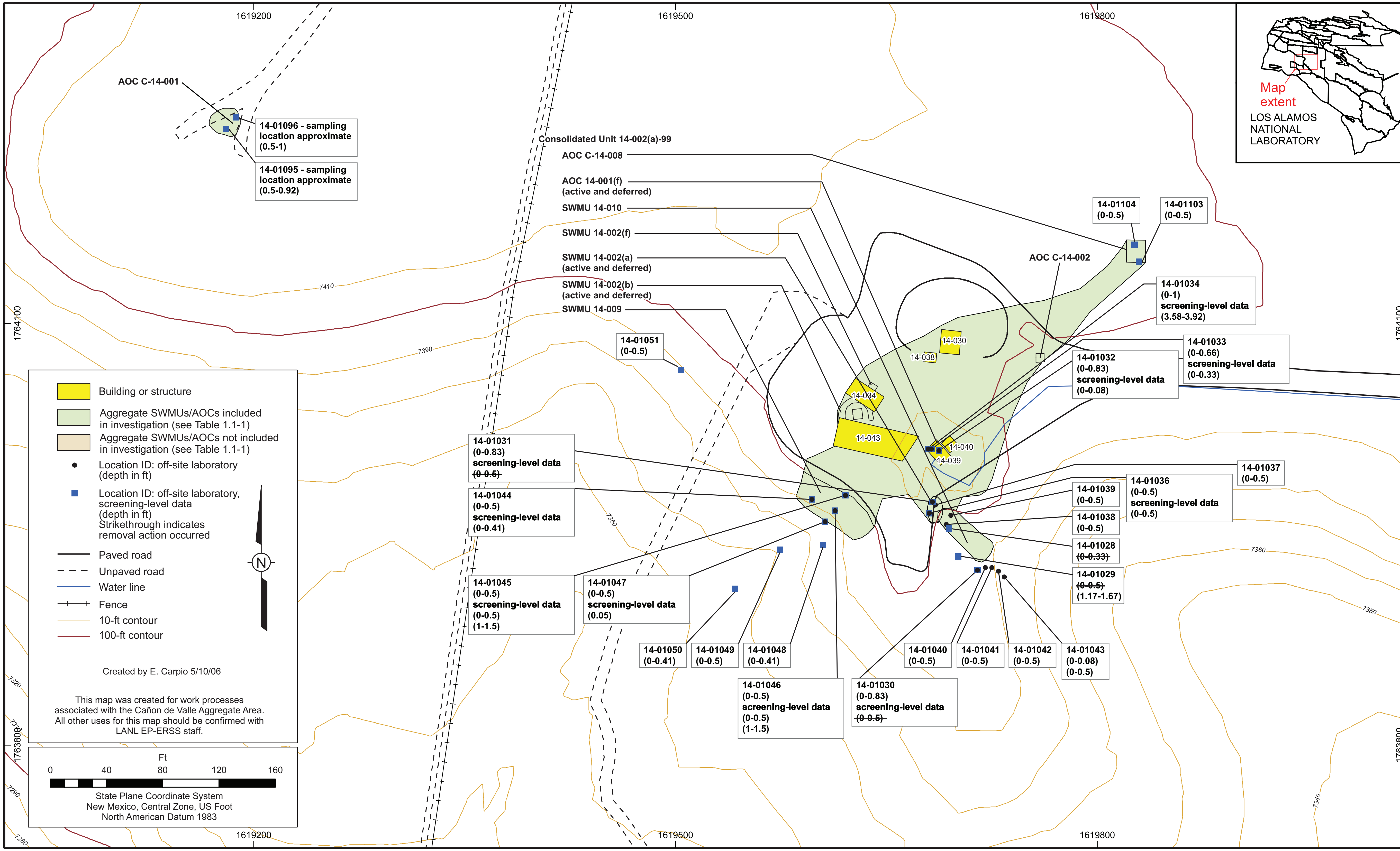


Figure 9.2-1. Subaggregate 8 (TA-14 Firing Site West) historical sampling locations and depths

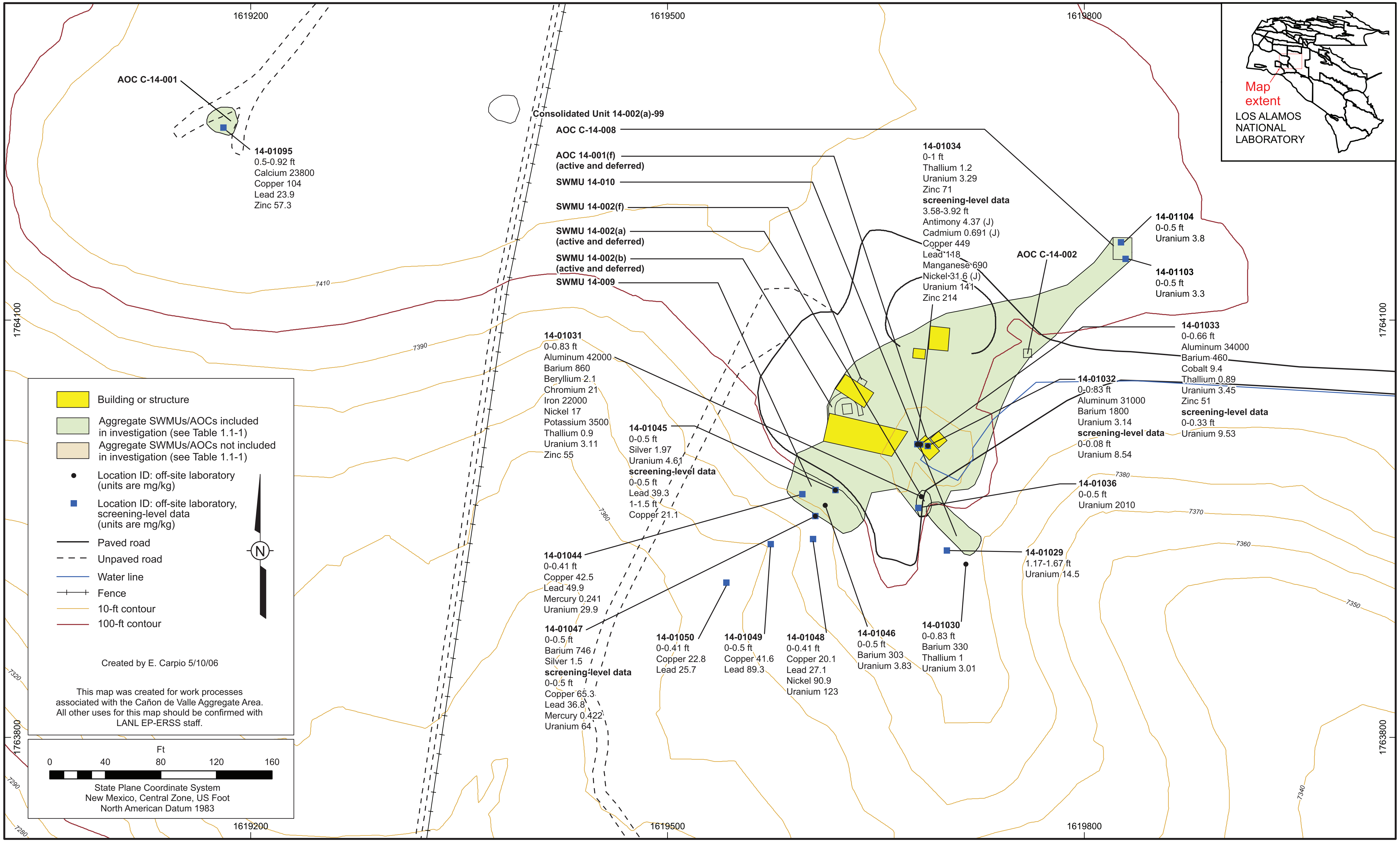


Figure 9.2-2. Subaggregate 8 (TA-14 Firing Site West) historical sampling locations with inorganic chemicals detected greater than background values

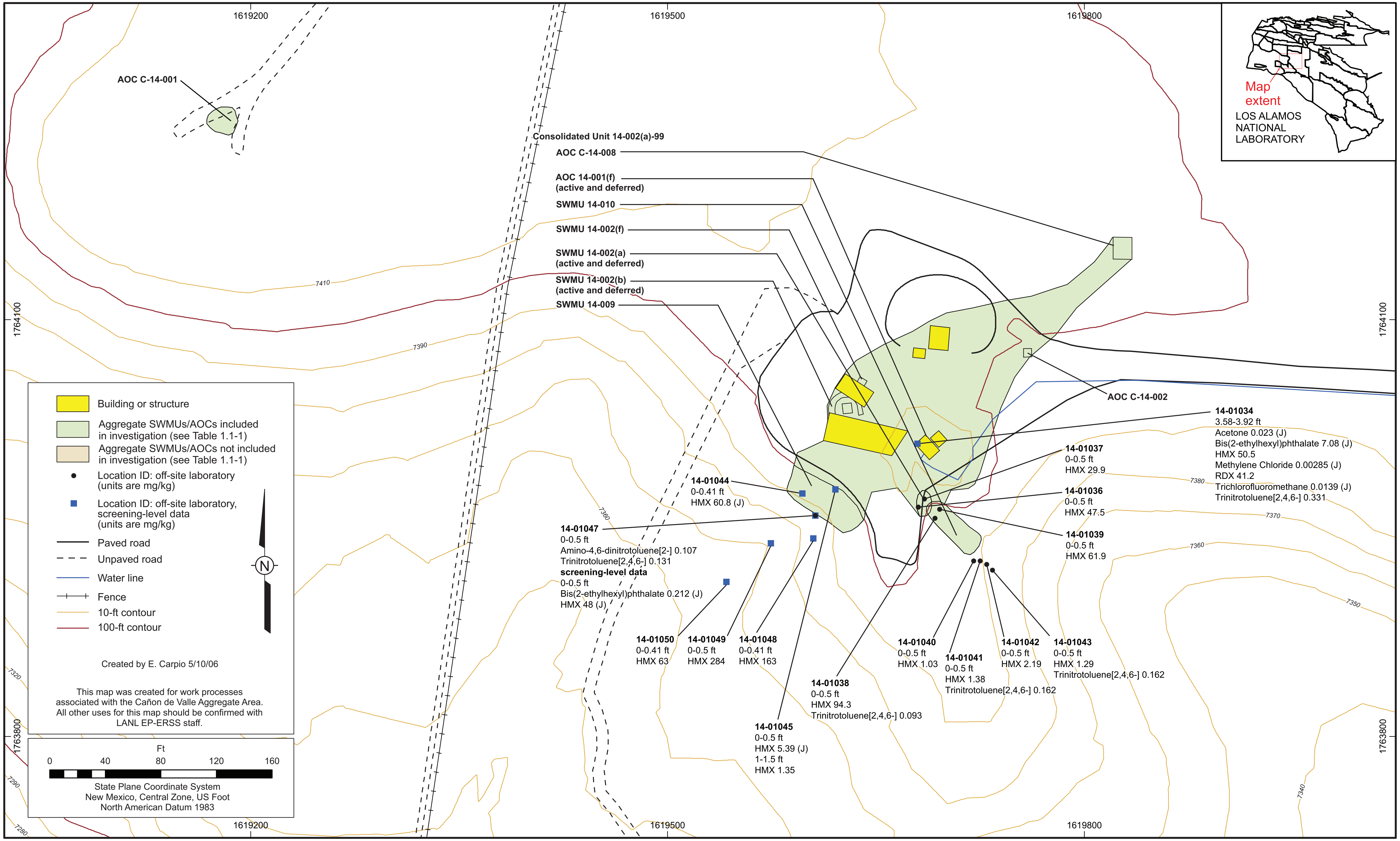


Figure 9.2-3. Subaggregate 8 (TA-14 Firing Site West) historical sampling locations with detected organic chemicals

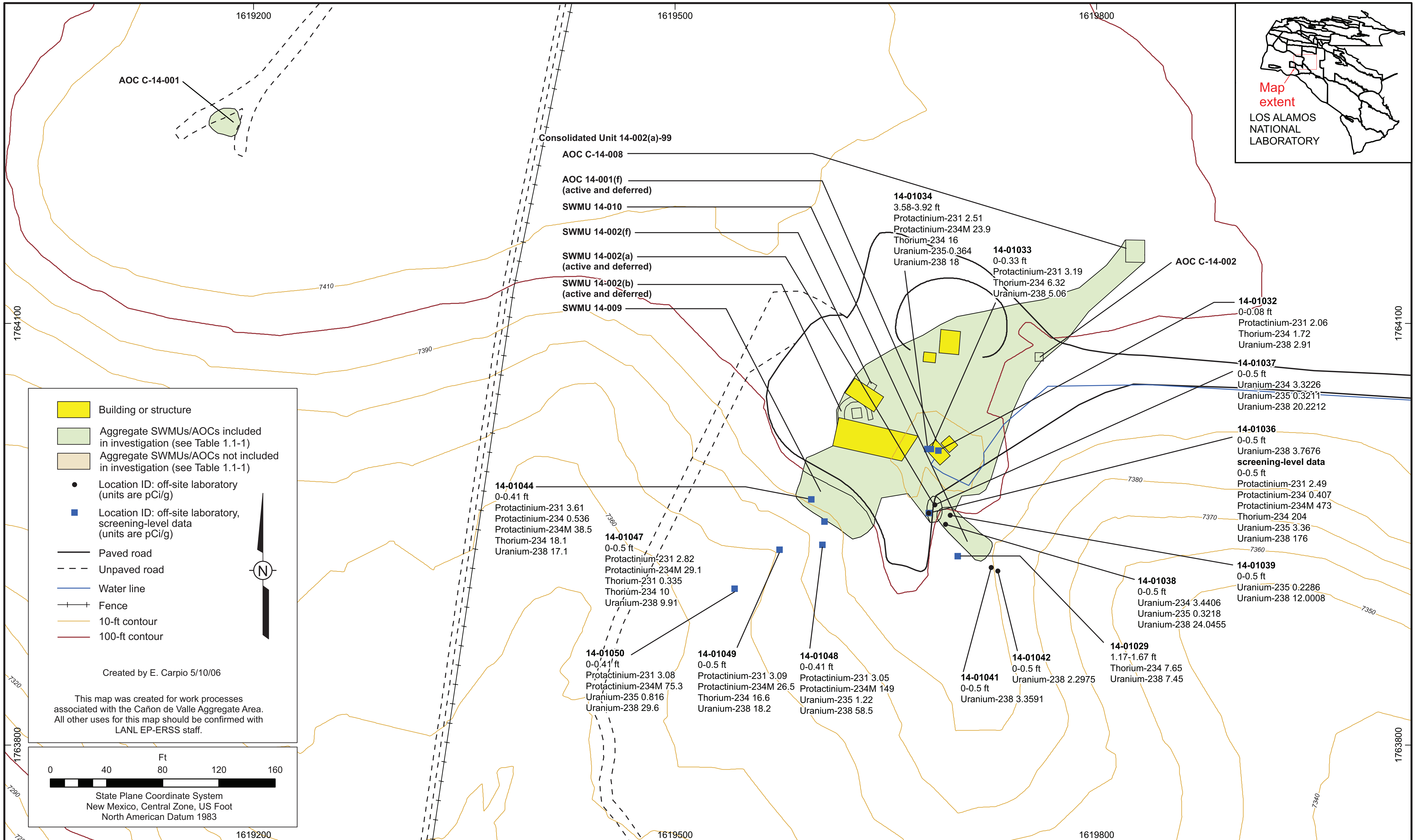


Figure 9.2-4. Subaggregate 8 (TA-14 Firing Site West) historical sampling locations with radionuclides detected, or detected greater than background values

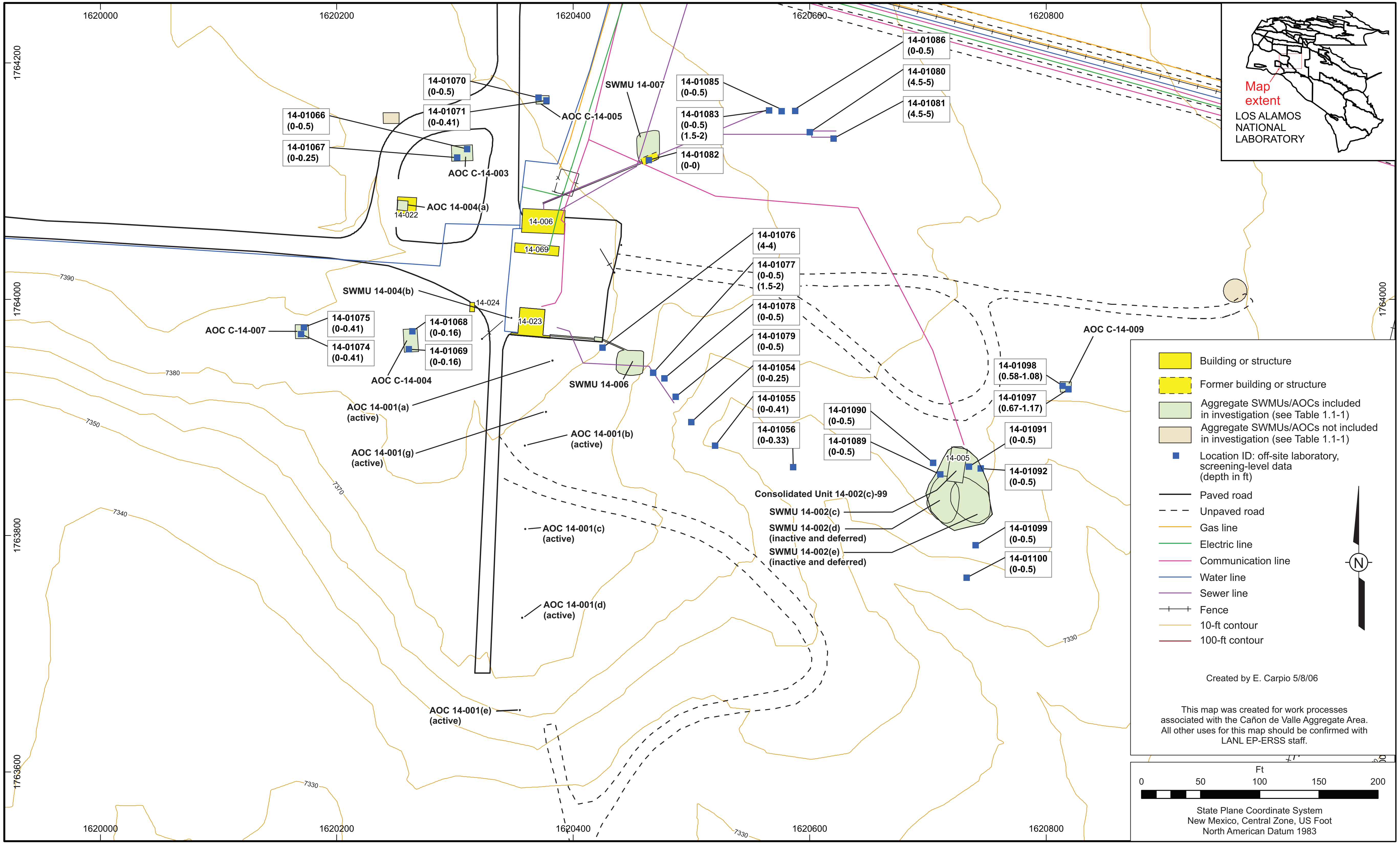


Figure 9.2-5. Subaggregate 8 (TA-14 Firing Site East) historical sampling locations and depths

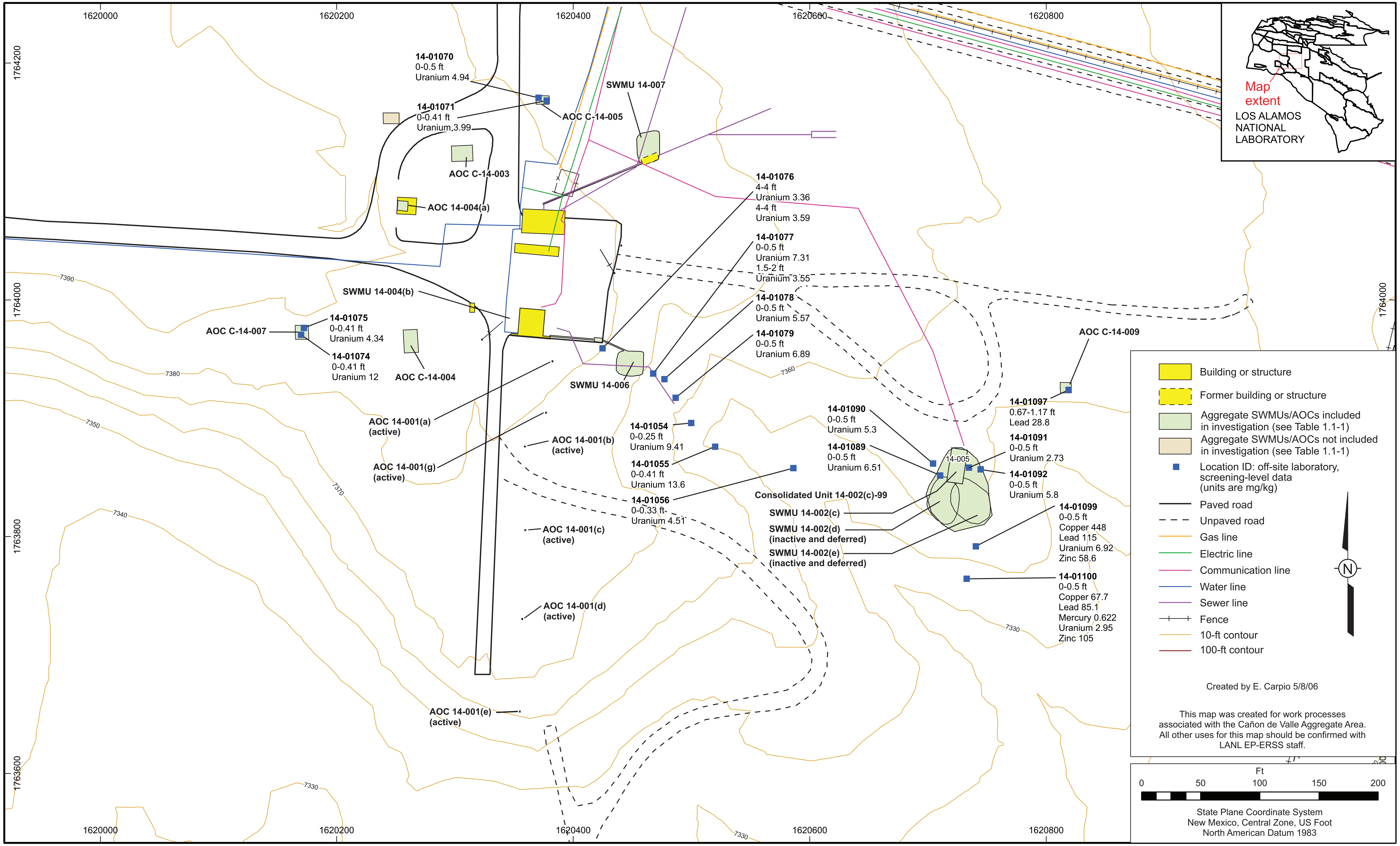


Figure 9.2-6. Subaggregate 8 (TA-14 Firing Site East) historical sampling locations with inorganic chemicals detected greater than background values

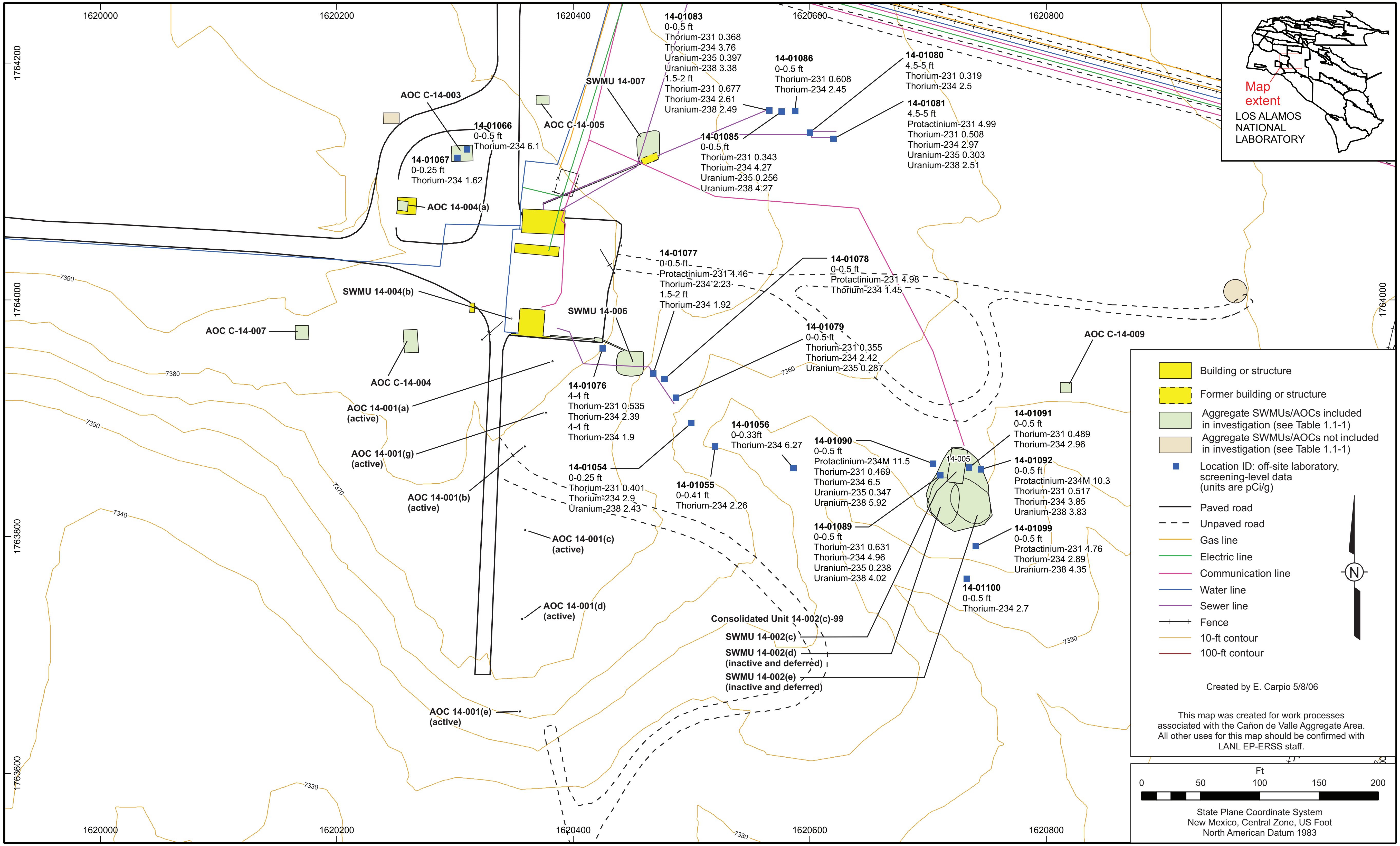


Figure 9.2-7. Subaggregate 8 (TA-14 Firing Site East) historical sampling locations with radionuclides detected, or detected greater than background values

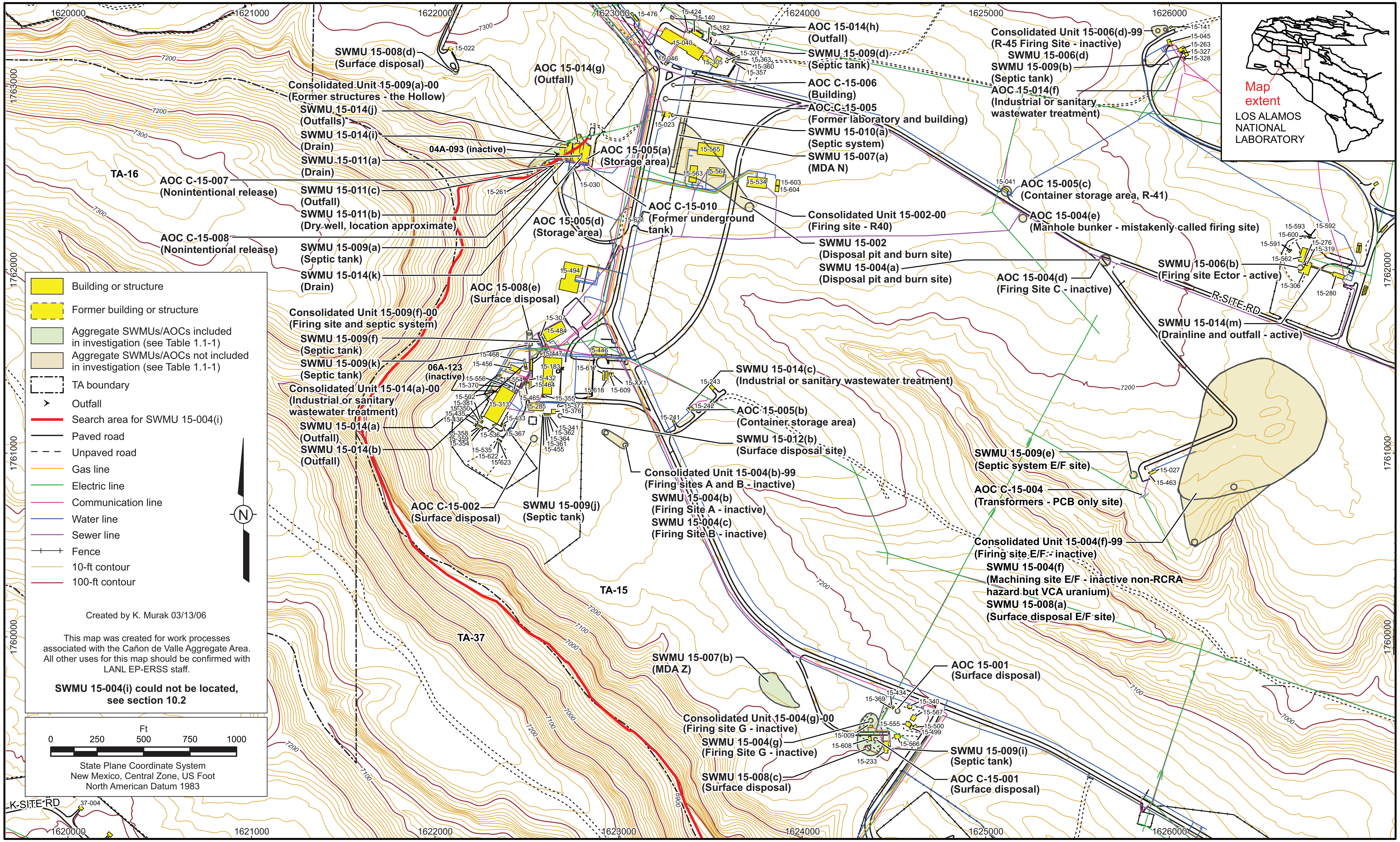


Figure 10.0-1. Detailed site map of Subaggregate 9 (TA-15 West), surrounding SWMUs and AOCs, and subsurface utility corridors

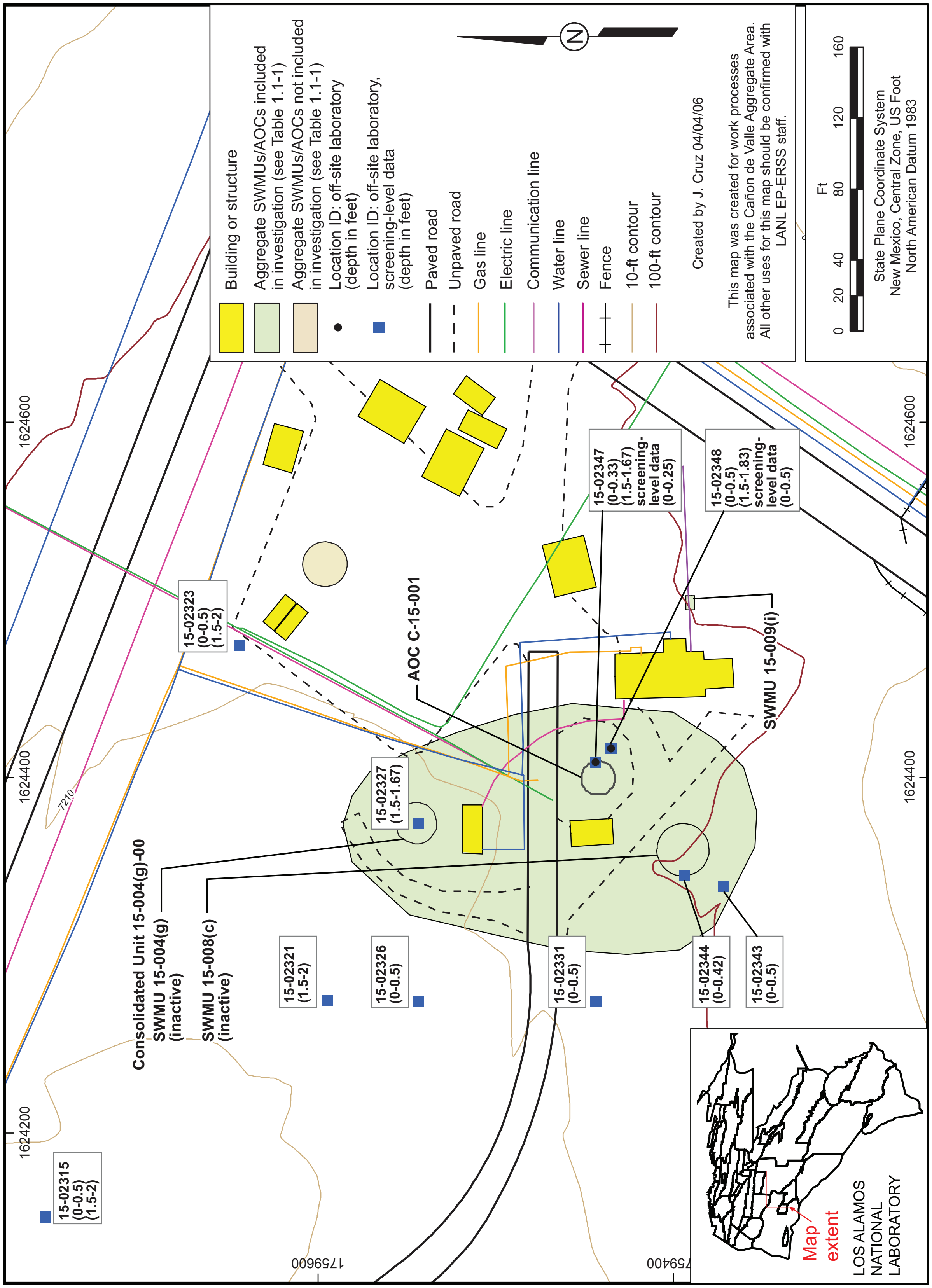


Figure 10.1-1. Subaggregate 9 (TA-15 West), Firing Site G, historical sampling locations and depths

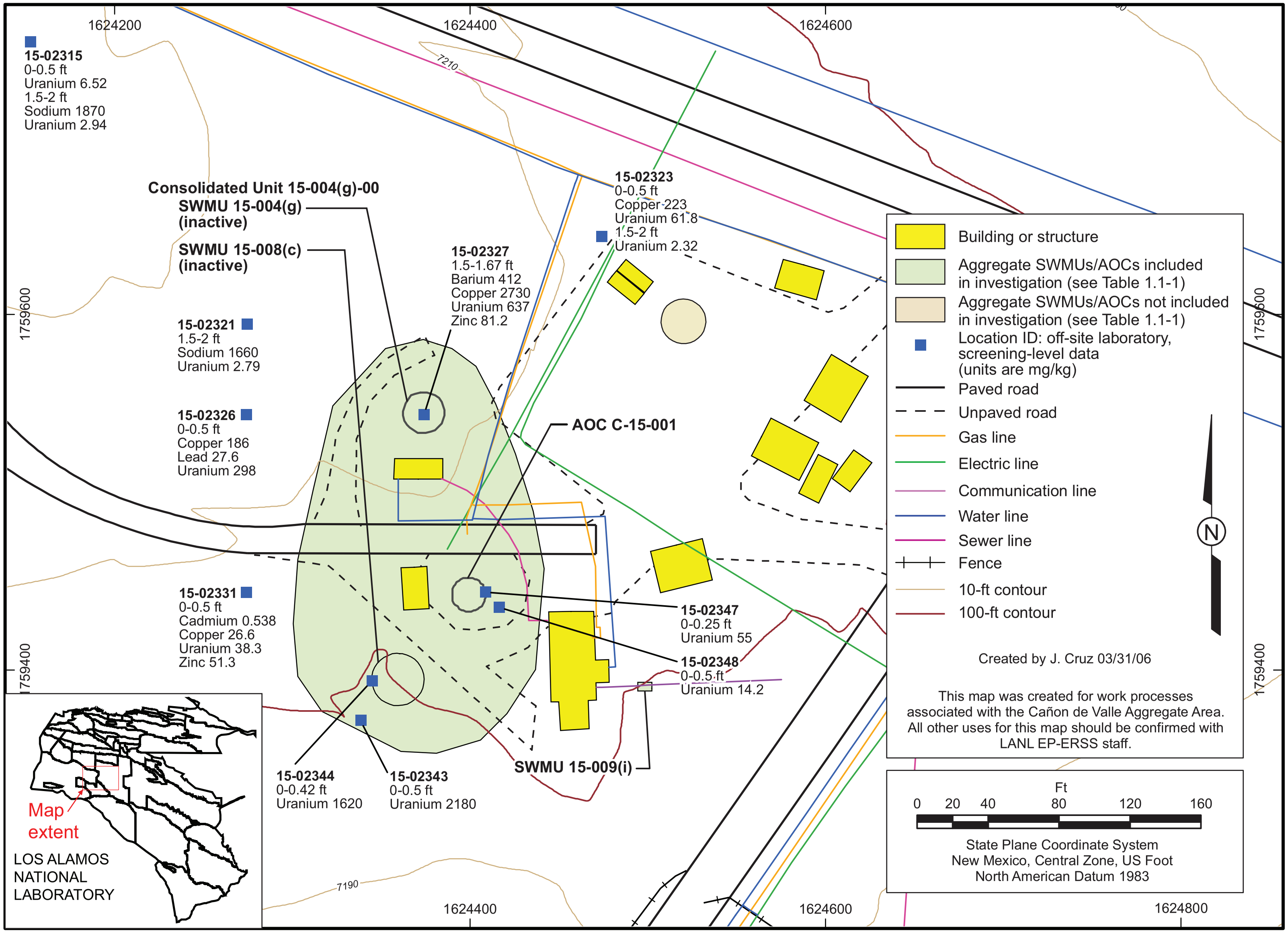


Figure 10.1-2. Subaggregate 9 (TA-15 West), Firing Site G, historical sampling locations with inorganic chemicals detected greater than background values

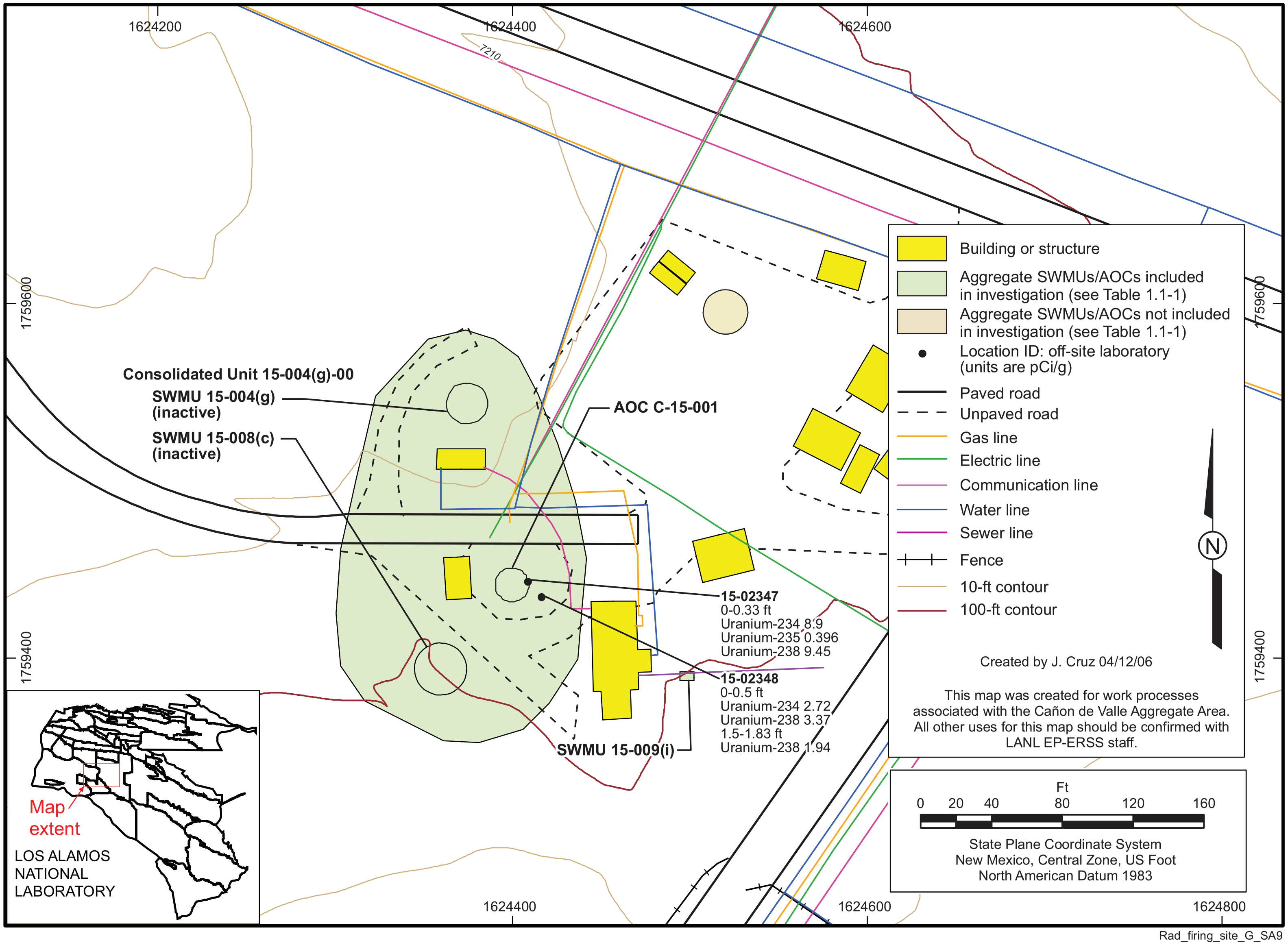


Figure 10.1-3. Subaggregate 9 (TA-15 West), Firing Site G, historical sampling locations with radionuclides detected, or detected greater than background values

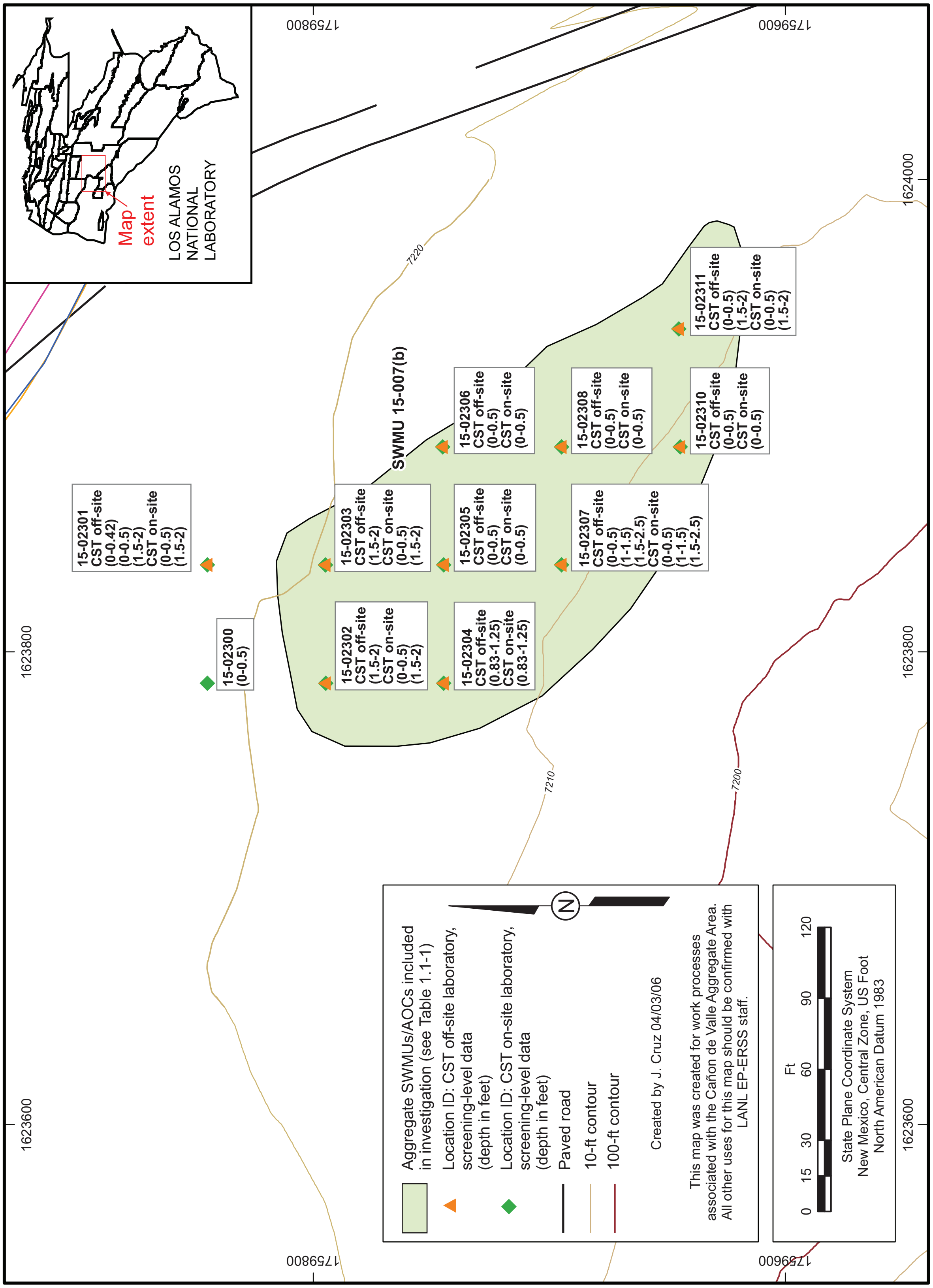


Figure 10.3-1. Subaggregate 9 (TA-15 West), MDA Z, historical sampling locations and depths

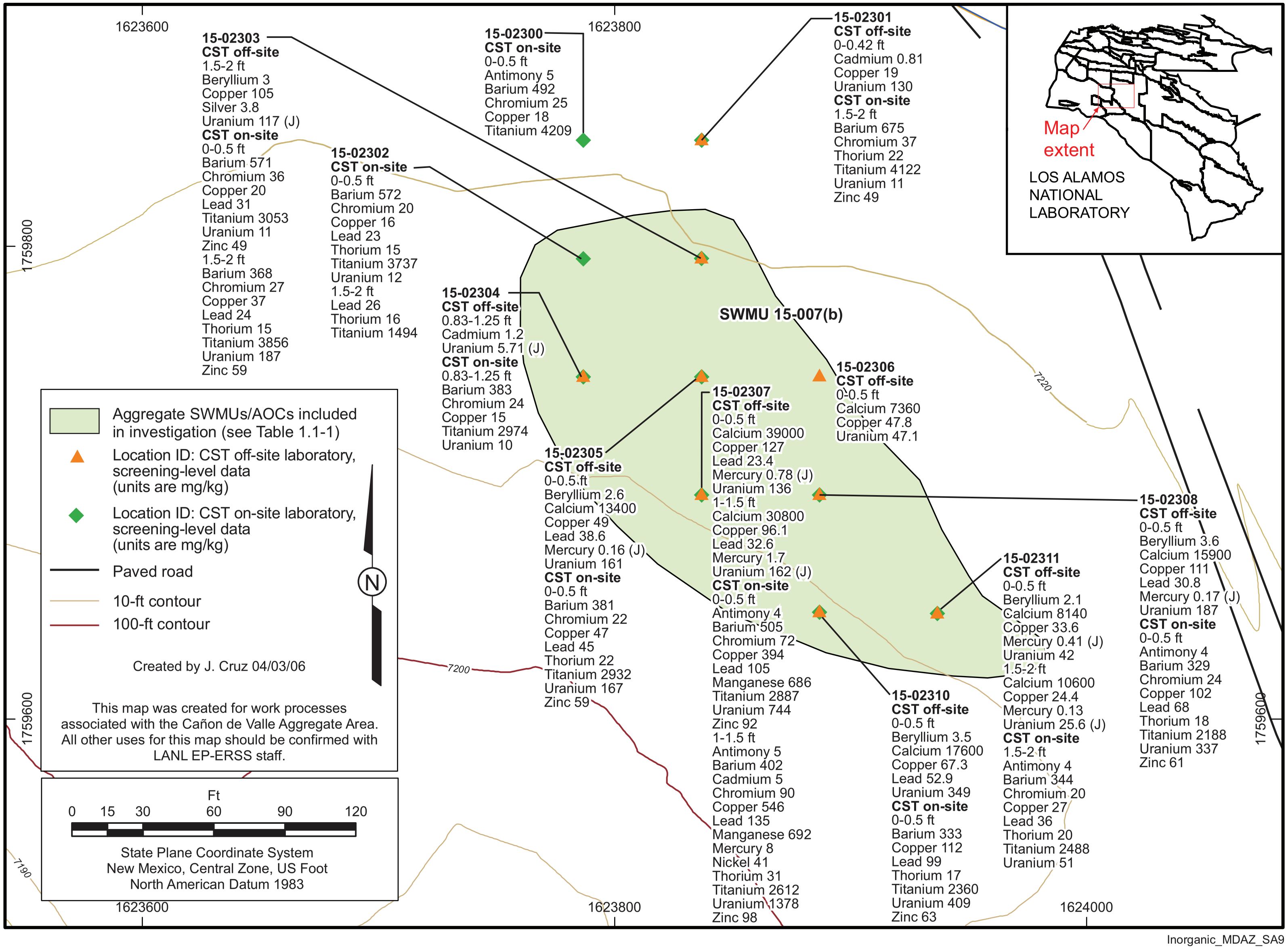


Figure 10.3-2. Subaggregate 9 (TA-15 West), MDA Z, historical sampling locations with inorganic chemicals detected greater than background values

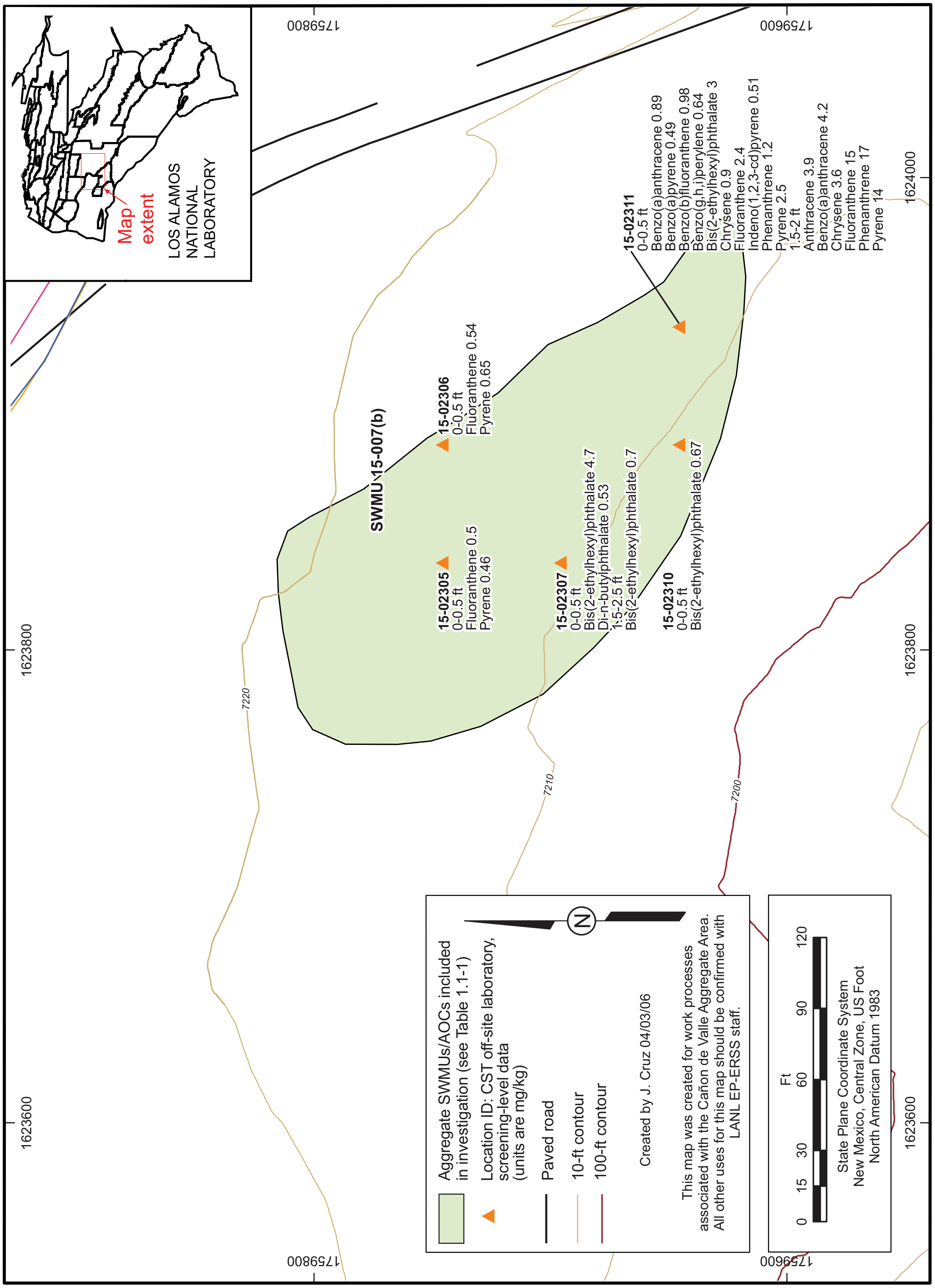


Figure 10.3-3. Subaggregate 9 (TA-15 West), MDA Z, historical sampling locations with detected organic chemicals

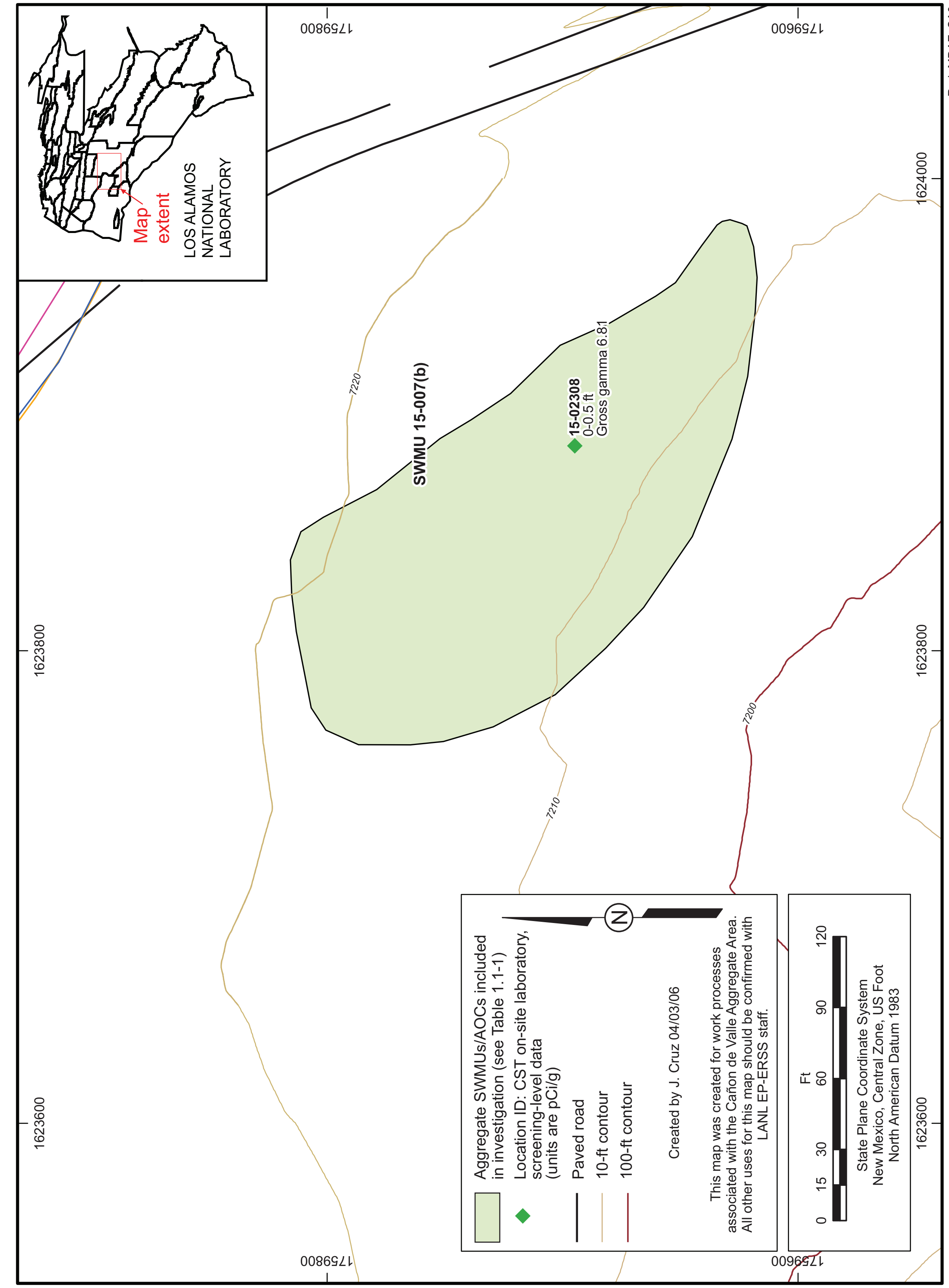


Figure 10.3-4. Subaggregate 9 (TA-15 West), MDA Z, historical sampling location with gross gamma activity

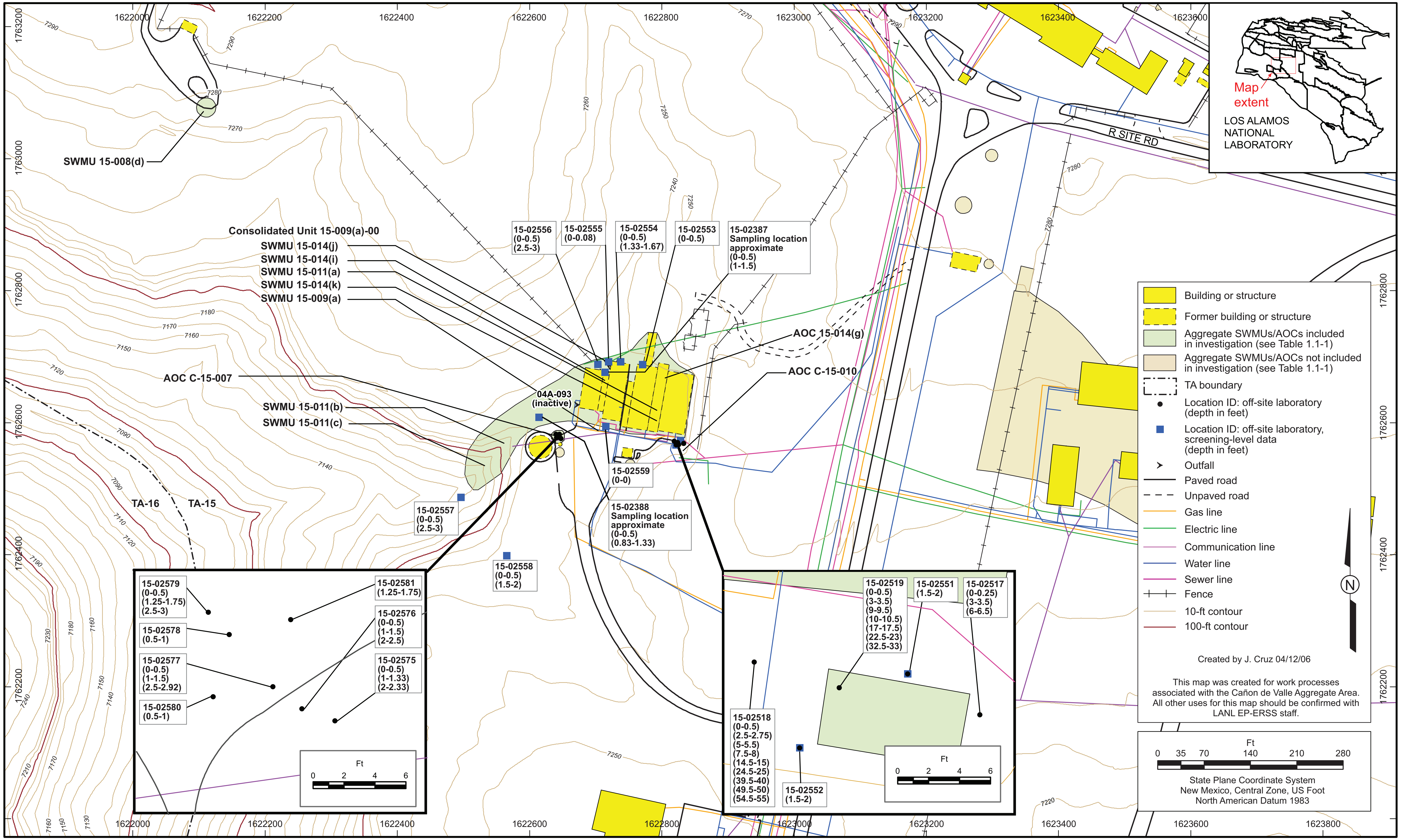


Figure 10.5-1. Subaggregate 9 (TA-15 West), the Hollow, historical sampling locations and depths

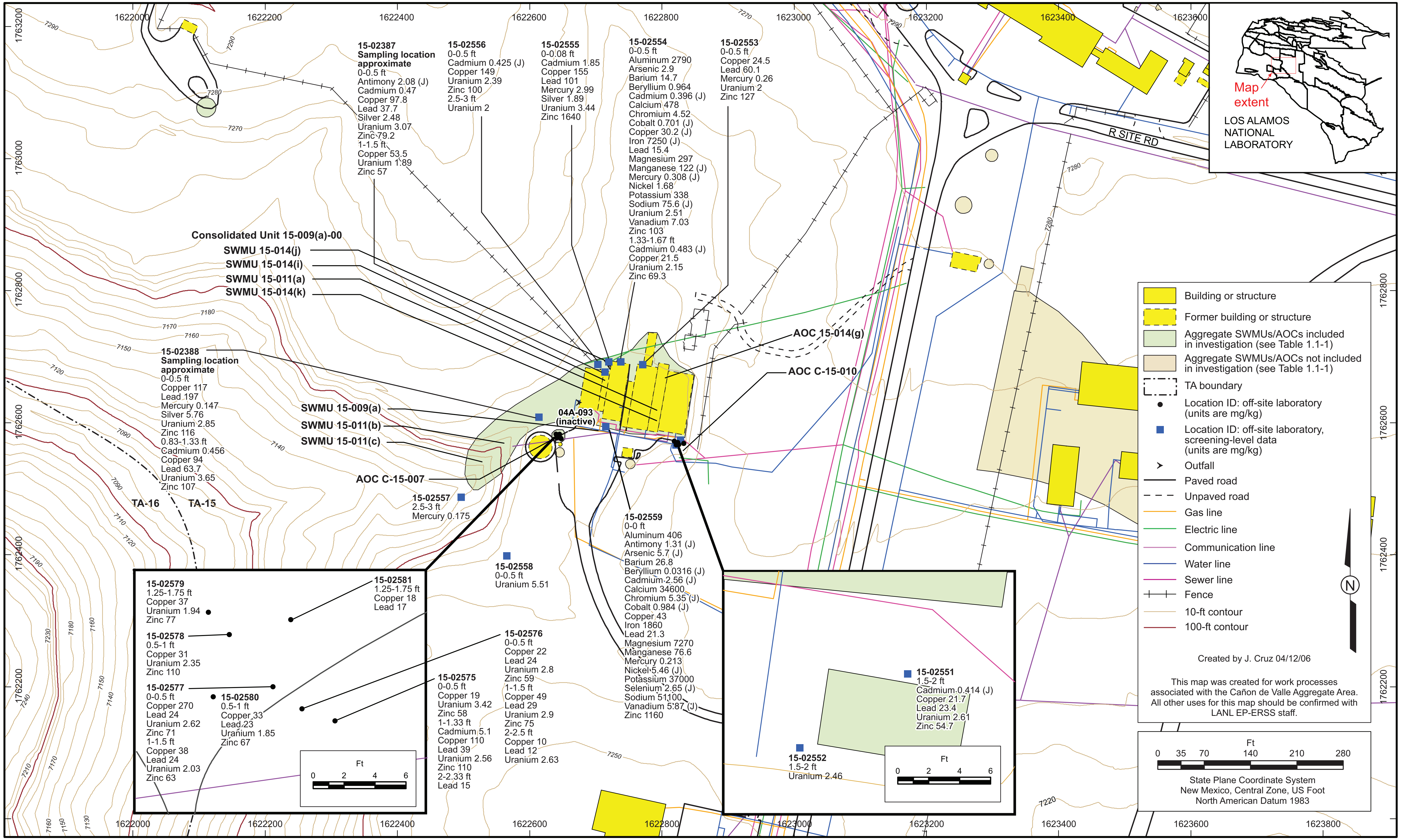


Figure 10.5-2. Subaggregate 9 (TA-15 West), the Hollow, historical sampling locations with inorganic chemicals detected greater than background values

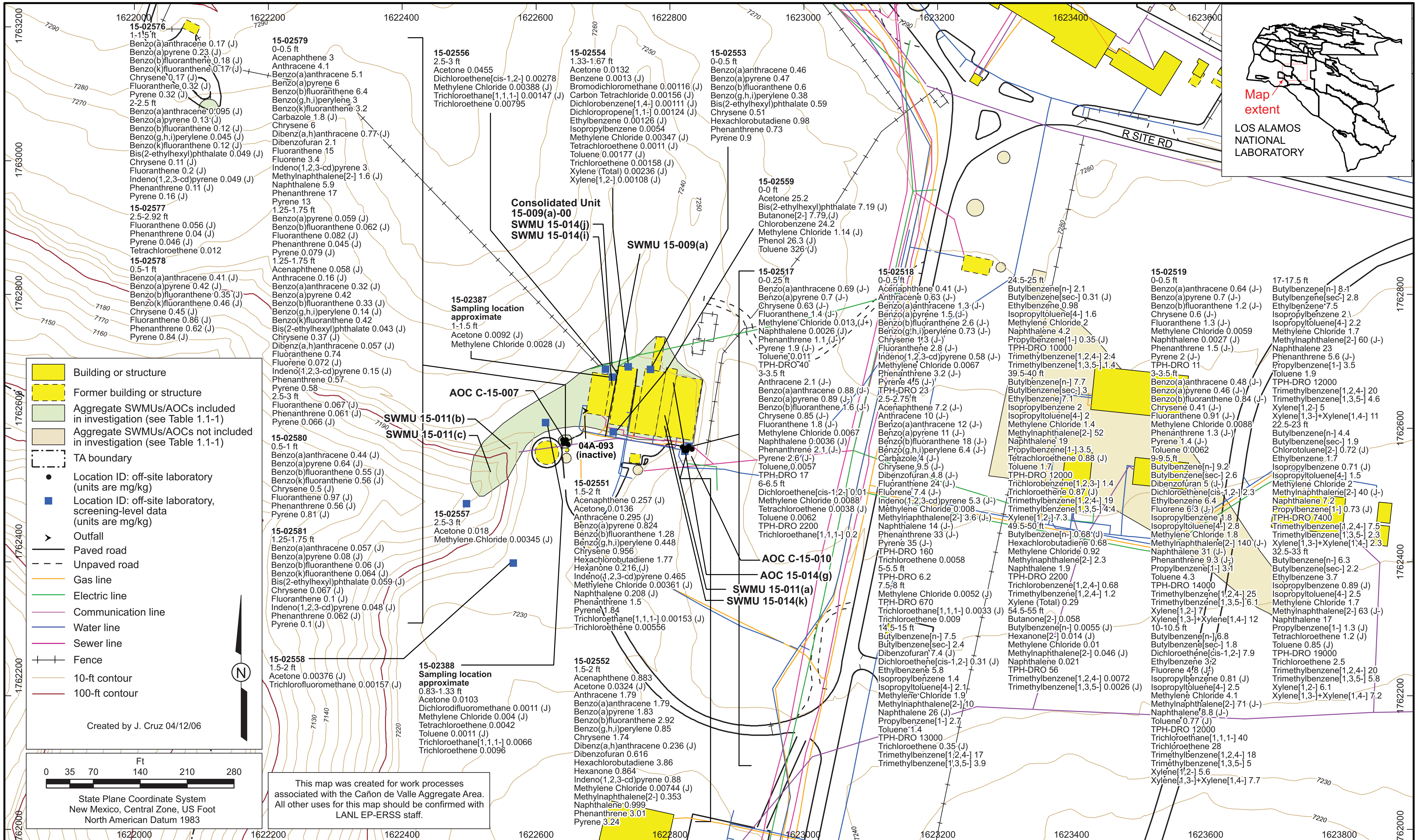


Figure 10.5-3. Subaggregate 9 (TA-15 West), the Hollow, historical sampling locations with detected organic chemicals

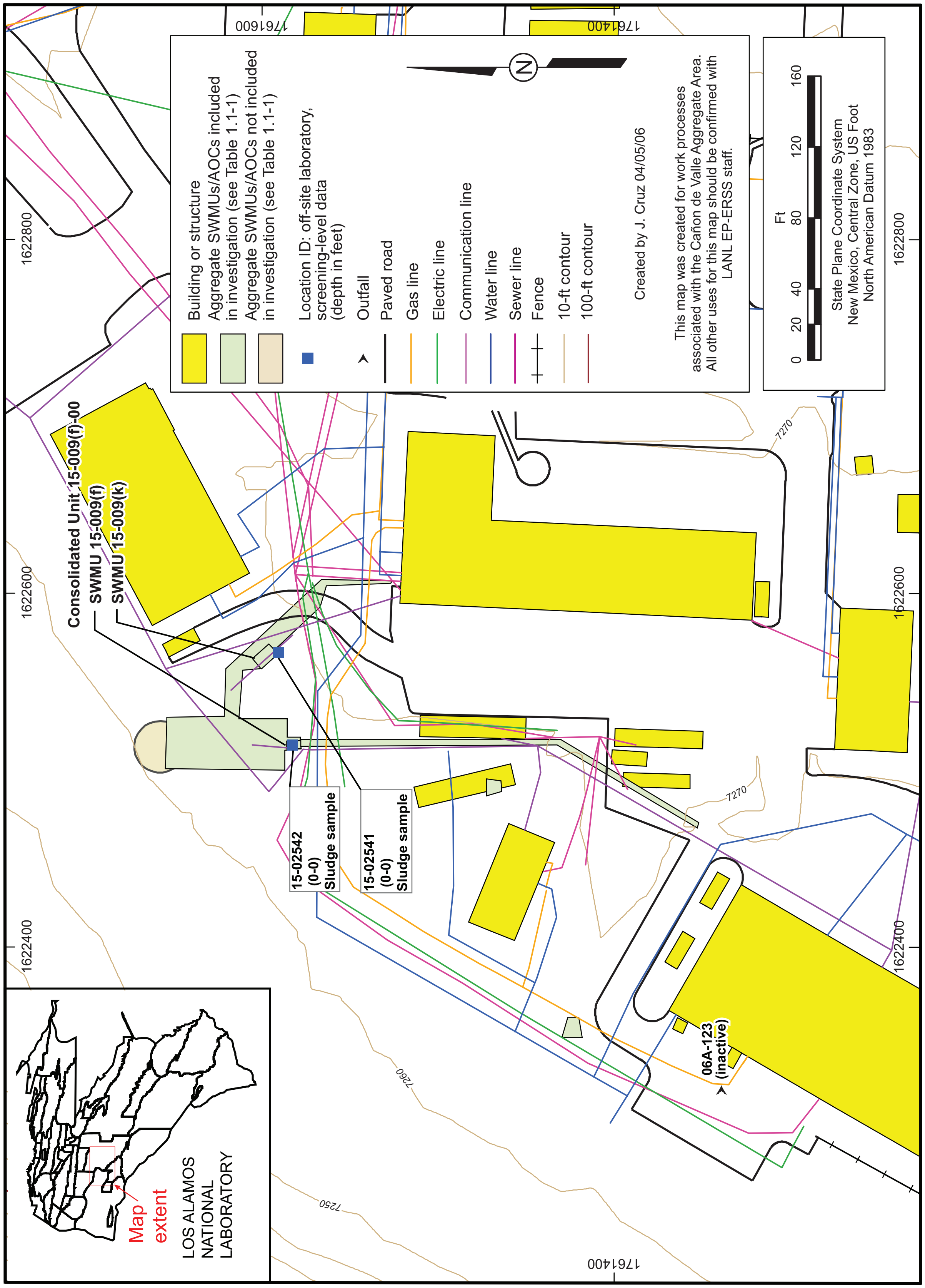


Figure 10.6-1. Subaggregate 9 (TA-15 West), Septic Systems, historical sampling locations and depths

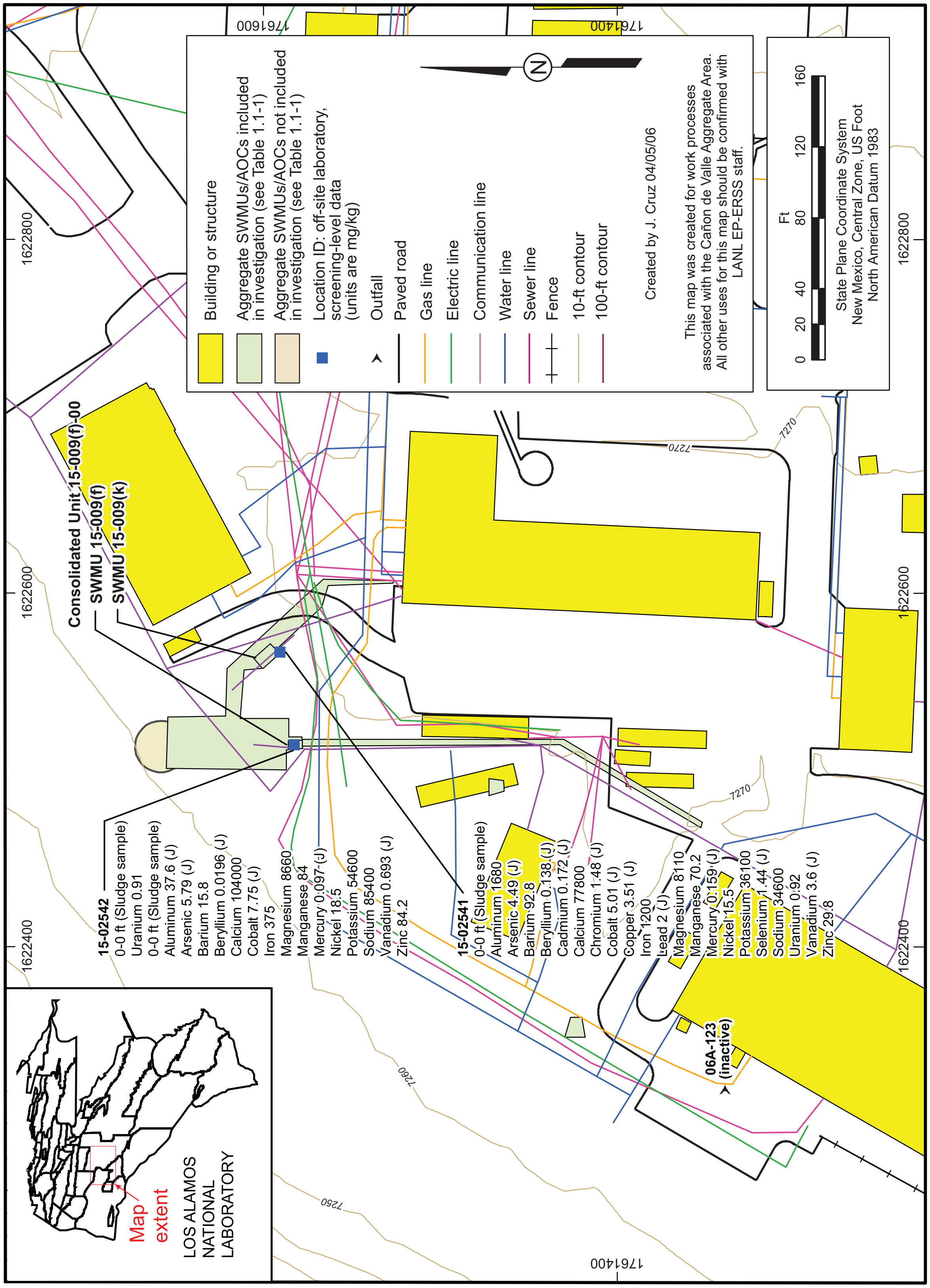


Figure 10.6-2. Subaggregate 9 (TA-15 West), Septic Systems, historical sampling locations with detected inorganic chemicals

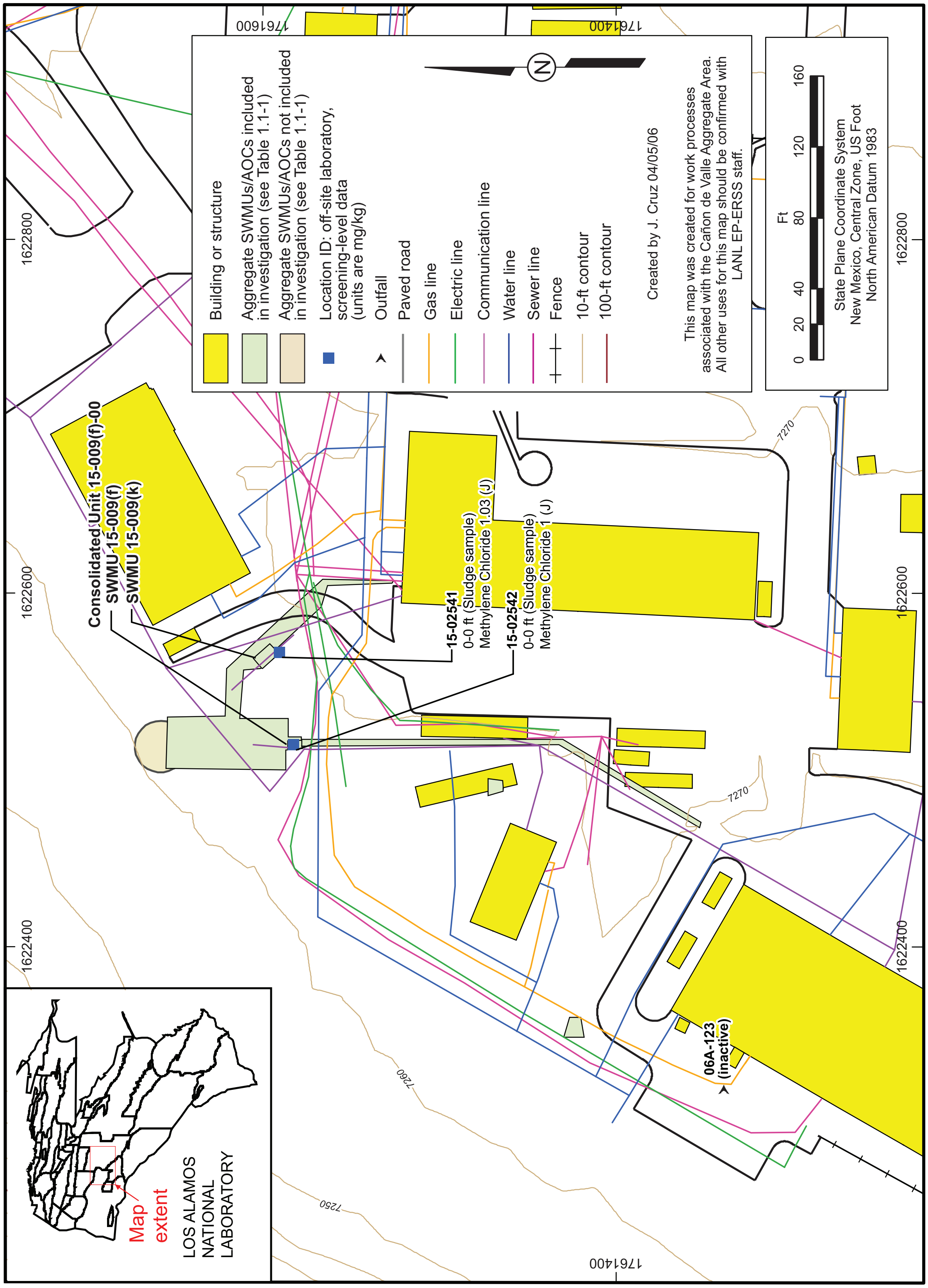


Figure 10.6-3. Subaggregate 9 (TA-15 West), Septic Systems, historical sampling locations with detected organic chemicals

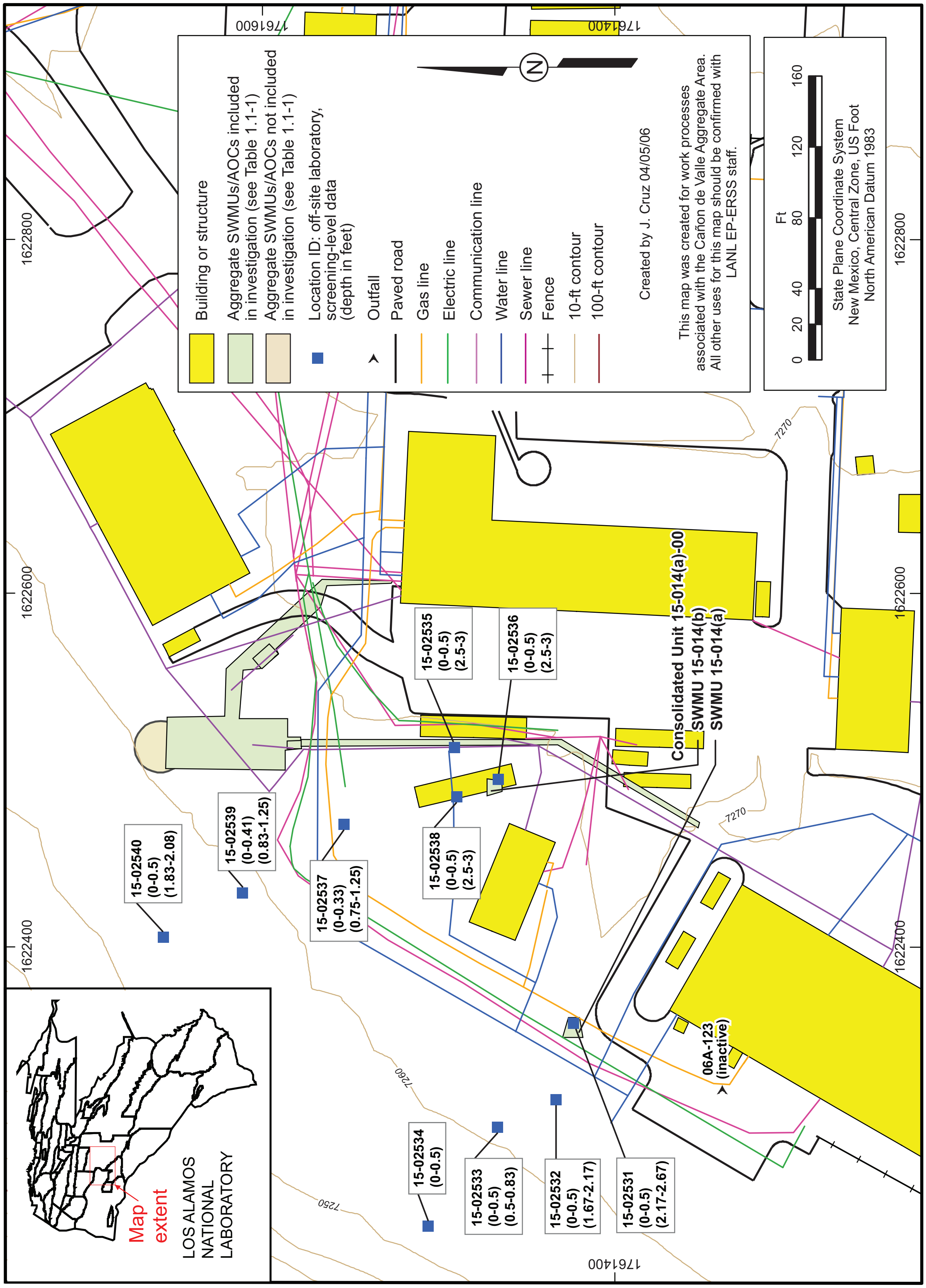


Figure 10.7-1. Subaggregate 9 (TA-15 West), Outfalls, historical sampling locations and depths

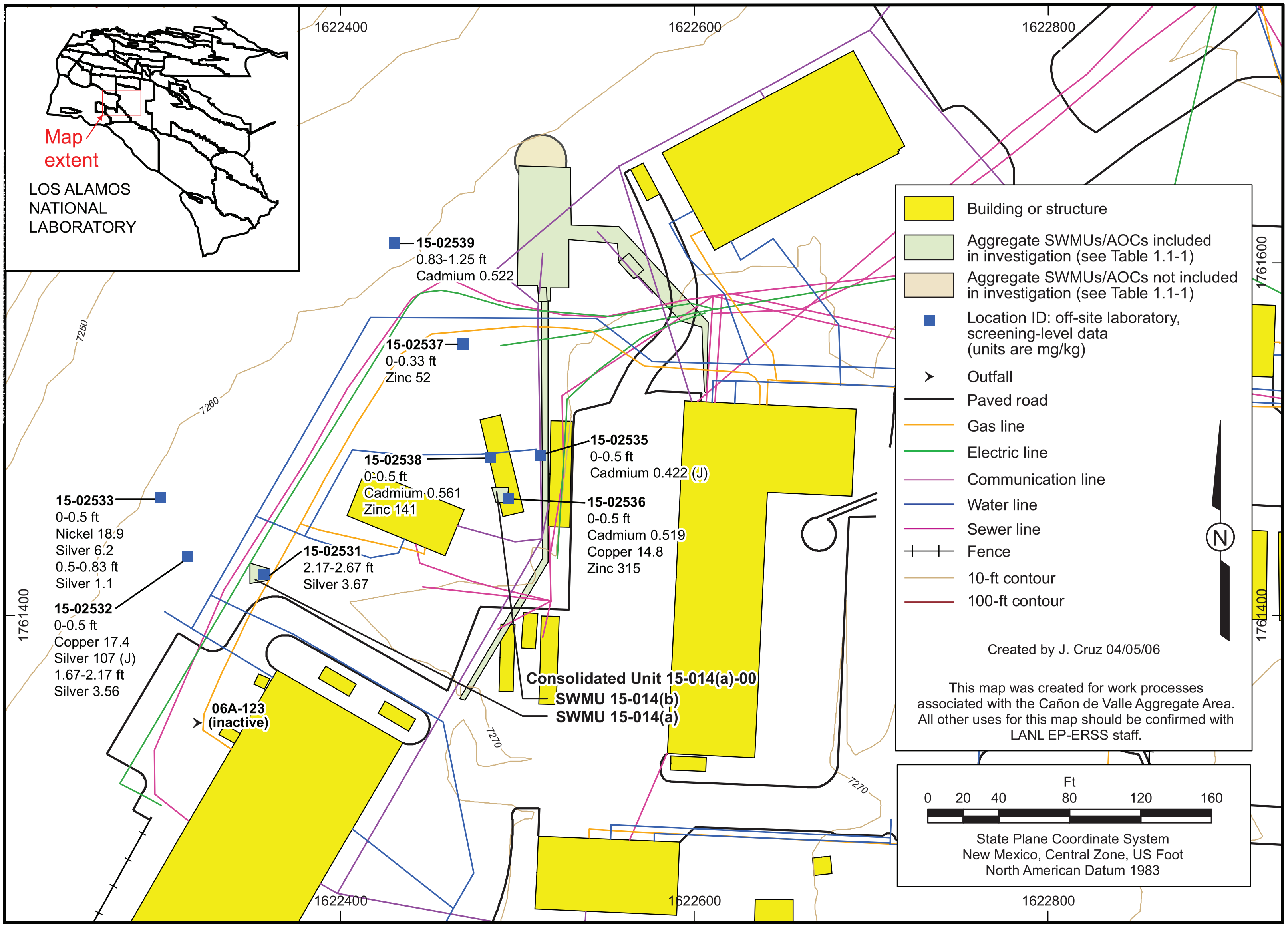


Figure 10.7-2. Subaggregate 9 (TA-15 West), Outfalls, historical sampling locations with inorganic chemicals detected greater than background values

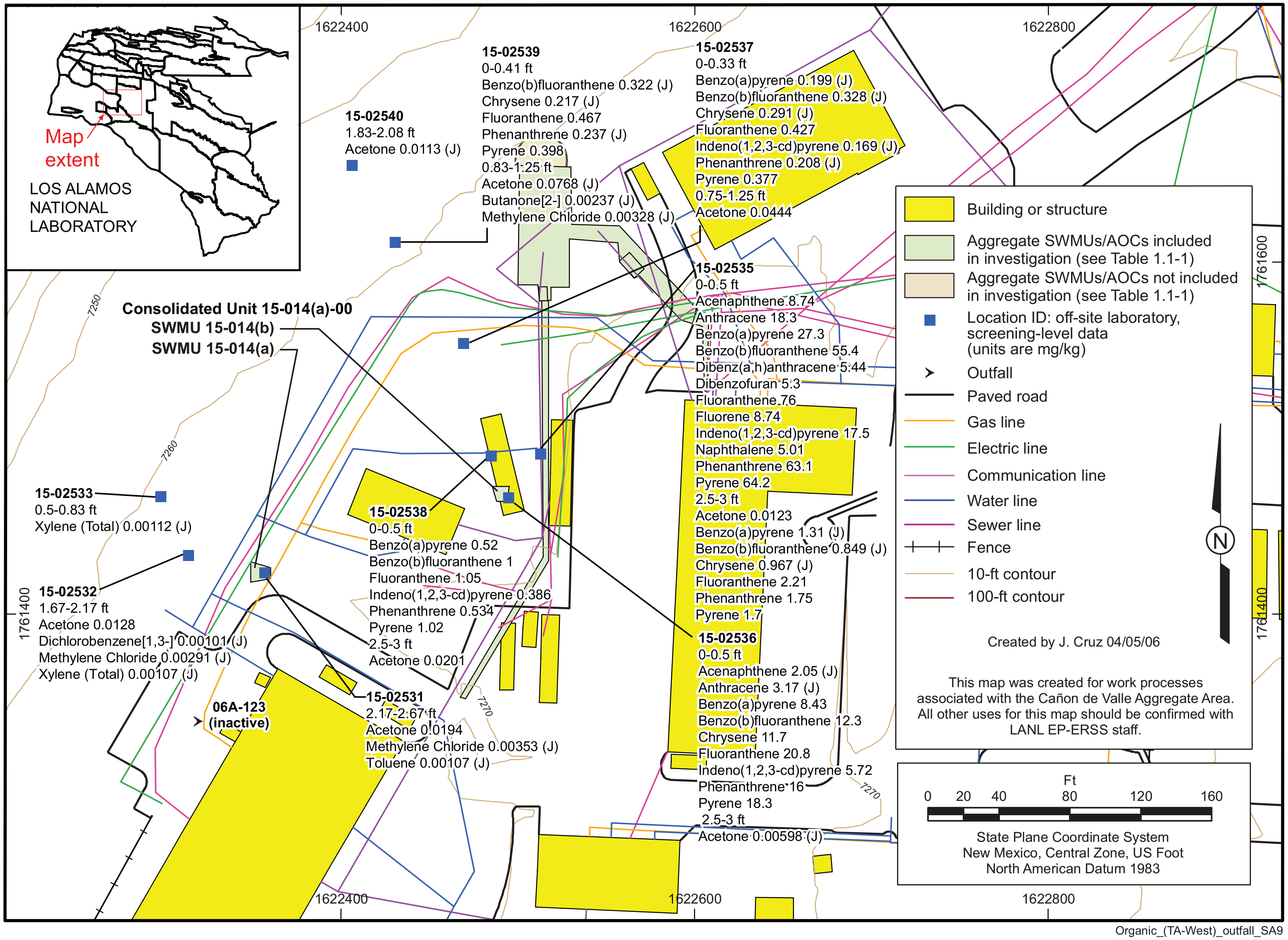


Figure 10.7-3. Subaggregate 9 (TA-15 West), Outfalls, historical sampling locations with detected organic chemicals

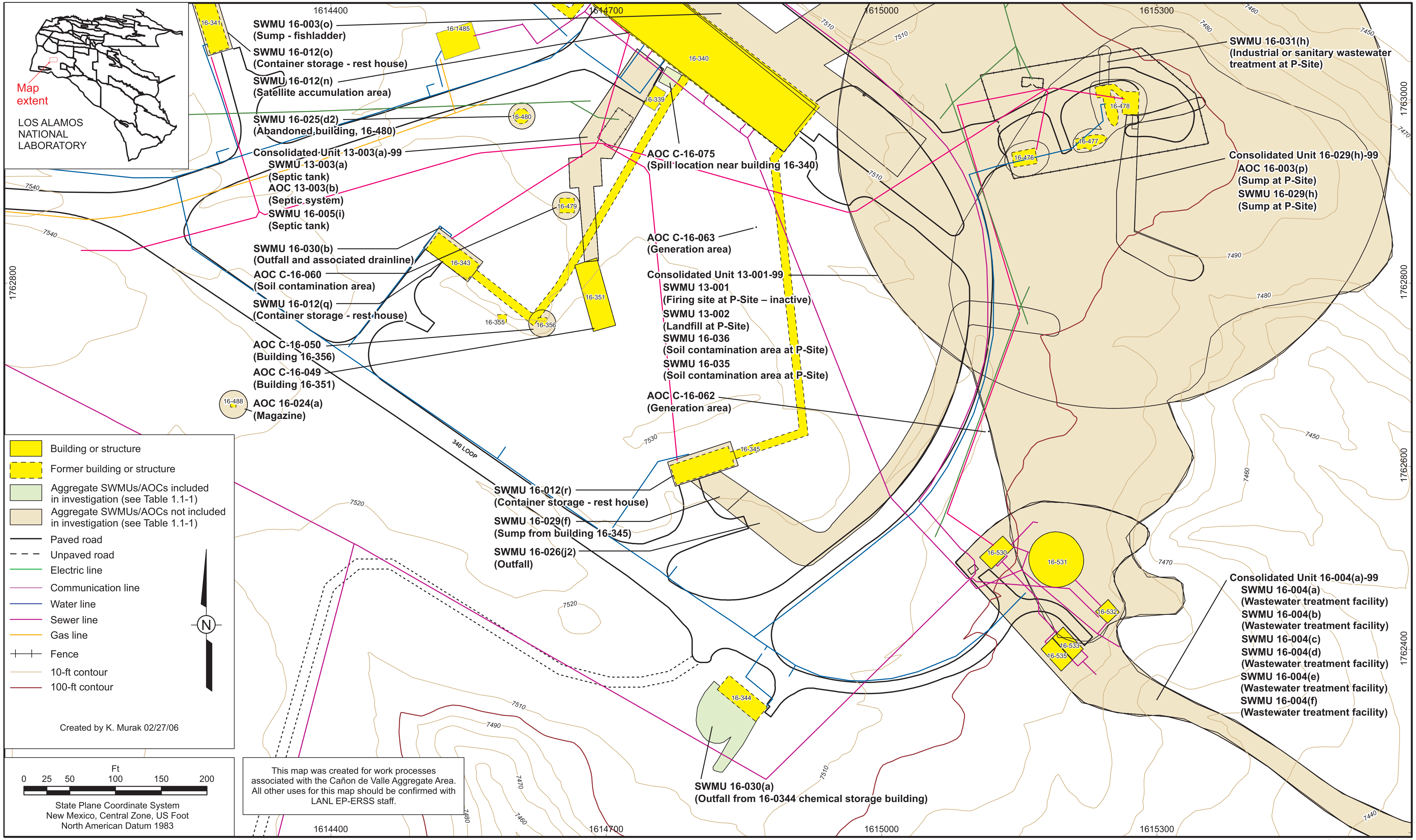


Figure 11.0-1. Detailed site map of Subaggregate 10 (TA-16-340 Complex), surrounding SWMUs and AOCs, and subsurface utility corridors

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Table 1.1-1
Cañon de Valle Aggregate Area List of Consolidated Units, SWMUs, and AOCs

Site Number	Subunit	Module VIII of the HWF Permit	Status	Description	Reference
AOC 14-001(a)		No	In Progress	Firing site (active)	Subaggregate 8
AOC 14-001(b)		No	In Progress	Firing site (active)	Subaggregate 8
AOC 14-001(c)		No	In Progress	Firing site (active)	Subaggregate 8
AOC 14-001(d)		No	In Progress	Firing site (active)	Subaggregate 8
AOC 14-001(e)		No	In Progress	Firing site (active)	Subaggregate 8
AOC 14-001(g)		No	In Progress	Firing site - open burn/open detonation (active)	Subaggregate 8
Consolidated Unit 14-002(a)-99	AOC 14-001(f)	No	In Progress	Former firing site	Subaggregate 8
	SWMU 14-002(a)	Yes	In Progress	Former firing site	Subaggregate 8
	SWMU 14-002(b)	Yes	In Progress	Former firing site	Subaggregate 8
	SWMU 14-002(f)	Yes	In Progress	Former firing site	Subaggregate 8
	SWMU 14-009	Yes	In Progress	Former firing site	Subaggregate 8
	SWMU 14-010	Yes	In Progress	Former firing site	Subaggregate 8
	AOC C-14-008	No	In Progress	Former firing site	Subaggregate 8
Consolidated Unit 14-002(c)-99	SWMU 14-002(c)	Yes	In Progress	Former firing site	Subaggregate 8
	SWMU 14-002(d)	Yes	In Progress	Former firing site	Subaggregate 8
	SWMU 14-002(e)	Yes	In Progress	Former firing site	Subaggregate 8
SWMU 14-003		Yes	Pending	Open burning ground	LANL 2001, 71096
AOC 14-004(a)		No	In Progress	Storage area (active)	Subaggregate 8
SWMU 14-004(b)		Yes	Removed from Module VIII, HWFP* 12/23/98	Satellite accumulation area	NMED 2001, 70010 (A.1, 5-2-01)
AOC 14-004(c)		No	NFA approved by EPA 1/21/05	Storage area	King 2005, 88464
SWMU 14-005		Yes	In Progress	Incinerator (active)	Subject to RCRA Closure not Consent Order (NMED 2005, 88027; Section III.W.1)
SWMU 14-006		Yes	In Progress	Tank and/or associated equipment	Subaggregate 8
SWMU 14-007		Yes	In Progress	Septic system	Subaggregate 8
AOC 14-008		No	NFA approved by EPA 1/21/05	Landfill and surface disposal	King 2005, 88464
AOC C-14-001		No	In Progress	Building	Subaggregate 8
AOC C-14-002		No	In Progress	Building	Subaggregate 8

Table 1.1-1 (continued)

Site Number	Subunit	Module VIII of the HWF Permit	Status	Description	Reference
AOC C-14-003		No	In Progress	Building	Subaggregate 8
AOC C-14-004		No	In Progress	Building	Subaggregate 8
AOC C-14-005		No	In Progress	Building	Subaggregate 8
AOC C-14-007		No	In Progress	Building	Subaggregate 8
AOC C-14-009		No	In Progress	Building	Subaggregate 8
Consolidated Unit 15-004(g)-00	SWMU 15-004(g)	Yes	In Progress	Firing site G (inactive)	Subaggregate 9
	SWMU 15-008(c)	Yes	In Progress	Firing site G (inactive)	Subaggregate 9
SWMU 15-004(i)		Yes	In Progress	The Gulch firing site (inactive)	Subaggregate 9
AOC 15-005(a)		No	NFA approved by EPA 1/21/05	Storage area	King 2005, 88464
AOC 15-005(d)		No	NFA approved by EPA 1/21/05	Storage area	King 2005, 88464
SWMU 15-007(b)		Yes	In Progress	Material disposal area (MDA Z) landfill	Subaggregate 9
SWMU 15-008(d)		Yes	In Progress	Surface disposal	Subaggregate 9
AOC 15-008(e)		No	NFA approved by EPA 1/21/05	Surface disposal	King 2005, 88464
Consolidated Unit 15-009(a)-00	SWMU 15-009(a)	Yes	In Progress	Former structures - the Hollow	Subaggregate 9
	SWMU 15-011(a)	Yes	In Progress	Former structures - the Hollow	Subaggregate 9
	SWMU 15-011(b)	Yes	In Progress	Former structures - the Hollow	Subaggregate 9
	SWMU 15-011(c)	Yes	In Progress	Former structures - the Hollow	Subaggregate 9
	SWMU 15-014(i)	Yes	In Progress	Former structures - the Hollow	Subaggregate 9
	SWMU 15-014(j)	Yes	In Progress	Former structures - the Hollow	Subaggregate 9
	SWMU 15-014(k)	Yes	In Progress	Former structures - the Hollow	Subaggregate 9
Consolidated Unit 15-009(f)-00	SWMU 15-009(f)	Yes	In Progress	Firing site and septic systems	Subaggregate 9
	SWMU 15-009(k)	Yes	In Progress	Firing site and septic systems	Subaggregate 9
SWMU 15-009(i)		Yes	In Progress	Septic tank	Subaggregate 9
SWMU 15-012(a)		Yes	Removed from Module VIII, HWFP 11/09/01	Surface disposal (not located) - does not exist	Young 2001, 70236 (A.1, 11-9-01)

Table 1.1-1 (continued)

Site Number	Subunit	Module VIII of the HWF Permit	Status	Description	Reference
Consolidated Unit 15-014(a)-00	SWMU 15-014(a)	Yes	In Progress	Outfalls	Subaggregate 9
	SWMU 15-014(b)	Yes	In Progress	Outfalls	Subaggregate 9
AOC 15-014(g)		No	In Progress	Industrial or sanitary wastewater treatment	Subaggregate 9
AOC C-15-001		No	In Progress	Surface disposal	Subaggregate 9
AOC C-15-002		No	NFA approved by EPA 1/21/05	Surface disposal	King 2005, 88464
AOC C-15-007		No	In Progress	Non-intentional release	Subaggregate 9
AOC C-15-008		No	NFA approved by EPA 1/21/05	Non-intentional release	King 2005, 88464
AOC C-15-010		No	In Progress	Former underground tank	Subaggregate 9
Consolidated Unit 16-001(a)-99	SWMU 16-001(a)	Yes	In Progress	Former steam plant	Subaggregate 4
	SWMU 16-001(b)	Yes	In Progress	Former steam plant	Subaggregate 4
	SWMU 16-001(c)	Yes	In Progress	Former steam plant	Subaggregate 4
Consolidated Unit 16-003(h)-99	SWMU 16-003(h)	Yes	In Progress	Inactive sump, drainline, and outfall	Subaggregate 7
	AOC 16-030(d)	No	In Progress	Inactive sump, drainline, and outfall	Subaggregate 7
SWMU 16-003(i)		Yes	In Progress	Sump 16-265	Subaggregate 7
SWMU 16-003(j)		Yes	In Progress	Sump 16-267	Subaggregate 7
Consolidated Unit 16-003(n)-99	SWMU 16-003(n)	Yes	In Progress	HE sump	TA-16-340 Complex (Fish Ladder) Investigation Work Plan (LANL 2004, 87345)
	SWMU 16-029(i)	Yes	In Progress	HE sump	
SWMU 16-003(o)		Yes	In Progress	Sump- fish ladder	
SWMU 16-005(b)		Yes	Removed from Module VIII, HWFP 05/02/01	Septic system (removed)	NMED 2001, 70010
SWMU 16-005(f)		Yes	Removed from Module VIII, HWFP 12/23/98	Decommissioned septic system	Kelley 1998, 63042
SWMU 16-005(n)		Yes	In Progress	Septic system	Subaggregate 6
SWMU 16-006(a)		Yes	In Progress	Septic system	Subaggregate 4
SWMU 16-006(b)		Yes	Removed from Module VIII, HWFP 12/23/98	Septic system	Kelley 1998, 63042 (A.1 12-23-98)

Table 1.1-1 (continued)

Site Number	Subunit	Module VIII of the HWF Permit	Status	Description	Reference
Consolidated Unit 16-007(a)-99	SWMU 16-007(a)	Yes	In Progress	Machining buildings and settling ponds	Ponds Investigation Work Plan (LANL, 2005, 89331) LA-UR-05-6234
	AOC 16-024(d)	No	In Progress	Machining buildings and settling ponds	
	SWMU 16-024(e)	Yes	In Progress	Machining buildings and settling ponds	
	SWMU 16-025(e)	Yes	In Progress	Machining buildings and settling ponds	
	SWMU 16-025(f)	Yes	In Progress	Machining buildings and settling ponds	
AOC 16-007(b)		No	NFA approved by EPA 1/21/05	Surface disposal site - does not exist	King 2005, 88464
Consolidated Unit 16-008(a)-99	SWMU 16-008(a)	Yes	In Progress	90s Line: 16-89, 16-90, 16-91, 16-92, 16-93	Ponds Investigation Work Plan (LANL, 2005, 89331) LA-UR-05-6234
	SWMU 16-017(a)-99	Yes	In Progress	90s Line: 16-89, 16-90, 16-91, 16-92, 16-93	
	SWMU 16-017(b)-99	Yes	In Progress	90s Line: 16-89, 16-90, 16-91, 16-92, 16-93	Ponds Investigation Work Plan (LANL, 2005, 89331) LA-UR-05-6234
	SWMU 16-017(c)-99	Yes	In Progress	90s Line: 16-89, 16-90, 16-91, 16-92, 16-93	
	SWMU 16-017(d)-99	Yes	In Progress	90s Line: 16-89, 16-90, 16-91, 16-92, 16-93	
	SWMU 16-017(e)-99	Yes	In Progress	90s Line: 16-89, 16-90, 16-91, 16-92, 16-93	
	SWMU 16-026(m)	Yes	In Progress	90s Line: 16-89, 16-90, 16-91, 16-92, 16-93	
	SWMU 16-026(n)	Yes	In Progress	90s Line: 16-89, 16-90, 16-91, 16-92, 16-93	
	SWMU 16-026(o)	Yes	In Progress	90s Line: 16-89, 16-90, 16-91, 16-92, 16-93	
	SWMU 16-026(p)	Yes	In Progress	90s Line: 16-89, 16-90, 16-91, 16-92, 16-93	
	SWMU 16-029(k)	Yes	In Progress	90s Line: 16-89, 16-90, 16-91, 16-92, 16-93	

Table 1.1-1 (continued)

Site Number	Subunit	Module VIII of the HWF Permit	Status	Description	Reference
Consolidated Unit 16-008(a)-99 (continued)	SWMU 16-029(l)	Yes	In Progress	90s Line: 16-89, 16-90, 16-91, 16-92, 16-93	
	SWMU 16-029(s)	Yes	In Progress	90s Line: 16-89, 16-90, 16-91, 16-92, 16-93	
	SWMU 16-029(t)	Yes	In Progress	90s Line: 16-89, 16-90, 16-91, 16-92, 16-93	
	SWMU 16-029(u)	Yes	In Progress	90s Line: 16-89, 16-90, 16-91, 16-92, 16-93	
	AOC C-16-067	No	In Progress	90s Line: 16-89, 16-90, 16-91, 16-92, 16-93	
AOC 16-008(b)		No	NFA approved by EPA 1/21/05	Surface impoundment at the TA-16 Burning Ground	King 2005, 88464
SWMU 16-009(a)		Yes	In Progress	Burn site	Subaggregate 4
SWMU 16-010(b)		Yes	In Progress	Flash pad; RCRA unit (undergoing closure)	Subject to RCRA Closure not Consent Order (NMED 2005, 88027; Section III.W.1)
SWMU 16-010(c)		Yes	In Progress	Burn site 16-388 - RCRA Unit (active)	
SWMU 16-010(d)		Yes	In Progress	Burn site 16-399 - RCRA unit (active)	
SWMU 16-010(e)		Yes	In Progress	HE filter vessel; RCRA unit (active)	
SWMU 16-010(f)		Yes	In Progress	HE filter vessel; RCRA unit (active)	
SWMU 16-010(g)		Yes	Removed from Module VIII, HWFP 12/23/98	Wastewater treatment facility	Kelley 1998, 63042 (A.1 12-23-98)
Consolidated Unit 16-010(h)-99	SWMU 16-005(g)	Yes	In Progress	Former burning ground structures	Subaggregate 3
	SWMU 16-010(h)	Yes	In Progress	Former burning ground structures	Subaggregate 3
	SWMU 16-010(i)	Yes	In Progress	Former burning ground structures	Subaggregate 3
	SWMU 16-010(j)	Yes	In Progress	Former burning ground structures (RCRA Closure Unit)	Subject to RCRA Closure not Consent Order (NMED 2005, 88027; Section III.W.1)

Table 1.1-1 (continued)

Site Number	Subunit	Module VIII of the HWF Permit	Status	Description	Reference
Consolidated Unit 16-010(h)-99 (continued)	SWMU 16-010(k)	Yes	In Progress	Former burning ground structures	Subaggregate 3
	SWMU 16-010(l)	Yes	In Progress	Former burning ground structures	Subaggregate 3
	SWMU 16-010(m)	Yes	In Progress	Former burning ground structures	Subaggregate 3
	SWMU 16-010(n)	Yes	In Progress	Former burning ground structures	Subaggregate 3
SWMU 16-012(a)		Yes	Removed from Module VIII, HWFP 12/23/98	Container storage, rest house	Kelley 1998, 63042 (A.1 12-23-98)
AOC 16-012(a2)		No	NFA approved by EPA 1/21/05	Container storage	King 2005, 88464
SWMU 16-012(b)		Yes	Removed from Module VIII, HWFP 12/23/98	Container storage - rest house	Kelley 1998, 63042 (A.1 12-23-98)
SWMU 16-012(c)		Yes	Removed from Module VIII, HWFP 12/23/98	Container storage - rest house	
SWMU 16-012(d)		Yes	Removed from Module VIII, HWFP 12/23/98	Satellite accumulation area	
SWMU 16-012(e)		Yes	Removed from Module VIII, HWFP 12/23/98	Container storage - rest house	
SWMU 16-012(f)		Yes	Removed from Module VIII, HWFP 12/23/98	Container storage - rest house	
SWMU 16-012(g)		Yes	Removed from Module VIII, HWFP 12/23/98	Container storage - rest house	
SWMU 16-012(h)		Yes	Removed from Module VIII, HWFP 12/23/98	Container storage - rest house	
SWMU 16-012(n)		Yes	Removed from Module VIII, HWFP 12/23/98	Satellite accumulation area	
SWMU 16-012(o)		Yes	Removed from Module VIII, HWFP 12/23/98	Container storage - rest house	
SWMU 16-012(p)		Yes	Removed from Module VIII, HWFP 12/23/98	Less-than-ninety-day storage	

Table 1.1-1 (continued)

Site Number	Subunit	Module VIII of the HWF Permit	Status	Description	Reference
SWMU 16-012(q)		Yes	Removed from Module VIII, HWFP 12/23/98	Container storage - rest house	
SWMU 16-012(r)		Yes	Removed from Module VIII, HWFP 12/23/98	Container storage - rest house	
SWMU 16-012(z)		Yes	Removed from Module VIII, HWFP 12/23/98	Container storage - rest house	
SWMU 16-016(b)		Yes	In Progress	Landfill	Subaggregate 4
Consolidated Unit 16-016(c)-99	SWMU 16-006(e)	Yes	In Progress	Burning ground	MDA P Closure (LANL 2005, 92251; LANL 2005, 91141)
	SWMU 16-010(a)	Yes	In Progress	Burning ground	
	SWMU 16-016(c)	Yes	In Progress	Burning ground	
SWMU 16-016(d)		Yes	In Progress	Surface disposal site	Subaggregate 1
SWMU 16-017(g)-99		Yes	In Progress	Former HE structure	Subaggregate 6
Consolidated Unit 16-017(i)-99	SWMU C-16-025	Yes	In Progress	Storage building	Subaggregate 4
	SWMU C-16-026	Yes	In Progress	Storage building	
	SWMU 16-017(i)	No	In Progress	Storage building	
SWMU 16-018		Yes	In Progress	Material disposal area (MDA P); RCRA unit (currently undergoing RCRA closure)	MDA P Closure (LANL 2005, 92251; LANL 2005, 91141)
SWMU 16-019		Yes	In Progress	Material disposal area (MDA R)	Subaggregate 2
SWMU 16-020		Yes	In Progress	Silver recovery unit	Subaggregate 1
Consolidated Unit 16-021(c)-99	SWMU 16-003(k)	Yes	In Progress	16-260 Sumps, drainlines, and outfall	CMS (260 Outfall) (LANL 2003, 85531)
	SWMU 16-021(c)	Yes	In Progress	16-260 Sumps, drainlines, and outfall	
AOC 16-023(a)		No	NFA approved by EPA 1/21/05	Incinerator - does not exist	King 2005, 88464
AOC 16-024(b)		No	In Progress	Magazine	Subaggregate 6
AOC 16-024(c)		No	In Progress	Magazine	Subaggregate 6
AOC 16-024(f)		No	In Progress	Magazine	Subaggregate 5
AOC 16-024(g)		No	In Progress	Magazine	Subaggregate 5
AOC 16-024(h)		No	In Progress	Magazine	Subaggregate 5
AOC 16-024(v)		No	In Progress	Magazine	NMED 2006, 91832

Table 1.1-1 (continued)

Site Number	Subunit	Module VIII of the HWF Permit	Status	Description	Reference
SWMU 16-025(a)		Yes	In Progress	Abandoned radiography building, 16-39	Subaggregate 6
SWMU 16-025(b)		Yes	In Progress	Abandoned radiography building, 16-40	Subaggregate 6
SWMU 16-025(c)		Yes	Removed from Module VIII, HWFP 12/23/98	Abandoned utility building and appurtenances	Kelley 1998, 63042
SWMU 16-025(e2)		Yes	Pending	Abandoned building, 16-106	LANL 2001, 71096
SWMU 16-025(f2)		Yes	Pending	Abandoned building, 16-107	LANL 2001, 71096
SWMU 16-026(g)		Yes	In Progress	Outfall	Subaggregate 7
SWMU 16-026(g2)		Yes	Pending	Outfall from 16-285	LANL 2005, 91544
SWMU 16-026(h)		Yes	Pending	Outfall from 16-281	LANL 2005, 91544
SWMU 16-026(i)		Yes	In Progress	Outfall	Subaggregate 1
SWMU 16-026(i2)		Yes	Removed from Module VIII, HWFP 12/23/98	Outfall	Kelley 1998, 63042
SWMU 16-026(j)		Yes	In Progress	Outfall, 16-226	Subaggregate 1
SWMU 16-026(j2)		Yes	In Progress	Outfall	TA-16-340 Complex (Fish Ladder) Investigation Work Plan (LANL 2004, 87345.2)
SWMU 16-026(k)		Yes	Pending	Outfall and associated drainline	LANL 2005, 91544
Consolidated Unit 16-026(l)-00	SWMU 16-026(l)	Yes	In Progress	Drainlines and outfall	Subaggregate 1
	SWMU 16-028(c)	Yes	In Progress	Drainlines and outfall	Subaggregate 1
SWMU 16-026(r)		Yes	In Progress	Outfall, 16-180	NMED 2006, 91832
AOC 16-027(a)		No	In Progress	Transformer - PCB only site	Subaggregate 7
AOC 16-027(b)		No	In Progress	Transformer - PCB only site	Subaggregate 4
SWMU 16-028(a)		Yes	In Progress	South drainage channel	Subaggregate 3
SWMU 16-029(f)		Yes	In Progress	Sump from Building 16-345	TA-16-340 Complex (Fish Ladder) Investigation Work Plan (LANL 2004, 87345)

Table 1.1-1 (continued)

Site Number	Subunit	Module VIII of the HWF Permit	Status	Description	Reference
Consolidated Unit 16-029(h2)-99	SWMU 16-025(d)	Yes	In Progress	HE machining line buildings and associated structures	Subaggregate 6
	SWMU 16-025(g)	Yes	In Progress	HE machining line buildings and associated structures	Subaggregate 6
	SWMU 16-025(h)	Yes	In Progress	HE machining line buildings and associated structures	Subaggregate 6
	SWMU 16-025(i)	Yes	In Progress	HE machining line buildings and associated structures	Subaggregate 6
	SWMU 16-025(j)	Yes	In Progress	HE machining line buildings and associated structures	Subaggregate 6
	SWMU 16-029(h2)	Yes	In Progress	HE machining line buildings and associated structures	Subaggregate 6
	SWMU 16-029(m)	Yes	In Progress	HE machining line buildings and associated structures	Subaggregate 6
	SWMU 16-029(n)	Yes	In Progress	HE machining line buildings and associated structures	Subaggregate 6
	SWMU 16-029(o)	Yes	In Progress	HE machining line buildings and associated structures	Subaggregate 6
	SWMU 16-029(p)	Yes	In Progress	HE machining line buildings and associated structures	Subaggregate 6
Consolidated Unit 16-029(j)-99	SWMU 16-026(k2)	Yes	In Progress	16-260 Bay 25 outfalls	Subaggregate 7
	SWMU 16-029(j)	Yes	In Progress	16-260 Bay 25 outfalls	Subaggregate 7
Consolidated Unit 16-029(q)-99	SWMU 16-017(f)-99	Yes	In Progress	HE machining building and associated structures	Subaggregate 6
	SWMU 16-017(u)-99	Yes	In Progress	Storage building 16-164	Subaggregate 6
	SWMU 16-029(q)	Yes	In Progress	HE machining building and associated structures	Subaggregate 6
	AOC C-16-064	No	In Progress	HE machining building and associated structures	Subaggregate 6

Table 1.1-1 (continued)

Site Number	Subunit	Module VIII of the HWF Permit	Status	Description	Reference
SWMU 16-030(a)		Yes	In Progress	Outfall from 16-344, chemical storage building	Subaggregate 10
SWMU 16-030(b)		Yes	Pending	Outfall and associated drainline	LANL 2005, 91544
SWMU 16-030(c)		Yes	Pending	16-222 outfall	LANL 2002, 73664
SWMU 16-030(e)		Yes	Pending	Outfall and associated drainline	LANL 2005, 91544
SWMU 16-030(f)		Yes	Pending	Outfall and associated drainline	LANL 2005, 91544
SWMU 16-031(b)		Yes	In Progress	Industrial or sanitary wastewater treatment, 16-262	Subaggregate 7
AOC 16-033(e)		No	In Progress	Underground tank	Subaggregate 4
AOC 16-033(f)		No	In Progress	Underground tank	Subaggregate 4
AOC 16-033(g)		No	In Progress	Underground tank	Subaggregate 7
AOC 16-033(h)		No	In Progress	Underground tank	Subaggregate 7
Consolidated Unit 16-034(b)-99	SWMU 16-005(j)	Yes	In Progress	Former structures, T-Site	Subaggregate 5
	SWMU 16-005(m)	Yes	In Progress	Former structures, T-Site	Subaggregate 5
	SWMU 16-025(m)	Yes	In Progress	Former structures, T-Site	Subaggregate 5
	SWMU 16-025(n)	Yes	In Progress	Former structures, T-Site	Subaggregate 5
	SWMU 16-025(o)	Yes	In Progress	Former structures, T-Site	Subaggregate 5
	SWMU 16-034(b)	Yes	In Progress	Former structures, T-Site	Subaggregate 5
Consolidated Unit 16-034(b)-99 (continued)	SWMU 16-034(c)	Yes	In Progress	Former structures, T-Site	Subaggregate 5
	SWMU 16-034(d)	Yes	In Progress	Former structures, T-Site	Subaggregate 5
	SWMU 16-034(e)	Yes	In Progress	Former structures, T-Site	Subaggregate 5
	SWMU 16-034(f)	Yes	In Progress	Former structures, T-Site	Subaggregate 5
SWMU 16-034(h)		Yes	In Progress	Soil contamination area, 16-137	Subaggregate 4
SWMU 16-034(i)		Yes	In Progress	Soil contamination area	Subaggregate 4

Table 1.1-1 (continued)

Site Number	Subunit	Module VIII of the HWF Permit	Status	Description	Reference
SWMU 16-034(j)		Yes	In Progress	Soil contamination area	Subaggregate 4
SWMU 16-034(k)		Yes	In Progress	Soil contamination area	Subaggregate 4
AOC 16-037		No	In Progress	Aboveground tank - does not exist	Subaggregate 4
AOC C-16-001		No	In Progress	Building	Subaggregate 3
AOC C-16-002		No	In Progress	Building 16-262	Subaggregate 7
AOC C-16-003		No	NFA approved by EPA 1/21/05	Septic system - see SWMU 16-005(n)	King 2005, 88464
AOC C-16-008		No	In Progress	Building	Subaggregate 4
AOC C-16-009		No	In Progress	Building	Subaggregate 4
AOC C-16-010		No	In Progress	Building	Subaggregate 4
AOC C-16-011		No	In Progress	Building TA-16-132	Subaggregate 4
AOC C-16-012		No	In Progress	Building	Subaggregate 4
AOC C-16-013		No	In Progress	Storage area	Subaggregate 4
AOC C-16-014		No	In Progress	Building	Subaggregate 4
AOC C-16-015		No	In Progress	Building	Subaggregate 4
AOC C-16-016		No	In Progress	Building	Subaggregate 4
AOC C-16-017		No	In Progress	Building	Subaggregate 4
AOC C-16-018		No	In Progress	Aboveground tank	Subaggregate 4
AOC C-16-023		No	NFA approved by EPA 1/21/05	Warehouse	King 2005, 88464
AOC C-16-036		No	In Progress	Septic system	Subaggregate 4
AOC C-16-038		No	NFA approved by EPA 1/21/05	Storage area	King 2005, 88464
AOC C-16-041		No	In Progress	Building	Subaggregate 4
AOC C-16-042		No	NFA approved by EPA 1/21/05	Steam manhole	King 2005, 88464
AOC C-16-043		No	NFA approved by EPA 1/21/05	Steam manhole	King 2005, 88464
AOC C-16-044		No	In Progress	Manhole	Subaggregate 4
AOC C-16-051		No	In Progress	Transport area	Subaggregate 1
AOC C-16-052		No	NFA approved by EPA 1/21/05	Steam manhole	King 2005, 88464
AOC C-16-053		No	NFA approved by EPA 1/21/05	Water manhole	
AOC C-16-054		No	NFA approved by EPA 1/21/05	Steam manhole	
AOC C-16-055		No	NFA approved by EPA 1/21/05	Switch box	

Table 1.1-1 (continued)

Site Number	Subunit	Module VIII of the HWF Permit	Status	Description	Reference
AOC C-16-061		No	In Progress	Building	Subaggregate 3
AOC C-16-066		No	NFA approved by EPA 1/21/05	Storage area	King 2005, 88464
AOC C-16-070		No	In Progress	Underground tank	Subaggregate 3
AOC C-16-072		No	In Progress	Tank - does not exist	Subaggregate 4
AOC C-16-075		No	In Progress	Spill location near Building 16-340	Subaggregate 10

Yellow	Site requires no further investigation or corrective action, as specified in cited reference; not included in Cañon de Valle Aggregate Area Investigation Work Plan/HIR.
Pink	Permitted RCRA unit, not included in the Cañon de Valle Aggregate Area Investigation Work Plan/HIR.
Purple	Deferred under Table IV-2 of the Consent Order; but included in Cañon de Valle Aggregate Area Investigation Work Plan/HIR.
Light cyan	SWMU or AOC included in Cañon de Valle Aggregate Area Investigation Work Plan/HIR.
Blue	SWMU or AOC included in another document/investigation; not included in Cañon de Valle Aggregate Area Investigation Work Plan/HIR.
Gray	NFA Approval Pending; not included in Cañon de Valle Aggregate Area Investigation Work Plan/HIR.

*HWFP = The Laboratory's Hazardous Waste Facility Permit.

Table 1.1-2
List of Consolidated Units, SWMUs, and AOCs and
Planned Activities in the Cañon de Valle Aggregate Area Investigation Work Plan

Site Number	Subunit	Description	Subaggregate	Planned SWMU or AOC Work Plan Activities
SWMU 16-016(d)		Surface disposal site	1	Investigation Sampling
SWMU 16-020		Silver recovery unit	1	Investigation Sampling
SWMU 16-026(i)		Outfall	1	Investigation Sampling
SWMU 16-026(j)		Outfall, 16-226	1	Investigation Sampling
Consolidated Unit 16-026(l)-00	SWMU 16-026(l)	Drainlines and outfall	1	Investigation Sampling
	SWMU 16-028(c)	Drainlines and outfall	1	Investigation Sampling
AOC C-16-051		Transport Area	1	Investigation Sampling
SWMU 16-019		Material disposal area (MDA R)	2	Investigation Sampling
Consolidated Unit 16-010(h)-99	SWMU 16-005(g)	Former burning ground structures	3	Removal Action/Confirmatory Sampling
	SWMU 16-010(h)	Former burning ground structures	3	
	SWMU 16-010(i)	Former burning ground structures	3	
	SWMU 16-010(k)	Former burning ground structures	3	
	SWMU 16-010(l)	Former burning ground structures	3	
	SWMU 16-010(m)	Former burning ground structures	3	
	SWMU 16-010(n)	Former burning ground structures	3	
SWMU 16-028(a)		South drainage channel	3	Investigation Sampling
AOC C-16-001		Building	3	Appendix B, No Further Investigation/ Corrective Action
AOC C-16-061		Building	3	Appendix B, No Further Investigation/ Corrective Action
AOC C-16-070		Underground Tank	3	Appendix B, No Further Investigation/ Corrective Action
Consolidated Unit 16-001(a)-99	SWMU 16-001(a)	Former steam plant	4	Investigation Sampling
	SWMU 16-001(b)	Former steam plant	4	Investigation Sampling
	SWMU 16-001(c)	Former steam plant	4	Investigation Sampling
SWMU 16-006(a)		Septic system	4	Investigation Sampling
SWMU 16-009(a)		Burn site	4	Investigation Sampling
SWMU 16-016(b)		Landfill	4	Appendix B, No Further Investigation/ Corrective Action
Consolidated Unit 16-017(i)-99	SWMU C-16-025	Storage building (16-8)	4	Investigation Sampling
	SWMU C-16-026	Storage building (16-6)	4	Investigation Sampling
	SWMU 16-017(i)	Storage building (16-10)	4	Investigation Sampling

Table 1.1-2 (continued)

Site Number	Subunit	Description	Subaggregate	Planned SWMU or AOC Work Plan Activities
AOC 16-027(b)		Transformer-PCB only site	4	Appendix B, No Further Investigation/ Corrective Action
AOC 16-033(e)		Underground tank	4	Investigation Sampling
AOC 16-033(f)		Underground tank	4	Investigation Sampling
SWMU 16-034(h)		Soil contamination area, 16-137	4	Investigation Sampling
SWMU 16-034(i)		Soil contamination area	4	Investigation Sampling
SWMU 16-034(j)		Soil contamination area	4	Investigation Sampling
SWMU 16-034(k)		Soil contamination area	4	Investigation Sampling
AOC 16-037		Aboveground Tank-does not exist	4	Appendix B, No Further Investigation/ Corrective Action
AOC C-16-008		Building	4	Investigation Sampling
AOC C-16-009		Building	4	Appendix B, No Further Investigation/ Corrective Action
AOC C-16-010		Building	4	Investigation Sampling
AOC C-16-011		Building TA-16-132	4	Investigation Sampling
AOC C-16-012		Building	4	Investigation Sampling
AOC C-16-013		Storage Area	4	Investigation Sampling
AOC C-16-014		Building	4	Investigation Sampling
AOC C-16-015		Building	4	Appendix B, No Further Investigation/ Corrective Action
AOC C-16-016		Building	4	Investigation Sampling
AOC C-16-017		Building	4	Investigation Sampling
AOC C-16-018		Aboveground Tank	4	Appendix B, No Further Investigation/ Corrective Action
AOC C-16-036		Septic system	4	Appendix B, No Further Investigation/ Corrective Action
AOC C-16-041		Building	4	Appendix B, No Further Investigation/ Corrective Action
AOC C-16-044		Manhole	4	Appendix B, No Further Investigation/ Corrective Action
AOC C-16-072		Storage Tank	4	Appendix B, No Further Investigation/ Corrective Action

Table 1.1-2 (continued)

Site Number	Subunit	Description	Subaggregate	Planned SWMU or AOC Work Plan Activities
AOC 16-024(f)		Magazine	5	Appendix B, No Further Investigation/ Corrective Action
AOC 16-024(g)		Magazine	5	Appendix B, No Further Investigation/ Corrective Action
AOC 16-024(h)		Magazine	5	Appendix B, No Further Investigation/ Corrective Action
Consolidated Unit 16-034(b)-99	SWMU 16-005(j)	Former structures, T-Site	5	Investigation Sampling
	SWMU 16-005(m)	Former structures, T-Site	5	Investigation Sampling
	SWMU 16-025(m)	Former structures, T-Site	5	Investigation Sampling
	SWMU 16-025(n)	Former structures, T-Site	5	Investigation Sampling
	SWMU 16-025(o)	Former structures, T-Site	5	Investigation Sampling
	SWMU 16-034(b)	Former structures, T-Site	5	Investigation Sampling
	SWMU 16-034(c)	Former structures, T-Site	5	Investigation Sampling
	SWMU 16-034(d)	Former structures, T-Site	5	Investigation Sampling
	SWMU 16-034(e)	Former structures, T-Site	5	Investigation Sampling
	SWMU 16-034(f)	Former structures, T-Site	5	Investigation Sampling
SWMU 16-005(n)		Septic system	6	Investigation Sampling
SWMU 16-017(g)-99		Former HE structure	6	Investigation Sampling
AOC 16-024(b)		Magazine	6	Investigation Sampling
AOC 16-024(c)		Magazine	6	Appendix B, No Further Investigation/ Corrective Action
SWMU 16-025(a)		Abandoned radiography building, 16-39	6	Investigation Sampling
SWMU 16-025(b)		Abandoned radiography building, 16-40	6	Investigation Sampling
Consolidated Unit 16-029(h2)-99	SWMU 16-025(d)	HE machining line buildings and associated structures	6	Investigation Sampling
	SWMU 16-025(g)	HE machining line buildings and associated structures	6	Investigation Sampling
	SWMU 16-025(h)	HE machining line buildings and associated structures	6	Investigation Sampling
	SWMU 16-025(i)	HE machining line buildings and associated structures	6	Investigation Sampling
	SWMU 16-025(j)	HE machining line buildings and associated structures	6	Investigation Sampling
	SWMU 16-029(h2)	HE machining line buildings and associated structures	6	Investigation Sampling

Table 1.1-2 (continued)

Site Number	Subunit	Description	Subaggregate	Planned SWMU or AOC Work Plan Activities
Consolidated Unit 16-029(h2)-99 (continued)	SWMU 16-029(m)	HE machining line buildings and associated structures	6	Investigation Sampling
	SWMU 16-029(n)	HE machining line buildings and associated structures	6	Investigation Sampling
	SWMU 16-029(o)	HE machining line buildings and associated structures	6	Investigation Sampling
	SWMU 16-029(p)	HE machining line buildings and associated structures	6	Investigation Sampling
Consolidated Unit 16-029(q)-99	SWMU 16-017(f)-99	HE machining building and associated structures	6	Investigation Sampling
	SWMU 16-017(u)-99	Storage Building 16-164	6	Investigation Sampling
	SWMU 16-029(q)	HE machining building and associated structures	6	Investigation Sampling
	AOC C-16-064	HE machining building and associated structures	6	Investigation Sampling
Consolidated Unit 16-003(h)-99	SWMU 16-003(h)	Inactive sump, drainline, and outfall	7	Investigation Sampling
	AOC 16-030(d)	Inactive sump, drainline, and outfall	7	Investigation Sampling
SWMU 16-003(i)		Sump 16-265	7	Investigation Sampling
SWMU 16-003(j)		Sump 16-267	7	Investigation Sampling
SWMU 16-026(g)		Outfall	7	Investigation Sampling
AOC 16-027(a)		Transformer - PCB only site	7	Appendix B, No Further Investigation/ Corrective Action
Consolidated Unit 16-029(j)-99	SWMU 16-026(k2)	16-260 Bay 25 outfalls	7	Investigation Sampling
	SWMU 16-029(j)	16-260 Bay 25 outfalls	7	Investigation Sampling
SWMU 16-031(b)		Industrial or sanitary wastewater treatment, 16-262	7	Investigation Sampling
AOC 16-033(g)		Underground tank	7	Investigation Sampling
AOC 16-033(h)		Underground tank	7	Investigation Sampling
AOC C-16-002		Building 16-262	7	Investigation Sampling
AOC 14-001(a)		Firing Site *(Electrical Pull Box)*	8	Appendix B, No Further Investigation/ Corrective Action
AOC 14-001(b)		Firing Site *(Electrical Pull Box)*	8	Appendix B, No Further Investigation/ Corrective Action
AOC 14-001(c)		Firing Site *(Electrical Pull Box)*	8	Appendix B, No Further Investigation/ Corrective Action

Table 1.1-2 (continued)

Site Number	Subunit	Description	Subaggregate	Planned SWMU or AOC Work Plan Activities
AOC 14-001(d)		Firing Site *(Electrical Pull Box)*	8	Appendix B, No Further Investigation/ Corrective Action
AOC 14-001(e)		Firing Site *(Electrical Pull Box)*	8	Appendix B, No Further Investigation/ Corrective Action
AOC 14-001(g)		Firing site - Open Burn/Open Detonation (active)	8	Corrective Action/Confirmatory Sampling Execution deferred pending cease in operational testing
Consolidated Unit 14-002(a)-99	AOC 14-001(f)	Former firing site	8	Deferred under Table IV-2 of Consent Order
	SWMU 14-002(a)	Former firing site	8	Deferred under Table IV-2 of Consent Order
	SWMU 14-002(b)	Former firing site	8	Deferred under Table IV-2 of Consent Order
	SWMU 14-002(f)	Former firing site	8	Investigation Sampling
	SWMU 14-009	Former firing site	8	Corrective Action/Confirmatory Sampling
	SWMU 14-010	Former firing site	8	Investigation Sampling
	AOC C-14-008	Former firing site	8	Appendix B, No Further Investigation/ Corrective Action
Consolidated Unit 14-002(c)-99	SWMU 14-002(c)	Former firing site	8	Investigation Sampling
	SWMU 14-002(d)	Former firing site	8	Deferred under Table IV-2 of Consent Order
	SWMU 14-002(e)	Former firing site	8	Deferred under Table IV-2 of Consent Order
AOC 14-004(a)		Storage area *(magazine to satellite storage)*	8	Investigation Sampling
SWMU 14-006		Tank and/or associated equipment	8	Corrective Action/Confirmatory Sampling
SWMU 14-007		Septic system	8	Corrective Action/Confirmatory Sampling
AOC C-14-001		Building	8	Appendix B, No Further Investigation/ Corrective Action
AOC C-14-002		Building *(could not be located)*	8	Appendix B, No Further Investigation/ Corrective Action
AOC C-14-003		Building	8	Investigation Sampling

Table 1.1-2 (continued)

Site Number	Subunit	Description	Subaggregate	Planned SWMU or AOC Work Plan Activities
AOC C-14-004		Building	8	Investigation Sampling
AOC C-14-005		Building	8	Investigation Sampling
AOC C-14-007		Building	8	Investigation Sampling
AOC C-14-009		Building	8	Appendix B, No Further Investigation/ Corrective Action
Consolidated Unit 15-004(g)-00	SWMU 15-004(g)	Firing site G (inactive)	9	Deferred under Table IV-2 of Consent Order
	SWMU 15-008(c)	Firing site G (inactive)	9	Investigation Sampling
SWMU 15-004(i)		Gulch Firing Site (inactive)	9	Appendix B, No Further Investigation/ Corrective Action
SWMU 15-007(b)		Material disposal area (MDA Z) landfill	9	Corrective Action/Confirmatory Sampling
SWMU 15-008(d)		Surface disposal	9	Corrective Action/Confirmatory Sampling
Consolidated Unit 15-009(a)-00	SWMU 15-009(a)	Former structures - the Hollow	9	Corrective Action/Confirmatory Sampling
	SWMU 15-011(a)	Former structures - the Hollow	9	Investigation Sampling
	SWMU 15-011(b)	Former structures - the Hollow	9	Investigation Sampling
	SWMU 15-011(c)	Former structures - the Hollow	9	Investigation Sampling
	SWMU 15-014(i)	Former structures - the Hollow	9	Investigation Sampling
	SWMU 15-014(j)	Former structures - the Hollow	9	Investigation Sampling
	SWMU 15-014(k)	Former structures - the Hollow	9	Investigation Sampling
Consolidated Unit 15-009(f)-00	SWMU 15-009(f)	Firing site and septic systems	9	Corrective Action/Confirmatory Sampling
	SWMU 15-009(k)	Firing site and septic systems	9	Corrective Action/Confirmatory Sampling
SWMU 15-009(i)		Septic tank	9	Corrective Action/Confirmatory Sampling
Consolidated Unit 15-014(a)-00	SWMU 15-014(a)	Outfalls	9	Investigation Sampling
	SWMU 15-014(b)	Outfalls	9	Investigation Sampling
AOC 15-014(g)		Industrial or sanitary wastewater treatment	9	Investigation Sampling
AOC C-15-001		Surface disposal	9	Investigation Sampling
AOC C-15-007		Nonintentional release	9	Investigation Sampling
AOC C-15-010		Former underground tank	9	Investigation Sampling

Table 1.1-2 (continued)

Site Number	Subunit	Description	Subaggregate	Planned SWMU or AOC Work Plan Activities
SWMU 16-030(a)		Outfall from 16-344, chemical storage building	10	Investigation Sampling
AOC C-16-075		Spill location near building 16-340	10	Investigation Sampling

Table 2.1-1
Subaggregate 1 Summary of Historical Samples
Collected in Soil at the X-Ray Buildings: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number			
				High Explosives	Inorganic Chemicals	SVOC	VOC
SWMU 16-026(i)							
16-21957	0.5–1	RE16-03-50423	ALLH	1564S	1564S	1564S	1564S
16-21958	0.5–1	RE16-03-50424	ALLH	1565S	1565S	1565S	1565S
16-21959	0.5–1	RE16-03-50425	ALLH	1565S	1565S	1565S	1565S
16-21960	0.5–1	RE16-03-50426	ALLH	1565S	1565S	1565S	1565S
SWMU 16-026(j)							
16-03-21712	0.5–1	RE16-03-50442	ALLH	1620S	1621S	1620S	1620S
16-03-21712	1.5–2	RE16-03-50443	ALLH	1620S	1621S	1620S	1620S
16-03-21713	0.5–1	RE16-03-50446	ALLH	1618S	1619S	1618S	1618S
16-03-21713	1.5–2	RE16-03-50447	ALLH	1618S	1619S	1618S	1618S
SWMU 16-026(l)							
16-03-21708	0.5–1	RE16-03-50418	ALLH	1564S	1564S	1564S	1564S
16-21953	0.5–1	RE16-03-50417	ALLH	1564S	1564S	1564S	1564S
16-21954	0.5–1	RE16-03-50419	ALLH	1564S	1564S	1564S	1564S
16-21955	0.5–1	RE16-03-50420	ALLH	1564S	1564S	1564S	1564S

Table 2.1-2
Subaggregate 1 Frequency of Detection of Inorganic Chemicals in Soil at the X-Ray Buildings: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Aluminum	ALLH	12	12	7940–42400	29200	2/12	0/12
Antimony	ALLH	4	1	[0.057]–0.059	0.83	0/4	0/4
Arsenic	ALLH	12	12	0.779–4.27	8.17	0/12	0/12
Barium	ALLH	12	12	94.7–282	295	0/12	0/12
Beryllium	ALLH	12	12	0.459–3.37	1.83	1/12	0/12
Cadmium	ALLH	12	12	0.149–0.493	0.4	3/12	0/12
Calcium	ALLH	12	12	3340–43600	6120	5/12	0/12
Chromium	ALLH	12	12	5.05–38.4	19.3	2/12	0/12
Cobalt	ALLH	12	11	[0.00285]–5.59	8.64	0/12	0/12
Copper	ALLH	12	12	4.72–17.4	14.7	1/12	0/12
Iron	ALLH	12	12	7520–30300	21500	2/12	0/12
Lead	ALLH	12	12	7.43–437	22.3	3/12	0/12
Magnesium	ALLH	12	12	1130–5070	4610	1/12	0/12
Manganese	ALLH	12	12	90.1–528	671	0/12	0/12
Mercury	ALLH	12	3	[0.00005]–0.07	0.1	0/12	0/12
Nickel	ALLH	12	12	4.85–18.1	15.4	2/12	0/12
Potassium	ALLH	12	12	933–2840	3460	0/12	0/12
Selenium	ALLH	12	12	0.244–0.972	1.52	0/12	0/12
Silver	ALLH	12	10	[0.000026]–0.071	1	0/12	0/12
Sodium	ALLH	12	12	136–572	915	0/12	0/12
Thallium	ALLH	12	4	[0.000261]–0.342	0.73	0/12	0/12
Vanadium	ALLH	12	12	11.3–30.7	39.6	0/12	0/12
Zinc	ALLH	12	12	21.1–58.8	48.8	2/12	0/12

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Values in brackets are below detection limits.

Table 2.1-3
Subaggregate 1 Frequency of Detection of Organic Chemicals in Soil at the X-Ray Buildings: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Acenaphthene	ALLH	12	9	[0.00003]–4.4	9/12
Acenaphthylene	ALLH	12	2	[0.00003]–0.14	2/12
Acetone	ALLH	12	8	[0.00005]–0.32	8/12
Anthracene	ALLH	12	11	[0.000038]–13	11/12
Benzo(a)anthracene	ALLH	12	11	[0.000038]–20	11/12
Benzo(a)pyrene	ALLH	12	11	[0.000038]–19	11/12
Benzo(b)fluoranthene	ALLH	12	11	[0.000038]–32	11/12
Benzo(g,h,i)perylene	ALLH	12	5	[0.0003]–13	5/12
Bis(2-ethylhexyl)phthalate	ALLH	12	1	[0.0003]–0.41	1/12
Chrysene	ALLH	12	11	[0.000038]–23	11/12
Dibenzofuran	ALLH	12	9	[0.00003]–2.9	9/12
Dimethylphenol[2,4-]	ALLH	12	2	[0.00003]–0.17	2/12
Fluoranthene	ALLH	12	12	0.05–50	12/12
Fluorene	ALLH	12	9	[0.00003]–4.6	9/12
Indeno(1,2,3-cd)pyrene	ALLH	12	5	[0.0003]–11	5/12
Isopropyltoluene[4-]	ALLH	12	1	[0.000025]–0.034	1/12
Methylnaphthalene[2-]	ALLH	12	9	[0.00003]–2	9/12
Methylphenol[2-]	ALLH	12	1	[0.00003]–0.091	1/12
Methylphenol[4-]	ALLH	12	3	[0.00003]–0.22	3/12
Naphthalene	ALLH	12	11	[0.000038]–5	11/12
Phenanthrene	ALLH	12	12	0.06–40	12/12
Pyrene	ALLH	12	12	0.044–40	12/12
Toluene	ALLH	12	2	[0.000005]–0.022	2/12

Note: Values in brackets are below detection limits.

Table 2.1-4
Subaggregate 1 Historical Analytical Results of Inorganic Chemicals Detected Greater Than Background Values in Soil at the X-Ray Buildings: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Aluminum	Beryllium	Cadmium	Calcium	Chromium	Copper	Iron	Lead	Magnesium	Nickel	Zinc
Soil Background Value				**29200**	**1.83**	**0.4**	**6120**	**19.3**	**14.7**	**21500**	**22.3**	**4610**	**15.4**	**48.8**
SWMU 16-026(i)														
16-21958	0.5–1	RE16-03-50424	ALLH	—*	—	0.461	—	—	—	—	—	—	—	—
16-21959	0.5–1	RE16-03-50425	ALLH	—	—	0.401	43600	—	—	—	24.5	—	—	58.8
16-21960	0.5–1	RE16-03-50426	ALLH	—	—	0.493	9490	—	—	30300	—	—	—	—
SWMU 16-026(j)														
16-03-21712	1.5–2	RE16-03-50443	ALLH	42400	3.37	—	6610	22.9	17.4	25100	—	5070	18.1	50.4
16-03-21713	1.5–2	RE16-03-50447	ALLH	—	—	—	10300	—	—	—	—	—	—	—
SWMU 16-026(l)														
16-21954	0.5–1	RE16-03-50419	ALLH	29300	—	—	6400	—	—	—	437	—	—	—
16-21955	0.5–1	RE16-03-50420	ALLH	—	—	—	—	38.4	—	—	25.6	—	17.2	—

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).

Note: Units are mg/kg.

*— = If analyzed, sample result is less than background value.

Table 2.1-5
Subaggregate 1 Historical Analytical Results of Organic Chemicals Detected in Soil at the X-Ray Buildings: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Acenaphthene	Acenaphthylene	Acetone	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Bis(2-ethylhexyl)phthalate	Chrysene	Dibenzofuran
SWMU 16-026(i)														
16-21957	0.5–1	RE16-03-50423	ALLH	2.1	0.07	0.1	4.3	8.4	7.5	13	4.8	—*	9.3	1.2
16-21958	0.5–1	RE16-03-50424	ALLH	0.7	—	0.32	1.1	1.5	1.8	2.9	—	—	1.3	0.54
16-21959	0.5–1	RE16-03-50425	ALLH	4.4	0.14	0.09	13	20	19	32	13	—	23	2.9
16-21960	0.5–1	RE16-03-50426	ALLH	1	—	0.12	1.6	2.5	2.1	3.7	1	—	2.3	0.65
SWMU 16-026(j)														
16-03-21712	0.5–1	RE16-03-50442	ALLH	0.2	—	—	0.3	0.36	0.31	0.52	—	—	0.39	0.13
16-03-21712	1.5–2	RE16-03-50443	ALLH	—	—	—	—	—	—	—	—	—	—	—
16-03-21713	0.5–1	RE16-03-50446	ALLH	0.1	—	—	0.15	0.23	0.19	0.32	—	—	0.23	0.06
16-03-21713	1.5–2	RE16-03-50447	ALLH	0.4	—	0.1	0.79	1.1	1	1.7	0.7	—	1.2	0.3
SWMU 16-026(l)														
16-03-21708	0.5–1	RE16-03-50418	ALLH	—	—	0.12	0.052	0.095	0.063	0.16	—	—	0.1	—
16-21953	0.5–1	RE16-03-50417	ALLH	0.7	—	0.12	0.96	2.4	2.9	4.9	—	—	2.1	0.37
16-21954	0.5–1	RE16-03-50419	ALLH	0.3	—	0.16	0.43	0.71	0.63	1.1	0.4	0.4	0.68	0.16
16-21955	0.5–1	RE16-03-50420	ALLH	—	—	—	0.047 (J+)	0.092 (J+)	0.087 (J+)	0.15 (J+)	—	—	0.1 (J+)	—

Table 2.1-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Dimethylphenol[2,4]	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4]	Methylnaphthalene[2]	Methylphenol[2]	Methylphenol[4]	Naphthalene	Phenanthrene	Pyrene	Toluene
SWMU 16-026(i)															
16-21957	0.5–1	RE16-03-50423	ALLH	0.03	20	2.2	4.2	—	0.59	—	0.06	1.9	19	19	0.01
16-21958	0.5–1	RE16-03-50424	ALLH	—	3.2	0.87	—	0.03	0.37	—	—	1.3	3.8	4	0.02
16-21959	0.5–1	RE16-03-50425	ALLH	0.17	50	4.6	11	—	2	0.09	0.22	5	40	40	—
16-21960	0.5–1	RE16-03-50426	ALLH	—	7.2	1.1	1	—	0.48	—	0.03	1.6	4.5	5.4	—
SWMU 16-026(j)															
16-03-21712	0.5–1	RE16-03-50442	ALLH	—	1	0.2	—	—	0.09	—	—	0.32	1.1	0.9	—
16-03-21712	1.5–2	RE16-03-50443	ALLH	—	0.05	—	—	—	—	—	—	—	0.06	0.044	—
16-03-21713	0.5–1	RE16-03-50446	ALLH	—	0.55	0.09	—	—	0.05	—	—	0.18	0.56	0.55	—
16-03-21713	1.5–2	RE16-03-50447	ALLH	—	2.7	0.48	0.6	—	0.26	—	—	0.96	2.7	2.8	—
SWMU 16-026(l)															
16-03-21708	0.5–1	RE16-03-50418	ALLH	—	0.21	—	—	—	—	—	—	0.042	0.16	0.22	—
16-21953	0.5–1	RE16-03-50417	ALLH	—	6.7	0.73	—	—	0.26	—	—	0.94	3.9	5	—
16-21954	0.5–1	RE16-03-50419	ALLH	—	1.5	0.25	0.4	—	0.12	—	—	0.48	1.5	1.6	—
16-21955	0.5–1	RE16-03-50420	ALLH	—	0.24 (J+)	—	—	—	—	—	—	0.043 (J+)	0.22 (J+)	0.23 (J+)	—

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

*— = If analyzed, sample result is not detected.

Table 2.2-1
Subaggregate 1 Summary of Historical Samples
Collected in Soil, Sediment, and Tuff at the Silver Outfall: Screening- and Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number			
				High Explosive	Inorganic Chemicals	SVOC	VOC
Screening-Level Data							
16-01573	0–0.5	0316-95-0474[a]	ALLH	285	285	284	—[b]
16-01574	0–0.5	0316-95-0475[a]	ALLH	285	285	284	—
16-01575	0–0.5	0316-95-0491[a]	ALLH	285	285	284	—
16-01576	0–0.5	0316-95-0492[a]	ALLH	285	285	284	—
16-01577	0–0.5	0316-95-0496[a]	ALLH	285	285	284	—
16-01578	0–0.5	0316-95-0497[a]	ALLH	285	285	284	—
16-01579	0–0.5	0316-95-0471[a]	ALLH	285	285	284	—
16-01579	2.5–4.5	0316-95-0472[a]	ALLH	1180	1180	1179	1179
16-01579	4.5–5.5	0316-95-0473[a]	ALLH	1180	1180	1179	1179
16-01580	0–0.5	0316-95-0476[a]	ALLH	285	285	284	—
16-01580	2.5–2.92	0316-95-0477[a]	ALLH	1155	1155	1154	1154
16-01580	4–5.5	0316-95-0478[a]	QBT4	1180	1180	1179	1179
16-01581	0–0.5	0316-95-0479[a]	ALLH	285	285	284	—
16-01581	1.25–1.75	0316-95-0480[a]	QBT4	1155	1155	1154	1154
16-01581	3.5–5	0316-95-0481[a]	QBT4	1180	1180	1179	1179
16-01582	0–0.5	0316-95-0482[a]	ALLH	285	285	284	—
16-01582	2–3	0316-95-0483[a]	ALLH	1180	1180	1179	1179
16-01582	4–5	0316-95-0484[a]	QBT4	1180	1180	1179	1179
16-01583	0–0.5	0316-95-0485[a]	ALLH	285	285	284	—
16-01583	1.83–3	0316-95-0486[a]	ALLH	1180	1180	1179	1179
16-01583	3–4	0316-95-0487[a]	QBT4	1180	1180	1179	1179
16-01584	0–0.5	0316-95-0488[a]	SED	285	285	284	—
16-01584	0.67–1.17	0316-95-0489[a]	ALLH	1392	1392	1391	1391
16-01584	1.17–1.42	0316-95-0490[a]	ALLH	1392	1392	1391	1391
16-01585	0–0.5	0316-95-0493[a]	SED	285	285	284	—
16-01585	0.67–1.08	0316-95-0494[a]	ALLH	1392	1392	1391	1391
16-01585	1.17–1.5	0316-95-0495[a]	ALLH	1392	1392	1391	1391
16-02168	0–0.5	0316-95-0512[a]	SED	1392	1392	1391	—
16-02168	0.67–1.08	0316-95-0513[a]	ALLH	1392	1392	1391	1391
16-02168	1.17–1.33	0316-95-0514[a]	ALLH	1392	1392	1391	1391
16-02169	0–0.5	0316-95-0515[a]	ALLH	1392	1392	1391	—
16-02170	0–0.5	0316-95-0516[a]	ALLH	1392	1392	1391	—

Table 2.2-1 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number			
				High Explosive	Inorganic Chemicals	SVOC	VOC
Decision-Level Data							
16-06542	0–0.5	RE16-00-0304	ALLH	7726R	7725R	7724R	7724R
16-06542	0–2	RE16-00-0305	ALLH	7726R	7725R	7724R	7724R
16-06555	0–0.5	RE16-00-0302	ALLH	7726R	7725R	7724R	7724R
16-06555	0–2	RE16-00-0303	ALLH	7726R	7725R	7724R	7724R
16-06562	0–0.5	RE16-00-0300	ALLH	7726R	7725R	7724R	7724R
16-06562	0–2	RE16-00-0301	ALLH	7726R	7725R	7724R	7724R
16-06564	0–0.5	RE16-00-0320	ALLH	7726R	7725R	7724R	7724R
16-06564	0–2	RE16-00-0321	ALLH	7726R	7725R	7724R	7724R
16-06568	0–0.5	RE16-00-0316	ALLH	7726R	7725R	7724R	7724R
16-06568	0–2	RE16-00-0317	ALLH	7726R	7725R	7724R	7724R
16-06573	0–0.5	RE16-00-0314	ALLH	7726R	7725R	7724R	7724R
16-06573	0–2	RE16-00-0315	ALLH	7726R	7725R	7724R	7724R
16-06583	0–0.5	RE16-00-0306	ALLH	7726R	7725R	7724R	7724R
16-06583	0–2	RE16-00-0307	ALLH	7726R	7725R	7724R	7724R
16-06587	0–0.5	RE16-00-0308	ALLH	7726R	7725R	7724R	7724R
16-06587	0–2	RE16-00-0309	ALLH	7726R	7725R	7724R	7724R
16-06588	0–0.5	RE16-00-0310	ALLH	7726R	7725R	7724R	7724R
16-06588	0–2	RE16-00-0311	ALLH	7726R	7725R	7724R	7724R
16-06591	0–0.5	RE16-00-0312	ALLH	7726R	7725R	7724R	7724R
16-06593	0–0.26	RE16-00-0371	SED	7766R	7768R	7765R	—

[a] Soil removed after sampling.

[b] — = Analysis was not requested.

Table 2.2-2
Subaggregate 1 Frequency of Detection of Inorganic Chemicals in Soil, Sediment, and Tuff at the Silver Outfall: Screening- and Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Screening-Level Data (Excavated Samples)							
Aluminum	ALLH	24	24	2600–12400	29200	0/24	0/24
Aluminum	SED	3	3	2900–13000	15400	0/3	0/3
Aluminum	QBT4	5	5	2030–17900	7340	1/5	0/5
Antimony	ALLH	24	0	[5–9.82]	0.83	0/24	24/24
Antimony	SED	3	0	[4.97–9.7]	0.83	0/3	3/3
Antimony	QBT4	5	0	[5.1–6]	0.5	0/5	5/5
Arsenic	ALLH	24	23	0.81–19.3	8.17	3/24	0/24
Arsenic	SED	3	3	1.87–6.4	3.98	1/3	0/3
Arsenic	QBT4	5	5	0.52–2.4	2.79	0/5	0/5
Barium	ALLH	24	24	21.9–274	295	0/24	0/24
Barium	SED	3	3	105–126	127	0/3	0/3
Barium	QBT4	5	5	17.4–211	46	3/5	0/5
Beryllium	ALLH	24	9	[0.42]–0.84	1.83	0/24	0/24
Beryllium	SED	3	1	[0.398]–0.96	1.31	0/3	0/3
Beryllium	QBT4	5	2	[0.42]–1.5	1.21	1/5	0/5
Cadmium	ALLH	24	6	[0.5]–1.75	0.4	6/24	18/24
Cadmium	SED	3	2	[0.497]–1.3	0.4	2/3	1/3
Cadmium	QBT4	5	1	[0.51]–0.59	1.63	0/5	0/5
Calcium	ALLH	24	24	199–2360	6120	0/24	0/24
Calcium	SED	3	3	998–2190	4420	0/3	0/3
Calcium	QBT4	5	5	262–1050	2200	0/5	0/5
Chromium	ALLH	24	24	5.1–1190	19.3	11/24	0/24
Chromium	SED	3	3	8.43–158	10.5	1/3	0/3
Chromium	QBT4	5	5	8.3–74.2	7.14	5/5	0/5
Cobalt	ALLH	24	21	[1.2]–10.6	8.64	2/24	0/24
Cobalt	SED	3	3	2.9–5.43	4.73	1/3	0/3
Cobalt	QBT4	5	5	3.4–20.8	3.14	5/5	0/5
Copper	ALLH	24	24	3.9–65.9	14.7	12/24	0/24
Copper	SED	3	3	7.31–33.5	11.2	2/3	0/3
Copper	QBT4	5	5	10.2–231	4.66	5/5	0/5
Cyanide (Total)	ALLH	24	0	[1–2]	0.5	0/24	24/24
Cyanide (Total)	SED	3	0	[1.03–2]	0.82	0/3	3/3
Cyanide (Total)	QBT4	5	0	[1–1.2]	0.5	0/5	5/5

Table 2.2-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Iron	ALLH	24	24	6110–12300	21500	0/24	0/24
Iron	SED	3	3	8160–11200	13800	0/3	0/3
Iron	QBT4	5	5	7170–16200	14500	1/5	0/5
Lead	ALLH	24	24	4.8–56.4	22.3	4/24	0/24
Lead	SED	3	3	11.7–25.4	19.7	2/3	0/3
Lead	QBT4	5	5	4.1–12.2	11.2	1/5	0/5
Magnesium	ALLH	24	24	216–1710	4610	0/24	0/24
Magnesium	SED	3	3	519–1640	2370	0/3	0/3
Magnesium	QBT4	5	5	176–1730	1690	1/5	0/5
Manganese	ALLH	24	24	22.3–719	671	1/24	0/24
Manganese	SED	3	3	121–549	543	1/3	0/3
Manganese	QBT4	5	5	87.3–231	482	0/5	0/5
Mercury	ALLH	24	12	[0.05]–0.263	0.1	5/24	0/24
Mercury	SED	3	2	[0.058]–0.154	0.1	1/3	0/3
Nickel	ALLH	24	24	2.62–200	15.4	5/24	0/24
Nickel	SED	3	3	7.4–123	9.38	1/3	0/3
Nickel	QBT4	5	5	8.6–75.4	6.58	5/5	0/5
Potassium	ALLH	24	24	368–1830	3460	0/24	0/24
Potassium	SED	3	3	543–1690	2690	0/3	0/3
Potassium	QBT4	5	5	350–3040	43700	0/5	0/5
Selenium	ALLH	24	0	[0.255–0.5]	1.52	0/24	0/24
Selenium	SED	3	0	[0.248–0.493]	0.3	0/3	1/3
Selenium	QBT4	5	0	[0.25–0.3]	0.3	0/5	0/5
Silver	ALLH	24	24	7.91–672	1	24/24	0/24
Silver	SED	3	3	5.7–465	1	3/3	0/3
Silver	QBT4	5	5	25–341	1	5/5	0/5
Sodium	ALLH	24	24	330–700	915	0/24	0/24
Sodium	SED	3	3	401–622	1470	0/3	0/3
Sodium	QBT4	5	5	398–671	2770	0/5	0/5
Thallium	ALLH	24	1	[0.204]–0.4	0.73	0/24	0/24
Thallium	QBT4	5	1	[0.2]–0.3	1.1	0/5	0/5
Vanadium	ALLH	24	24	7–44.4	39.6	1/24	0/24
Vanadium	SED	3	3	13.1–28.8	19.7	2/3	0/3
Vanadium	QBT4	5	5	5–24.1	17	1/5	0/5
Zinc	ALLH	24	24	25.2–160	48.8	5/24	0/24
Zinc	SED	3	3	24.2–63.1	60.2	1/3	0/3

Table 2.2-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Zinc	QBT4	5	5	38.4–154	63.5	2/5	0/5
Decision-Level Data							
Aluminum	ALLH	19	19	3500–22000	29200	0/19	0/19
Aluminum	SED	1	1	9600	15400	0/1	0/1
Arsenic	ALLH	19	19	1.4–9.5	8.17	1/19	0/19
Arsenic	SED	1	1	3.2	3.98	0/1	0/1
Barium	ALLH	19	19	15–150	295	0/19	0/19
Barium	SED	1	1	260	127	1/1	0/1
Beryllium	ALLH	19	19	0.11–0.93	1.83	0/19	0/19
Beryllium	SED	1	1	0.59	1.31	0/1	0/1
Boron	SED	1	1	7.4	n/a*	n/a	n/a
Cadmium	ALLH	19	16	[0.0402]–1.1	0.4	7/19	0/19
Cadmium	SED	1	1	0.13	0.4	0/1	0/1
Calcium	ALLH	19	19	180–3400	6120	0/19	0/19
Calcium	SED	1	1	2400	4420	0/1	0/1
Chromium	ALLH	19	19	2.6–250	19.3	4/19	0/19
Chromium	SED	1	1	6.8	10.5	0/1	0/1
Cobalt	ALLH	19	19	0.46–3.4	8.64	0/19	0/19
Cobalt	SED	1	1	3.6	4.73	0/1	0/1
Copper	ALLH	19	19	2.1–18	14.7	1/19	0/19
Copper	SED	1	1	8.7	11.2	0/1	0/1
Iron	ALLH	19	19	4800–12000	21500	0/19	0/19
Iron	SED	1	1	8100	13800	0/1	0/1
Lead	ALLH	19	19	4.9–21	22.3	0/19	0/19
Lead	SED	1	1	29	19.7	1/1	0/1
Magnesium	ALLH	19	19	280–2100	4610	0/19	0/19
Magnesium	SED	1	1	1500	2370	0/1	0/1
Manganese	ALLH	19	19	31–440	671	0/19	0/19
Manganese	SED	1	1	340	543	0/1	0/1
Mercury	ALLH	19	15	[0.0183]–0.088	0.1	0/19	0/19
Mercury	SED	1	1	0.11	0.1	1/1	0/1
Nickel	ALLH	19	18	[1.88]–8.6	15.4	0/19	0/19
Nickel	SED	1	1	5.3	9.38	0/1	0/1
Potassium	ALLH	19	19	340–2000	3460	0/19	0/19
Potassium	SED	1	1	1600	2690	0/1	0/1
Selenium	ALLH	19	19	0.227–0.929	1.52	0/19	0/19

Table 2.2-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Selenium	SED	1	1	0.442	0.3	1/1	0/1
Silver	ALLH	19	19	2.8–720	1	19/19	0/19
Silver	SED	1	1	1.6	1	1/1	0/1
Sodium	ALLH	19	19	73–210	915	0/19	0/19
Sodium	SED	1	1	140	1470	0/1	0/1
Thallium	ALLH	19	15	[0.0515]–0.335	0.73	0/19	0/19
Thallium	SED	1	1	0.195	0.73	0/1	0/1
Uranium	SED	1	1	1.79	2.22	0/1	0/1
Vanadium	ALLH	19	19	3.8–25	39.6	0/19	0/19
Vanadium	SED	1	1	13	19.7	0/1	0/1
Zinc	ALLH	19	19	22–59	48.8	4/19	0/19
Zinc	SED	1	1	32	60.2	0/1	0/1

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Values in brackets are below detection limits.
*n/a = Not applicable; no background value available.

Table 2.2-3
Subaggregate 1 Frequency of Detection of Organic Chemicals in Soil, Sediment, and Tuff at the Silver Outfall: Screening- and Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Screening-Level Data					
Acenaphthene	ALLH	32	16	0.057–50	16/32
Acenaphthene	SED	5	2	0.21–[2]	2/5
Acenaphthylene	ALLH	32	1	0.064–[24]	1/32
Acetone	ALLH	14	3	[0.005]–0.012	3/14
Acetone	QBT4	5	4	0.009–[0.025]	4/5
Anthracene	ALLH	32	17	0.051–120	17/32
Anthracene	SED	5	2	[0.34]–0.76	2/5
Benzo(a)anthracene	ALLH	32	20	0.058–420	20/32
Benzo(a)anthracene	QBT4	5	1	0.058–[0.4]	1/5
Benzo(a)anthracene	SED	5	2	[0.34]–3.9	2/5
Benzo(a)pyrene	ALLH	32	20	0.062–460	20/32
Benzo(a)pyrene	SED	5	2	[0.34]–4.9	2/5
Benzo(b)fluoranthene	ALLH	32	22	0.07–580	22/32
Benzo(b)fluoranthene	QBT4	5	1	0.079–[0.4]	1/5
Benzo(b)fluoranthene	SED	5	2	[0.34]–8.2	2/5
Benzo(g,h,i)perylene	ALLH	32	16	0.066–350	16/32
Benzo(g,h,i)perylene	SED	5	2	[0.34]–3.5	2/5
Benzo(k)fluoranthene	ALLH	32	15	0.077–140	15/32
Benzo(k)fluoranthene	SED	5	2	[0.34]–3.5	2/5
Benzoic Acid	ALLH	32	4	0.17–[240]	4/32
Benzoic Acid	SED	5	1	0.98–[20]	1/5
Bis(2-ethylhexyl)phthalate	ALLH	32	3	[0.13]–1.8	3/32
Bis(2-ethylhexyl)phthalate	SED	5	1	[0.34]–0.42	1/5
Chrysene	ALLH	32	22	0.063–610	22/32
Chrysene	QBT4	5	2	0.059–[0.4]	2/5
Chrysene	SED	5	2	[0.34]–6.7	2/5
Dibenz(a,h)anthracene	ALLH	32	10	0.064–68	10/32
Dibenz(a,h)anthracene	SED	5	2	[0.34]–1.8	2/5
Dibenzofuran	ALLH	32	10	0.036–22	10/32
Diethylphthalate	QBT4	5	1	0.043–[0.4]	1/5
Dimethylphenol[2,4-]	ALLH	32	1	0.054–[24]	1/32
Di-n-butylphthalate	SED	5	2	[0.34]–0.84	2/5
Fluoranthene	ALLH	32	26	0.068–980	26/32
Fluoranthene	QBT4	5	2	0.078–[0.4]	2/5
Fluoranthene	SED	5	2	[0.34]–10	2/5

Table 2.2-3 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Fluorene	ALLH	32	14	0.05–40	14/32
Fluorene	SED	5	1	0.28–[2]	1/5
Indeno(1,2,3-cd)pyrene	ALLH	32	17	0.071–270	17/32
Indeno(1,2,3-cd)pyrene	SED	5	2	[0.34]–2.5	2/5
Methylene Chloride	ALLH	14	3	[0.003]–0.005	3/14
Methylnaphthalene[2-]	ALLH	32	7	0.043–12	7/32
Methylphenol[4-]	ALLH	32	1	0.088–[24]	1/32
Naphthalene	ALLH	32	9	0.083–34	9/32
Phenanthrene	ALLH	32	25	0.047–610	25/32
Phenanthrene	QBT4	5	1	0.065–[0.4]	1/5
Phenanthrene	SED	5	2	[0.34]–3.7	2/5
Pyrene	ALLH	32	27	0.044–720	27/32
Pyrene	QBT4	5	2	0.066–[0.4]	2/5
Pyrene	SED	5	2	[0.34]–10	2/5
Toluene	ALLH	14	1	0.003–[0.007]	1/14
Trichlorofluoromethane	ALLH	14	7	0.005–0.012	7/14
Trichlorofluoromethane	QBT4	5	3	[0.003]–0.009	3/5
Decision-Level Data					
Acenaphthene	ALLH	19	3	[0.0429]–0.17	3/19
Acetone	ALLH	19	12	[0.00322]–0.19	12/19
Amino-4,6-dinitrotoluene[2-]	ALLH	19	1	0.05–[0.31]	1/19
Anthracene	ALLH	19	4	[0.036]–0.44	4/19
Benzo(a)anthracene	ALLH	19	10	[0.0302]–2.5	10/19
Benzo(a)anthracene	SED	1	1	0.082	1/1
Benzo(a)pyrene	ALLH	19	10	[0.0272]–3.1	10/19
Benzo(a)pyrene	SED	1	1	0.09	1/1
Benzo(b)fluoranthene	ALLH	19	11	[0.0293]–3.4	11/19
Benzo(b)fluoranthene	SED	1	1	0.16	1/1
Benzo(g,h,i)perylene	ALLH	19	8	[0.0386]–1.3	8/19
Benzo(g,h,i)perylene	SED	1	1	0.07	1/1
Benzo(k)fluoranthene	ALLH	19	9	[0.0356]–2.7	9/19
Benzo(k)fluoranthene	SED	1	1	0.062	1/1
Benzoic Acid	SED	1	1	0.037	1/1
Bis(2-ethylhexyl)phthalate	ALLH	19	3	[0.0407]–0.15	3/19
Bis(2-ethylhexyl)phthalate	SED	1	1	0.041	1/1
Chrysene	ALLH	19	10	[0.0426]–3.3	10/19
Chrysene	SED	1	1	0.1	1/1
Dibenzofuran	ALLH	19	1	[0.0444]–0.11	1/19

Table 2.2-3 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Di-n-butylphthalate	ALLH	19	1	[0.0322]–0.038	1/19
Fluoranthene	ALLH	19	10	[0.0297]–5	10/19
Fluoranthene	SED	1	1	0.19	1/1
Fluorene	ALLH	19	3	[0.0454]–0.24	3/19
Indeno(1,2,3-cd)pyrene	ALLH	19	7	[0.037]–1.4	7/19
Indeno(1,2,3-cd)pyrene	SED	1	1	0.06	1/1
Isopropyltoluene[4-]	ALLH	19	5	[0.00026]–0.037	5/19
Methylene Chloride	ALLH	19	10	[0.000503]–0.0019	10/19
Methylphenol[3-]	ALLH	18	1	[0.0464]–0.0968	1/18
Naphthalene	ALLH	19	2	[0.0375]–0.1	2/19
Nitrotoluene[2-]	ALLH	19	1	0.11–[0.31]	1/19
Nitrotoluene[4-]	ALLH	19	1	0.11–[0.31]	1/19
Phenanthrene	ALLH	19	10	[0.0457]–2.3	10/19
Phenanthrene	SED	1	1	0.12	1/1
Pyrene	ALLH	19	14	[0.032]–6.5	14/19
Pyrene	SED	1	1	0.2	1/1
RDX	ALLH	19	1	0.21–[0.31]	1/19
Toluene	ALLH	19	4	[0.000412]–0.0014	4/19
Trichlorofluoromethane	ALLH	19	14	[0.00122]–0.061	14/19

Note: Values in brackets are below detection limits.

Table 2.2-4
Subaggregate 1 Historical Analytical Results of Inorganic Chemicals Greater Than Background Values in Soil, Sediment, and Tuff at the Silver Outfall: Screening- and Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper
Soil Background Value				**29200**	**0.83**	**8.17**	**295**	**1.83**	**n/a**[a]	**0.4**	**19.3**	**8.64**	**14.7**
Sediment Background Value				**15400**	**0.83**	**3.98**	**127**	**1.31**	**n/a**	**0.4**	**10.5**	**4.73**	**11.2**
QBT4 Background Value				**7340**	**0.5**	**2.79**	**46**	**1.21**	**n/a**	**1.63**	**7.14**	**3.14**	**4.66**
Screening-Level Data													
16-01573	0–0.5	0316-95-0474[b]	ALLH	—[c]	5.1 (U)	—	—	—	—	0.51 (U)	—	—	—
16-01574	0–0.5	0316-95-0475[b]	ALLH	—	5.3 (U)	—	—	—	—	0.53 (U)	30.7	10.6	—
16-01575	0–0.5	0316-95-0491[b]	ALLH	—	9.82 (U)	8.38	—	—	—	0.982 (U)	137	—	16.7
16-01576	0–0.5	0316-95-0492[b]	ALLH	—	8.8 (U)	—	—	—	—	0.99	163	—	18.1
16-01577	0–0.5	0316-95-0496[b]	ALLH	—	6 (U)	—	—	—	—	0.6 (U)	—	—	—
16-01578	0–0.5	0316-95-0497[b]	ALLH	—	5.6 (U)	—	—	—	—	0.56 (U)	—	—	—
16-01579	0–0.5	0316-95-0471[b]	ALLH	—	7.1 (U)	—	—	—	—	0.71 (U)	433	—	54.2
16-01579	2.5–4.5	0316-95-0472[b]	ALLH	—	5.7 (U)	—	—	—	—	0.57 (U)	—	—	—
16-01579	4.5–5.5	0316-95-0473[b]	ALLH	—	6.5 (U)	—	—	—	—	1	277	—	—
16-01580	0–0.5	0316-95-0476[b]	ALLH	—	6.6 (U)	19.3	—	—	—	0.66 (U)	1190	—	29.4
16-01580	2.5–2.92	0316-95-0477[b]	ALLH	—	5.6 (U)	—	—	—	—	1.7	—	—	—
16-01580	4–5.5	0316-95-0478[b]	QBT4	—	5.1 (U)	—	—	—	—	—	8.3	20.8	186
16-01581	0–0.5	0316-95-0479[b]	ALLH	—	8.32 (U)	—	—	—	—	1.2	466	—	45.2
16-01581	1.25–1.75	0316-95-0480[b]	QBT4	17900	6 (U)	—	211	1.5	—	—	15.5	3.4 (J)	10.2
16-01581	3.5–5	0316-95-0481[b]	QBT4	—	5.2 (U)	—	61.6	—	—	—	8.9	8.2	25.7
16-01582	0–0.5	0316-95-0482[b]	ALLH	—	6.81 (U)	17.5	—	—	—	1.41	673	—	16.8
16-01582	2–3	0316-95-0483[b]	ALLH	—	5.5 (U)	—	—	—	—	0.55 (U)	61.8	—	41.5
16-01582	4–5	0316-95-0484[b]	QBT4	—	5.9 (U)	—	47.3	—	—	—	50.3	4.3 (J)	26.3
16-01583	0–0.5	0316-95-0485[b]	ALLH	—	5.9 (U)	—	—	—	—	0.59 (U)	225	—	—

Table 2.2-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper
Soil Background Value				**29200**	**0.83**	**8.17**	**295**	**1.83**	**n/a**	**0.4**	**19.3**	**8.64**	**14.7**
Sediment Background Value				**15400**	**0.83**	**3.98**	**127**	**1.31**	**n/a**	**0.4**	**10.5**	**4.73**	**11.2**
QBT4 Background Value				**7340**	**0.5**	**2.79**	**46**	**1.21**	**n/a**	**1.63**	**7.14**	**3.14**	**4.66**
16-01583	1.83–3	0316-95-0486[b]	ALLH	—	5.5 (U)	—	—	—	—	0.55 (U)	—	9.2	44.9
16-01583	3–4	0316-95-0487[b]	QBT4	—	5.5 (U)	—	—	—	—	—	74.2	14.8	231
16-01584	0–0.5	0316-95-0488[b]	SED	—	9.7 (U)	6.4	—	—	—	1.3	158	—	18
16-01584	0.67–1.17	0316-95-0489[b]	ALLH	—	5.54 (U)	—	—	—	—	0.554 (U)	33.4 (J+)	—	—
16-01584	1.17–1.42	0316-95-0490[b]	ALLH	—	5.3 (U)	—	—	—	—	1.75	—	—	—
16-01585	0–0.5	0316-95-0493[b]	SED	—	5.93 (U)	—	—	—	—	0.934	—	5.43 (J)	—
16-01585	0.67–1.08	0316-95-0494[b]	ALLH	—	5.18 (U)	—	—	—	—	0.518 (U)	—	—	—
16-01585	1.17–1.5	0316-95-0495[b]	ALLH	—	5 (U)	—	—	—	—	0.5 (U)	—	—	—
16-02168	0–0.5	0316-95-0512[b]	SED	—	4.97 (U)	—	—	—	—	0.497 (U)	—	—	33.5
16-02168	0.67–1.08	0316-95-0513[b]	ALLH	—	5.19 (U)	—	—	—	—	0.519 (U)	—	—	22.9
16-02168	1.17–1.33	0316-95-0514[b]	ALLH	—	5.2 (U)	—	—	—	—	0.52 (U)	—	—	25.2
16-02169	0–0.5	0316-95-0515[b]	ALLH	—	5.41 (U)	—	—	—	—	0.541 (U)	—	—	51
16-02170	0–0.5	0316-95-0516[b]	ALLH	—	5.74 (U)	—	—	—	—	0.574 (U)	—	—	65.9
Decision-Level Data													
16-06542	0–0.5	RE16-00-0304	ALLH	—	—	—	—	—	—	—	—	—	—
16-06542	0–2	RE16-00-0305	ALLH	—	—	—	—	—	—	—	—	—	—
16-06555	0–0.5	RE16-00-0302	ALLH	—	—	—	—	—	—	0.54	—	—	—
16-06555	0–2	RE16-00-0303	ALLH	—	—	—	—	—	—	1.1	—	—	—
16-06562	0–0.5	RE16-00-0300	ALLH	—	—	—	—	—	—	0.58	46	—	—
16-06562	0–2	RE16-00-0301	ALLH	—	—	—	—	—	—	—	—	—	—
16-06564	0–0.5	RE16-00-0320	ALLH	—	—	—	—	—	—	—	—	—	—
16-06564	0–2	RE16-00-0321	ALLH	—	—	—	—	—	—	—	—	—	—

Table 2.2-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper
Soil Background Value				**29200**	**0.83**	**8.17**	**295**	**1.83**	**n/a**	**0.4**	**19.3**	**8.64**	**14.7**
Sediment Background Value				**15400**	**0.83**	**3.98**	**127**	**1.31**	**n/a**	**0.4**	**10.5**	**4.73**	**11.2**
QBT4 Background Value				**7340**	**0.5**	**2.79**	**46**	**1.21**	**n/a**	**1.63**	**7.14**	**3.14**	**4.66**
16-06568	0–0.5	RE16-00-0316	ALLH	—	—	—	—	—	—	—	34	—	—
16-06568	0–2	RE16-00-0317	ALLH	—	—	—	—	—	—	—	—	—	—
16-06573	0–0.5	RE16-00-0314	ALLH	—	—	—	—	—	—	0.49	—	—	—
16-06573	0–2	RE16-00-0315	ALLH	—	—	—	—	—	—	0.58	—	—	—
16-06583	0–0.5	RE16-00-0306	ALLH	—	—	9.5	—	—	—	0.87	250	—	18
16-06583	0–2	RE16-00-0307	ALLH	—	—	—	—	—	—	0.68	42	—	—
16-06587	0–0.5	RE16-00-0308	ALLH	—	—	—	—	—	—	—	—	—	—
16-06587	0–2	RE16-00-0309	ALLH	—	—	—	—	—	—	—	—	—	—
16-06588	0–0.5	RE16-00-0310	ALLH	—	—	—	—	—	—	—	—	—	—
16-06588	0–2	RE16-00-0311	ALLH	—	—	—	—	—	—	—	—	—	—
16-06591	0–0.5	RE16-00-0312	ALLH	—	—	—	—	—	—	—	—	—	—
16-06593	0–0.26	RE16-00-0371	SED	—	—	—	260	—	7.4 (J)	—	—	—	—

Table 2.2-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Cyanide (Total)	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Selenium	Silver	Vanadium	Zinc
Soil Background Value				**0.5**	**21500**	**22.3**	**4610**	**671**	**0.1**	**15.4**	**1.52**	**1**	**39.6**	**48.8**
Sediment Background Value				**0.82**	**13800**	**19.7**	**2370**	**543**	**0.1**	**9.38**	**0.3**	**1**	**19.7**	**60.2**
QBT4 Background Value				**0.5**	**14500**	**11.2**	**1690**	**482**	**0.1**	**6.58**	**0.3**	**1**	**17**	**63.5**
Screening-Level Data														
16-01573	0–0.5	0316-95-0474[b]	ALLH	1 (U)	—	—	—	—	—	—	—	34.6	—	—
16-01574	0–0.5	0316-95-0475[b]	ALLH	1.1 (U)	—	—	—	719	—	—	—	121	—	—
16-01575	0–0.5	0316-95-0491[b]	ALLH	2 (U)	—	—	—	—	0.14 (J)	—	—	454	—	68.5
16-01576	0–0.5	0316-95-0492[b]	ALLH	1.8 (U)	—	24.1	—	—	0.161 (J)	—	—	423	—	62.3
16-01577	0–0.5	0316-95-0496[b]	ALLH	1.2 (U)	—	—	—	—	—	—	—	303	—	—
16-01578	0–0.5	0316-95-0497[b]	ALLH	1.1 (U)	—	—	—	—	—	—	—	82.5	—	—
16-01579	0–0.5	0316-95-0471[b]	ALLH	1.4 (U)	—	56.4	—	—	—	—	—	423	—	160
16-01579	2.5–4.5	0316-95-0472[b]	ALLH	1.2 (U)	—	—	—	—	—	—	—	251	—	—
16-01579	4.5–5.5	0316-95-0473[b]	ALLH	1.3 (U)	—	—	—	—	—	—	—	446	—	—
16-01580	0–0.5	0316-95-0476[b]	ALLH	1.3 (U)	—	—	—	—	0.19	—	—	346	44.4	—
16-01580	2.5–2.92	0316-95-0477[b]	ALLH	1.2 (U)	—	—	—	—	—	—	—	31.2	—	—
16-01580	4–5.5	0316-95-0478[b]	QBT4	1 (U)	—	—	—	—	—	40.8	—	25	—	139
16-01581	0–0.5	0316-95-0479[b]	ALLH	1.7 (U)	—	—	—	—	0.263	—	—	455	—	64
16-01581	1.25–1.75	0316-95-0480[b]	QBT4	1.2 (U)	16200	12.2	1730	—	—	8.6	—	276	24.1	—
16-01581	3.5–5	0316-95-0481[b]	QBT4	1.1 (U)	—	—	—	—	—	11.7	—	47.6	—	—
16-01582	0–0.5	0316-95-0482[b]	ALLH	1.4 (U)	—	—	—	—	0.25	—	—	298	—	—
16-01582	2–3	0316-95-0483[b]	ALLH	1.1 (U)	—	—	—	—	—	35	—	103	—	61.9
16-01582	4–5	0316-95-0484[b]	QBT4	1.2 (U)	—	—	—	—	—	27.5	—	98	—	—
16-01583	0–0.5	0316-95-0485[b]	ALLH	1.2 (U)	—	—	—	—	—	—	—	329	—	—
16-01583	1.83–3	0316-95-0486[b]	ALLH	1.1 (U)	—	—	—	—	—	—	—	397	—	—
16-01583	3–4	0316-95-0487[b]	QBT4	1.1 (U)	—	—	—	—	—	75.4	—	341	—	154

Table 2.2-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Cyanide (Total)	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Selenium	Silver	Vanadium	Zinc
Soil Background Value				**0.5**	**21500**	**22.3**	**4610**	**671**	**0.1**	**15.4**	**1.52**	**1**	**39.6**	**48.8**
Sediment Background Value				**0.82**	**13800**	**19.7**	**2370**	**543**	**0.1**	**9.38**	**0.3**	**1**	**19.7**	**60.2**
QBT4 Background Value				**0.5**	**14500**	**11.2**	**1690**	**482**	**0.1**	**6.58**	**0.3**	**1**	**17**	**63.5**
16-01584	0–0.5	0316-95-0488[b]	SED	2 (U)	—	25.4	—	—	0.154 (J)	—	0.493 (U)	465	28.8	63.1
16-01584	0.67–1.17	0316-95-0489[b]	ALLH	1.11 (U)	—	—	—	—	—	—	—	672	—	—
16-01584	1.17–1.42	0316-95-0490[b]	ALLH	1.09 (U)	—	—	—	—	—	—	—	345	—	—
16-01585	0–0.5	0316-95-0493[b]	SED	1.2 (U)	—	—	—	549	—	—	—	338	21.6	—
16-01585	0.67–1.08	0316-95-0494[b]	ALLH	1.04 (U)	—	—	—	—	—	—	—	49.5	—	—
16-01585	1.17–1.5	0316-95-0495[b]	ALLH	1.04 (U)	—	—	—	—	—	—	—	43.1	—	—
16-02168	0–0.5	0316-95-0512[b]	SED	1.03 (U)	—	24.7 (J+)	—	—	—	123	—	5.7	—	—
16-02168	0.67–1.08	0316-95-0513[b]	ALLH	1.06 (U)	—	—	—	—	—	106	—	17.6	—	—
16-02168	1.17–1.33	0316-95-0514[b]	ALLH	1.08 (U)	—	—	—	—	—	113	—	25.9	—	—
16-02169	0–0.5	0316-95-0515[b]	ALLH	1.11 (U)	—	23.2 (J+)	—	—	—	147	—	7.91	—	—
16-02170	0–0.5	0316-95-0516[b]	ALLH	1.19 (U)	—	30.4 (J+)	—	—	—	200	—	17.1	—	—
Decision-Level Data														
16-06542	0–0.5	RE16-00-0304	ALLH	—	—	—	—	—	—	—	—	99 (J)	—	59
16-06542	0–2	RE16-00-0305	ALLH	—	—	—	—	—	—	—	—	35 (J)	—	—
16-06555	0–0.5	RE16-00-0302	ALLH	—	—	—	—	—	—	—	—	84 (J)	—	—
16-06555	0–2	RE16-00-0303	ALLH	—	—	—	—	—	—	—	—	150 (J)	—	—
16-06562	0–0.5	RE16-00-0300	ALLH	—	—	—	—	—	—	—	—	720 (J)	—	52
16-06562	0–2	RE16-00-0301	ALLH	—	—	—	—	—	—	—	—	190 (J)	—	—
16-06564	0–0.5	RE16-00-0320	ALLH	—	—	—	—	—	—	—	—	580	—	—
16-06564	0–2	RE16-00-0321	ALLH	—	—	—	—	—	—	—	—	550	—	—
16-06568	0–0.5	RE16-00-0316	ALLH	—	—	—	—	—	—	—	—	680 (J)	—	—
16-06568	0–2	RE16-00-0317	ALLH	—	—	—	—	—	—	—	—	490 (J)	—	—

Table 2.2-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Cyanide (Total)	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Selenium	Silver	Vanadium	Zinc
Soil Background Value				**0.5**	**21500**	**22.3**	**4610**	**671**	**0.1**	**15.4**	**1.52**	**1**	**39.6**	**48.8**
Sediment Background Value				**0.82**	**13800**	**19.7**	**2370**	**543**	**0.1**	**9.38**	**0.3**	**1**	**19.7**	**60.2**
QBT4 Background Value				**0.5**	**14500**	**11.2**	**1690**	**482**	**0.1**	**6.58**	**0.3**	**1**	**17**	**63.5**
16-06573	0–0.5	RE16-00-0314	ALLH	—	—	—	—	—	—	—	—	270 (J)	—	—
16-06573	0–2	RE16-00-0315	ALLH	—	—	—	—	—	—	—	—	77 (J)	—	—
16-06583	0–0.5	RE16-00-0306	ALLH	—	—	—	—	—	—	—	—	680 (J)	—	59
16-06583	0–2	RE16-00-0307	ALLH	—	—	—	—	—	—	—	—	610 (J)	—	57
16-06587	0–0.5	RE16-00-0308	ALLH	—	—	—	—	—	—	—	—	4.6 (J)	—	—
16-06587	0–2	RE16-00-0309	ALLH	—	—	—	—	—	—	—	—	2.8 (J)	—	—
16-06588	0–0.5	RE16-00-0310	ALLH	—	—	—	—	—	—	—	—	340 (J)	—	—
16-06588	0–2	RE16-00-0311	ALLH	—	—	—	—	—	—	—	—	290 (J)	—	—
16-06591	0–0.5	RE16-00-0312	ALLH	—	—	—	—	—	—	—	—	11 (J)	—	—
16-06593	0–0.26	RE16-00-0371	SED	—	—	29	—	—	0.11	—	0.44	1.6	—	—

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

[a] n/a = Not applicable; no background value available.

[b] Soil removed after sampling.

[c] — = If analyzed, sample result is less than background value.

Table 2.2-5
Subaggregate 1 Historical Analytical Results of Organic Chemicals Detected in Soil, Sediment, and Tuff at the Silver Outfall: Screening- and Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Acenaphthene	Acenaphthylene	Acetone	Amino-4,6-dinitrotoluene[2]	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene
Screening-Level Data												
16-01573	0–0.5	0316-95-0474[a]	ALLH	0.076 (J)	—[b]	—	—	0.13 (J)	0.36	0.37	0.46	—
16-01574	0–0.5	0316-95-0475[a]	ALLH	0.19 (J)	—	—	—	0.35	1.1	1.1	1.3	0.82
16-01575	0–0.5	0316-95-0491[a]	ALLH	0.27 (J)	—	—	—	0.62 (J)	3.4 (J)	4 (J)	5.3 (J)	3.2 (J)
16-01576	0–0.5	0316-95-0492[a]	ALLH	0.28 (J)	—	—	—	0.51 (J)	3.4 (J)	4 (J)	5.3 (J)	3.7 (J)
16-01577	0–0.5	0316-95-0496[a]	ALLH	—	—	—	—	—	—	—	—	—
16-01579	0–0.5	0316-95-0471[a]	ALLH	50	—	—	—	120	420	460	580	350
16-01579	2.5–4.5	0316-95-0472[a]	ALLH	—	—	0.011 (J)	—	—	0.076 (J)	0.07 (J)	0.089 (J)	—
16-01579	4.5–5.5	0316-95-0473[a]	ALLH	1.5	0.064 (J)	—	—	2.7	8.6	8.5	11	3
16-01580	0–0.5	0316-95-0476[a]	ALLH	1.4 (J)	—	—	—	3.2 (J)	13 (J)	14 (J)	16 (J)	12 (J)
16-01580	2.5–2.92	0316-95-0477[a]	ALLH	—	—	—	—	0.051 (J)	0.15 (J)	0.15 (J)	0.18 (J)	0.066 (J)
16-01580	4–5.5	0316-95-0478[a]	QBT4	—	—	0.009 (J)	—	—	—	—	—	—
16-01581	0–0.5	0316-95-0479[a]	ALLH	1.2 (J)	—	—	—	2.6 (J)	8.9 (J)	10 (J)	12 (J)	8.6 (J)
16-01581	3.5–5	0316-95-0481[a]	QBT4	—	—	0.021 (J)	—	—	—	—	—	—
16-01582	0–0.5	0316-95-0482[a]	ALLH	8.8 (J)	—	—	—	13 (J)	29 (J)	29 (J)	32 (J)	20 (J)
16-01582	2–3	0316-95-0483[a]	ALLH	—	—	0.011 (J)	—	—	—	—	—	—
16-01582	4–5	0316-95-0484[a]	QBT4	—	—	0.018 (J)	—	—	—	—	—	—
16-01583	0–0.5	0316-95-0485[a]	ALLH	0.42 (J)	—	—	—	0.68 (J)	1.9 (J)	2.1 (J)	2.7 (J)	1.6 (J)
16-01583	1.83–3	0316-95-0486[a]	ALLH	—	—	0.012 (J)	—	—	0.058 (J)	0.062 (J)	0.09 (J)	—

Table 2.2-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Acenaphthene	Acenaphthylene	Acetone	Amino-4,6-dinitrotoluene[2]	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene
16-01583	3–4	0316-95-0487[a]	QBT4	—	—	0.022 (J)	—	—	0.058 (J)	—	0.079 (J)	—
16-01584	0–0.5	0316-95-0488[a]	SED	0.33 (J)	—	—	—	0.76 (J)	3.9 (J)	4.9 (J)	8.2 (J)	3.5 (J)
16-01584	0.67–1.17	0316-95-0489[a]	ALLH	0.082 (J)	—	—	—	0.19 (J)	0.69	0.8 (J)	1.4 (J)	0.44 (J)
16-01584	1.17–1.42	0316-95-0490[a]	ALLH	0.057 (J)	—	—	—	0.12 (J)	0.66	0.75	1.1	0.45
16-01585	0.67–1.08	0316-95-0494[a]	ALLH	—	—	—	—	—	—	—	—	—
16-01585	1.17–1.5	0316-95-0495[a]	ALLH	—	—	—	—	—	0.13 (J)	0.12 (J)	0.16 (J)	—
16-02168	1.17–1.33	0316-95-0514[a]	ALLH	—	—	—	—	—	—	—	—	—
16-02169	0–0.5	0316-95-0515[a]	ALLH	—	—	—	—	—	—	—	0.07 (J)	—
16-02170	0–0.5	0316-95-0516[a]	ALLH	—	—	—	—	—	—	—	0.093 (J)	—
Decision-Level Data												
16-06542	0–0.5	RE16-00-0304	ALLH	—	—	0.018 (J-)	—	—	0.08 (J-)	0.074 (J-)	0.09 (J-)	—
16-06542	0–2	RE16-00-0305	ALLH	—	—	0.021 (J-)	—	—	—	—	—	—
16-06555	0–0.5	RE16-00-0302	ALLH	—	—	—	—	—	—	—	—	—
16-06555	0–2	RE16-00-0303	ALLH	—	—	0.047 (J)	—	—	—	—	—	—
16-06562	0–0.5	RE16-00-0300	ALLH	—	—	0.0074 (J-)	0.05 (J)	0.14 (J-)	0.97 (J-)	1.3 (J-)	1.5 (J-)	0.43 (J-)
16-06562	0–2	RE16-00-0301	ALLH	—	—	0.035 (J)	—	—	0.099 (J-)	0.1 (J-)	0.15 (J-)	0.1 (J-)
16-06564	0–0.5	RE16-00-0320	ALLH	—	—	—	—	—	0.16 (J-)	0.2 (J-)	0.24 (J-)	0.11 (J-)
16-06564	0–2	RE16-00-0321	ALLH	—	—	0.057 (J)	—	—	0.095 (J-)	0.12 (J-)	0.15 (J-)	—
16-06568	0–0.5	RE16-00-0316	ALLH	—	—	—	—	—	0.13 (J-)	0.17 (J-)	0.19 (J-)	0.12 (J-)
16-06568	0–2	RE16-00-0317	ALLH	—	—	—	—	—	—	—	0.074 (J-)	—
16-06573	0–0.5	RE16-00-0314	ALLH	—	—	0.0075 (J)	—	—	—	—	—	—

Table 2.2-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Acenaphthene	Acenaphthylene	Acetone	Amino-4,6-dinitrotoluene[2]	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene
16-06573	0–2	RE16-00-0315	ALLH	—	—	—	—	—	—	—	—	—
16-06583	0–0.5	RE16-00-0306	ALLH	0.17 (J-)	—	0.094 (J)	—	0.44 (J-)	2.5 (J-)	3.1 (J-)	3.4 (J-)	1.3 (J-)
16-06583	0–2	RE16-00-0307	ALLH	0.056 (J)	—	0.041 (J)	—	0.12 (J)	0.38	0.39	0.37	0.3 (J)
16-06587	0–0.5	RE16-00-0308	ALLH	—	—	0.0084 (J-)	—	—	—	—	—	—
16-06587	0–2	RE16-00-0309	ALLH	—	—	—	—	—	—	—	—	—
16-06588	0–0.5	RE16-00-0310	ALLH	—	—	—	—	—	0.049 (J)	0.047 (J)	0.086 (J)	0.039 (J)
16-06588	0–2	RE16-00-0311	ALLH	0.071 (J)	—	0.14 (J)	—	0.14 (J)	0.41	0.38	0.38	0.28 (J)
16-06591	0–0.5	RE16-00-0312	ALLH	—	—	0.19 (J)	—	—	—	—	—	—
16-06593	0–0.26	RE16-00-0371	SED	—	—	—	—	—	0.082 (J)	0.09 (J)	0.16 (J)	0.07 (J)

Table 2.2-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Chrysene	Dibenz(a,h)anthracene	Dibenzofuran	Diethylphthalate	Dimethylphenol[2,4]	Di-n-butylphthalate
Screening-Level Data												
16-01573	0–0.5	0316-95-0474[a]	ALLH	0.18 (J)	—	—	0.47	—	0.036 (J)	—	—	—
16-01574	0–0.5	0316-95-0475[a]	ALLH	0.52	—	—	1.3	—	0.077 (J)	—	—	—
16-01575	0–0.5	0316-95-0491[a]	ALLH	2.5 (J)	—	—	6.4 (J)	—	—	—	—	—
16-01576	0–0.5	0316-95-0492[a]	ALLH	1.9 (J)	—	—	6.5 (J)	0.74 (J)	0.12 (J)	—	—	—
16-01577	0–0.5	0316-95-0496[a]	ALLH	—	—	—	—	—	—	—	—	—
16-01579	0–0.5	0316-95-0471[a]	ALLH	140	—	—	610	68	22 (J)	—	—	—
16-01579	2.5–4.5	0316-95-0472[a]	ALLH	—	—	—	0.12 (J)	—	—	—	—	—
16-01579	4.5–5.5	0316-95-0473[a]	ALLH	3.5	—	—	13	0.9	1	—	0.054 (J)	—
16-01580	0–0.5	0316-95-0476[a]	ALLH	—	—	—	21 (J)	3 (J)	0.87 (J)	—	—	—
16-01580	2.5–2.92	0316-95-0477[a]	ALLH	0.077 (J)	—	—	0.22 (J)	0.064 (J)	—	—	—	—
16-01580	4–5.5	0316-95-0478[a]	QBT4	—	—	—	—	—	—	0.043 (J)	—	—
16-01581	0–0.5	0316-95-0479[a]	ALLH	4.8 (J)	—	1.8 (J)	11 (J)	2.3 (J)	0.51 (J)	—	—	—
16-01581	3.5–5	0316-95-0481[a]	QBT4	—	—	—	—	—	—	—	—	—
16-01582	0–0.5	0316-95-0482[a]	ALLH	13 (J)	—	—	45 (J)	5.5 (J)	6.9 (J)	—	—	—
16-01582	2–3	0316-95-0483[a]	ALLH	—	—	—	—	—	—	—	—	—
16-01582	4–5	0316-95-0484[a]	QBT4	—	—	—	0.059 (J)	—	—	—	—	—
16-01583	0–0.5	0316-95-0485[a]	ALLH	0.93 (J)	—	0.31 (J)	3.3 (J)	—	0.26 (J)	—	—	—
16-01583	1.83–3	0316-95-0486[a]	ALLH	—	—	—	0.11 (J)	—	—	—	—	—
16-01583	3–4	0316-95-0487[a]	QBT4	—	—	—	0.097 (J)	—	—	—	—	—
16-01584	0–0.5	0316-95-0488[a]	SED	3.5 (J)	0.98 (J)	0.42 (J)	6.7 (J)	1.8 (J)	—	—	—	0.84 (J)

Table 2.2-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Chrysene	Dibenz(a,h)anthracene	Dibenzofuran	Diethylphthalate	Dimethylphenol[2,4]	Di-n-butylphthalate
16-01584	0.67–1.17	0316-95-0489[a]	ALLH	0.59 (J)	0.2 (J)	—	1.2	0.12 (J)	—	—	—	—
16-01584	1.17–1.42	0316-95-0490[a]	ALLH	0.46	0.17 (J)	—	1.1	0.12 (J)	—	—	—	—
16-01585	0.67–1.08	0316-95-0494[a]	ALLH	—	0.26 (J)	—	—	—	—	—	—	—
16-01585	1.17–1.5	0316-95-0495[a]	ALLH	—	—	—	0.16 (J)	—	—	—	—	—
16-02168	1.17–1.33	0316-95-0514[a]	ALLH	—	—	—	—	—	—	—	—	—
16-02169	0–0.5	0316-95-0515[a]	ALLH	—	—	—	0.063 (J)	—	—	—	—	—
16-02170	0–0.5	0316-95-0516[a]	ALLH	—	—	—	0.081 (J)	—	—	—	—	—
Decision-Level Data												
16-06542	0–0.5	RE16-00-0304	ALLH	—	—	—	0.091 (J-)	—	—	—	—	—
16-06542	0–2	RE16-00-0305	ALLH	—	—	0.088 (J-)	—	—	—	—	—	—
16-06555	0–0.5	RE16-00-0302	ALLH	—	—	—	—	—	—	—	—	—
16-06555	0–2	RE16-00-0303	ALLH	—	—	—	—	—	—	—	—	—
16-06562	0–0.5	RE16-00-0300	ALLH	1.2 (J-)	—	0.12 (J-)	1.3 (J-)	—	—	—	—	—
16-06562	0–2	RE16-00-0301	ALLH	0.08 (J-)	—	—	0.15 (J-)	—	—	—	—	—
16-06564	0–0.5	RE16-00-0320	ALLH	0.15 (J-)	—	—	0.24 (J-)	—	—	—	—	—
16-06564	0–2	RE16-00-0321	ALLH	0.1 (J-)	—	—	0.14 (J-)	—	—	—	—	—
16-06568	0–0.5	RE16-00-0316	ALLH	0.14 (J-)	—	—	0.2 (J-)	—	—	—	—	—
16-06568	0–2	RE16-00-0317	ALLH	—	—	—	—	—	—	—	—	—
16-06573	0–0.5	RE16-00-0314	ALLH	—	—	—	—	—	—	—	—	—
16-06573	0–2	RE16-00-0315	ALLH	—	—	—	—	—	—	—	—	0.038 (J)
16-06583	0–0.5	RE16-00-0306	ALLH	2.7 (J-)	—	0.15 (J-)	3.3 (J-)	—	0.11 (J-)	—	—	—

Table 2.2-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Chrysene	Dibenz(a,h)anthracene	Dibenzofuran	Diethylphthalate	Dimethylphenol[2,4]	Di-n-butylphthalate
16-06583	0–2	RE16-00-0307	ALLH	0.33 (J)	—	—	0.45	—	—	—	—	—
16-06587	0–0.5	RE16-00-0308	ALLH	—	—	—	—	—	—	—	—	—
16-06587	0–2	RE16-00-0309	ALLH	—	—	—	—	—	—	—	—	—
16-06588	0–0.5	RE16-00-0310	ALLH	0.043 (J)	—	—	0.057 (J)	—	—	—	—	—
16-06588	0–2	RE16-00-0311	ALLH	0.27 (J)	—	—	0.43	—	—	—	—	—
16-06591	0–0.5	RE16-00-0312	ALLH	—	—	—	—	—	—	—	—	—
16-06593	0–0.26	RE16-00-0371	SED	0.062 (J)	0.037 (J-)	0.041 (J)	0.1 (J)	—	—	—	—	—

Table 2.2-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4]	Methylene Chloride	Methylnaphthalene[2]	Methylphenol[3]	Methylphenol[4]
Screening-Level Data											
16-01573	0–0.5	0316-95-0474[a]	ALLH	0.88	0.07 (J)	0.27 (J)	—	—	—	—	—
16-01574	0–0.5	0316-95-0475[a]	ALLH	2.4	0.16 (J)	0.78	—	—	0.043 (J)	—	—
16-01575	0–0.5	0316-95-0491[a]	ALLH	8.9 (J)	0.22 (J)	3.4 (J)	—	—	—	—	—
16-01576	0–0.5	0316-95-0492[a]	ALLH	9.8 (J)	0.18 (J)	3.5 (J)	—	—	—	—	—
16-01577	0–0.5	0316-95-0496[a]	ALLH	0.8 (J)	—	—	—	—	—	—	—
16-01579	0–0.5	0316-95-0471[a]	ALLH	980	40	270	—	—	12 (J)	—	—
16-01579	2.5–4.5	0316-95-0472[a]	ALLH	0.2 (J)	—	—	—	—	—	—	—
16-01579	4.5–5.5	0316-95-0473[a]	ALLH	20	1.7	3.6	—	—	0.7	—	0.088 (J)
16-01580	0–0.5	0316-95-0476[a]	ALLH	36 (J)	1.6 (J)	10 (J)	—	—	0.35 (J)	—	—
16-01580	2.5–2.92	0316-95-0477[a]	ALLH	0.32 (J)	—	0.071 (J)	—	—	—	—	—
16-01580	4–5.5	0316-95-0478[a]	QBT4	—	—	—	—	—	—	—	—
16-01581	0–0.5	0316-95-0479[a]	ALLH	26 (J)	1.1 (J)	8.7 (J)	—	—	—	—	—
16-01581	3.5–5	0316-95-0481[a]	QBT4	—	—	—	—	—	—	—	—
16-01582	0–0.5	0316-95-0482[a]	ALLH	62 (J)	11 (J)	18 (J)	—	—	4.6 (J)	—	—
16-01582	2–3	0316-95-0483[a]	ALLH	—	—	—	—	—	—	—	—
16-01582	4–5	0316-95-0484[a]	QBT4	0.078 (J)	—	—	—	—	—	—	—
16-01583	0–0.5	0316-95-0485[a]	ALLH	5.3 (J)	0.43 (J)	1.6 (J)	—	—	0.17 (J)	—	—
16-01583	1.83–3	0316-95-0486[a]	ALLH	0.15 (J)	—	—	—	—	—	—	—
16-01583	3–4	0316-95-0487[a]	QBT4	0.14 (J)	—	—	—	—	—	—	—
16-01584	0–0.5	0316-95-0488[a]	SED	8.3 (J)	0.28 (J)	2.5 (J)	—	—	—	—	—
16-01584	0.67–1.17	0316-95-0489[a]	ALLH	1.5	0.079 (J)	0.5 (J)	—	0.004 (J-)	—	—	—

Table 2.2-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4]	Methylene Chloride	Methylnaphthalene[2]	Methylphenol[3]	Methylphenol[4]
16-01584	1.17–1.42	0316-95-0490[a]	ALLH	1.4	0.05 (J)	0.47	—	0.005 (J-)	—	—	—
16-01585	0.67–1.08	0316-95-0494[a]	ALLH	0.081 (J)	—	—	—	0.005 (J-)	—	—	—
16-01585	1.17–1.5	0316-95-0495[a]	ALLH	0.28 (J)	—	—	—	—	—	—	—
16-02168	1.17–1.33	0316-95-0514[a]	ALLH	0.068 (J)	—	—	—	—	—	—	—
16-02169	0–0.5	0316-95-0515[a]	ALLH	0.1 (J)	—	—	—	—	—	—	—
16-02170	0–0.5	0316-95-0516[a]	ALLH	0.14 (J)	—	—	—	—	—	—	—
Decision-Level Data											
16-06542	0–0.5	RE16-00-0304	ALLH	0.18 (J-)	—	—	—	0.00082 (J-)	—	—	—
16-06542	0–2	RE16-00-0305	ALLH	—	—	—	0.037	0.0012 (J-)	—	—	—
16-06555	0–0.5	RE16-00-0302	ALLH	—	—	—	—	—	—	—	—
16-06555	0–2	RE16-00-0303	ALLH	—	—	—	0.00087 (J)	0.0014 (J-)	—	—	—
16-06562	0–0.5	RE16-00-0300	ALLH	2.2 (J-)	—	0.47 (J-)	0.00039 (J)	—	—	0.0968 (J-)	—
16-06562	0–2	RE16-00-0301	ALLH	0.27 (J-)	—	0.085 (J-)	—	—	—	—	—
16-06564	0–0.5	RE16-00-0320	ALLH	0.42 (J-)	—	0.1 (J-)	—	—	—	—	—
16-06564	0–2	RE16-00-0321	ALLH	0.2 (J-)	—	—	—	—	—	—	—
16-06568	0–0.5	RE16-00-0316	ALLH	0.32 (J-)	—	0.11 (J-)	—	—	—	—	—
16-06568	0–2	RE16-00-0317	ALLH	—	—	—	—	—	—	—	—
16-06573	0–0.5	RE16-00-0314	ALLH	—	—	—	—	0.00086 (J)	—	—	—
16-06573	0–2	RE16-00-0315	ALLH	—	—	—	—	—	—	—	—
16-06583	0–0.5	RE16-00-0306	ALLH	5 (J-)	0.24 (J-)	1.4 (J-)	—	0.0019 (J-)	—	—	—
16-06583	0–2	RE16-00-0307	ALLH	0.86	0.065 (J)	0.25 (J)	—	0.0017 (J-)	—	—	—
16-06587	0–0.5	RE16-00-0308	ALLH	—	—	—	0.00071 (J)	0.0014 (J-)	—	—	—

Table 2.2-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4]	Methylene Chloride	Methylnaphthalene[2]	Methylphenol[3]	Methylphenol[4]
16-06587	0–2	RE16-00-0309	ALLH	—	—	—	—	0.0015 (J-)	—	—	—
16-06588	0–0.5	RE16-00-0310	ALLH	0.097 (J)	—	—	0.00043 (J)	—	—	—	—
16-06588	0–2	RE16-00-0311	ALLH	0.92	0.086 (J)	0.22 (J)	—	0.00081 (J-)	—	—	—
16-06591	0–0.5	RE16-00-0312	ALLH	—	—	—	—	0.0011 (J-)	—	—	—
16-06593	0–0.26	RE16-00-0371	SED	0.19 (J)	—	0.06 (J)	—	—	—	—	—

Table 2.2-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Naphthalene	Nitrotoluene[2]	Nitrotoluene[4]	Phenanthrene	Pyrene	RDX	Toluene	Trichlorofluoromethane
Screening-Level Data											
16-01573	0–0.5	0316-95-0474[a]	ALLH	0.083 (J)	—	—	0.63	0.82	—	—	—
16-01574	0–0.5	0316-95-0475[a]	ALLH	0.14 (J)	—	—	1.6	2.1	—	—	—
16-01575	0–0.5	0316-95-0491[a]	ALLH	—	—	—	3.4 (J)	5.9 (J)	—	—	—
16-01576	0–0.5	0316-95-0492[a]	ALLH	—	—	—	3.3 (J)	5.4 (J)	—	—	—
16-01577	0–0.5	0316-95-0496[a]	ALLH	—	—	—	0.6 (J)	0.54 (J)	—	—	—
16-01579	0–0.5	0316-95-0471[a]	ALLH	34	—	—	610	720	—	—	—
16-01579	2.5–4.5	0316-95-0472[a]	ALLH	—	—	—	0.16 (J)	0.14 (J)	—	—	—
16-01579	4.5–5.5	0316-95-0473[a]	ALLH	1.8	—	—	15	15	—	—	0.007
16-01580	0–0.5	0316-95-0476[a]	ALLH	1.1 (J)	—	—	16 (J)	21 (J)	—	—	—
16-01580	2.5–2.92	0316-95-0477[a]	ALLH	—	—	—	0.24 (J)	0.29 (J)	—	—	—
16-01580	4–5.5	0316-95-0478[a]	QBT4	—	—	—	—	—	—	—	—
16-01581	0–0.5	0316-95-0479[a]	ALLH	0.54 (J)	—	—	11 (J)	14 (J)	—	—	—
16-01581	3.5–5	0316-95-0481[a]	QBT4	—	—	—	—	—	—	—	0.009
16-01582	0–0.5	0316-95-0482[a]	ALLH	17 (J)	—	—	61 (J)	50 (J)	—	—	—
16-01582	2–3	0316-95-0483[a]	ALLH	—	—	—	—	—	—	—	0.007
16-01582	4–5	0316-95-0484[a]	QBT4	—	—	—	—	0.066 (J)	—	—	0.008
16-01583	0–0.5	0316-95-0485[a]	ALLH	0.64 (J)	—	—	3.2 (J)	4 (J)	—	—	—
16-01583	1.83–3	0316-95-0486[a]	ALLH	—	—	—	0.065 (J)	0.12 (J)	—	—	0.009
16-01583	3–4	0316-95-0487[a]	QBT4	—	—	—	0.065 (J)	0.11 (J)	—	—	0.009
16-01584	0–0.5	0316-95-0488[a]	SED	—	—	—	3.7 (J)	5.6 (J)	—	—	—

Table 2.2-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Naphthalene	Nitrotoluene[2]	Nitrotoluene[4]	Phenanthrene	Pyrene	RDX	Toluene	Trichlorofluoromethane
16-01584	0.67–1.17	0316-95-0489[a]	ALLH	—	—	—	0.91	2.6	—	—	0.005 (J-)
16-01584	1.17–1.42	0316-95-0490[a]	ALLH	—	—	—	0.69	1.8	—	0.003 (J)	0.009 (J-)
16-01585	0.67–1.08	0316-95-0494[a]	ALLH	—	—	—	—	0.13 (J)	—	—	0.01 (J-)
16-01585	1.17–1.5	0316-95-0495[a]	ALLH	—	—	—	0.25 (J)	0.34 (J)	—	—	0.012 (J-)
16-02168	1.17–1.33	0316-95-0514[a]	ALLH	—	—	—	0.047 (J)	0.044 (J)	—	—	—
16-02169	0–0.5	0316-95-0515[a]	ALLH	—	—	—	0.048 (J)	0.11 (J)	—	—	—
16-02170	0–0.5	0316-95-0516[a]	ALLH	—	—	—	0.077 (J)	0.13 (J)	—	—	—
Decision-Level Data											
16-06542	0–0.5	RE16-00-0304	ALLH	—	—	—	0.11 (J-)	0.17 (J-)	0.21 (J)	—	0.038
16-06542	0–2	RE16-00-0305	ALLH	—	—	—	—	—	—	0.0014 (J)	—
16-06555	0–0.5	RE16-00-0302	ALLH	—	—	—	—	0.087 (J-)	—	—	—
16-06555	0–2	RE16-00-0303	ALLH	—	—	—	—	0.091 (J-)	—	0.00085 (J)	0.061
16-06562	0–0.5	RE16-00-0300	ALLH	—	0.11 (J)	0.11 (J)	0.88 (J-)	2.3 (J-)	—	—	0.017
16-06562	0–2	RE16-00-0301	ALLH	—	—	—	0.14 (J-)	0.24 (J-)	—	—	0.018
16-06564	0–0.5	RE16-00-0320	ALLH	—	—	—	0.19 (J-)	0.41 (J-)	—	—	—
16-06564	0–2	RE16-00-0321	ALLH	—	—	—	0.093 (J-)	0.25 (J-)	—	—	0.008
16-06568	0–0.5	RE16-00-0316	ALLH	—	—	—	0.12 (J-)	0.34 (J-)	—	—	0.0023 (J)
16-06568	0–2	RE16-00-0317	ALLH	—	—	—	—	0.11 (J-)	—	—	—
16-06573	0–0.5	RE16-00-0314	ALLH	—	—	—	—	0.092 (J-)	—	—	0.0029 (J)
16-06573	0–2	RE16-00-0315	ALLH	—	—	—	—	—	—	—	0.0025 (J)
16-06583	0–0.5	RE16-00-0306	ALLH	0.1 (J-)	—	—	2.3 (J-)	6.5 (J-)	—	0.00055 (J)	0.016

Table 2.2-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Naphthalene	Nitrotoluene[2]	Nitrotoluene[4]	Phenanthrene	Pyrene	RDX	Toluene	Trichlorofluoromethane
16-06583	0–2	RE16-00-0307	ALLH	—	—	—	0.53	0.89	—	—	0.0075
16-06587	0–0.5	RE16-00-0308	ALLH	—	—	—	—	—	—	0.00076 (J)	0.0056 (J)
16-06587	0–2	RE16-00-0309	ALLH	—	—	—	—	—	—	—	0.0043 (J)
16-06588	0–0.5	RE16-00-0310	ALLH	—	—	—	0.059 (J)	0.11 (J)	—	—	—
16-06588	0–2	RE16-00-0311	ALLH	0.051 (J)	—	—	0.68	0.97	—	—	0.0047 (J)
16-06591	0–0.5	RE16-00-0312	ALLH	—	—	—	—	—	—	—	0.0044 (J)
16-06593	0–0.26	RE16-00-0371	SED	—	—	—	0.12 (J)	0.2 (J)	—	—	—

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

[a] Soil removed after sampling.

[b] — = If analyzed, sample result is not detected.

Table 3.1-1
Subaggregate 2 Summary of Historical Samples Collected in Soil, Fill, Sediment, and Tuff at MDA R: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number						
				Anions	Cyanide	Gamma Spectroscopy	High Explosives	Inorganic Chemicals	SVOC	VOC
Landfill										
16-02703	3.5–4.5	0316-97-0268	ALLH	—[a]	3904R	—	3903R	3904R	3902R	3902R
16-02703	53–54	0316-97-0270	QBT4	—	3904R	—	3903R	3904R	3902R	3902R
16-02703	69–70	0316-97-0269	QBT4	—	3904R	—	3903R	3904R	3902R	3902R
16-05907	0–0.5	RE16-98-2007	ALLH	—	—	—	5013R	5015R	5012R	—
16-05908	0–0.5	RE16-98-2008	ALLH	—	—	—	5013R	5015R	5012R	—
16-05909	0–0.5	RE16-98-2009	ALLH	—	—	—	5013R	5015R	5012R	—
16-06502	0–1	RE16-00-0200	FILL	—	—	—	7670R	7671R	7668R	—
16-06503	0–1	RE16-00-0201	FILL	—	—	—	7670R	7671R	7668R	—
16-06504	2–2.5	RE16-00-0343	ALLH	—	—	—	7670R	7671R	7668R	—
16-06505	0–1	RE16-00-0344	FILL	—	—	—	7670R	7671R	7668R	—
16-06506	0–1	RE16-00-0204	FILL	—	—	—	7670R	7671R	7668R	—
16-06506	3–4	RE16-00-0244	FILL	—	—	—	—	7671R	7668R	—
16-06507	1–1.5	RE16-00-0205	ALLH	—	—	—	7670R	7671R	7668R	—
16-06508	0–1	RE16-00-0326	FILL	—	—	—	7670R	7671R	7668R	—
16-06508	1.67–2.08	RE16-00-0327	ALLH	—	—	—	7670R	7671R	7668R	—
16-06509	0–1	RE16-00-0207	FILL	—	—	—	7670R	7671R	7668R	—
16-06509	1–2	RE16-00-0247	ALLH	—	—	—	7670R	7671R	7668R	—
16-06510	0–1	RE16-00-0208	FILL	—	—	—	7670R	7671R	7668R	—
16-06510	2–3	RE16-00-0248	ALLH	—	—	—	7670R	7671R	7668R	—
16-06511	0–1	RE16-00-0328	FILL	—	—	—	7670R	7671R	7668R	—
16-06511	2–3	RE16-00-0329	ALLH	—	—	—	7670R	7671R	7668R	—
16-06512	0–1	RE16-00-0330	ALLH	—	—	—	7670R	7671R	7668R	—
16-06512	2–3	RE16-00-0331	ALLH	—	—	—	7670R	7671R	7668R	—

Table 3.1-1 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number						
				Anions	Cyanide	Gamma Spectroscopy	High Explosives	Inorganic Chemicals	SVOC	VOC
16-06513	0–1	RE16-00-0334	FILL	—	—	—	7670R	7671R	7668R	—
16-06513	2–3	RE16-00-0335	ALLH	—	—	—	7670R	7671R	7668R	—
16-06514	2–2.67	RE16-00-0212	ALLH	—	—	—	7670R	7671R	7668R	—
16-06514	2.67–3.33	RE16-00-0252	ALLH	—	—	—	7670R	7671R	7668R	—
16-06515	1–2	RE16-00-0213	FILL	—	—	—	7670R	7671R	7668R	—
16-06515	6–7	RE16-00-0253	ALLH	—	—	—	7670R	7671R	7668R	—
16-06516	0–1	RE16-00-0336	FILL	—	—	—	7670R	7671R	7668R	—
16-06517	0–1	RE16-00-0340	ALLH	—	—	—	7670R	7671R	7668R	—
16-06517	2–3	RE16-00-0341	ALLH	—	—	—	7670R	7671R	7668R	—
16-06518	0–1	RE16-00-0342	FILL	—	—	—	7670R	7671R	7668R	—
16-06518	1–2	RE16-00-0345	ALLH	—	—	—	7670R	7671R	7668R	—
16-06519	0–1	RE16-00-0249	FILL	—	—	—	7670R	7671R	7668R	—
16-06520	0–1	RE16-00-0210	FILL	—	—	—	7753R	7755R	7752R	—
16-06520	4–5	RE16-00-0250	FILL	—	—	—	7753R	7755R	7752R	—
16-06522	0–0.5	RE16-00-0220	FILL	—	—	—	7670R	7671R	7668R	—
16-06523	0–0.5	RE16-00-0221	FILL	—	—	—	7670R	7671R	7668R	—
16-06524	0–0.5	RE16-00-0222	FILL	—	—	—	7670R	7671R	7668R	—
16-06525	0–0.5	RE16-00-0223	ALLH	—	—	—	7670R	7671R	7668R	—
16-06526	0–0.5	RE16-00-0224	FILL	—	—	—	7670R	7671R	7668R	—
16-06527	1–2.5	RE16-00-0225	FILL	—	—	—	7485R	7487R	7484R	—
16-06528	1–2.5	RE16-00-0226	FILL	—	—	—	7485R	7487R	7484R	—
16-06528	5–6	RE16-00-0256	QBT4	—	—	—	7560R	7562R	7559R	—
16-06529	1–2.5	RE16-00-0227	FILL	—	—	—	7485R	7487R	7484R	—
16-06529	17.5–20	RE16-00-0234	QBT4	—	—	—	7560R	7562R	7559R	—
16-06530	2.5–5	RE16-00-0228	FILL	—	—	—	7564R	7566R	7563R	—

Table 3.1-1 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number						
				Anions	Cyanide	Gamma Spectroscopy	High Explosives	Inorganic Chemicals	SVOC	VOC
16-06530	10–11	RE16-00-0235	QBT4	—	—	—	7560R	7562R	7559R	—
16-06531	0–2.5	RE16-00-0229	FILL	—	—	—	7581R	7583R	7580R	—
16-06531	7.5–10	RE16-00-0236	QBT4	—	—	—	7581R	7583R	7580R	—
16-06532	1.5–2.5	RE16-00-0230	FILL	—	—	—	7485R	7487R	7484R	—
16-06532	10–11	RE16-00-0237	QBT4	—	—	—	7581R	7583R	7580R	—
16-06533	2.5–5	RE16-00-0231	QBT4	—	—	—	7485R	7487R	7484R	—
16-06533	11–12	RE16-00-0238	QBT4	—	—	—	7560R	7562R	7559R	—
16-06534	1–2.5	RE16-00-0232	FILL	—	—	—	7485R	7487R	7484R	—
16-06534	7.5–9	RE16-00-0239	QBT4	—	—	—	7560R	7562R	7559R	—
16-06537	0–2.5	RE16-00-0211	FILL	—	—	—	7753R	7755R	7752R	—
16-06537	4–5	RE16-00-0251	ALLH	—	—	—	7753R	7755R	7752R	—
16-06538	0–1	RE16-00-0332	FILL	—	—	—	7753R	7755R	7752R	—
16-06538	4–4.5	RE16-00-0333	ALLH	—	—	—	7753R	7755R	7752R	—
16-06539	0–1	RE16-00-0338	FILL	—	—	—	7753R	7755R	7752R	—
16-06539	4–5	RE16-00-0339	ALLH	—	—	—	7753R	7755R	7752R	—
Drainage										
16-02656	3–3.5	0316-97-0404	SED	—	3910R	—	3909R	3910R	3908R	3908R
16-02749	0–0.33	RE16-02-46396	SED	—	—	—	1051S	1052S	1051S	—
16-02749	0–0.5	0816-96-0060	SED	2609	2609	2610	2613	2610	2608	—
16-02750	0–0.5	0816-96-0061	SED	2609	2609	2610	2613	2610	2608	—
16-02751	0–0.5	0816-96-0062	SED	2609	2609	2610	2613	2610	2608	—
16-02752	0–0.5	0816-96-0063	SED	2609	2609	2610	2613	2610	2608	—
16-02753	0–0.33	RE16-02-46397	SED	—	—	—	1051S	1052S	1051S	—
16-02753	0–0.5	0816-96-0064	SED	2609	2609	2610	2613	2610	2608	—
16-02754	0–0.33	RE16-02-46398	SED	—	—	—	1051S	1052S	1051S	—

Table 3.1-1 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number						
				Anions	Cyanide	Gamma Spectroscopy	High Explosives	Inorganic Chemicals	SVOC	VOC
16-02754	0–0.5	0816-96-0065	SED	2609	2609	2610	2613	2610	2608	—
16-02755	0–0.5	0816-96-0066	SED	2609	2609	2610	2613	2610	2608	—
16-05910	0–0.5	RE16-98-2010	ALLH	—	—	—	5013R	5015R	5012R	—
16-05911	0–0.5	RE16-98-2011	ALLH	—	—	—	5013R	5015R	5012R	—
16-06122	0–0.3	RE16-99-0089	SED	—	—	—	6091R	6092R	—	—
16-06122	0.3–0.53	RE16-99-0090	SED	—	—	—	6091R	6092R	—	—
16-06521	0–0.5	RE16-00-0219	FILL	—	—	—	7670R	7671R	7668R	—
Upgradient										
16-02168	0–0.5	0316-95-0512[b]	SED	—	1392	—	—	1392	1391	—
16-02168	0.67–1.08	0316-95-0513[b]	ALLH	—	1392	—	—	1392	1391	1391
16-02168	1.17–1.42	0316-95-0514[b]	ALLH	—	1392	—	—	1392	1391	1391
16-02169	0–0.5	0316-95-0515[b]	ALLH	—	1392	—	—	1392	1391	—
16-02170	0–0.5	0316-95-0516[b]	ALLH	—	1392	—	—	1392	1391	—

[a] — = The analysis was not requested.

[b] Soil removed after sampling.

Table 3.1-2
Subaggregate 2 Frequency of Detection of
Inorganic Chemicals in Soil, Fill, Sediment, and Tuff at MDA R: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Landfill							
Aluminum	ALLH	23	23	2100–52000	29200	1/23	0/23
Aluminum	FILL	30	30	2400–42000	29200	2/30	0/30
Aluminum	QBT4	10	10	238–38000	7340	3/10	0/10
Arsenic	ALLH	23	23	1.3–4.6	8.17	0/23	0/23
Arsenic	FILL	30	30	1.5–5.6	8.17	0/30	0/30
Arsenic	QBT4	10	10	1.1–7.1	2.79	6/10	0/10
Barium	ALLH	23	23	59.3–110000	295	19/23	0/23
Barium	FILL	30	30	110–84000	295	27/30	0/30
Barium	QBT4	10	10	10.4–840	46	3/10	0/10
Beryllium	ALLH	23	23	0.16–3	1.83	1/23	0/23
Beryllium	FILL	30	30	0.22–1.8	1.83	0/30	0/30
Beryllium	QBT4	10	10	0.23–2.1	1.21	1/10	0/10
Cadmium	ALLH	23	13	[0.0415]–0.913	0.4	1/23	0/23
Cadmium	FILL	30	26	[0.0433]–0.851	0.4	3/30	0/30
Cadmium	QBT4	10	1	[0.0402]–0.23	1.63	0/10	0/10
Calcium	ALLH	23	23	460–6000	6120	0/23	0/23
Calcium	FILL	30	30	580–13000	6120	2/30	0/30
Calcium	QBT4	10	10	479–4800	2200	2/10	0/10
Chromium	ALLH	23	23	1.4–15	19.3	0/23	0/23
Chromium	FILL	30	30	1.6–23	19.3	1/30	0/30
Chromium	QBT4	10	10	0.32–18	7.14	2/10	0/10
Cobalt	ALLH	23	23	1.3–30.2	8.64	4/23	0/23
Cobalt	FILL	30	30	2.1–15	8.64	4/30	0/30
Cobalt	QBT4	10	10	0.44–8.6	3.14	2/10	0/10
Copper	ALLH	23	23	1.1–980	14.7	8/23	0/23
Copper	FILL	30	30	2.7–1300	14.7	10/30	0/30
Copper	QBT4	10	10	0.83–11	4.66	2/10	0/10
Cyanide (Total)	ALLH	1	0	[1.1]	0.5	0/1	1/1
Cyanide (Total)	QBT4	2	0	[0.98–1]	0.5	0/2	2/2
Iron	ALLH	23	23	2200–21000	21500	0/23	0/23
Iron	FILL	30	30	3100–25000	21500	1/30	0/30
Iron	QBT4	10	10	3860–23000	14500	2/10	0/10
Lead	ALLH	23	23	3.5–195	22.3	6/23	0/23

Table 3.1-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Lead	FILL	30	30	6.3–160	22.3	9/30	0/30
Lead	QBT4	10	10	1.7–15	11.2	2/10	0/10
Magnesium	ALLH	23	23	360–4600	4610	0/23	0/23
Magnesium	FILL	30	30	280–4800	4610	1/30	0/30
Magnesium	QBT4	10	10	177–4700	1690	2/10	0/10
Manganese	ALLH	23	23	63–790	671	1/23	0/23
Manganese	FILL	30	30	74–700	671	1/30	0/30
Manganese	QBT4	10	10	120–490	482	1/10	0/10
Mercury	ALLH	23	21	0.018–0.16	0.1	2/23	0/23
Mercury	FILL	30	25	0.02–0.11	0.1	2/30	0/30
Mercury	QBT4	10	1	[0.0183]–0.054	0.1	0/10	0/10
Nickel	ALLH	23	23	1.3–22	15.4	3/23	0/23
Nickel	FILL	30	30	3.3–15	15.4	0/30	0/30
Nickel	QBT4	10	6	0.32–11	6.58	2/10	0/10
Potassium	ALLH	23	23	290–2600	3460	0/23	0/23
Potassium	FILL	30	30	240–3000	3460	0/30	0/30
Potassium	QBT4	10	10	147–2600	43700	0/10	0/10
Selenium	ALLH	23	21	[0.114]–1.2	1.52	0/23	0/23
Selenium	FILL	30	28	[0.108]–0.543	1.52	0/30	0/30
Selenium	QBT4	10	8	0.221–0.499	0.3	7/10	0/10
Silver	ALLH	23	22	[0.096]–28.2	1	19/23	0/23
Silver	FILL	30	30	0.72–14	1	26/30	0/30
Silver	QBT4	10	8	[0.079]–2.1	1	1/10	0/10
Sodium	ALLH	23	23	36–440	915	0/23	0/23
Sodium	FILL	30	30	37–480	915	0/30	0/30
Sodium	QBT4	10	10	140–1100	2770	0/10	0/10
Thallium	ALLH	23	19	[0.0568]–0.845	0.73	1/23	2/23
Thallium	FILL	30	30	0.066–0.526	0.73	0/30	0/30
Thallium	QBT4	10	3	[0.0515]–0.546	1.1	0/10	0/10
Uranium	ALLH	22	22	0.3–40.5	1.82	1/22	0/22
Uranium	FILL	30	30	0.322–44.2	1.82	1/30	0/30
Uranium	QBT4	8	8	0.218–0.989	2.4	0/8	0/8
Vanadium	ALLH	23	23	3.7–22	39.6	0/23	0/23
Vanadium	FILL	30	30	3–35	39.6	0/30	0/30
Vanadium	QBT4	10	10	0.95–28	17	2/10	0/10
Zinc	ALLH	23	23	9.3–200	48.8	7/23	0/23

Table 3.1-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Zinc	FILL	30	30	15–490	48.8	8/30	0/30
Zinc	QBT4	10	10	19–53	63.5	0/10	0/10
Drainage							
Aluminum	ALLH	2	2	3520–3610	29200	0/2	0/2
Aluminum	FILL	1	1	2700	29200	0/1	0/1
Aluminum	SED	13	13	1920–8800	15400	0/13	0/13
Arsenic	ALLH	2	2	2.6–2.6	8.17	0/2	0/2
Arsenic	FILL	1	1	3.5	8.17	0/1	0/1
Arsenic	SED	13	7	1.4–11	3.98	1/13	2/13
Barium	ALLH	2	2	28000–29800	295	2/2	0/2
Barium	FILL	1	1	29000	295	1/1	0/1
Barium	SED	13	13	34.9–15900	127	12/13	0/13
Beryllium	ALLH	2	2	0.51–0.57	1.83	0/2	0/2
Beryllium	FILL	1	1	0.36	1.83	0/1	0/1
Beryllium	SED	13	3	0.153–0.446	1.31	0/13	0/13
Boron	SED	5	2	0.924–1.82	n/a*	n/a	n/a
Cadmium	FILL	1	1	0.256	0.4	0/1	0/1
Cadmium	SED	13	1	[0.04]–0.115	0.4	0/13	2/13
Calcium	ALLH	2	2	630–686	6120	0/2	0/2
Calcium	FILL	1	1	590	6120	0/1	0/1
Calcium	SED	13	13	454–2030	4420	0/13	0/13
Chromium	ALLH	2	2	4.1–6	19.3	0/2	0/2
Chromium	FILL	1	1	3.6	19.3	0/1	0/1
Chromium	SED	13	12	[1.8]–17.8	10.5	1/13	0/13
Cobalt	ALLH	2	2	11.3–15.1	8.64	2/2	0/2
Cobalt	FILL	1	1	7.8	8.64	0/1	0/1
Cobalt	SED	13	13	1.4–10.1	4.73	6/13	0/13
Copper	ALLH	2	2	27.4–43.8	14.7	2/2	0/2
Copper	FILL	1	1	28	14.7	1/1	0/1
Copper	SED	13	13	1.9–99.8	11.2	6/13	0/13
Cyanide (Total)	SED	8	0	[0.2–1.1]	0.82	0/8	1/8
Iron	ALLH	2	2	8170–8340	21500	0/2	0/2
Iron	FILL	1	1	5800	21500	0/1	0/1
Iron	SED	13	13	4670–22000	13800	1/13	0/13
Lead	ALLH	2	2	141–431	22.3	2/2	0/2
Lead	FILL	1	1	140	22.3	1/1	0/1

Table 3.1-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Lead	SED	13	13	5.08–129	19.7	5/13	0/13
Magnesium	ALLH	2	2	497–610	4610	0/2	0/2
Magnesium	FILL	1	1	430	4610	0/1	0/1
Magnesium	SED	13	13	224–1130	2370	0/13	0/13
Manganese	ALLH	2	2	309–343	671	0/2	0/2
Manganese	FILL	1	1	260	671	0/1	0/1
Manganese	SED	13	13	165–553	543	1/13	0/13
Mercury	FILL	1	1	0.037	0.1	0/1	0/1
Mercury	SED	13	3	[0.0038]–0.0247	0.1	0/13	0/13
Nickel	ALLH	2	2	4.4–4.6	15.4	0/2	0/2
Nickel	FILL	1	1	2.7	15.4	0/1	0/1
Nickel	SED	13	12	[1.9]–305	9.38	8/13	0/13
Nitrate-Nitrite as N	SED	7	3	[0.5]–1.2	n/a	n/a	n/a
Potassium	ALLH	2	2	539–608	3460	0/2	0/2
Potassium	FILL	1	1	360	3460	0/1	0/1
Potassium	SED	13	13	274–1020	2690	0/13	0/13
Selenium	ALLH	2	2	0.6–0.81	1.52	0/2	0/2
Selenium	SED	13	3	0.306–1.7	0.3	3/13	10/13
Silver	ALLH	1	1	2.5	1	1/1	0/1
Silver	FILL	1	1	3.5	1	1/1	0/1
Silver	SED	13	10	[0.15]–113	1	7/13	0/13
Sodium	ALLH	2	2	55.7–67.4	915	0/2	0/2
Sodium	FILL	1	1	190	915	0/1	0/1
Sodium	SED	13	12	56.9–157	1470	0/13	0/13
Thallium	SED	13	4	0.0392–1.1	0.73	1/13	8/13
Uranium	ALLH	2	2	0.24–0.28	1.82	0/2	0/2
Uranium	FILL	1	1	0.833	1.82	0/1	0/1
Uranium	SED	7	7	1.61–3.26	2.22	1/7	0/7
Vanadium	ALLH	2	2	14.9–15.1	39.6	0/2	0/2
Vanadium	FILL	1	1	13	39.6	0/1	0/1
Vanadium	SED	13	13	5.6–54.2	19.7	4/13	0/13
Zinc	ALLH	2	2	47.6–80.2	48.8	1/2	0/2
Zinc	FILL	1	1	53	48.8	1/1	0/1
Zinc	SED	13	13	19.2–62.3	60.2	1/13	0/13
Upgradient (Excavated Sample Locations)							
Aluminum	ALLH	4	4	3860–4830	29200	0/4	0/4

Table 3.1-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Aluminum	SED	1	1	2900	15400	0/1	0/1
Antimony	ALLH	4	0	[5.19–5.74]	0.83	0/4	4/4
Antimony	SED	1	0	[4.97]	0.83	0/1	1/1
Arsenic	ALLH	4	4	1.56–2.1	8.17	0/4	0/4
Arsenic	SED	1	1	1.87	3.98	0/1	0/1
Barium	ALLH	4	4	220–274	295	0/4	0/4
Barium	SED	1	1	126	127	0/1	0/1
Beryllium	ALLH	4	2	[0.42]–0.527	1.83	0/4	0/4
Cadmium	ALLH	4	0	[0.519–0.574]	0.4	0/4	4/4
Cadmium	SED	1	0	[0.497]	0.4	0/1	1/1
Calcium	ALLH	4	4	1070–2080	6120	0/4	0/4
Calcium	SED	1	1	998	4420	0/1	0/1
Chromium	ALLH	4	4	6.83–18.3	19.3	0/4	0/4
Chromium	SED	1	1	8.43	10.5	0/1	0/1
Cobalt	ALLH	4	4	2.83–6.77	8.64	0/4	0/4
Cobalt	SED	1	1	3.29	4.73	0/1	0/1
Copper	ALLH	4	4	22.9–65.9	14.7	4/4	0/4
Copper	SED	1	1	33.5	11.2	1/1	0/1
Iron	ALLH	4	4	7480–10500	21500	0/4	0/4
Iron	SED	1	1	8160	13800	0/1	0/1
Lead	ALLH	4	4	11.4–30.4	22.3	2/4	0/4
Lead	SED	1	1	24.7	19.7	1/1	0/1
Magnesium	ALLH	4	4	715–958	4610	0/4	0/4
Magnesium	SED	1	1	519	2370	0/1	0/1
Manganese	ALLH	4	4	292–442	671	0/4	0/4
Manganese	SED	1	1	338	543	0/1	0/1
Nickel	ALLH	4	4	106–200	15.4	4/4	0/4
Nickel	SED	1	1	123	9.38	1/1	0/1
Potassium	ALLH	4	4	702–911	3460	0/4	0/4
Potassium	SED	1	1	543	2690	0/1	0/1
Silver	ALLH	4	4	7.91–25.9	1	4/4	0/4
Silver	SED	1	1	5.7	1	1/1	0/1
Sodium	ALLH	4	4	391–525	915	0/4	0/4
Sodium	SED	1	1	432	1470	0/1	0/1
Vanadium	ALLH	4	4	12.2–20.1	39.6	0/4	0/4
Vanadium	SED	1	1	13.1	19.7	0/1	0/1

Table 3.1-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Zinc	ALLH	4	4	25.3–32.4	48.8	0/4	0/4
Zinc	SED	1	1	24.2	60.2	0/1	0/1

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).

Note: Values in brackets are below detection limits.

*n/a = Not applicable; no background value available.

Table 3.1-3
Subaggregate 2 Frequency of Detection of
Organic Chemicals in Soil, Fill, Sediment, and Tuff at MDA R: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Landfill					
Amino-2,6-dinitrotoluene[4-]	ALLH	7	1	[0.085]–0.27	1/7
Amino-2,6-dinitrotoluene[4-]	FILL	5	1	0.05–[2.6]	1/5
Amino-4,6-dinitrotoluene[2-]	ALLH	7	1	[0.083]–0.26	1/7
Amino-4,6-dinitrotoluene[2-]	FILL	5	2	0.049–0.69	2/5
Amino-DNTs	FILL	24	1	[0.48]–1.8	1/24
Aniline	ALLH	23	1	[0.35]–0.38	1/23
Benzoic Acid	FILL	30	1	[0.0205]–0.095	1/30
Bis(2-ethylhexyl)phthalate	ALLH	23	3	[0.041]–0.57	3/23
Bis(2-ethylhexyl)phthalate	FILL	29	2	[0.0415]–0.25	2/29
Bis(2-ethylhexyl)phthalate	QBT4	9	2	0.041–[0.39]	2/9
Di-n-butylphthalate	ALLH	23	1	[0.0332]–0.6	1/23
Di-n-butylphthalate	FILL	29	2	[0.0329]–1	2/29
HMX	ALLH	23	4	0.14–[440]	4/23
HMX	FILL	29	6	0.25–15	6/29
Methylphenol[4-]	ALLH	23	1	0.039–[38]	1/23
Naphthalene	ALLH	23	1	[0.0387]–0.083	1/23
Naphthalene	FILL	30	1	[0.0383]–0.082	1/30
Phenanthrene	ALLH	23	2	0.041–[38]	2/23
Phenanthrene	FILL	30	3	0.035–[1.9]	3/30
Pyridine	ALLH	19	1	[0.37]–0.81	1/19
Pyridine	FILL	25	1	0.04–[2.1]	1/25
RDX	ALLH	23	11	0.1–1500	11/23
RDX	FILL	29	11	0.085–120	11/29
RDX	QBT4	10	1	[0.161]–1.2	1/10
Trinitrotoluene[2,4,6-]	ALLH	23	3	[0.085]–720	3/23
Trinitrotoluene[2,4,6-]	FILL	29	3	[0.24]–2.3	3/29
Xylene[1,3-]+Xylene[1,4-]	ALLH	1	1	0.007	1/1
Drainage					
Amino-2,6-dinitrotoluene[4-]	SED	13	3	[0.08]–1.1	3/13
Amino-4,6-dinitrotoluene[2-]	SED	13	3	[0.08]–1.3	3/13
Amino-DNTs	FILL	1	1	2.7	1/1
Benzoic Acid	SED	11	1	0.38–[8.4]	1/11
Di-n-butylphthalate	SED	11	7	[0.339]–10	7/11
Dinitrobenzene[1,3-]	SED	13	1	[0.08]–0.097	1/13
Fluoranthene	SED	11	1	0.0177–[0.84]	1/11

Table 3.1-3 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
HMX	FILL	1	1	1.8	1/1
HMX	SED	13	2	[0.08]–0.48	2/13
Pyrene	SED	11	1	0.0187–[0.84]	1/11
RDX	ALLH	2	1	[1]–14	1/2
RDX	FILL	1	1	5.2	1/1
RDX	SED	13	4	[0.08]–5.5	4/13
Trinitrotoluene[2,4,6-]	FILL	1	1	3.8	1/1
Trinitrotoluene[2,4,6-]	SED	13	3	[0.08]–1.35	3/13
Upgradient (Excavated Sample Locations)					
Benzo(b)fluoranthene	ALLH	4	2	0.07–[0.36]	2/4
Chrysene	ALLH	4	2	0.063–[0.36]	2/4
Fluoranthene	ALLH	4	3	0.068–[0.35]	3/4
Phenanthrene	ALLH	4	3	0.047–[0.35]	3/4
Pyrene	ALLH	4	3	0.044–[0.35]	3/4

Note: Values in brackets are below detection limits.

Table 3.1-4
Subaggregate 2 Frequency of
Detection of Radionuclides in Sediment at MDA R: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (pCi/g)	Background Value (pCi/g)	Frequency of Detects Greater Than Background/ Fallout Value	Frequency of Nondetects Greater Than Background/ Fallout Value
Cesium-137	SED	7	2	[0.019]–1.06	0.9	1/7	0/7
Uranium-235	SED	7	5	[-0.02]–0.134	0.2	0/7	0/7

Source: Background/fallout values from LANL 1998 (59730, Table 6.0-2, p. 45).
Note: Values in brackets are below detection limits.

Table 3.1-5
Subaggregate 2 Historical Analytical Results of Inorganic Chemicals Detected Greater Than Background Values in Soil, Fill, and Tuff at the Landfill at MDA R: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron
Soil Background Value[a]				**29200**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**21500**
QBT4 Background Value				**7340**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**14500**
16-05907	0–0.5	RE16-98-2007	ALLH	—[b]	—	110000	—	—	—	30.2 (J)	60.5	—	—
16-05908	0–0.5	RE16-98-2008	ALLH	—	—	75100	—	—	—	26.5 (J)	49	—	—
16-05909	0–0.5	RE16-98-2009	ALLH	—	—	44100	—	—	—	—	68.5	—	—
16-06502	0–1	RE16-00-0200	FILL	—	—	3000	—	—	—	—	—	—	—
16-06503	0–1	RE16-00-0201	FILL	—	—	1200	—	—	—	—	69 (J)	—	—
16-06504	2–2.5	RE16-00-0343	ALLH	—	—	3200	—	—	—	—	—	56 (J)	—
16-06505	0–1	RE16-00-0344	FILL	—	—	1600	—	—	—	—	—	—	—
16-06506	0–1	RE16-00-0204	FILL	—	—	27000	—	—	—	—	—	—	—
16-06506	3–4	RE16-00-0244	FILL	—	—	6800	—	—	—	—	—	—	—
16-06507	1–1.5	RE16-00-0205	ALLH	—	—	4300	—	—	—	—	—	—	—
16-06508	0–1	RE16-00-0326	FILL	—	—	84000	—	—	—	—	70 (J)	—	—
16-06508	1.67–2.08	RE16-00-0327	ALLH	—	—	63000	—	—	—	—	140 (J)	—	—
16-06509	0–1	RE16-00-0207	FILL	—	—	3100	—	7000	—	—	1300 (J)	—	—
16-06509	1–2	RE16-00-0247	ALLH	—	—	1700	—	—	—	—	980 (J)	—	—
16-06510	0–1	RE16-00-0208	FILL	—	—	600	—	—	—	—	—	—	—
16-06510	2–3	RE16-00-0248	ALLH	—	—	1600	—	—	—	—	—	—	—
16-06511	0–1	RE16-00-0328	FILL	—	—	5800	—	—	—	—	—	73 (J)	—
16-06511	2–3	RE16-00-0329	ALLH	—	—	4500	—	—	—	—	—	15 (J)	—
16-06512	0–1	RE16-00-0330	ALLH	—	—	9900	—	—	—	—	—	—	—
16-06512	2–3	RE16-00-0331	ALLH	—	—	380	—	—	—	—	—	—	—
16-06513	0–1	RE16-00-0334	FILL	—	—	6400	—	—	—	—	—	—	—

Table 3.1-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron
Soil Background Value[a]				**29200**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**21500**
QBT4 Background Value				**7340**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**14500**
16-06513	2–3	RE16-00-0335	ALLH	—	—	8400	—	—	—	—	—	—	—
16-06514	2–2.67	RE16-00-0212	ALLH	—	—	6900	—	—	—	—	—	—	—
16-06514	2.67–3.33	RE16-00-0252	ALLH	—	—	8900	—	—	—	—	—	—	—
16-06515	1–2	RE16-00-0213	FILL	—	—	1100	—	—	—	—	—	—	—
16-06515	6–7	RE16-00-0253	ALLH	—	—	600	—	—	—	—	—	—	—
16-06516	0–1	RE16-00-0336	FILL	—	—	2100	—	—	—	—	—	—	—
16-06517	0–1	RE16-00-0340	ALLH	—	—	5400	—	—	—	—	—	—	—
16-06517	2–3	RE16-00-0341	ALLH	—	—	1900	—	—	—	—	—	—	—
16-06518	1–2	RE16-00-0345	ALLH	—	—	350	—	—	—	—	—	—	—
16-06519	0–1	RE16-00-0249	FILL	—	—	2400	—	—	—	—	—	110 (J)	—
16-06520	0–1	RE16-00-0210	FILL	34000	—	7200	—	—	13000	—	—	17	—
16-06520	4–5	RE16-00-0250	FILL	—	—	370	—	—	—	—	—	—	—
16-06522	0–0.5	RE16-00-0220	FILL	—	—	680	—	—	—	—	—	—	—
16-06523	0–0.5	RE16-00-0221	FILL	—	—	810	—	—	—	—	—	—	—
16-06524	0–0.5	RE16-00-0222	FILL	—	—	—	—	—	—	—	—	—	—
16-06525	0–0.5	RE16-00-0223	ALLH	—	—	—	—	—	—	—	—	—	—
16-06526	0–0.5	RE16-00-0224	FILL	—	—	470	—	—	—	—	—	—	—
16-06527	1–2.5	RE16-00-0225	FILL	42000	—	850 (J-)	—	—	—	—	29	25000	—
16-06528	1–2.5	RE16-00-0226	FILL	—	—	650 (J-)	—	—	—	—	—	—	—
16-06528	5–6	RE16-00-0256	QBT4	—	3.1 (J+)	—	—	—	—	—	—	—	—
16-06529	1–2.5	RE16-00-0227	FILL	—	—	1700 (J-)	—	—	—	—	16	—	—
16-06529	17.5–20	RE16-00-0234	QBT4	38000	7.1 (J+)	—	2.1 (J+)	—	4800	18 (J+)	4.8 (J+)	11 (J+)	23000

Table 3.1-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron
Soil Background Value[a]				**29200**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**	**21500**
QBT4 Background Value				**7340**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**	**14500**
16-06530	2.5–5	RE16-00-0228	FILL	—	—	—	—	—	—	—	—	—	—
16-06530	10–11	RE16-00-0235	QBT4	—	—	440 (J+)	—	—	—	—	—	—	—
16-06531	0–2.5	RE16-00-0229	FILL	—	—	8100 (J+)	—	—	—	—	190 (J+)	—	—
16-06531	7.5–10	RE16-00-0236	QBT4	15000	5.5 (J+)	93 (J+)	—	—	—	—	—	—	—
16-06532	1.5–2.5	RE16-00-0230	FILL	—	—	630 (J-)	—	—	—	—	—	—	—
16-06532	10–11	RE16-00-0237	QBT4	—	2.9 (J+)	—	—	—	—	—	—	—	—
16-06533	2.5–5	RE16-00-0231	QBT4	19000	4.4	840 (J-)	—	2400	—	8.6 (J)	7.2	15000	—
16-06533	11–12	RE16-00-0238	QBT4	—	—	—	—	—	—	—	—	—	—
16-06534	1–2.5	RE16-00-0232	FILL	—	—	420 (J-)	—	—	—	—	—	—	—
16-06534	7.5–9	RE16-00-0239	QBT4	—	3 (J+)	—	—	—	—	—	—	—	—
16-06537	0–2.5	RE16-00-0211	FILL	—	—	5200	—	0.61	—	—	8.9	93	—
16-06537	4–5	RE16-00-0251	ALLH	—	—	540	—	—	—	—	—	26	—
16-06538	0–1	RE16-00-0332	FILL	—	—	5400	—	—	—	—	11	—	—
16-06538	4–4.5	RE16-00-0333	ALLH	—	—	—	—	—	—	—	—	—	—
16-06539	0–1	RE16-00-0338	FILL	—	—	2900	—	—	—	—	—	—	—
16-06539	4–5	RE16-00-0339	ALLH	52000	—	—	3	—	—	—	—	—	—

Table 3.1-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Lead	Magnesium	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Background Value[a]				**22.3**	**4610**	**671**	**0.1**	**15.4**	**1.52**	**1**	**0.73**	**39.6**	**48.8**
QBT4 Background Value				**11.2**	**1690**	**482**	**0.1**	**6.58**	**0.3**	**1**	**1.1**	**17**	**63.5**
16-05907	0–0.5	RE16-98-2007	ALLH	—	—	—	—	—	28.2 (J-)	—	—	—	85.9
16-05908	0–0.5	RE16-98-2008	ALLH	—	—	—	—	—	10.9 (J-)	—	—	—	103
16-05909	0–0.5	RE16-98-2009	ALLH	—	—	—	—	—	6.2 (J-)	—	—	—	119
16-06502	0–1	RE16-00-0200	FILL	—	—	—	—	—	1.1	—	—	—	—
16-06503	0–1	RE16-00-0201	FILL	—	—	—	—	—	1.6	—	—	—	—
16-06504	2–2.5	RE16-00-0343	ALLH	24	—	—	—	18	—	2.1	—	—	53 (J-)
16-06505	0–1	RE16-00-0344	FILL	—	—	—	—	—	—	1.2	—	—	—
16-06506	0–1	RE16-00-0204	FILL	—	—	—	—	—	2.1	—	—	—	—
16-06506	3–4	RE16-00-0244	FILL	—	—	—	—	—	—	—	—	—	—
16-06507	1–1.5	RE16-00-0205	ALLH	—	—	—	—	—	1.5	—	—	—	—
16-06508	0–1	RE16-00-0326	FILL	—	—	—	—	—	5.4	—	—	—	100 (J-)
16-06508	1.67–2.08	RE16-00-0327	ALLH	—	—	—	22	—	3.9	—	—	—	65 (J-)
16-06509	0–1	RE16-00-0207	FILL	—	—	—	—	—	3.6	—	44.2	—	490
16-06509	1–2	RE16-00-0247	ALLH	—	—	—	—	—	3.1	—	40.5	—	200
16-06510	0–1	RE16-00-0208	FILL	—	—	—	—	—	—	1.2	—	—	—
16-06510	2–3	RE16-00-0248	ALLH	—	—	790	—	—	—	1.1	—	—	—
16-06511	0–1	RE16-00-0328	FILL	24	—	—	—	—	—	2.7	—	—	70 (J-)
16-06511	2–3	RE16-00-0329	ALLH	—	—	—	—	—	—	2.1	—	—	—
16-06512	0–1	RE16-00-0330	ALLH	—	—	—	—	—	—	2.9	—	—	—
16-06512	2–3	RE16-00-0331	ALLH	—	—	—	—	—	—	1.1	—	—	—
16-06513	0–1	RE16-00-0334	FILL	—	—	—	—	—	3.1	—	—	—	—

Table 3.1-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Lead	Magnesium	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Background Value[a]				**22.3**	**4610**	**671**	**0.1**	**15.4**	**1.52**	**1**	**0.73**	**39.6**	**48.8**
QBT4 Background Value				**11.2**	**1690**	**482**	**0.1**	**6.58**	**0.3**	**1**	**1.1**	**17**	**63.5**
16-06513	2–3	RE16-00-0335	ALLH	—	—	—	—	—	3.6	—	—	—	—
16-06514	2–2.67	RE16-00-0212	ALLH	—	—	—	—	—	1.8	—	—	—	—
16-06514	2.67–3.33	RE16-00-0252	ALLH	—	—	—	—	—	1.6	—	—	—	—
16-06515	1–2	RE16-00-0213	FILL	—	—	—	—	—	—	—	—	—	—
16-06515	6–7	RE16-00-0253	ALLH	—	—	—	—	—	—	—	—	—	—
16-06516	0–1	RE16-00-0336	FILL	—	—	—	—	—	—	—	—	—	—
16-06517	0–1	RE16-00-0340	ALLH	—	—	—	—	—	—	1.5	—	—	—
16-06517	2–3	RE16-00-0341	ALLH	—	—	—	—	—	—	—	—	—	—
16-06518	1–2	RE16-00-0345	ALLH	—	—	—	—	—	—	—	—	—	—
16-06519	0–1	RE16-00-0249	FILL	29 (J)	—	—	—	—	—	2.9	—	—	69
16-06520	0–1	RE16-00-0210	FILL	—	—	—	—	—	—	3.4	—	—	54
16-06520	4–5	RE16-00-0250	FILL	—	—	—	0.11	—	—	1.7	—	—	—
16-06522	0–0.5	RE16-00-0220	FILL	—	—	—	—	—	—	2	—	—	—
16-06523	0–0.5	RE16-00-0221	FILL	—	—	—	—	—	—	1.3	—	—	—
16-06524	0–0.5	RE16-00-0222	FILL	—	—	—	—	—	—	1.1	—	—	—
16-06525	0–0.5	RE16-00-0223	ALLH	—	—	—	—	—	—	1.3	—	—	—
16-06526	0–0.5	RE16-00-0224	FILL	—	—	—	—	—	—	1.5	—	—	—
16-06527	1–2.5	RE16-00-0225	FILL	4800	—	—	—	—	1.6	—	—	—	59
16-06528	1–2.5	RE16-00-0226	FILL	—	—	—	—	—	2	—	—	—	—
16-06528	5–6	RE16-00-0256	QBT4	—	—	—	—	—	0.37 (J)	—	—	—	—
16-06529	1–2.5	RE16-00-0227	FILL	—	—	—	—	—	2.1	—	—	—	—
16-06529	17.5–20	RE16-00-0234	QBT4	13 (J+)	4700	—	—	11 (J+)	0.499	—	—	28 (J+)	—

Table 3.1-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Lead	Magnesium	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Background Value[a]				**22.3**	**4610**	**671**	**0.1**	**15.4**	**1.52**	**1**	**0.73**	**39.6**	**48.8**
QBT4 Background Value				**11.2**	**1690**	**482**	**0.1**	**6.58**	**0.3**	**1**	**1.1**	**17**	**63.5**
16-06530	2.5–5	RE16-00-0228	FILL	—	—	—	—	—	2	—	—	—	—
16-06530	10–11	RE16-00-0235	QBT4	—	—	—	—	—	0.372	—	—	—	—
16-06531	0–2.5	RE16-00-0229	FILL	—	—	—	—	—	2.5	—	—	—	73 (J+)
16-06531	7.5–10	RE16-00-0236	QBT4	—	—	—	—	—	0.453 (J)	—	—	—	—
16-06532	1.5–2.5	RE16-00-0230	FILL	—	—	—	—	—	1.7	—	—	—	—
16-06532	10–11	RE16-00-0237	QBT4	—	—	—	—	—	—	—	—	—	—
16-06533	2.5–5	RE16-00-0231	QBT4	1900	—	—	8.7	—	2.1	—	—	21	—
16-06533	11–12	RE16-00-0238	QBT4	—	—	—	—	—	0.431 (J)	—	—	—	—
16-06534	1–2.5	RE16-00-0232	FILL	—	—	—	—	—	1.8	—	—	—	—
16-06534	7.5–9	RE16-00-0239	QBT4	—	—	—	—	—	0.382 (J)	—	—	—	—
16-06537	0–2.5	RE16-00-0211	FILL	160 (J)	—	—	—	—	—	14	—	—	150
16-06537	4–5	RE16-00-0251	ALLH	—	—	—	0.16	—	—	2.2	—	—	—
16-06538	0–1	RE16-00-0332	FILL	—	—	—	—	—	—	2.1	—	—	—
16-06538	4–4.5	RE16-00-0333	ALLH	—	—	—	—	—	—	1.9	—	—	—
16-06539	0–1	RE16-00-0338	FILL	23 (J)	—	—	—	—	—	2.1	—	—	—
16-06539	4–5	RE16-00-0339	ALLH	—	—	—	0.11 (J)	16	—	2.4	0.845	—	52

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

[a] Fill samples were compared to soil background values.

[b] — = If analyzed, sample result is less than background value.

Table 3.1-6
Subaggregate 2 Historical Analytical Results of Organic Chemicals Detected in Soil, Fill, and Tuff at the Landfill at MDA R: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Amino-2,6-dinitrotoluene[4-]	Amino-4,6-dinitrotoluene[2-]	Amino-DNTs	Aniline	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Di-n-butylphthalate	HMX
16-02703	3.5–4.5	0316-97-0268	ALLH	—*	—	—	—	—	0.57	—	—
16-02703	69–70	0316-97-0269	QBT4	—	—	—	—	—	0.14	—	—
16-05907	0–0.5	RE16-98-2007	ALLH	—	—	—	—	—	—	—	—
16-05908	0–0.5	RE16-98-2008	ALLH	—	—	—	—	—	—	—	22 (J)
16-05909	0–0.5	RE16-98-2009	ALLH	0.27	0.26	—	0.38 (J)	—	—	—	—
16-06504	2–2.5	RE16-00-0343	ALLH	—	—	—	—	—	0.047 (J)	—	—
16-06505	0–1	RE16-00-0344	FILL	—	—	—	—	—	—	—	—
16-06506	0–1	RE16-00-0204	FILL	—	—	—	—	—	—	—	4.2
16-06508	0–1	RE16-00-0326	FILL	—	—	1.8	—	—	0.25 (J)	0.28 (J)	15
16-06508	1.67–2.08	RE16-00-0327	ALLH	—	—	—	—	—	—	—	10
16-06509	0–1	RE16-00-0207	FILL	—	—	—	—	—	—	1 (J)	—
16-06509	1–2	RE16-00-0247	ALLH	—	—	—	—	—	—	0.6 (J)	—
16-06511	0–1	RE16-00-0328	FILL	—	—	—	—	—	—	—	—
16-06511	2–3	RE16-00-0329	ALLH	—	—	—	—	—	—	—	—
16-06513	0–1	RE16-00-0334	FILL	—	—	—	—	—	0.088 (J)	—	—
16-06513	2–3	RE16-00-0335	ALLH	—	—	—	—	—	0.1 (J)	—	—
16-06514	2–2.67	RE16-00-0212	ALLH	—	—	—	—	—	—	—	—
16-06514	2.67–3.33	RE16-00-0252	ALLH	—	—	—	—	—	—	—	—

Table 3.1-6 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Amino-2,6-dinitrotoluene[4-]	Amino-4,6-dinitrotoluene[2-]	Amino-DNTs	Aniline	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Di-n-butylphthalate	HMX
16-06515	1–2	RE16-00-0213	FILL	—	—	—	—	0.095 (J)	—	—	—
16-06519	0–1	RE16-00-0249	FILL	—	—	—	—	—	—	—	—
16-06520	0–1	RE16-00-0210	FILL	—	—	—	—	—	—	—	0.25 (J)
16-06520	4–5	RE16-00-0250	FILL	—	—	—	—	—	—	—	0.68
16-06524	0–0.5	RE16-00-0222	FILL	—	—	—	—	—	—	—	—
16-06528	5–6	RE16-00-0256	QBT4	—	—	—	—	—	0.041 (J)	—	—
16-06530	10–11	RE16-00-0235	QBT4	—	—	—	—	—	—	—	—
16-06530	2.5–5	RE16-00-0228	FILL	—	—	—	—	—	—	—	—
16-06537	0–2.5	RE16-00-0211	FILL	—	0.69 (J)	—	—	—	—	—	4.2
16-06537	4–5	RE16-00-0251	ALLH	—	—	—	—	—	—	—	0.64
16-06538	0–1	RE16-00-0332	FILL	—	—	—	—	—	—	—	0.46
16-06538	4–4.5	RE16-00-0333	ALLH	—	—	—	—	—	—	—	0.14 (J)
16-06539	0–1	RE16-00-0338	FILL	0.05 (J)	0.049 (J)	—	—	—	—	—	—
16-06539	4–5	RE16-00-0339	ALLH	—	—	—	—	—	—	—	—

Table 3.1-6 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Methylphenol[4-]	Naphthalene	Phenanthrene	Pyridine	RDX	Trinitrotoluene[2,4,6-]	Xylene[1,3-] + Xylene[1,4-]
16-02703	3.5–4.5	0316-97-0268	ALLH	—	—	—	—	—	—	0.007
16-02703	69–70	0316-97-0269	QBT4	—	—	—	—	—	—	—
16-05907	0–0.5	RE16-98-2007	ALLH	—	—	—	—	1500	720	—
16-05908	0–0.5	RE16-98-2008	ALLH	—	—	—	—	100	—	—
16-05909	0–0.5	RE16-98-2009	ALLH	—	—	—	—	4	0.88	—
16-06504	2–2.5	RE16-00-0343	ALLH	—	—	—	—	5.9	—	—
16-06505	0–1	RE16-00-0344	FILL	—	—	0.035 (J)	—	—	—	—
16-06506	0–1	RE16-00-0204	FILL	—	—	—	—	31	—	—
16-06508	0–1	RE16-00-0326	FILL	—	—	—	—	120	0.78	—
16-06508	1.67–2.08	RE16-00-0327	ALLH	—	—	—	—	77	2.2	—
16-06509	0–1	RE16-00-0207	FILL	—	—	—	—	1.7	—	—
16-06509	1–2	RE16-00-0247	ALLH	—	—	0.11 (J)	—	—	—	—
16-06511	0–1	RE16-00-0328	FILL	—	—	—	—	7.7	1.1	—
16-06511	2–3	RE16-00-0329	ALLH	—	—	—	—	1.9	—	—
16-06513	0–1	RE16-00-0334	FILL	—	0.082 (J)	0.051 (J)	0.04 (J)	—	—	—
16-06513	2–3	RE16-00-0335	ALLH	0.039 (J)	0.083 (J)	0.041 (J)	0.81	—	—	—
16-06514	2–2.67	RE16-00-0212	ALLH	—	—	—	—	3.1	—	—
16-06514	2.67–3.33	RE16-00-0252	ALLH	—	—	—	—	2.8	—	—
16-06515	1–2	RE16-00-0213	FILL	—	—	—	—	—	—	—

Table 3.1-6 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Methylphenol[4-]	Naphthalene	Phenanthrene	Pyridine	RDX	Trinitrotoluene[2,4,6-]	Xylene[1,3-] + Xylene[1,4-]
16-06519	0–1	RE16-00-0249	FILL	—	—	0.25 (J)	—	—	—	—
16-06520	0–1	RE16-00-0210	FILL	—	—	—	—	0.13 (J)	—	—
16-06520	4–5	RE16-00-0250	FILL	—	—	—	—	0.9	—	—
16-06524	0–0.5	RE16-00-0222	FILL	—	—	—	—	17	—	—
16-06528	5–6	RE16-00-0256	QBT4	—	—	—	—	—	—	—
16-06530	2.5–5	RE16-00-0228	FILL	—	—	—	—	9.6	—	—
16-06530	10–11	RE16-00-0235	QBT4	—	—	—	—	1.2	—	—
16-06537	0–2.5	RE16-00-0211	FILL	—	—	—	—	30	2.3 (J)	—
16-06537	4–5	RE16-00-0251	ALLH	—	—	—	—	2	—	—
16-06538	0–1	RE16-00-0332	FILL	—	—	—	—	0.085 (J)	—	—
16-06538	4–4.5	RE16-00-0333	ALLH	—	—	—	—	0.24 (J)	—	—
16-06539	0–1	RE16-00-0338	FILL	—	—	—	—	0.098 (J)	—	—
16-06539	4–5	RE16-00-0339	ALLH	—	—	—	—	0.1 (J)	—	—

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

*— = If analyzed, sample result is not detected.

Table 3.1-7
Subaggregate 2 Historical Analytical Results of Inorganic Chemicals
Greater Than Background Values in Soil, Fill, and Sediment at Downgradient Drainage Locations at MDA R: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Arsenic	Barium	Boron	Cadmium	Chromium	Cobalt	Copper	Cyanide (Total)	Iron	Lead
Soil Background Value[a]				**8.17**	**295**	**n/a[b]**	**0.4**	**19.3**	**8.64**	**14.7**	**0.5**	**21500**	**22.3**
Sediment Background Value				**3.98**	**127**	**n/a**	**0.4**	**10.5**	**4.73**	**11.2**	**0.82**	**13800**	**19.7**
16-02656	3–3.5	0316-97-0404	SED	—[c]	200	—	—	—	—	—	—	—	—
16-02749	0–0.33	RE16-02-46396	SED	—	—	—	0.491 (U)	—	—	—	—	—	—
16-02749	0–0.5	0816-96-0060	SED	—	258	—	—	17.8 (J)	—	69	—	—	30.2
16-02750	0–0.5	0816-96-0061	SED	4.2 (U)	199	—	—	—	7.4 (J)	—	—	—	—
16-02751	0–0.5	0816-96-0062	SED	4.1 (U)	194	—	—	—	6.7 (J)	13.3	—	—	—
16-02752	0–0.5	0816-96-0063	SED	—	234	—	—	—	5.4 (J)	—	—	—	—
16-02753	0–0.33	RE16-02-46397	SED	—	177 (J+)	1.82 (J)	—	—	—	—	—	—	—
16-02753	0–0.5	0816-96-0064	SED	11	13800	—	—	—	10.1 (J)	99.8	—	22000	129
16-02754	0–0.33	RE16-02-46398	SED	—	810 (J+)	0.924 (J)	0.484 (U)	—	—	—	—	—	—
16-02754	0–0.5	0816-96-0065	SED	—	15900	—	—	—	8.7 (J)	28.8	1.1 (U)	—	108
16-02755	0–0.5	0816-96-0066	SED	—	751	—	—	—	—	12.1	—	—	28.3
16-05910	0–0.5	RE16-98-2010	ALLH	—	28000	—	—	—	11.3 (J)	43.8	—	—	141
16-05911	0–0.5	RE16-98-2011	ALLH	—	29800	—	—	—	15.1 (J)	27.4	—	—	431
16-06122	0–0.3	RE16-99-0089	SED	—	7360	—	—	—	6.5 (J)	27.7	—	—	55.1
16-06122	0.3–0.53	RE16-99-0090	SED	—	4670	—	—	—	—	—	—	—	—
16-06521	0–0.5	RE16-00-0219	FILL	—	29000	—	—	—	—	28 (J)	—	—	140 (J)

Table 3.1-7 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Manganese	Nickel	Nitrate-Nitrite as N	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
Soil Background Value[a]				**671**	**15.4**	**n/a**	**1.52**	**1**	**0.73**	**1.82**	**39.6**	**48.8**
Sediment Background Value				**543**	**9.38**	**n/a**	**0.3**	**1**	**0.73**	**2.22**	**19.7**	**60.2**
16-02656	3–3.5	0316-97-0404	SED	—	—	—	0.57 (U)	—	—	—	—	—
16-02749	0–0.33	RE16-02-46396	SED	—	—	—	0.491 (U)	29.2	—	—	—	—
16-02749	0–0.5	0816-96-0060	SED	—	305 (J-)	0.7	0.67 (U)	15.1 (J)	0.77 (U)	3.26	—	—
16-02750	0–0.5	0816-96-0061	SED	553 (J+)	11.7 (J-)	—	0.97 (U)	—	1.1 (J)	—	20	—
16-02751	0–0.5	0816-96-0062	SED	—	43.7 (J-)	—	0.45 (U)	—	0.86 (U)	—	—	—
16-02752	0–0.5	0816-96-0063	SED	—	17 (J-)	1.2	0.42 (U)	—	0.77 (U)	—	20.9	—
16-02753	0–0.33	RE16-02-46397	SED	—	12.9	—	0.494	113	—	—	20	—
16-02753	0–0.5	0816-96-0064	SED	—	9.6 (J-)	0.9	1.7	1.3 (J)	0.75 (U)	—	54.2	62.3
16-02754	0–0.33	RE16-02-46398	SED	—	—	—	0.306 (J)	6.58	—	—	—	—
16-02754	0–0.5	0816-96-0065	SED	—	13.5 (J-)	—	0.4 (U)	2.2 (J)	0.76 (U)	—	—	—
16-02755	0–0.5	0816-96-0066	SED	—	—	—	0.45 (U)	—	0.86 (U)	—	—	—
16-05910	0–0.5	RE16-98-2010	ALLH	—	—	—	—	—	—	—	—	80.2
16-05911	0–0.5	RE16-98-2011	ALLH	—	—	—	—	2.5 (J-)	—	—	—	—
16-06122	0–0.3	RE16-99-0089	SED	—	20.3	—	0.66 (U)	3.2	1 (U)	—	—	—
16-06122	0.3–0.53	RE16-99-0090	SED	—	—	—	0.65 (U)	—	1 (U)	—	—	—
16-06521	0–0.5	RE16-00-0219	FILL	—	—	—	—	3.5	—	—	—	53

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

[a] Fill samples were compared to soil background values.

[b] n/a = Not applicable; no background value available.

[c] — = If analyzed, sample result is less than background value.

Table 3.1-8
Subaggregate 2 Historical Analytical Results of Organic Chemicals Detected in Soil, Fill, and Sediment at Downgradient Drainage Locations at MDA R: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Amino-2,6-dinitrotoluene[4-]	Amino-4,6-dinitrotoluene[2-]	Amino-DNTs	Benzoic Acid	Di-n-butylphthalate	Dinitrobenzene[1,3-]	Fluoranthene	HMX	Pyrene	RDX	Trinitrotoluene[2,4,6-]
16-02656	3–3.5	0316-97-0404	SED	—*	—	—	—	—	0.097 (J+)	—	—	—	—	—
16-02749	0–0.5	0816-96-0060	SED	—	—	—	—	1.5	—	—	—	—	—	—
16-02750	0–0.5	0816-96-0061	SED	—	—	—	—	0.83	—	—	—	—	—	—
16-02751	0–0.5	0816-96-0062	SED	—	—	—	—	1.1	—	—	—	—	—	—
16-02752	0–0.5	0816-96-0063	SED	—	—	—	—	0.88	—	—	—	—	—	—
16-02753	0–0.33	RE16-02-46397	SED	—	—	—	0.38 (J-)	—	—	0.0177 (J)	—	0.0187 (J)	—	—
16-02753	0–0.5	0816-96-0064	SED	0.43	0.494	—	—	1.9	—	—	—	—	1.24	0.447
16-02754	0–0.5	0816-96-0065	SED	0.908	0.733	—	—	10	—	—	—	—	0.974	1.35
16-02755	0–0.5	0816-96-0066	SED	—	—	—	—	3	—	—	—	—	—	—
16-05911	0–0.5	RE16-98-2011	ALLH	—	—	—	—	—	—	—	—	—	14	—
16-06122	0–0.3	RE16-99-0089	SED	1.1	1.3	—	—	—	—	—	0.29 (J)	—	5.5	0.29
16-06122	0.3–0.53	RE16-99-0090	SED	—	—	—	—	—	—	—	0.48 (J)	—	0.26 (J)	—
16-06521	0–0.5	RE16-00-0219	FILL	—	—	2.7	—	—	—	—	1.8	—	5.2	3.8

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

*— = If analyzed, sample result is not detected.

Table 3.1-9
Subaggregate 2 Historical Analytical
Results of Radionuclides Detected Greater Than Fallout Values in
Sediment at Downgradient Drainage Locations at MDA R: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Cesium-137
Sediment Fallout Value				
16-02749	0–0.5	0816-96-0060	SED	1.06

Source: Fallout values from LANL (1998, 59730, Table 6.0-2, p. 45).
Note: Units are pCi/g.

Table 3.1-10
Subaggregate 2 Historical Analytical Results of Inorganic Chemicals Greater Than Background Values in Soil and Sediment at Upgradient Drainage Locations at MDA R: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Antimony	Cadmium	Copper	Cyanide	Lead	Nickel	Silver
Soil Background Value				**0.83**	**0.4**	**14.7**	**0.5**	**22.3**	**15.4**	**1**
Sediment Background Value				**0.83**	**0.4**	**11.2**	**0.82**	**19.7**	**9.38**	**1**
16-02168	0–0.5	0316-95-0512[a]	SED	4.97 (U)	0.497 (U)	33.5	1.06 (U)	24.7 (J+)	123	5.7
16-02168	0.67–1.08	0316-95-0513[a]	ALLH	5.19 (U)	0.519 (U)	22.9	1.03 (U)	—[b]	106	17.6
16-02168	1.17–1.42	0316-95-0514[a]	ALLH	5.2 (U)	0.52 (U)	25.2	1.08 (U)	—	113	25.9
16-02169	0–0.5	0316-95-0515[a]	ALLH	5.41 (U)	0.541 (U)	51	1.11 (U)	23.2 (J+)	147	7.91
16-02170	0–0.5	0316-95-0516[a]	ALLH	5.74 (U)	0.574 (U)	65.9	1.19 (U)	30.4 (J+)	200	17.1

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).
Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.
[a] Soil removed after sampling.
[b] — = If analyzed, sample result is less than background value.

Table 3.1-11
Subaggregate 2 Historical Analytical Results of Organic Chemicals Detected in Soil at Upgradient Drainage Locations at MDA R: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Benzo(b)fluoranthene	Chrysene	Fluoranthene	Phenanthrene	Pyrene
16-02168	1.17–1.42	0316-95-0514[a]	ALLH	—[b]	—	0.068 (J)	0.047 (J)	0.044 (J)
16-02169	0–0.5	0316-95-0515[a]	ALLH	0.07 (J)	0.063 (J)	0.1 (J)	0.048 (J)	0.11 (J)
16-02170	0–0.5	0316-95-0516[a]	ALLH	0.093 (J)	0.081 (J)	0.14 (J)	0.077 (J)	0.13 (J)

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.
[a] Soil removed after sampling.
[b] — = If analyzed, sample result is not detected.

Table 4.1-1
Subaggregate 3 Summary of Historical Samples
Collected in Soil, Fill, Sediment, and Tuff at the TA-16 Burning Ground: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number				
				Cyanide	High Explosives	Inorganic Chemicals	SVOC	VOC
SWMU 16-005(g)								
16-01341	2–3	0316-95-0468	FILL	904	903	904	903	903
16-01341	5–7	0316-95-0469	QBT4	904	903	904	903	903
16-01660	0–1	0316-97-0611	ALLH	—*	3677R	3676R	3675R	3675R
16-01660	3–5	0316-97-0612	ALLH	—	3677R	3676R	3675R	3675R
16-01660	5–7	0316-97-0613	QBT4	—	3677R	3676R	3675R	3675R
SWMU 16-010(h)								
16-01349	0.33–0.83	0316-95-0307	FILL	1437	1436	1438	1436	—
16-01349	1.3–1.9	0316-95-0308	FILL	1437	1436	1438	1436	—
16-01351	0–0.5	0316-95-0305	FILL	1437	1436	1438	1436	—
16-01351	1–2	0316-95-0306	FILL	1437	1436	1438	1436	—
16-01352	0–0.5	0316-95-0303	ALLH	1313	1312	1314	1312	—
16-01352	0.5–1.5	0316-95-0304	ALLH	1313	1312	1314	1312	—
16-03-21917	1–1.5	RE16-03-50636	ALLH	—	1567S	1568S	1567S	1567S
16-03-21918	1–1.5	RE16-03-50637	ALLH	—	1567S	1568S	1567S	1567S
SWMU 16-010(i)								
16-01272	0–0.5	0316-95-0311	FILL	1398	1397	1399	1397	—
16-01272	0.58–1	0316-95-0312	FILL	1398	1397	1399	1397	1397
16-01278	0–0.5	0316-95-0313	FILL	1398	1397	1399	1397	—
16-01278	0.58–1	0316-95-0314	FILL	1398	1397	1399	1397	1397
16-01296	0–0.5	0316-95-0309	FILL	1398	1397	1399	1397	—
16-01296	0.58–1	0316-95-0310	FILL	1398	1397	1399	1397	1397
16-01297	0.33–0.83	0316-95-0315	ALLH	1398	1397	1399	1397	1397
16-01297	0.83–1.33	0316-95-0316	ALLH	1398	1397	1399	1397	1397
16-01298	0–0.66	0316-95-0317	ALLH	1298	1297	1299	1297	1297
16-01299	0–0.66	0316-95-0318	ALLH	1298	1297	1299	1297	1297
16-01300	0–0.5	0316-95-0319	SED	1298	1297	1299	1297	—
16-01301	0–0.5	0316-95-0320	SED	1398	1397	1399	1397	—
16-01302	0–0.5	0316-95-0321	ALLH	1298	1297	1299	1297	—
16-01303	0–0.5	0316-95-0322	SED	1398	1397	1399	1397	—
16-01313	0–0.5	0316-95-0356	ALLH	1374	1373	1375	—	—
16-01313	0.67–1.17	0316-95-0382	FILL	1521	1520	1522	1520	1520

Table 4.1-1 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number				
				Cyanide	High Explosives	Inorganic Chemicals	SVOC	VOC
SWMU 16-010(k)								
16-01282	0–0.5	0316-95-0333	ALLH	1374	1373	1374	—	—
16-01283	0–0.5	0316-95-0334	ALLH	1374	1373	1374	—	—
16-01284	0–0.5	0316-95-0335	ALLH	1374	1373	1374	—	—
16-01285	0–0.5	0316-95-0336	ALLH	1374	1373	1374	—	—
16-01286	0–0.5	0316-95-0337	ALLH	1374	1373	1374	—	—
16-01287	0–0.5	0316-95-0338	ALLH	1374	1373	1374	—	—
16-01288	0–0.5	0316-95-0339	ALLH	1374	1373	1374	—	—
16-01289	0–0.5	0316-95-0340	ALLH	1374	1373	1374	—	—
16-01289	0–0.66	0316-95-0379	ALLH	1313	1312	1314	1312	1312
16-01290	0–0.5	0316-95-0341	ALLH	1374	1373	1374	—	—
16-01290	0.67–1.17	0316-95-2018	ALLH	1313	1312	1314	1312	1312
16-01290	1–1.5	0316-95-0378	ALLH	1313	1312	1314	1312	1312
SWMU 16-010(l)								
16-01237	0–0.5	0316-95-0323	ALLH	1374	1373	1374	—	—
16-01237	2–2.5	0316-95-0376	ALLH	1521	1520	1522	1520	1520
16-01239	0–0.5	0316-95-0324	ALLH	1374	1373	1374	—	—
16-01239	3–3.5	0316-95-0377	ALLH	1521	1520	1522	1520	1520
16-01240	0–0.5	0316-95-0325	ALLH	1252	1251	1252	—	—
16-01246	0–0.5	0316-95-0326	ALLH	1252	1251	1252	—	—
SWMU 16-010(m)								
16-01226	0–0.5	0316-95-0343	ALLH	1374	1373	1374	—	—
16-01226	1–1.5	0316-95-0381	ALLH	1437	1436	1438	1436	1436
16-01230	0–0.5	0316-95-0344	ALLH	1252	1251	1252	—	—
16-01232	0–0.5	0316-95-0345	ALLH	1252	1251	1252	—	—
16-01233	0–0.5	0316-95-0346	ALLH	1374	1373	1374	—	—
16-01234	0–0.5	0316-95-0347	ALLH	1374	1373	1374	—	—
16-01235	0–0.5	0316-95-0348	ALLH	1374	1373	1374	—	—
16-01236	0–0.5	0316-95-0349	FILL	1374	1373	1374	—	—
16-01236	1–1.5	0316-95-0380	FILL	1437	1436	1438	1436	1436
16-01236	1–1.5	0316-95-2019	FILL	1437	1436	1438	1436	1436
SWMU 16-010(n)								
16-01304	0–0.5	0316-95-0353	ALLH	1252	1251	1253	—	—
16-01307	0–0.5	0316-95-0354	ALLH	1252	1251	1253	—	—
16-01311	0–0.5	0316-95-0355	ALLH	1252	1251	1253	—	—

Table 4.1-1 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number				
				Cyanide	High Explosives	Inorganic Chemicals	SVOC	VOC
SWMU 16-028(a)								
16-01329	0–0.5	0316-95-0363	FILL	1392	1391	1393	1391	—
16-01329	0–2	0316-97-0602	QBT4	—	3625R	3627R	3624R	3624R
16-01329	1.08–2.08	0316-97-0601	QBT4	—	3625R	3627R	—	3624R
16-01330	0–0.5	0316-95-0364	FILL	1392	1391	1393	1391	—
16-01330	1.67–2.33	0316-97-0603	ALLH	—	3625R	3627R	—	3624R
16-01330	4–5	0316-97-0604	QBT4	—	3625R	3627R	—	3624R
16-01331	0–0.5	0316-95-0365	FILL	1392	1391	1393	1391	—
16-01332	0–0.5	0316-95-0366	FILL	1392	1391	1393	1391	—
16-01333	0–0.5	0316-95-0367	FILL	1392	1391	1393	1391	—

*— = The analysis was not requested.

Table 4.1-2
Subaggregate 3 Summary of Historical Samples
Collected in Soil at the TA-16 Burning Ground: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number		
				Inorganic Chemicals	SVOC	VOC
SWMU 16-010(i)						
16-01272	0–0.5	0316-96-0003	ALLH	79265	79266	79328
SWMU 16-010(l)						
16-01240	0–0.5	0316-96-0004	ALLH	79265	79266	79328

Table 4.1-3
Subaggregate 3 Frequency of Detection of Inorganic Chemicals in Soil, Fill, Sediment, and Tuff at the TA-16 Burning Ground: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Aluminum	ALLH	41	41	1830–12800	29200	0/41	0/41
Aluminum	FILL	20	20	822–5700	29200	0/20	0/20
Aluminum	SED	3	3	4620–5580	15400	0/3	0/3
Aluminum	QBT4	5	5	2020–4180	7340	0/5	0/5
Antimony	ALLH	39	1	[0.052]–12.1	0.83	1/39	35/39
Antimony	FILL	20	0	[4.8–6.1]	0.83	0/20	20/20
Antimony	SED	3	0	[5–5.34]	0.83	0/3	3/3
Antimony	QBT4	4	0	[0.71–5.8]	0.5	0/4	4/4
Arsenic	ALLH	41	41	0.441–7.3	8.17	0/41	0/41
Arsenic	FILL	20	20	0.644–2.7	8.17	0/20	0/20
Arsenic	SED	3	3	0.77–1.2	3.98	0/3	0/3
Arsenic	QBT4	5	5	0.72–2.4	2.79	0/5	0/5
Barium	ALLH	41	41	42–1820	295	19/41	0/41
Barium	FILL	20	20	35.8–880	295	10/20	0/20
Barium	SED	3	3	150–228	127	3/3	0/3
Barium	QBT4	5	5	22–1770	46	2/5	0/5
Beryllium	ALLH	41	36	[0.402]–1.6	1.83	0/41	0/41
Beryllium	FILL	20	7	[0.39]–1.3	1.83	0/20	0/20
Beryllium	SED	3	2	[0.41]–0.54	1.31	0/3	0/3
Beryllium	QBT4	5	5	0.5–1.4	1.21	1/5	0/5
Cadmium	ALLH	41	6	[0.09]–1.1	0.4	4/41	34/41
Cadmium	FILL	20	4	[0.48]–2.8	0.4	4/20	16/20
Cadmium	SED	3	0	[0.5–0.534]	0.4	0/3	3/3
Calcium	ALLH	41	41	758–4440	6120	0/41	0/41
Calcium	FILL	20	20	798–37800	6120	2/20	0/20
Calcium	SED	3	3	1090–1340	4420	0/3	0/3
Calcium	QBT4	5	5	308–890	2200	0/5	0/5
Chromium	ALLH	41	41	2.3–25.6	19.3	1/41	0/41
Chromium	FILL	20	20	1.82–23.7	19.3	2/20	0/20
Chromium	SED	3	3	3.9–5.03	10.5	0/3	0/3
Chromium	QBT4	5	4	[1.6]–21.9	7.14	2/5	0/5
Cobalt	ALLH	41	36	1.1–4.9	8.64	0/41	0/41
Cobalt	FILL	20	16	0.98–3.04	8.64	0/20	0/20
Cobalt	SED	3	3	1.5–1.8	4.73	0/3	0/3

Table 4.1-3 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Cobalt	QBT4	5	3	[1.2]–5.4	3.14	2/5	0/5
Copper	ALLH	41	41	2.6–68.5	14.7	3/41	0/41
Copper	FILL	20	20	2.34–33.5	14.7	3/20	0/20
Copper	SED	3	3	3.8–11.4	11.2	1/3	0/3
Copper	QBT4	5	5	2.6–73.2	4.66	4/5	0/5
Iron	ALLH	41	41	4810–20200	21500	0/41	0/41
Iron	FILL	20	20	2880–15700	21500	0/20	0/20
Iron	SED	3	3	8400–9010	13800	0/3	0/3
Iron	QBT4	5	5	5900–10500	14500	0/5	0/5
Lead	ALLH	41	41	2.2–800	22.3	11/41	0/41
Lead	FILL	20	20	3.74–76.6	22.3	8/20	0/20
Lead	SED	3	3	7.1–9.9	19.7	0/3	0/3
Lead	QBT4	5	5	1.3–5.2	11.2	0/5	0/5
Magnesium	ALLH	41	41	473–2270	4610	0/41	0/41
Magnesium	FILL	20	20	416–1300	4610	0/20	0/20
Magnesium	SED	3	3	935–1270	2370	0/3	0/3
Magnesium	QBT4	5	5	282–742	1690	0/5	0/5
Manganese	ALLH	41	41	142–377	671	0/41	0/41
Manganese	FILL	20	20	64–364	671	0/20	0/20
Manganese	SED	3	3	181–220	543	0/3	0/3
Manganese	QBT4	5	5	146–315	482	0/5	0/5
Mercury	ALLH	41	8	[0.02]–0.57	0.1	4/41	2/41
Mercury	FILL	20	10	0.04–0.89	0.1	5/20	0/20
Mercury	QBT4	5	0	[0.02–0.12]	0.1	0/5	1/5
Nickel	ALLH	41	40	[1.6]–16.5	15.4	1/41	0/41
Nickel	FILL	20	20	1.6–9.8	15.4	0/20	0/20
Nickel	SED	3	3	3.4–3.9	9.38	0/3	0/3
Nickel	QBT4	5	5	2.1–16.6	6.58	3/5	0/5
Potassium	ALLH	41	41	395–1790	3460	0/41	0/41
Potassium	FILL	20	20	160–1160	3460	0/20	0/20
Potassium	SED	3	3	832–949	2690	0/3	0/3
Potassium	QBT4	5	5	360–617	43700	0/5	0/5
Selenium	ALLH	39	3	[0.245]–0.471	1.52	0/39	0/39
Selenium	QBT4	4	0	[0.29–0.64]	0.3	0/4	3/4
Silver	ALLH	41	7	0.028–1.1	1	1/41	2/41
Silver	QBT4	5	1	[0.25]–0.29	1	0/5	1/5

Table 4.1-3 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Sodium	ALLH	41	41	113–858	915	0/41	0/41
Sodium	FILL	20	20	253–666	915	0/20	0/20
Sodium	SED	3	3	358–377	1470	0/3	0/3
Sodium	QBT4	5	5	81.3–532	2770	0/5	0/5
Thallium	ALLH	41	7	[0.026]–0.49	0.73	0/41	2/41
Thallium	QBT4	5	0	[0.29–1.5]	1.1	0/5	1/5
Uranium	ALLH	18	17	1.05–11.3	1.82	10/18	1/18
Uranium	FILL	18	18	1.15–7.86	1.82	14/18	0/18
Uranium	SED	3	3	1.61–2.7	2.22	1/3	0/3
Uranium	QBT4	3	3	0.97–4.6	2.4	1/3	0/3
Vanadium	ALLH	41	41	4.2–32.1	39.6	0/41	0/41
Vanadium	FILL	20	20	5.5–16.4	39.6	0/20	0/20
Vanadium	SED	3	3	8–10	19.7	0/3	0/3
Vanadium	QBT4	5	5	3.5–8.8	17	0/5	0/5
Zinc	ALLH	41	41	19.7–1070	48.8	19/41	0/41
Zinc	FILL	20	20	23.3–170	48.8	8/20	0/20
Zinc	SED	3	3	32.9–40.7	60.2	0/3	0/3
Zinc	QBT4	5	5	27–81.8	63.5	2/5	0/5

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Values in brackets are below detection limits.

Table 4.1-4
Subaggregate 3 Frequency of Detection of
Inorganic Chemicals in Soil at the TA-16 Burning Ground: Screening-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Arsenic	ALLH	2	0	[10–10]	8.17	0/2	2/2
Barium	ALLH	2	2	1250–4200	295	2/2	0/2
Cadmium	ALLH	2	1	[0.402]–4.21	0.4	1/2	1/2
Lead	ALLH	2	1	[4.81]–53.9	22.3	1/2	0/2
Mercury	ALLH	2	0	[2–2]	0.1	0/2	2/2
Selenium	ALLH	2	0	[5.27–8.59]	1.52	0/2	2/2
Silver	ALLH	2	0	[10–10]	1	0/2	2/2

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Values in brackets are below detection limits.

Table 4.1-5
Subaggregate 3 Frequency of Detection of Organic Chemicals in Soil, Fill, Sediment, and Tuff at the TA-16 Burning Ground: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Acetone	ALLH	15	2	[0.004]–0.015	2/15
Acetone	FILL	7	2	0.002–0.015	2/7
Amino-2,6-dinitrotoluene[4-]	ALLH	41	25	[0.084]–15.2	25/41
Amino-2,6-dinitrotoluene[4-]	FILL	20	12	[0.084]–14.7	12/20
Amino-2,6-dinitrotoluene[4-]	SED	3	3	0.115–0.167	3/3
Amino-4,6-dinitrotoluene[2-]	ALLH	41	25	[0.076]–21.7	25/41
Amino-4,6-dinitrotoluene[2-]	FILL	20	16	[0.081]–19.9	16/20
Amino-4,6-dinitrotoluene[2-]	SED	3	2	[0.094]–0.211	2/3
Anthracene	ALLH	17	1	[0.03]–0.037	1/17
Anthracene	FILL	19	1	0.042–[6.8]	1/19
Benzo(a)anthracene	ALLH	17	1	[0.03]–0.031	1/17
Benzo(a)anthracene	FILL	19	1	0.095–[6.8]	1/19
Benzo(a)pyrene	FILL	19	1	0.09–[6.8]	1/19
Benzo(b)fluoranthene	FILL	19	1	0.11–[6.8]	1/19
Benzo(k)fluoranthene	FILL	19	1	0.056–[6.8]	1/19
Bis(2-ethylhexyl)phthalate	ALLH	17	3	0.062–[1.6]	3/17
Bis(2-ethylhexyl)phthalate	FILL	19	1	[0.052]–2.1	1/19
Chrysene	ALLH	17	1	[0.03]–0.033	1/17
Chrysene	FILL	19	1	0.11–[6.8]	1/19
Dichloroethane[1,2-]	FILL	7	1	0.004–[0.006]	1/7
Di-n-butylphthalate	FILL	19	3	0.037–[6.8]	3/19
Dinitrobenzene[1,3-]	FILL	20	1	[0.063]–0.09	1/20
Dinitrotoluene[2,4-]	ALLH	58	3	[0.056]–0.116	3/58
Dinitrotoluene[2,4-]	FILL	39	15	0.042–[6.8]	15/39
Dinitrotoluene[2,6-]	ALLH	58	1	[0.079]–0.178	1/58
Fluoranthene	ALLH	17	4	0.038–[0.43]	4/17
Fluoranthene	FILL	19	1	0.26–[6.8]	1/19
HMX	ALLH	41	36	[0.1]–18700	36/41
HMX	FILL	20	20	0.34–4830	20/20
HMX	SED	3	3	0.273–1.73	3/3
HMX	QBT4	5	2	0.999–[2.2]	2/5
Isopropyltoluene[4-]	ALLH	15	2	[0.005]–0.022	2/15
Methylene Chloride	ALLH	15	2	[0.002]–0.078	2/15
Nitrosodimethylamine[n-]	FILL	19	1	0.33–[6.8]	1/19
Nitrotoluene[2-]	FILL	20	2	[0.155]–3.03	2/20

Table 4.1-5 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Nitrotoluene[4-]	FILL	20	1	[0.185]–4.51	1/20
Phenanthrene	ALLH	17	2	[0.03]–0.07	2/17
Phenanthrene	FILL	19	1	0.2–[6.8]	1/19
Pyrene	ALLH	17	2	[0.03]–0.067	2/17
Pyrene	FILL	19	1	0.22–[6.8]	1/19
RDX	ALLH	41	25	[0.174]–4980	25/41
RDX	FILL	20	15	[0.174]–10700	15/20
RDX	SED	3	1	[0.2]–2.3	1/3
RDX	QBT4	5	1	[0.162]–0.741	1/5
Tetrachloroethene	ALLH	15	1	[0.005]–1	1/15
Tetrachloroethene	QBT4	5	2	[0.0052]–0.23	2/5
Tetryl	ALLH	41	1	[0.093]–0.275	1/41
Toluene	FILL	7	1	[0.005]–0.018	1/7
Trinitrobenzene[1,3,5-]	ALLH	41	3	[0.08]–0.421	3/41
Trinitrobenzene[1,3,5-]	FILL	20	9	[0.086]–3.36	9/20
Trinitrotoluene[2,4,6-]	ALLH	41	9	[0.084]–30.9	9/41
Trinitrotoluene[2,4,6-]	FILL	20	14	[0.089]–2060	14/20
Trinitrotoluene[2,4,6-]	SED	3	1	[0.103]–0.142	1/3

Note: Values in brackets are below detection limits.

Table 4.1-6
Subaggregate 3 Historical Analytical Results of Inorganic Chemicals Greater Than Background Values in Soil, Fill, Sediment, and Tuff at the TA-16 Burning Ground: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Antimony	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper
Soil Background Value[a]				**0.83**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**
Sediment Background Value				**0.83**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**
QBT4 Background Value				**0.5**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**
SWMU 16-005(g)											
16-01341	2–3	0316-95-0468	FILL	6.1 (U)	—[b]	—	0.61 (U)	—	23.7	—	—
16-01341	5–7	0316-95-0469	QBT4	5.8 (U)	—	1.4	—	—	21.9	—	—
16-01660	0–1	0316-97-0611	ALLH	—	—	—	0.6 (U)	—	—	—	—
16-01660	3–5	0316-97-0612	ALLH	—	—	—	0.64 (U)	—	—	—	—
16-01660	5–7	0316-97-0613	QBT4	—	—	—	—	—	18	—	6.6
SWMU 16-010(h)											
16-01349	0.33–0.83	0316-95-0307	FILL	5.4 (U)	—	—	1	37800	20.2	—	33.5
16-01349	1.3–1.9	0316-95-0308	FILL	6.1 (U)	—	—	0.61 (U)	—	—	—	—
16-01351	0–0.5	0316-95-0305	FILL	5.5 (U)	—	—	0.55 (U)	22100	—	—	—
16-01351	1–2	0316-95-0306	FILL	5.5 (U)	—	—	2.8	—	—	—	—
16-01352	0–0.5	0316-95-0303	ALLH	5.3 (U)	—	—	0.65	—	—	—	—
16-01352	0.5–1.5	0316-95-0304	ALLH	5.2 (U)	—	—	0.52 (U)	—	—	—	—
16-03-21918	1–1.5	RE16-03-50637	ALLH	—	—	—	—	—	—	—	—
SWMU 16-010(i)											
16-01272	0–0.5	0316-95-0311	FILL	4.8 (U)	—	—	0.48 (U)	—	—	—	—
16-01272	0.58–1	0316-95-0312	FILL	4.8 (U)	340 (J+)	—	0.48 (U)	—	—	—	—
16-01278	0–0.5	0316-95-0313	FILL	4.9 (U)	880 (J+)	—	0.68	—	—	—	—
16-01278	0.58–1	0316-95-0314	FILL	5 (U)	652 (J+)	—	0.5 (U)	—	—	—	—
16-01296	0–0.5	0316-95-0309	FILL	4.9 (U)	345 (J+)	—	0.49 (U)	—	—	—	—

Table 4.1-6 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Antimony	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper
Soil Background Value[a]				**0.83**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**
Sediment Background Value				**0.83**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**
QBT4 Background Value				**0.5**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**
16-01296	0.58–1	0316-95-0310	FILL	4.9 (U)	833 (J+)	—	0.49 (U)	—	—	—	—
16-01297	0.33–0.83	0316-95-0315	ALLH	5.4 (U)	—	—	0.54 (U)	—	—	—	—
16-01297	0.83–1.33	0316-95-0316	ALLH	5.1 (U)	571 (J+)	—	0.51 (U)	—	—	—	—
16-01298	0–0.66	0316-95-0317	ALLH	5.03 (U)	—	—	0.503 (U)	—	—	—	—
16-01299	0–0.66	0316-95-0318	ALLH	5.46 (U)	—	—	0.546 (U)	—	—	—	—
16-01300	0–0.5	0316-95-0319	SED	5.34 (U)	228	—	0.534 (U)	—	—	—	11.4
16-01301	0–0.5	0316-95-0320	SED	5 (U)	150	—	0.5 (U)	—	—	—	—
16-01302	0–0.5	0316-95-0321	ALLH	5.28 (U)	318	—	0.528 (U)	—	—	—	—
16-01303	0–0.5	0316-95-0322	SED	5.1 (U)	207 (J+)	—	0.51 (U)	—	—	—	—
16-01313	0–0.5	0316-95-0356	ALLH	5.2 (U)	545	—	0.94	—	—	—	35
16-01313	0.67–1.17	0316-95-0382	FILL	5.4 (U)	340	—	0.95	—	—	—	29.3
SWMU 16-010(k)											
16-01282	0–0.5	0316-95-0333	ALLH	5.8 (U)	1820	—	0.58 (U)	—	—	—	19.5
16-01283	0–0.5	0316-95-0334	ALLH	5.4 (U)	480	—	0.54 (U)	—	—	—	—
16-01284	0–0.5	0316-95-0335	ALLH	5.5 (U)	633	—	0.55 (U)	—	—	—	—
16-01285	0–0.5	0316-95-0336	ALLH	5.3 (U)	456	—	0.53 (U)	—	—	—	—
16-01286	0–0.5	0316-95-0337	ALLH	5.1 (U)	—	—	0.51 (U)	—	—	—	—
16-01287	0–0.5	0316-95-0338	ALLH	5.1 (U)	401	—	1.1	—	—	—	—
16-01288	0–0.5	0316-95-0339	ALLH	5.2 (U)	301	—	0.52 (U)	—	—	—	—
16-01289	0–0.5	0316-95-0340	ALLH	5.7 (U)	610	—	0.57 (U)	—	—	—	—
16-01289	0–0.66	0316-95-0379	ALLH	5.8 (U)	—	—	0.58 (U)	—	—	—	—
16-01290	0–0.5	0316-95-0341	ALLH	5.4 (U)	337	—	0.54 (U)	—	—	—	—

Table 4.1-6 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Antimony	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper
Soil Background Value[a]				**0.83**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**
Sediment Background Value				**0.83**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**
QBT4 Background Value				**0.5**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**
16-01290	0.67–1.17	0316-95-2018	ALLH	5.3 (U)	—	—	0.65	—	—	—	—
16-01290	1–1.5	0316-95-0378	ALLH	6 (U)	—	—	0.6 (U)	—	—	—	—
SWMU 16-010(l)											
16-01237	0–0.5	0316-95-0323	ALLH	5.7 (U)	475	—	0.57 (U)	—	—	—	—
16-01237	2–2.5	0316-95-0376	ALLH	5.6 (U)	—	—	0.56 (U)	—	—	—	—
16-01239	0–0.5	0316-95-0324	ALLH	5.5 (U)	387	—	0.55 (U)	—	—	—	—
16-01239	3–3.5	0316-95-0377	ALLH	6.2 (U)	—	—	0.62 (U)	—	—	—	—
16-01240	0–0.5	0316-95-0325	ALLH	5.7 (U)	902	—	0.57 (U)	—	—	—	—
16-01246	0–0.5	0316-95-0326	ALLH	5.1 (U)	489	—	0.51 (U)	—	—	—	—
SWMU 16-010(m)											
16-01226	0–0.5	0316-95-0343	ALLH	12.1	—	—	0.56 (U)	—	—	—	—
16-01226	1–1.5	0316-95-0381	ALLH	6 (U)	—	—	0.6 (U)	—	—	—	—
16-01230	0–0.5	0316-95-0344	ALLH	5.3 (U)	380	—	0.53 (U)	—	—	—	—
16-01232	0–0.5	0316-95-0345	ALLH	5.2 (U)	577	—	0.52 (U)	—	—	—	—
16-01233	0–0.5	0316-95-0346	ALLH	5.7 (U)	316	—	0.57 (U)	—	25.6	—	—
16-01234	0–0.5	0316-95-0347	ALLH	5.6 (U)	—	—	0.56 (U)	—	—	—	—
16-01235	0–0.5	0316-95-0348	ALLH	5.6 (U)	—	—	0.56 (U)	—	—	—	—
16-01236	0–0.5	0316-95-0349	FILL	5.9 (U)	—	—	0.59 (U)	—	—	—	29.5
16-01236	1–1.5	0316-95-0380	FILL	6 (U)	—	—	0.6 (U)	—	—	—	—
16-01236	1–1.5	0316-95-2019	FILL	6 (U)	—	—	0.6 (U)	—	—	—	—

Table 4.1-6 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Antimony	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper
Soil Background Value[a]				**0.83**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**
Sediment Background Value				**0.83**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**4.73**	**11.2**
QBT4 Background Value				**0.5**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**	**4.66**
SWMU 16-010(n)											
16-01304	0–0.5	0316-95-0353	ALLH	5.6 (U)	—	—	0.56 (U)	—	—	—	—
16-01307	0–0.5	0316-95-0354	ALLH	5.3 (U)	494	—	0.53 (U)	—	—	—	—
16-01311	0–0.5	0316-95-0355	ALLH	5.5 (U)	—	—	0.55 (U)	—	—	—	—
SWMU 16-028(a)											
16-01329	0–0.5	0316-95-0363	FILL	4.94 (U)	321	—	0.494 (U)	—	—	—	—
16-01329	0–2	0316-97-0602	QBT4	0.71 (UJ)	74.1	—	—	—	—	5.4 (J)	59.1
16-01329	1.08–2.08	0316-97-0601	QBT4	0.8 (UJ)	1770	—	—	—	—	—	43.4
16-01330	0–0.5	0316-95-0364	FILL	5.09 (U)	588	—	0.509 (U)	—	—	—	—
16-01330	1.67–2.33	0316-97-0603	ALLH	—	—	—	—	—	—	—	68.5
16-01330	4–5	0316-97-0604	QBT4	0.77 (UJ)	—	—	—	—	—	4 (J)	73.2
16-01331	0–0.5	0316-95-0365	FILL	4.92 (U)	—	—	0.492 (U)	—	—	—	—
16-01332	0–0.5	0316-95-0366	FILL	5.69 (U)	501	—	0.569 (U)	—	—	—	—
16-01333	0–0.5	0316-95-0367	FILL	5.03 (U)	368	—	0.503 (U)	—	—	—	—

Table 4.1-6 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Uranium	Zinc
Soil Background Value[a]				**22.3**	**0.1**	**15.4**	**1.52**	**1**	**0.73**	**1.82**	**48.8**
Sediment Background Value				**19.7**	**0.1**	**9.38**	**0.3**	**1**	**0.73**	**2.22**	**60.2**
QBT4 Background Value				**11.2**	**0.1**	**6.58**	**0.3**	**1**	**1.1**	**2.4**	**63.5**
SWMU 16-005(g)											
16-01341	2–3	0316-95-0468	FILL	—	—	—	—	—	—	—	60.9
16-01341	5–7	0316-95-0469	QBT4	—	—	—	—	—	—	—	—
16-01660	0–1	0316-97-0611	ALLH	—	0.12 (U)	—	—	2.4 (U)	1.5 (U)	—	49
16-01660	3–5	0316-97-0612	ALLH	—	0.13 (U)	—	—	2.6 (U)	1.6 (U)	—	—
16-01660	5–7	0316-97-0613	QBT4	—	0.12 (U)	—	—	2.4 (U)	1.5 (U)	—	—
SWMU 16-010(h)											
16-01349	0.33–0.83	0316-95-0307	FILL	44.2	—	—	—	—	—	3.02	96.7
16-01349	1.3–1.9	0316-95-0308	FILL	—	—	—	—	—	—	3.03	53.9
16-01351	0–0.5	0316-95-0305	FILL	—	—	—	—	—	—	2.69	—
16-01351	1–2	0316-95-0306	FILL	—	—	—	—	—	—	2.44	—
16-01352	0–0.5	0316-95-0303	ALLH	800	—	—	—	—	—	—	1070
16-01352	0.5–1.5	0316-95-0304	ALLH	51.1	—	—	—	—	—	—	115
16-03-21918	1–1.5	RE16-03-50637	ALLH	38	—	—	—	—	—	—	56.3 (J-)
SWMU 16-010(i)											
16-01272	0–0.5	0316-95-0311	FILL	—	0.17	—	—	—	—	2.86	—
16-01272	0.58–1	0316-95-0312	FILL	32.5	0.19	—	—	—	—	5.22	—
16-01278	0–0.5	0316-95-0313	FILL	46.8 (J+)	0.331	—	—	—	—	6.64	118
16-01278	0.58–1	0316-95-0314	FILL	—	—	—	—	—	—	7.86	—
16-01296	0–0.5	0316-95-0309	FILL	45.5 (J+)	—	—	—	—	—	2.08	—
16-01296	0.58–1	0316-95-0310	FILL	54.8 (J+)	—	—	—	—	—	2.86	—
16-01297	0.33–0.83	0316-95-0315	ALLH	—	—	—	—	—	—	3.81	—

Table 4.1-6 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Uranium	Zinc
Soil Background Value[a]				**22.3**	**0.1**	**15.4**	**1.52**	**1**	**0.73**	**1.82**	**48.8**
Sediment Background Value				**19.7**	**0.1**	**9.38**	**0.3**	**1**	**0.73**	**2.22**	**60.2**
QBT4 Background Value				**11.2**	**0.1**	**6.58**	**0.3**	**1**	**1.1**	**2.4**	**63.5**
16-01297	0.83–1.33	0316-95-0316	ALLH	—	—	—	—	—	—	2.79	—
16-01298	0–0.66	0316-95-0317	ALLH	—	—	—	—	—	—	2.15	—
16-01299	0–0.66	0316-95-0318	ALLH	—	—	—	—	—	—	3.83	—
16-01300	0–0.5	0316-95-0319	SED	—	—	—	—	—	—	—	—
16-01301	0–0.5	0316-95-0320	SED	—	—	—	—	—	—	2.7	—
16-01302	0–0.5	0316-95-0321	ALLH	—	—	—	—	—	—	2.11	—
16-01303	0–0.5	0316-95-0322	SED	—	—	—	—	—	—	—	—
16-01313	0–0.5	0316-95-0356	ALLH	87.6	0.57	—	—	—	—	11.3	166
16-01313	0.67–1.17	0316-95-0382	FILL	48.3	0.89 (J+)	—	—	—	—	5.06	129
SWMU 16-010(k)											
16-01282	0–0.5	0316-95-0333	ALLH	169	0.3	—	—	—	—	—	63.7
16-01283	0–0.5	0316-95-0334	ALLH	—	—	—	—	—	—	—	—
16-01284	0–0.5	0316-95-0335	ALLH	—	—	—	—	—	—	—	—
16-01285	0–0.5	0316-95-0336	ALLH	49.4	—	—	—	—	—	—	—
16-01286	0–0.5	0316-95-0337	ALLH	87.7	—	—	—	—	—	—	—
16-01287	0–0.5	0316-95-0338	ALLH	489	—	—	—	—	—	—	71.4
16-01288	0–0.5	0316-95-0339	ALLH	—	—	—	—	—	—	—	54.6
16-01289	0–0.5	0316-95-0340	ALLH	—	—	—	—	—	—	—	—
16-01289	0–0.66	0316-95-0379	ALLH	—	—	—	—	—	—	—	—
16-01290	0–0.5	0316-95-0341	ALLH	—	0.12	—	—	—	—	—	—
16-01290	0.67–1.17	0316-95-2018	ALLH	—	—	—	—	—	—	—	—
16-01290	1–1.5	0316-95-0378	ALLH	—	—	—	—	—	—	—	—

Table 4.1-6 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Uranium	Zinc
Soil Background Value[a]				**22.3**	**0.1**	**15.4**	**1.52**	**1**	**0.73**	**1.82**	**48.8**
Sediment Background Value				**19.7**	**0.1**	**9.38**	**0.3**	**1**	**0.73**	**2.22**	**60.2**
QBT4 Background Value				**11.2**	**0.1**	**6.58**	**0.3**	**1**	**1.1**	**2.4**	**63.5**
SWMU 16-010(l)											
16-01237	0–0.5	0316-95-0323	ALLH	—	—	—	—	—	—	—	—
16-01237	2–2.5	0316-95-0376	ALLH	—	—	—	—	—	—	2.73	60.2
16-01239	0–0.5	0316-95-0324	ALLH	—	—	—	—	—	—	—	55.1
16-01239	3–3.5	0316-95-0377	ALLH	—	—	—	—	—	—	—	67.2
16-01240	0–0.5	0316-95-0325	ALLH	—	—	—	—	1.1 (J)	—	—	125
16-01246	0–0.5	0316-95-0326	ALLH	—	—	—	—	—	—	—	86.3
SWMU 16-010(m)											
16-01226	0–0.5	0316-95-0343	ALLH	102	0.15	—	—	—	—	—	76.6
16-01226	1–1.5	0316-95-0381	ALLH	31.3	—	—	—	—	—	3.14	—
16-01230	0–0.5	0316-95-0344	ALLH	—	—	—	—	—	—	—	53.4
16-01232	0–0.5	0316-95-0345	ALLH	—	—	—	—	—	—	—	106
16-01233	0–0.5	0316-95-0346	ALLH	192	—	—	—	—	—	—	66.1
16-01234	0–0.5	0316-95-0347	ALLH	—	—	—	—	—	—	—	—
16-01235	0–0.5	0316-95-0348	ALLH	—	—	—	—	—	—	—	—
16-01236	0–0.5	0316-95-0349	FILL	—	—	—	—	—	—	—	120
16-01236	1–1.5	0316-95-0380	FILL	46.8	—	—	—	—	—	2.75	—
16-01236	1–1.5	0316-95-2019	FILL	—	0.11 (J)	—	—	—	—	2.7	56.7
SWMU 16-010(n)											
16-01304	0–0.5	0316-95-0353	ALLH	—	—	—	—	—	—	1.84 (U)	—
16-01307	0–0.5	0316-95-0354	ALLH	—	—	—	—	—	—	2.71	162
16-01311	0–0.5	0316-95-0355	ALLH	—	—	—	—	—	—	2.23	—

Table 4.1-6 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Uranium	Zinc
Soil Background Value[a]				**22.3**	**0.1**	**15.4**	**1.52**	**1**	**0.73**	**1.82**	**48.8**
Sediment Background Value				**19.7**	**0.1**	**9.38**	**0.3**	**1**	**0.73**	**2.22**	**60.2**
QBT4 Background Value				**11.2**	**0.1**	**6.58**	**0.3**	**1**	**1.1**	**2.4**	**63.5**
SWMU 16-028(a)											
16-01329	0–0.5	0316-95-0363	FILL	—	—	—	—	—	—	—	—
16-01329	0–2	0316-97-0602	QBT4	—	—	12.8	0.56 (U)	—	—	4.6	68.4
16-01329	1.08–2.08	0316-97-0601	QBT4	—	—	12.5	0.64 (U)	—	—	—	—
16-01330	0–0.5	0316-95-0364	FILL	—	—	—	—	—	—	—	170
16-01330	1.67–2.33	0316-97-0603	ALLH	—	—	16.5	—	—	—	—	81.5
16-01330	4–5	0316-97-0604	QBT4	—	—	16.6	0.61 (U)	—	—	—	81.8
16-01331	0–0.5	0316-95-0365	FILL	—	—	—	—	—	—	—	—
16-01332	0–0.5	0316-95-0366	FILL	76.6	—	—	—	—	—	2.53	—
16-01333	0–0.5	0316-95-0367	FILL	—	—	—	—	—	—	—	—

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

[a] Fill samples were compared to soil background values.

[b] — = If analyzed, sample result is less than background value.

Table 4.1-7
Subaggregate 3 Historical Analytical Results of
Organic Chemicals Detected in Soil, Fill, Sediment, and Tuff at the TA-16 Burning Ground: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Acetone	Amino-2,6-dinitrotoluene[4-]	Amino-4,6-dinitrotoluene[2-]	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Chrysene
SWMU 16-005(g)													
16-01341	2–3	0316-95-0468	FILL	—*	0.16	0.13	—	—	—	—	—	—	—
16-01341	5–7	0316-95-0469	QBT4	—	—	—	—	—	—	—	—	—	—
16-01660	0–1	0316-97-0611	ALLH	—	0.398	0.459	—	—	—	—	—	0.24	—
16-01660	3–5	0316-97-0612	ALLH	—	—	—	—	—	—	—	—	—	—
16-01660	5–7	0316-97-0613	QBT4	—	—	—	—	—	—	—	—	—	—
SWMU 16-010(h)													
16-01349	0.33–0.83	0316-95-0307	FILL	—	—	0.169	—	—	—	—	—	—	—
16-01349	1.3–1.9	0316-95-0308	FILL	—	0.138	0.172	—	—	—	—	—	—	—
16-01351	0–0.5	0316-95-0305	FILL	—	0.447	0.658	—	—	—	—	—	—	—
16-01351	1–2	0316-95-0306	FILL	—	—	—	—	—	—	—	—	—	—
16-01352	0–0.5	0316-95-0303	ALLH	—	—	—	0.037 (J)	—	—	—	—	—	—
16-03-21917	1–1.5	RE16-03-50636	ALLH	—	0.34	0.5	—	—	—	—	—	—	—
16-03-21918	1–1.5	RE16-03-50637	ALLH	—	—	—	—	0.031	—	—	—	—	0.033
SWMU 16-010(i)													
16-01272	0–0.5	0316-95-0311	FILL	—	5.83	7.14	—	—	—	—	—	—	—
16-01272	0.58–1	0316-95-0312	FILL	—	14.7	19.9	—	—	—	—	—	—	—
16-01278	0–0.5	0316-95-0313	FILL	—	—	4.07	—	—	—	—	—	—	—
16-01278	0.58–1	0316-95-0314	FILL	0.015 (J)	—	2.28	—	—	—	—	—	—	—

Table 4.1-7 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Acetone	Amino-2,6-dinitrotoluene[4-]	Amino-4,6-dinitrotoluene[2-]	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Chrysene
16-01296	0–0.5	0316-95-0309	FILL	—	1.87	2.32	—	—	—	—	—	—	—
16-01296	0.58–1	0316-95-0310	FILL	0.002 (J)	2.24	3.02	—	—	—	—	—	—	—
16-01297	0.33–0.83	0316-95-0315	ALLH	0.015 (J)	—	—	—	—	—	—	—	—	—
16-01297	0.83–1.33	0316-95-0316	ALLH	0.009 (J-)	3.66	2.1	—	—	—	—	—	—	—
16-01298	0–0.66	0316-95-0317	ALLH	—	0.104	—	—	—	—	—	—	—	—
16-01299	0–0.66	0316-95-0318	ALLH	—	—	—	—	—	—	—	—	—	—
16-01300	0–0.5	0316-95-0319	SED	—	0.115	0.102	—	—	—	—	—	—	—
16-01301	0–0.5	0316-95-0320	SED	—	0.167	0.211	—	—	—	—	—	—	—
16-01302	0–0.5	0316-95-0321	ALLH	—	—	—	—	—	—	—	—	—	—
16-01303	0–0.5	0316-95-0322	SED	—	0.125	—	—	—	—	—	—	—	—
16-01313	0–0.5	0316-95-0356	ALLH	—	1.56	1.55	—	—	—	—	—	—	—
16-01313	0.67–1.17	0316-95-0382	FILL	—	0.985	1.07	—	—	—	—	—	2.1	—
SWMU 16-010(k)													
16-01282	0–0.5	0316-95-0333	ALLH	—	—	1.29	—	—	—	—	—	—	—
16-01283	0–0.5	0316-95-0334	ALLH	—	—	—	—	—	—	—	—	—	—
16-01284	0–0.5	0316-95-0335	ALLH	—	0.266	0.554	—	—	—	—	—	—	—
16-01285	0–0.5	0316-95-0336	ALLH	—	0.102	0.134	—	—	—	—	—	—	—
16-01286	0–0.5	0316-95-0337	ALLH	—	0.416 (J)	0.453 (J)	—	—	—	—	—	—	—
16-01287	0–0.5	0316-95-0338	ALLH	—	0.215	0.225	—	—	—	—	—	—	—
16-01288	0–0.5	0316-95-0339	ALLH	—	1.07	1.51	—	—	—	—	—	—	—
16-01289	0–0.5	0316-95-0340	ALLH	—	0.435	0.573	—	—	—	—	—	—	—

Table 4.1-7 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Acetone	Amino-2,6-dinitrotoluene[4-]	Amino-4,6-dinitrotoluene[2-]	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Chrysene
16-01289	0–0.66	0316-95-0379	ALLH	—	0.13	0.105	—	—	—	—	—	—	—
16-01290	0–0.5	0316-95-0341	ALLH	—	0.584	0.542	—	—	—	—	—	—	—
16-01290	0.67–1.17	0316-95-2018	ALLH	—	0.421	0.52	—	—	—	—	—	—	—
16-01290	1–1.5	0316-95-0378	ALLH	—	0.216	—	—	—	—	—	—	—	—
SWMU 16-010(l)													
16-01237	0–0.5	0316-95-0323	ALLH	—	15.2	21.7	—	—	—	—	—	—	—
16-01237	2–2.5	0316-95-0376	ALLH	—	—	2.61	—	—	—	—	—	0.062 (J)	—
16-01239	0–0.5	0316-95-0324	ALLH	—	0.295	0.465	—	—	—	—	—	—	—
16-01239	3–3.5	0316-95-0377	ALLH	—	0.267	0.425	—	—	—	—	—	0.063 (J)	—
16-01240	0–0.5	0316-95-0325	ALLH	—	0.789	1.07	—	—	—	—	—	—	—
16-01246	0–0.5	0316-95-0326	ALLH	—	—	—	—	—	—	—	—	—	—
SWMU 16-010(m)													
16-01226	0–0.5	0316-95-0343	ALLH	—	0.427	0.433	—	—	—	—	—	—	—
16-01226	1–1.5	0316-95-0381	ALLH	—	—	—	—	—	—	—	—	—	—
16-01230	0–0.5	0316-95-0344	ALLH	—	0.247	0.457	—	—	—	—	—	—	—
16-01232	0–0.5	0316-95-0345	ALLH	—	0.315	0.649	—	—	—	—	—	—	—
16-01233	0–0.5	0316-95-0346	ALLH	—	0.536	1.18	—	—	—	—	—	—	—
16-01234	0–0.5	0316-95-0347	ALLH	—	—	—	—	—	—	—	—	—	—
16-01235	0–0.5	0316-95-0348	ALLH	—	0.17	0.131	—	—	—	—	—	—	—
16-01236	0–0.5	0316-95-0349	FILL	—	2.44	2.99	—	—	—	—	—	—	—
16-01236	1–1.5	0316-95-0380	FILL	—	—	1.8	—	—	—	—	—	—	—

Table 4.1-7 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Acetone	Amino-2,6-dinitrotoluene[4-]	Amino-4,6-dinitrotoluene[2-]	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Chrysene
16-01236	1–1.5	0316-95-2019	FILL	—	—	1.8	—	—	—	—	—	—	—
SWMU 16-010(n)													
16-01304	0–0.5	0316-95-0353	ALLH	—	0.271	0.251	—	—	—	—	—	—	—
16-01307	0–0.5	0316-95-0354	ALLH	—	—	—	—	—	—	—	—	—	—
SWMU 16-028(a)													
16-01329	0–0.5	0316-95-0363	FILL	—	0.097	0.093	0.042 (J)	0.095 (J)	0.09 (J)	0.11 (J)	0.056 (J)	—	0.11 (J)
16-01329	1.08–2.08	0316-97-0601	QBT4	—	—	—	—	—	—	—	—	—	—
16-01330	0–0.5	0316-95-0364	FILL	—	0.12	—	—	—	—	—	—	—	—
16-01330	1.67–2.33	0316-97-0603	ALLH	—	—	—	—	—	—	—	—	—	—
16-01330	4–5	0316-97-0604	QBT4	—	—	—	—	—	—	—	—	—	—
16-01331	0–0.5	0316-95-0365	FILL	—	—	—	—	—	—	—	—	—	—
16-01332	0–0.5	0316-95-0366	FILL	—	0.247	0.171	—	—	—	—	—	—	—
16-01333	0–0.5	0316-95-0367	FILL	—	—	—	—	—	—	—	—	—	—

Table 4.1-7 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Dichloroethane[1,2-]	Di-n-butylphthalate	Dinitrobenzene[1,3-]	Dinitrotoluene[2,4-]	Dinitrotoluene[2,6-]	Fluoranthene	HMX	Isopropyltoluene[4-]	Methylene Chloride	Nitrosodimethylamine[n-]
SWMU 16-005(g)													
16-01341	2–3	0316-95-0468	FILL	—	—	—	—	—	—	1.83	—	—	—
16-01341	5–7	0316-95-0469	QBT4	—	—	—	—	—	—	0.999	—	—	—
16-01660	0–1	0316-97-0611	ALLH	—	—	—	—	—	—	24.6	—	—	—
16-01660	3–5	0316-97-0612	ALLH	—	—	—	—	—	—	7.19	—	—	—
16-01660	5–7	0316-97-0613	QBT4	—	—	—	—	—	—	1.32	—	—	—
SWMU 16-010(h)													
16-01349	0.33–0.83	0316-95-0307	FILL	—	0.24 (J)	—	0.233	—	—	732	—	—	—
16-01349	1.3–1.9	0316-95-0308	FILL	—	—	—	—	—	—	37.1	—	—	—
16-01351	0–0.5	0316-95-0305	FILL	—	0.037 (J)	—	0.083	—	—	727	—	—	—
16-01351	1–2	0316-95-0306	FILL	—	0.037 (J)	—	—	—	—	18.3	—	—	—
16-01352	0–0.5	0316-95-0303	ALLH	—	—	—	—	—	0.089 (J)	0.623	—	—	—
16-03-21917	1–1.5	RE16-03-50636	ALLH	—	—	—	—	—	0.044	—	—	0.078	—
16-03-21918	1–1.5	RE16-03-50637	ALLH	—	—	—	—	—	0.079	—	—	0.077	—
SWMU 16-010(i)													
16-01272	0–0.5	0316-95-0311	FILL	—	—	—	0.651	—	—	77.7	—	—	—
16-01272	0.58–1	0316-95-0312	FILL	—	—	—	3.02	—	—	152	—	—	—
16-01278	0–0.5	0316-95-0313	FILL	—	—	—	0.857	—	—	4830	—	—	—
16-01278	0.58–1	0316-95-0314	FILL	0.004 (J)	—	—	0.635	—	—	2610	—	—	—
16-01296	0–0.5	0316-95-0309	FILL	—	—	0.09	0.348	—	—	764	—	—	0.33
16-01296	0.58–1	0316-95-0310	FILL	—	—	—	0.318	—	—	339	—	—	—

Table 4.1-7 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Dichloroethane[1,2-]	Di-n-butylphthalate	Dinitrobenzene[1,3-]	Dinitrotoluene[2,4-]	Dinitrotoluene[2,6-]	Fluoranthene	HMX	Isopropyltoluene[4-]	Methylene Chloride	Nitrosodimethylamine[n-]
16-01297	0.33–0.83	0316-95-0315	ALLH	—	—	—	—	—	—	8.05	0.022	—	—
16-01297	0.83–1.33	0316-95-0316	ALLH	—	—	—	0.098 (J)	—	—	64.8	0.012 (J+)	—	—
16-01298	0–0.66	0316-95-0317	ALLH	—	—	—	—	—	—	42.4	—	—	—
16-01299	0–0.66	0316-95-0318	ALLH	—	—	—	—	—	0.038 (J)	5.3	—	—	—
16-01300	0–0.5	0316-95-0319	SED	—	—	—	—	—	—	1.73	—	—	—
16-01301	0–0.5	0316-95-0320	SED	—	—	—	—	—	—	0.273	—	—	—
16-01302	0–0.5	0316-95-0321	ALLH	—	—	—	—	—	—	0.35	—	—	—
16-01303	0–0.5	0316-95-0322	SED	—	—	—	—	—	—	0.435	—	—	—
16-01313	0–0.5	0316-95-0356	ALLH	—	—	—	0.116	—	—	1890	—	—	—
16-01313	0.67–1.17	0316-95-0382	FILL	—	—	—	0.075	—	—	748	—	—	—
SWMU 16-010(k)													
16-01282	0–0.5	0316-95-0333	ALLH	—	—	—	—	—	—	12100	—	—	—
16-01283	0–0.5	0316-95-0334	ALLH	—	—	—	—	—	—	2.84	—	—	—
16-01284	0–0.5	0316-95-0335	ALLH	—	—	—	—	—	—	91.3	—	—	—
16-01285	0–0.5	0316-95-0336	ALLH	—	—	—	—	—	—	78.6	—	—	—
16-01286	0–0.5	0316-95-0337	ALLH	—	—	—	—	—	—	588	—	—	—
16-01287	0–0.5	0316-95-0338	ALLH	—	—	—	—	—	—	6.95	—	—	—
16-01288	0–0.5	0316-95-0339	ALLH	—	—	—	0.066	—	—	885	—	—	—
16-01289	0–0.5	0316-95-0340	ALLH	—	—	—	—	—	—	801	—	—	—
16-01289	0–0.66	0316-95-0379	ALLH	—	—	—	—	—	—	162	—	—	—
16-01290	0–0.5	0316-95-0341	ALLH	—	—	—	—	—	—	388	—	—	—

Table 4.1-7 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Dichloroethane[1,2-]	Di-n-butylphthalate	Dinitrobenzene[1,3-]	Dinitrotoluene[2,4-]	Dinitrotoluene[2,6-]	Fluoranthene	HMX	Isopropyltoluene[4-]	Methylene Chloride	Nitrosodimethylamine[n-]
16-01290	0.67–1.17	0316-95-2018	ALLH	—	—	—	—	—	—	69.1	—	—	—
16-01290	1–1.5	0316-95-0378	ALLH	—	—	—	—	—	—	116	—	—	—
SWMU 16-010(l)													
16-01237	0–0.5	0316-95-0323	ALLH	—	—	—	—	0.18	—	259	—	—	—
16-01237	2–2.5	0316-95-0376	ALLH	—	—	—	—	—	—	45.7	—	—	—
16-01239	0–0.5	0316-95-0324	ALLH	—	—	—	—	—	—	1	—	—	—
16-01239	3–3.5	0316-95-0377	ALLH	—	—	—	—	—	—	20.2	—	—	—
16-01240	0–0.5	0316-95-0325	ALLH	—	—	—	—	—	—	352	—	—	—
16-01246	0–0.5	0316-95-0326	ALLH	—	—	—	—	—	—	0.176	—	—	—
SWMU 16-010(m)													
16-01226	0–0.5	0316-95-0343	ALLH	—	—	—	—	—	—	2420	—	—	—
16-01226	1–1.5	0316-95-0381	ALLH	—	—	—	—	—	—	205	—	—	—
16-01230	0–0.5	0316-95-0344	ALLH	—	—	—	—	—	—	8.34	—	—	—
16-01232	0–0.5	0316-95-0345	ALLH	—	—	—	—	—	—	5.6	—	—	—
16-01233	0–0.5	0316-95-0346	ALLH	—	—	—	—	—	—	18700	—	—	—
16-01234	0–0.5	0316-95-0347	ALLH	—	—	—	—	—	—	0.905	—	—	—
16-01235	0–0.5	0316-95-0348	ALLH	—	—	—	—	—	—	1630	—	—	—
16-01236	0–0.5	0316-95-0349	FILL	—	—	—	—	—	—	603	—	—	—
16-01236	1–1.5	0316-95-0380	FILL	—	—	—	0.117	—	—	204	—	—	—
16-01236	1–1.5	0316-95-2019	FILL	—	—	—	0.078 (J)	—	—	153	—	—	—

Table 4.1-7 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Dichloroethane[1,2-]	Di-n-butylphthalate	Dinitrobenzene[1,3-]	Dinitrotoluene[2,4-]	Dinitrotoluene[2,6-]	Fluoranthene	HMX	Isopropyltoluene[4-]	Methylene Chloride	Nitrosodimethylamine[n-]
SWMU 16-010(n													
16-01304	0–0.5	0316-95-0353	ALLH	—	—	—	—	—	—	—	—	—	—
16-01307	0–0.5	0316-95-0354	ALLH	—	—	—	—	—	—	0.321	—	—	—
SWMU 16-028(a)													
16-01329	0–0.5	0316-95-0363	FILL	—	—	—	—	—	0.26 (J)	8.22	—	—	—
16-01329	1.08–2.08	0316-97-0601	QBT4	—	—	—	—	—	—	—	—	—	—
16-01330	0–0.5	0316-95-0364	FILL	—	—	—	—	—	—	1.04	—	—	—
16-01330	1.67–2.33	0316-97-0603	ALLH	—	—	—	—	—	—	4.87	—	—	—
16-01330	4–5	0316-97-0604	QBT4	—	—	—	—	—	—	—	—	—	—
16-01331	0–0.5	0316-95-0365	FILL	—	—	—	—	—	—	0.34	—	—	—
16-01332	0–0.5	0316-95-0366	FILL	—	—	—	—	—	—	0.644	—	—	—
16-01333	0–0.5	0316-95-0367	FILL	—	—	—	—	—	—	0.432	—	—	—

Table 4.1-7 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Nitrotoluene[2-]	Nitrotoluene[4-]	Phenanthrene	Pyrene	RDX	Tetrachloroethene	Tetryl	Toluene	Trinitrobenzene[1,3,5-]	Trinitrotoluene[2,4,6-]
SWMU 16-005(g)													
16-01341	2–3	0316-95-0468	FILL	—	—	—	—	—	—	—	—	—	—
16-01341	5–7	0316-95-0469	QBT4	—	—	—	—	0.741	—	—	—	—	—
16-01660	0–1	0316-97-0611	ALLH	—	—	—	—	1.37	—	—	—	—	—
16-01660	3–5	0316-97-0612	ALLH	—	—	—	—	0.184	—	—	—	—	—
16-01660	5–7	0316-97-0613	QBT4	—	—	—	—	—	—	—	—	—	—
SWMU 16-010(h)													
16-01349	0.33–0.83	0316-95-0307	FILL	—	—	—	—	124	—	—	—	—	3.37
16-01349	1.3–1.9	0316-95-0308	FILL	—	—	—	—	65.1	—	—	—	—	—
16-01351	0–0.5	0316-95-0305	FILL	—	—	—	—	1250	—	—	—	—	0.12
16-01351	1–2	0316-95-0306	FILL	—	—	—	—	189	—	—	—	—	—
16-01352	0–0.5	0316-95-0303	ALLH	—	—	—	0.056 (J)	—	—	—	—	—	—
16-03-21917	1–1.5	RE16-03-50636	ALLH	—	—	—	—	1.1	—	—	—	—	1.1
16-03-21918	1–1.5	RE16-03-50637	ALLH	—	—	0.058	0.067	0.8	—	—	—	—	—
SWMU 16-010(i)													
16-01272	0–0.5	0316-95-0311	FILL	—	—	—	—	5.75	—	—	—	0.11	35.1
16-01272	0.58–1	0316-95-0312	FILL	—	—	—	—	19.2	—	—	—	0.24	63.3
16-01278	0–0.5	0316-95-0313	FILL	1.6	4.5	—	—	10700	—	—	—	—	230
16-01278	0.58–1	0316-95-0314	FILL	3	—	—	—	8160	—	—	0.02	1.03	2060
16-01296	0–0.5	0316-95-0309	FILL	—	—	—	—	39.2	—	—	—	0.1	1.53
16-01296	0.58–1	0316-95-0310	FILL	—	—	—	—	58.7	—	—	—	0.35	24
16-01297	0.33–0.83	0316-95-0315	ALLH	—	—	—	—	3.32	—	—	—	—	0.24

Table 4.1-7 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Nitrotoluene[2-]	Nitrotoluene[4-]	Phenanthrene	Pyrene	RDX	Tetrachloroethene	Tetryl	Toluene	Trinitrobenzene[1,3,5-]	Trinitrotoluene[2,4,6-]
16-01297	0.83–1.33	0316-95-0316	ALLH	—	—	0.07 (J)	—	22.7	—	—	—	0.22	4.06
16-01298	0–0.66	0316-95-0317	ALLH	—	—	—	—	1.31	—	—	—	—	0.1
16-01299	0–0.66	0316-95-0318	ALLH	—	—	—	—	10.6	—	—	—	—	1.02
16-01300	0–0.5	0316-95-0319	SED	—	—	—	—	2.3	—	—	—	—	0.14
16-01301	0–0.5	0316-95-0320	SED	—	—	—	—	—	—	—	—	—	—
16-01302	0–0.5	0316-95-0321	ALLH	—	—	—	—	2.14	—	—	—	—	—
16-01303	0–0.5	0316-95-0322	SED	—	—	—	—	—	—	—	—	—	—
16-01313	0–0.5	0316-95-0356	ALLH	—	—	—	—	4980	—	0.28	—	0.09	3.66
16-01313	0.67–1.17	0316-95-0382	FILL	—	—	—	—	2430	—	—	—	—	2.83
SWMU 16-010(k)													
16-01282	0–0.5	0316-95-0333	ALLH	—	—	—	—	6.93	—	—	—	—	—
16-01283	0–0.5	0316-95-0334	ALLH	—	—	—	—	0.96	—	—	—	—	—
16-01284	0–0.5	0316-95-0335	ALLH	—	—	—	—	—	—	—	—	—	—
16-01285	0–0.5	0316-95-0336	ALLH	—	—	—	—	0.195	—	—	—	—	—
16-01286	0–0.5	0316-95-0337	ALLH	—	—	—	—	1.24	—	—	—	—	—
16-01287	0–0.5	0316-95-0338	ALLH	—	—	—	—	—	—	—	—	—	—
16-01288	0–0.5	0316-95-0339	ALLH	—	—	—	—	1.83	—	—	—	—	0.48
16-01289	0–0.5	0316-95-0340	ALLH	—	—	—	—	0.865	—	—	—	—	—
16-01289	0–0.66	0316-95-0379	ALLH	—	—	—	—	0.176	—	—	—	—	—
16-01290	0–0.5	0316-95-0341	ALLH	—	—	—	—	—	—	—	—	—	—
16-01290	0.67–1.17	0316-95-2018	ALLH	—	—	—	—	—	—	—	—	—	—
16-01290	1–1.5	0316-95-0378	ALLH	—	—	—	—	—	—	—	—	—	—

Table 4.1-7 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Nitrotoluene[2-]	Nitrotoluene[4-]	Phenanthrene	Pyrene	RDX	Tetrachloroethene	Tetryl	Toluene	Trinitrobenzene[1,3,5-]	Trinitrotoluene[2,4,6-]
SWMU 16-010(l)													
16-01237	0–0.5	0316-95-0323	ALLH	—	—	—	—	2540	—	—	—	0.42	23
16-01237	2–2.5	0316-95-0376	ALLH	—	—	—	—	594	—	—	—	—	30.9
16-01239	0–0.5	0316-95-0324	ALLH	—	—	—	—	—	—	—	—	—	—
16-01239	3–3.5	0316-95-0377	ALLH	—	—	—	—	2.29	—	—	—	—	—
16-01240	0–0.5	0316-95-0325	ALLH	—	—	—	—	2.38	—	—	—	—	—
16-01246	0–0.5	0316-95-0326	ALLH	—	—	—	—	—	—	—	—	—	—
SWMU 16-010(m)													
16-01226	0–0.5	0316-95-0343	ALLH	—	—	—	—	27.8	—	—	—	—	—
16-01226	1–1.5	0316-95-0381	ALLH	—	—	—	—	3.03	—	—	—	—	—
16-01230	0–0.5	0316-95-0344	ALLH	—	—	—	—	—	—	—	—	—	—
16-01232	0–0.5	0316-95-0345	ALLH	—	—	—	—	0.39	—	—	—	—	—
16-01233	0–0.5	0316-95-0346	ALLH	—	—	—	—	2050	—	—	—	—	—
16-01234	0–0.5	0316-95-0347	ALLH	—	—	—	—	—	—	—	—	—	—
16-01235	0–0.5	0316-95-0348	ALLH	—	—	—	—	—	—	—	—	—	—
16-01236	0–0.5	0316-95-0349	FILL	—	—	—	—	2.3	—	—	—	3.36	22.9
16-01236	1–1.5	0316-95-0380	FILL	—	—	—	—	3170	—	—	—	0.13	37.3
16-01236	1–1.5	0316-95-2019	FILL	—	—	—	—	2160	—	—	—	1.08	59.5
SWMU 16-010(n)													
16-01304	0–0.5	0316-95-0353	ALLH	—	—	—	—	—	—	—	—	—	—
16-01307	0–0.5	0316-95-0354	ALLH	—	—	—	—	—	—	—	—	—	—

Table 4.1-7 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Nitrotoluene[2-]	Nitrotoluene[4-]	Phenanthrene	Pyrene	RDX	Tetrachloroethene	Tetryl	Toluene	Trinitrobenzene[1,3,5-]	Trinitrotoluene[2,4,6-]
SWMU 16-028(a)													
16-01329	0–0.5	0316-95-0363	FILL	—	—	0.2 (J)	0.22 (J)	5.33	—	—	—	2.33	0.14
16-01329	1.08–2.08	0316-97-0601	QBT4	—	—	—	—	—	0.23	—	—	—	—
16-01330	0–0.5	0316-95-0364	FILL	—	—	—	—	—	—	—	—	—	—
16-01330	1.67–2.33	0316-97-0603	ALLH	—	—	—	—	—	1	—	—	—	—
16-01330	4–5	0316-97-0604	QBT4	—	—	—	—	—	0.02	—	—	—	—
16-01331	0–0.5	0316-95-0365	FILL	—	—	—	—	—	—	—	—	—	—
16-01332	0–0.5	0316-95-0366	FILL	—	—	—	—	—	—	—	—	—	0.3
16-01333	0–0.5	0316-95-0367	FILL	—	—	—	—	—	—	—	—	—	—

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

*— = If analyzed, sample result is not detected.

Table 4.1-8
Subaggregate 3 Historical Analytical Results of
Inorganic Chemicals Greater Than Background Values in Soil at the TA-16 Burning Ground: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Arsenic	Barium	Cadmium	Lead	Mercury	Selenium	Silver
Soil Background Value				**8.17**	**295**	**0.4**	**22.3**	**0.1**	**1.52**	**1**
SWMU 16-010(i)										
16-01272	0–0.5	0316-96-0003	ALLH	10 (U)	4200	4.21 (J)	53.9	2 (U)	5.27 (U)	10 (U)
SWMU 16-010(l)										
16-01240	0–0.5	0316-96-0004	ALLH	10 (U)	1250	0.402 (U)	—*	2 (U)	8.59 (U)	10 (U)

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

*— = If analyzed, sample result is less than background value.

Table 5.2-1
Subaggregate 4 Summary of Historical Samples Collected in Soil and Fill at TA-16 Administrative Area Storage Buildings: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number			
				High Explosives	Inorganic Chemicals	SVOC	VOC
AOC C-16-017							
16-04193	1–2	0316-97-0592	ALLH	—*	3528R	3526R	—
16-04194	0–1	0316-97-0573	ALLH	—	3440R	3438R	—
SWMU 16-017(i)							
16-05870	0–0.5	RE16-98-0060	FILL	4497R	4499R	4496R	4496R
16-05874	0–0.5	RE16-98-0061	ALLH	4497R	4499R	4496R	4496R
16-05878	0–0.5	RE16-98-0062	ALLH	4497R	4499R	4496R	4496R
16-05879	0–0.5	RE16-98-0063	ALLH	4497R	4499R	4496R	4496R

*— = The analysis was not requested.

Table 5.2-2
Subaggregate 4 Frequency of Detection of Inorganic Chemicals in Soil and Fill at Administrative Area Storage Buildings: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
AOC C-16-017							
Aluminum	ALLH	2	2	6570–7880	29200	0/2	0/2
Arsenic	ALLH	2	2	3.3–3.4	8.17	0/2	0/2
Barium	ALLH	2	2	126–137	295	0/2	0/2
Beryllium	ALLH	2	2	0.69–0.86	1.83	0/2	0/2
Calcium	ALLH	2	2	1640–1680	6120	0/2	0/2
Chromium	ALLH	2	2	7.4–8.4	19.3	0/2	0/2
Cobalt	ALLH	2	2	6.6–6.6	8.64	0/2	0/2
Copper	ALLH	2	2	4.7–5.6	14.7	0/2	0/2
Iron	ALLH	2	2	12200–13100	21500	0/2	0/2
Lead	ALLH	2	2	14.1–21.1	22.3	0/2	0/2
Magnesium	ALLH	2	2	1220–1500	4610	0/2	0/2
Manganese	ALLH	2	2	494–499	671	0/2	0/2
Nickel	ALLH	2	2	6.4–6.9	15.4	0/2	0/2
Potassium	ALLH	2	2	1070–1220	3460	0/2	0/2
Sodium	ALLH	2	2	46.1–47.2	915	0/2	0/2
Thallium	ALLH	2	1	[0.46]–0.55	0.73	0/2	0/2
Vanadium	ALLH	2	2	21.1–24.1	39.6	0/2	0/2
Zinc	ALLH	2	2	29.2–39.8	48.8	0/2	0/2
SWMU 16-017(i)							
Aluminum	ALLH	3	3	15000–18000	29200	0/3	0/3
Aluminum	FILL	1	1	7500	29200	0/1	0/1
Antimony	ALLH	3	0	[12–13]	0.83	0/3	3/3
Antimony	FILL	1	0	[11]	0.83	0/1	1/1
Arsenic	ALLH	3	3	4.7–5.5	8.17	0/3	0/3
Arsenic	FILL	1	1	2.6	8.17	0/1	0/1
Barium	ALLH	3	3	150–170	295	0/3	0/3
Barium	FILL	1	1	200	295	0/1	0/1
Beryllium	ALLH	3	3	0.67–0.85	1.83	0/3	0/3
Cadmium	ALLH	3	0	[0.6–0.66]	0.4	0/3	3/3
Cadmium	FILL	1	0	[0.54]	0.4	0/1	1/1
Calcium	ALLH	3	3	1600–5400	6120	0/3	0/3
Calcium	FILL	1	1	3100	6120	0/1	0/1
Chromium	ALLH	3	3	13–18	19.3	0/3	0/3

Table 5.2-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Chromium	FILL	1	1	11	19.3	0/1	0/1
Cobalt	ALLH	3	3	8.1–12	8.64	1/3	0/3
Cobalt	FILL	1	1	5.4	8.64	0/1	0/1
Copper	ALLH	3	3	7.1–19	14.7	1/3	0/3
Copper	FILL	1	1	8.2	14.7	0/1	0/1
Iron	ALLH	3	3	16000–18000	21500	0/3	0/3
Iron	FILL	1	1	11000	21500	0/1	0/1
Lead	ALLH	3	3	16–36	22.3	1/3	0/3
Lead	FILL	1	1	6.2	22.3	0/1	0/1
Magnesium	ALLH	3	3	2000–2400	4610	0/3	0/3
Magnesium	FILL	1	1	2500	4610	0/1	0/1
Manganese	ALLH	3	3	480–660	671	0/3	0/3
Manganese	FILL	1	1	380	671	0/1	0/1
Mercury	ALLH	3	0	[0.12–0.13]	0.1	0/3	3/3
Mercury	FILL	1	0	[0.11]	0.1	0/1	1/1
Nickel	ALLH	3	3	8.8–10	15.4	0/3	0/3
Nickel	FILL	1	1	9.5	15.4	0/1	0/1
Potassium	ALLH	3	3	1800–2000	3460	0/3	0/3
Potassium	FILL	1	1	1100	3460	0/1	0/1
Silver	ALLH	3	0	[2.4–2.6]	1	0/3	3/3
Silver	FILL	1	0	[2.2]	1	0/1	1/1
Sodium	ALLH	3	3	110–160	915	0/3	0/3
Sodium	FILL	1	1	150	915	0/1	0/1
Uranium	ALLH	3	0	[29.4–30.2]	1.82	0/3	3/3
Uranium	FILL	1	0	[26.8]	1.82	0/1	1/1
Vanadium	ALLH	3	3	30–34	39.6	0/3	0/3
Vanadium	FILL	1	1	25	39.6	0/1	0/1
Zinc	ALLH	3	3	27–56	48.8	1/3	0/3
Zinc	FILL	1	1	21	48.8	0/1	0/1

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Values in brackets are below detection limits.

Table 5.2-3
Subaggregate 4 Historical Analytical Results of Inorganic Chemicals Greater Than Background Values in Soil and Fill at TA-16 Administrative Area Storage Buildings: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Antimony	Cadmium	Cobalt	Copper	Lead	Mercury	Silver	Uranium	Zinc
Soil Background Value[a]				**0.83**	**0.4**	**8.64**	**14.7**	**22.3**	**0.1**	**1**	**1.82**	**48.8**
SWMU 16-017(i)												
16-05870	0–0.5	RE16-98-0060	FILL	11 (UJ)	0.54 (U)	—[b]	—	—	0.11 (U)	2.2 (U)	26.8 (U)	—
16-05874	0–0.5	RE16-98-0061	ALLH	13 (UJ)	0.66 (U)	—	19	36	0.13 (U)	2.6 (U)	30.2 (U)	56
16-05878	0–0.5	RE16-98-0062	ALLH	12 (UJ)	0.6 (U)	12	—	—	0.12 (U)	2.4 (U)	29.4 (U)	—
16-05879	0–0.5	RE16-98-0063	ALLH	12 (UJ)	0.62 (U)	—	—	—	0.12 (U)	2.5 (U)	30 (U)	—

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

[a] Fill samples were compared to soil background values.

[b] — = If analyzed, sample result is less than background value.

Table 5.6-1
Subaggregate 4 Summary of Historical Samples
Collected in Soil at Administrative Area Landfill: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number	
				High Explosives	Inorganic Chemicals
SWMU 16-016(b)					
16-09002	0–0.5	0316-95-9017	ALLH	68962	69257
16-09004	0–0.5	0316-95-9018	ALLH	68962	69257
16-09005	0–0.5	0316-95-9019	ALLH	68962	69257

Table 5.6-2
Subaggregate 4 Frequency of Detection of Inorganic
Chemicals in Soil at Administrative Area Landfill: Screening-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Aluminum	ALLH	3	3	5130–8220	29200	0/3	0/3
Antimony	ALLH	3	3	0.172–0.399	0.83	0/3	0/3
Arsenic	ALLH	3	3	1.88–2.29	8.17	0/3	0/3
Barium	ALLH	3	3	69–130	295	0/3	0/3
Beryllium	ALLH	3	3	0.447–0.587	1.83	0/3	0/3
Calcium	ALLH	3	3	1300–2500	6120	0/3	0/3
Chromium	ALLH	3	3	3.5–6.24	19.3	0/3	0/3
Cobalt	ALLH	3	3	2.42–4.13	8.64	0/3	0/3
Copper	ALLH	3	3	2.74–3.61	14.7	0/3	0/3
Iron	ALLH	3	3	6080–8830	21500	0/3	0/3
Lead	ALLH	3	3	7.06–8.77	22.3	0/3	0/3
Magnesium	ALLH	3	3	657–1240	4610	0/3	0/3
Manganese	ALLH	3	3	221–361	671	0/3	0/3
Mercury	ALLH	3	3	0.0108–0.0117	0.1	0/3	0/3
Nickel	ALLH	3	3	3.14–5.07	15.4	0/3	0/3
Potassium	ALLH	3	3	628–1330	3460	0/3	0/3
Selenium	ALLH	3	3	0.292–0.378	1.52	0/3	0/3
Sodium	ALLH	3	3	47.2–64.4	915	0/3	0/3
Thallium	ALLH	3	3	0.536–0.798	0.73	1/3	0/3
Vanadium	ALLH	3	3	9.08–15.3	39.6	0/3	0/3
Zinc	ALLH	3	3	16.9–20.2	48.8	0/3	0/3

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).

Table 5.6-3
Subaggregate 4 Frequency of Detection of Organic Chemicals in Soil at Administrative Area Landfill: Screening-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
HMX	ALLH	3	1	[0.75]–0.972	1/3

Note: Values in brackets are below detection limits.

Table 5.6-4
Subaggregate 4 Historical Analytical Results of Inorganic Chemicals Detected Greater Than Background Values in Soil at Administrative Area Landfill: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Thallium
Soil Background Value				**0.73**
SWMU 16-016(b)				
16-09005	0–0.5	0316-95-9019	ALLH	0.798

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Units are mg/kg.

Table 5.6-5
Subaggregate 4 Historical Analytical Results of Organic Chemicals Detected in Soil at Administrative Area Landfill: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	HMX
SWMU 16-016(b)				
16-09004	0–0.5	0316-95-9018	ALLH	0.972

Note: Units are mg/kg.

Table 6.1-1
Subaggregate 5 Summary of Historical Samples Collected in Soil at T-Site Laboratories, Offices, and Warehouses: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number									
				Cyanide	Gamma Spectroscopy	High Explosives	Isotopic Plutonium	Isotopic Radium	Isotopic Uranium	Inorganic Chemicals	Strontium-90	SVOC	Uranium
SWMU 16-025(m)													
16-04179	0–1	0316-97-0568	ALLH	—*	3420R	3418R	—	3420R	3420R	3419R	3420R	3417R	—
16-04181	0–1	0316-97-0569	ALLH	—	3420R	3418R	—	3420R	3420R	3419R	3420R	3417R	—
SWMU 16-025(n)													
16-04174	0–1	0316-97-0566	ALLH	—	3420R	3418R	—	3420R	3420R	3419R	3420R	3417R	—
16-04175	0–1	0316-97-0567	ALLH	—	3420R	3418R	—	3420R	3420R	3419R	3420R	3417R	—
SWMU 16-025(o)													
16-04184	0–1	0316-97-0570	ALLH	—	3420R	3418R	—	3420R	3420R	3419R	3420R	3417R	—
16-04186	0–1	0316-97-0571	ALLH	—	3420R	3418R	—	3420R	3420R	3419R	3420R	3417R	—
SWMU 16-034(c)													
16-04151	0–1	0316-97-0560	ALLH	—	—	3402R	—	—	—	3403R	—	3401R	—
16-04147	0–1	0316-97-0586	ALLH	—	—	3402R	—	—	—	3403R	—	3401R	—
SWMU 16-034(d)													
16-04158	0–1	0316-97-0587	ALLH	—	—	3402R	—	—	—	3403R	—	3401R	—
16-04161	0–1	0316-97-0563	ALLH	—	—	3402R	—	—	—	3403R	—	3401R	—
SWMU 16-034(e)													
16-04143	0–1	0316-97-0558	ALLH	—	—	3402R	—	—	—	3403R	—	3401R	3404R
16-04145	0–1	0316-97-0559	ALLH	—	—	3402R	—	—	—	3403R	—	3401R	3404R
SWMU 16-034(f)													
16-04152	0–0.83	0316-97-0562	ALLH	3403R	—	3402R	3404R	—	3404R	3403R	—	3401R	—
16-04156	0–1	0316-97-0561	ALLH	3403R	—	3402R	3404R	—	3404R	3403R	—	3401R	—

*— = The analysis was not requested.

Table 6.1-2
Subaggregate 5 Frequency of Detection of Inorganic Chemicals in Soil at T-Site Laboratories, Offices, and Warehouses: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Aluminum	ALLH	14	14	4400–22300	29200	0/14	0/14
Antimony	ALLH	6	2	[5.8]–14.2	0.83	2/6	4/6
Arsenic	ALLH	14	14	1.1–5.2	8.17	0/14	0/14
Barium	ALLH	14	14	56.2–207	295	0/14	0/14
Beryllium	ALLH	14	7	[0.52]–0.7	1.83	0/14	0/14
Cadmium	ALLH	14	0	[0.5–0.64]	0.4	0/14	14/14
Calcium	ALLH	14	14	1390–3300	6120	0/14	0/14
Chromium	ALLH	14	14	5.6–14.7	19.3	0/14	0/14
Cobalt	ALLH	14	14	2.9–8	8.64	0/14	0/14
Copper	ALLH	14	14	4.9–30	14.7	4/14	0/14
Cyanide (Total)	ALLH	2	0	[0.52–0.52]	0.5	0/2	2/2
Iron	ALLH	14	14	6700–18200	21500	0/14	0/14
Lead	ALLH	14	14	12.4–260	22.3	8/14	0/14
Magnesium	ALLH	14	14	700–2770	4610	0/14	0/14
Manganese	ALLH	14	14	220–440	671	0/14	0/14
Mercury	ALLH	14	0	[0.05–0.11]	0.1	0/14	4/14
Nickel	ALLH	14	14	4.1–10.8	15.4	0/14	0/14
Potassium	ALLH	14	14	837–2090	3460	0/14	0/14
Selenium	ALLH	14	4	0.27–0.38	1.52	0/14	0/14
Silver	ALLH	14	7	0.5–3.6	1	2/14	7/14
Sodium	ALLH	14	14	68–430	915	0/14	0/14
Thallium	ALLH	14	9	[0.22]–0.42	0.73	0/14	0/14
Uranium	ALLH	2	0	[3.02–3.05]	1.82	0/2	2/2
Vanadium	ALLH	14	14	11–30.6	39.6	0/14	0/14
Zinc	ALLH	14	14	14.7–480	48.8	9/14	0/14

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Values in brackets are below detection limits.

Table 6.1-3
Subaggregate 5 Frequency of Detection of Organic Chemicals in Soil at T-Site Laboratories, Offices, and Warehouses: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Benzoic Acid	ALLH	14	1	0.054–[9.2]	1/14
Bis(2-ethylhexyl)phthalate	ALLH	14	3	0.063–[1.8]	3/14
Methylnaphthalene[2-]	ALLH	14	1	0.046–[1.8]	1/14
Naphthalene	ALLH	14	1	0.039–[1.8]	1/14

Note: Values in brackets are below detection limits.

Table 6.1-4
Subaggregate 5 Frequency of Detection of Radionuclides in Soil at T-Site Laboratories, Offices, and Warehouses: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (pCi/g)	Background Value (pCi/g)	Frequency of Detects Greater Than Background/ Fallout Value	Frequency of Nondetects Greater Than Background/ Fallout Value
Cesium-137	ALLH	6	1	[-0.017]–0.477	1.65	0/6	0/6
Radium-226	ALLH	6	6	1.39–2.12	2.59	0/6	0/6
Uranium-234	ALLH	8	7	0.642–1.4	2.59	0/8	0/8
Uranium-235	ALLH	8	1	[0.027]–0.069	0.2	0/8	0/8
Uranium-238	ALLH	8	6	0.696–0.94	2.29	0/8	0/8

Source: Background values from LANL 1998 (59730, Table 6.0-2, p. 45).
Note: Values in brackets are below detection limits.

Table 6.1-5
Subaggregate 5 Historical Analytical Results of Inorganic Chemicals Greater Than Background Values in Soil at T-Site Laboratories, Offices, and Warehouses: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Antimony	Cadmium	Copper	Cyanide (Total)	Lead	Mercury	Silver	Uranium	Zinc
Soil Background Value				**0.83**	**0.4**	**14.7**	**0.5**	**22.3**	**0.1**	**1**	**1.82**	**48.8**
SWMU 16-025(m)												
16-04179	0–1	0316-97-0568	ALLH	6.8 (UJ)	0.59 (U)	—*	—	33.9	—	3.6	—	49
16-04181	0–1	0316-97-0569	ALLH	9.5 (J-)	0.64 (U)	—	—	—	—	—	—	—
SWMU 16-025(n)												
16-04174	0–1	0316-97-0566	ALLH	14.2	0.56 (U)	—	—	64.3	—	—	—	87.6
16-04175	0–1	0316-97-0567	ALLH	5.9 (UJ)	0.51 (U)	—	—	—	—	—	—	—
SWMU 16-025(o)												
16-04184	0–1	0316-97-0570	ALLH	5.8 (UJ)	0.5 (U)	—	—	—	—	—	—	—
16-04186	0–1	0316-97-0571	ALLH	6.2 (UJ)	0.54 (U)	21.9	—	—	—	—	—	—
SWMU 16-034(c)												
16-04147	0–1	0316-97-0586	ALLH	—	0.54 (U)	30	—	120	0.11 (U)	2.2 (U)	—	480
16-04151	0–1	0316-97-0560	ALLH	—	0.53 (U)	—	—	—	0.11 (U)	3.1	—	91
SWMU 16-034(d)												
16-04158	0–1	0316-97-0587	ALLH	—	0.52 (U)	—	—	200	—	2.1 (U)	—	55
16-04161	0–1	0316-97-0563	ALLH	—	0.52 (U)	18	—	260	—	2.1 (U)	—	67
SWMU 16-034(e)												
16-04143	0–1	0316-97-0558	ALLH	—	0.53 (U)	—	—	—	0.11 (U)	2.1 (U)	3.05 (U)	—
16-04145	0–1	0316-97-0559	ALLH	—	0.54 (U)	18	—	99	0.11 (U)	2.2 (U)	3.02 (U)	60
SWMU 16-034(f)												
16-04152	0–0.83	0316-97-0562	ALLH	—	0.52 (U)	—	0.52 (U)	31	—	2.1 (U)	—	52
16-04156	0–1	0316-97-0561	ALLH	—	0.52 (U)	—	0.52 (U)	39	—	2.1 (U)	—	59

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

*— = If analyzed, sample result is less than background value.

Table 6.1-6
Subaggregate 5 Historical Analytical Results of Organic Chemicals Detected in Soil at T-Site Laboratories, Offices, and Warehouses: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Methylnaphthalene[2-]	Naphthalene
SWMU 16-034(c)							
16-04147	0–1	0316-97-0586	ALLH	0.054 (J)	—*	0.046 (J)	0.039 (J)
SWMU 16-034(e)							
16-04143	0–1	0316-97-0558	ALLH	—	0.063 (J)	—	—
16-04145	0–1	0316-97-0559	ALLH	—	0.066 (J)	—	—
SWMU 16-034(f)							
16-04156	0–1	0316-97-0561	ALLH	—	0.091 (J)	—	—

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

*— = If analyzed, sample result is not detected.

Table 6.2-1
Subaggregate 5 Summary of Historical Samples Collected in Soil at T-Site HE Magazines: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number					
				Gamma Spectroscopy	High Explosives	Isotopic Uranium	Inorganic Chemicals	Strontium-90	SVOC
AOC 16-024(f)									
16-04162	0–1	0316-97-0564	ALLH	—*	3439R	—	3440R	—	3438R
16-04165	0–1	0316-97-0588	ALLH	—	3439R	—	3440R	—	3438R
AOC 16-024(g)									
16-04168	0–1	0316-97-0565	ALLH	—	3439R	—	3440R	—	3438R
16-04171	0–1	0316-97-0589	ALLH	—	3439R	—	3440R	—	3438R
AOC 16-024(h)									
16-04188	0–1	0316-97-0572	ALLH	3404R	3402R	3404R	3403R	3404R	3401R
16-04189	0–1	0316-97-0590	ALLH	3404R	3402R	—	3403R	3404R	3401R

*— = The analysis was not requested.

Table 6.2-2
Subaggregate 5 Frequency of Detection of Inorganic Chemicals in Soil at T-Site HE Magazines: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Aluminum	ALLH	6	6	4670–12000	29200	0/6	0/6
Arsenic	ALLH	6	6	1.7–3.6	8.17	0/6	0/6
Barium	ALLH	6	6	60.2–109	295	0/6	0/6
Beryllium	ALLH	6	3	[0.69]–0.96	1.83	0/6	0/6
Cadmium	ALLH	6	0	[0.08–0.55]	0.4	0/6	2/6
Calcium	ALLH	6	6	1600–2100	6120	0/6	0/6
Chromium	ALLH	6	6	6.1–8	19.3	0/6	0/6
Cobalt	ALLH	6	6	5.3–7.6	8.64	0/6	0/6
Copper	ALLH	6	6	3.8–7	14.7	0/6	0/6
Iron	ALLH	6	6	1200–11000	21500	0/6	0/6
Lead	ALLH	6	6	11–16	22.3	0/6	0/6
Magnesium	ALLH	6	6	1060–1400	4610	0/6	0/6
Manganese	ALLH	6	6	240–394	671	0/6	0/6
Mercury	ALLH	6	0	[0.02–0.11]	0.1	0/6	2/6
Nickel	ALLH	6	6	5.5–7	15.4	0/6	0/6
Potassium	ALLH	6	6	1040–1600	3460	0/6	0/6
Silver	ALLH	6	0	[0.25–2.2]	1	0/6	2/6
Sodium	ALLH	6	6	36.2–85	915	0/6	0/6
Thallium	ALLH	6	1	[0.34]–0.38	0.73	0/6	1/6
Vanadium	ALLH	6	6	19–22.8	39.6	0/6	0/6
Zinc	ALLH	6	6	20.1–41.4	48.8	0/6	0/6

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Values in brackets are below detection limits.

Table 6.2-3
Subaggregate 5 Historical Analytical Results of Inorganic Chemicals Greater Than Background Values in Soil at T-Site HE Magazines: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Cadmium	Mercury	Silver	Thallium
Soil Background Value				**0.4**	**22.3**	**1**	**0.73**
AOC 16-024(f)							
16-04162	0–1	0316-97-0564	ALLH	—*	—	—	0.91 (U)
AOC 16-024(h)							
16-04188	0–1	0316-97-0572	ALLH	0.53 (U)	0.11 (U)	2.1 (U)	—
16-04189	0–1	0316-97-0590	ALLH	0.55 (U)	0.11 (U)	2.2 (U)	—

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Units are mg/kg. Data qualifiers are defined in Appendix A.
*— = If analyzed, sample result is not detected.

Table 7.2-1
Subaggregate 6 Summary of Historical Samples Collected in Soil at HE Storage Magazines: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number		
				High Explosives	Inorganic Chemicals	SVOC
AOC 16-024(c)						
16-04136	0–1	0316-97-0556	ALLH	3439R	3440R	3438R

Table 7.2-2
Subaggregate 6 Frequency of Detection of Inorganic Chemicals in Soil at HE Storage Magazines: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Aluminum	ALLH	1	1	9620	29200	0/1	0/1
Arsenic	ALLH	1	1	3.7	8.17	0/1	0/1
Barium	ALLH	1	1	162	295	0/1	0/1
Beryllium	ALLH	1	1	1.1	1.83	0/1	0/1
Calcium	ALLH	1	1	1580	6120	0/1	0/1
Chromium	ALLH	1	1	9.4	19.3	0/1	0/1
Cobalt	ALLH	1	1	9.6	8.64	1/1	0/1
Copper	ALLH	1	1	5.6	14.7	0/1	0/1
Iron	ALLH	1	1	14800	21500	0/1	0/1
Lead	ALLH	1	1	15.6	22.3	0/1	0/1
Magnesium	ALLH	1	1	1910	4610	0/1	0/1
Manganese	ALLH	1	1	603	671	0/1	0/1
Nickel	ALLH	1	1	8.4	15.4	0/1	0/1
Potassium	ALLH	1	1	1420	3460	0/1	0/1
Selenium	ALLH	1	1	0.6	1.52	0/1	0/1
Sodium	ALLH	1	1	52.9	915	0/1	0/1
Thallium	ALLH	1	0	[1.4]	0.73	0/1	1/1
Vanadium	ALLH	1	1	26.9	39.6	0/1	0/1
Zinc	ALLH	1	1	24.2	48.8	0/1	0/1

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Values in brackets are below detection limits.

Table 7.2-3
Subaggregate 6 Historical Analytical Results of Inorganic Chemicals Greater Than Background Values in Soil at HE Storage Magazines: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Cobalt	Thallium
Soil Background Value				**8.64**	**0.73**
AOC 16-024(c)					
16-04136	0–1	0316-97-0556	ALLH	9.6 (J)	1.4 (U)

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Units are mg/kg. Data qualifiers are defined in Appendix A.

Table 7.3-1
Subaggregate 6 Summary of Historical Samples Collected in Soil at Radiography Buildings: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number						
				Gamma Spectroscopy	High Explosives	Isotopic Radium	Isotopic Uranium	Inorganic Chemicals	Strontium-90	SVOC
SWMU 16-025(b)										
16-04139	0–1	0316-97-0557	ALLH	3460R	3458R	3460R	3460R	3459R	3460R	3457R

Table 7.3-2
Subaggregate 6 Frequency of Detection of Inorganic Chemicals in Soil at Radiography Buildings: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Aluminum	ALLH	1	1	16000	29200	0/1	0/1
Antimony	ALLH	1	0	[7.3]	0.83	0/1	1/1
Arsenic	ALLH	1	1	3	8.17	0/1	0/1
Barium	ALLH	1	1	156	295	0/1	0/1
Cadmium	ALLH	1	0	[0.63]	0.4	0/1	1/1
Calcium	ALLH	1	1	2600	6120	0/1	0/1
Chromium	ALLH	1	1	11.4	19.3	0/1	0/1
Cobalt	ALLH	1	1	6	8.64	0/1	0/1
Copper	ALLH	1	1	8.1	14.7	0/1	0/1
Iron	ALLH	1	1	14400	21500	0/1	0/1
Lead	ALLH	1	1	10.8	22.3	0/1	0/1
Magnesium	ALLH	1	1	2300	4610	0/1	0/1
Manganese	ALLH	1	1	287	671	0/1	0/1
Nickel	ALLH	1	1	10.4	15.4	0/1	0/1
Potassium	ALLH	1	1	2020	3460	0/1	0/1
Silver	ALLH	1	1	0.86	1	0/1	0/1
Sodium	ALLH	1	1	101	915	0/1	0/1
Vanadium	ALLH	1	1	21.2	39.6	0/1	0/1
Zinc	ALLH	1	1	23.6	48.8	0/1	0/1

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Values in brackets are below detection limits.

Table 7.3-3
Subaggregate 6 Frequency of Detection of Organic Chemicals in Soil at Radiography Buildings: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Fluoranthene	ALLH	1	1	0.036	1/1
Pyrene	ALLH	1	1	0.044	1/1

Table 7.3-4
Subaggregate 6 Frequency of Detection of Radionuclides in Soil at Radiography Buildings: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (pCi/g)	Background Value (pCi/g)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Radium-226	ALLH	1	1	1.844	2.59	0/1	0/1
Strontium-90	ALLH	1	1	0.311	1.31	0/1	0/1
Uranium-234	ALLH	1	1	0.6411	2.59	0/1	0/1
Uranium-238	ALLH	1	1	0.677	2.29	0/1	0/1

Source: Background values from LANL 1998 (59730, Table 6.0-2, p. 45).

Table 7.3-5
Subaggregate 6 Historical Analytical Results of Inorganic Chemicals Greater Than Background Values in Soil at Radiography Buildings: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Antimony	Cadmium
Soil Background Value				**0.83**	**0.4**
SWMU 16-025(b)					
16-04139	0–1	0316-97-0557	ALLH	7.3 (UJ)	0.63 (U)

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).
Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

Table 7.3-6
Subaggregate 6 Historical Analytical Results of Organic Chemicals Detected in Soil at Radiography Buildings: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Fluoranthene	Pyrene
SWMU 16-025(b)					
16-04139	0–1	0316-97-0557	ALLH	0.036 (J)	0.04 (J)

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

Table 7.4-1
Subaggregate 6 Summary of Historical Samples Collected in Soil, Fill, and Tuff at HE Machining Buildings and Associated Structures: Screening- and Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number				
				Cyanide (Total)	High Explosives	Inorganic Chemicals	SVOC	VOC
Consolidated Unit 16-029(h2)-99—Screening-Level Data								
SWMU 16-025(i)								
16-05794	4.25–4.75	RE16-98-0011[a]	QBT4	—[b]	4262R	4265R	4263R	4263R
16-05794	5.75–6.75	RE16-98-0012[a]	QBT4	—	4262R	4265R	4263R	4263R
SWMU 16-025(j)								
16-05796	6.42–6.67	RE16-98-0013[a]	QBT4	—	4262R	4265R	4263R	—
16-05796	8.17–8.67	RE16-98-0014[a]	QBT4	—	4262R	4265R	4263R	4263R
SWMU 16-029(h2)								
16-03383	3.5–4	0316-97-0106[a]	ALLH	—	—	3901R	—	—
Consolidated Unit 16-029(q)-99—Screening-Level Data								
AOC C-16-064								
16-02541	0–0.5	0316-96-0130[a]	ALLH	1885	1886	1885	1884	—
16-02541	0.5–1	0316-96-0199[a]	ALLH	1885	1886	1885	1884	1884
SWMU 16-029(q)								
16-02404	0–0.5	0316-96-0063[a]	ALLH	2033	2034	2033	2032	2032
Consolidated Unit 16-029(h2)-99—Decision-Level Data								
SWMU 16-025(d)								
16-04114	0–1	0316-97-0550	ALLH	—	3442R	3443R	3441R	—
SWMU 16-025(g)								
16-04123	0–1	0316-97-0584	ALLH	—	3442R	3443R	3441R	—
16-04124	0–1	0316-97-0553	ALLH	—	3442R	3443R	3441R	—
16-04125	0–1	0316-97-0552	ALLH	—	3442R	3443R	3441R	—

Table 7.4-1 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number				
				Cyanide (Total)	High Explosives	Inorganic Chemicals	SVOC	VOC
SWMU 16-025(h)								
16-03401	3–3.33	0316-97-0104	ALLH	—	3962R	3963R	3960R	3960R
16-04129	0–1	0316-97-0554	ALLH	—	3402R	3403R	3401R	—
16-04129	0–1	0316-97-0585	FILL	—	3402R	3403R	3401R	—
16-04132	0–0.5	0316-97-0555	FILL	—	3402R	3403R	3401R	—
SWMU 16-025(j)								
16-04115	0–1	0316-97-0583	ALLH	—	3442R	3443R	3441R	—
16-04118	0–1	0316-97-0551	ALLH	—	3442R	3443R	3441R	—
16-04119	0–1	0316-97-0582	ALLH	—	3442R	3443R	3441R	—
16-05796	5–5.5	RE16-98-0010	ALLH	—	4245R	4244R	4243R	4243R
SWMU 16-029(h2)								
16-03381	3.5–3.6	RE16-98-0008	ALLH	—	4245R	4244R	4243R	4243R
16-03381	5.5–6.5	RE16-98-0009	ALLH	—	4245R	4246R	4243R	4243R
16-03382	0.5–1	0316-97-0105	ALLH	—	—	3901R	—	—
16-03382	2.5–3	0316-97-0112	ALLH	—	3930R	3931R	3928R	3928R
16-03383	3.5–4	0316-97-0113	ALLH	—	3930R	3931R	3928R	3928R
16-03386	2–2.5	0316-97-0107	ALLH	—	3912R	3914R	3911R	3911R
16-03388	2–2.5	0316-97-0109	ALLH	—	3912R	3914R	3911R	3911R
16-03389	3.5–4	0316-97-0101	ALLH	—	3930R	3931R	3928R	3928R
16-03393	1.25–1.5	0316-97-0110	ALLH	—	3917R	3919R	3916R	3916R
16-03396	1.25–1.5	0316-97-0111	ALLH	—	3917R	3919R	3916R	3916R
16-03397	2.5–3	0316-97-0102	ALLH	—	3940R	3942R	3939R	3939R
16-03399	2–2.5	0316-97-0103	ALLH	—	3940R	3942R	3939R	3939R

Table 7.4-1 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number				
				Cyanide (Total)	High Explosives	Inorganic Chemicals	SVOC	VOC
Consolidated Unit 16-029(q)-99—Decision-Level Data								
AOC C-16-064								
16-02541	1–1.5	0316-96-0162	ALLH	2492	2494	2492	2491	2491
16-02541	1.5–2	0316-96-0163	ALLH	2492	2494	2492	2491	2491
SWMU 16-017(f)-99								
16-02580	1–1.5	0316-96-0142	ALLH	2033	2034	2033	2032	2032
16-02582	1–1.5	0316-96-0143	ALLH	2033	2034	2033	2032	2032
SWMU 16-029(q)								
16-02397	5–6	0316-96-0122	QBT4	2158	2159	2158	2157	2157
16-02397	6–7	0316-96-0152	QBT4	2158	2159	2158	2157	2157
16-02399	4.5–5	0316-96-0062	ALLH	2033	2034	2033	2032	2032
16-02400	4.5–5	0316-96-0120	ALLH	2158	2159	2158	2157	2157
16-02400	5–6	0316-96-0150	ALLH	2158	2159	2158	2157	2157
16-02402	4.5–5	0316-96-0121	ALLH	2158	2159	2158	2157	2157
16-02402	5–6	0316-96-0151	ALLH	2158	2159	2158	2157	2157
16-02404	7–8	0316-96-0144	QBT4	2158	2159	2158	2157	2157
16-02405	0–0.5	0316-96-0126	ALLH	2242	2243	2242	2241	2241
16-02406	0–0.5	0316-96-0127	ALLH	2242	2243	2242	2241	2241
16-02407	4–4.5	0316-96-0061	FILL	1885	1886	1885	1884	1884
16-02407	7–8	0316-96-0069	QBT4	1911	1912	1911	1910	1910
16-02412	4–4.5	0316-96-0060	ALLH	1885	1886	1885	1884	1884
16-02412	7–8	0316-96-0068	FILL	1911	1912	1911	1910	1910

[a] Soil removed after sampling.

[b] — = The analysis was not requested.

Table 7.4-2
Subaggregate 6 Frequency of Detection of Inorganic Chemicals in Soil, Fill, and Tuff at HE Machining Buildings and Associated Structures: Screening- and Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Screening-Level Data (Excavated Samples)							
Consolidated Unit 16-029(h2)-99							
Aluminum	ALLH	1	1	14700	29200	0/1	0/1
Aluminum	QBT4	4	4	1050–13000	7340	1/4	0/4
Arsenic	ALLH	1	1	4.7	8.17	0/1	0/1
Arsenic	QBT4	4	4	0.87–2.8	2.79	1/4	0/4
Barium	ALLH	1	1	174	295	0/1	0/1
Barium	QBT4	4	4	49.1–1570	46	4/4	0/4
Beryllium	ALLH	1	1	1	1.83	0/1	0/1
Beryllium	QBT4	4	4	0.17–1.2	1.21	0/4	0/4
Calcium	ALLH	1	1	2750	6120	0/1	0/1
Calcium	QBT4	4	4	937–3880	2200	1/4	0/4
Chromium	ALLH	1	1	11.7	19.3	0/1	0/1
Chromium	QBT4	4	4	0.44–6.5	7.14	0/4	0/4
Cobalt	ALLH	1	1	7.5	8.64	0/1	0/1
Cobalt	QBT4	4	1	[0.33]–1.2	3.14	0/4	0/4
Copper	ALLH	1	1	10	14.7	0/1	0/1
Copper	QBT4	4	4	1.6–6.8	4.66	1/4	0/4
Iron	ALLH	1	1	15600	21500	0/1	0/1
Iron	QBT4	4	4	3960–9260	14500	0/4	0/4
Lead	ALLH	1	1	16.2	22.3	0/1	0/1
Lead	QBT4	4	4	2.2–6.5	11.2	0/4	0/4
Magnesium	ALLH	1	1	2270	4610	0/1	0/1
Magnesium	QBT4	4	4	243–2170	1690	1/4	0/4
Manganese	ALLH	1	1	308	671	0/1	0/1
Manganese	QBT4	4	4	33.2–130	482	0/4	0/4
Nickel	ALLH	1	1	9	15.4	0/1	0/1
Nickel	QBT4	4	4	1.3–6.5	6.58	0/4	0/4
Potassium	ALLH	1	1	1730	3460	0/1	0/1
Potassium	QBT4	4	4	470–2140	43700	0/4	0/4
Selenium	ALLH	1	1	0.43	1.52	0/1	0/1
Selenium	QBT4	4	0	[0.89–0.94]	0.3	0/4	4/4
Sodium	ALLH	1	1	554	915	0/1	0/1
Sodium	QBT4	4	4	134–200	2770	0/4	0/4

Table 7.4-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Thallium	ALLH	1	1	0.81	0.73	1/1	0/1
Thallium	QBT4	4	0	[1.2–1.3]	1.1	0/4	4/4
Uranium	ALLH	1	1	2.58	1.82	1/1	0/1
Uranium	QBT4	4	0	[25.2–25.2]	2.4	0/4	4/4
Vanadium	ALLH	1	1	28.6	39.6	0/1	0/1
Vanadium	QBT4	4	4	1.3–9.2	17	0/4	0/4
Zinc	ALLH	1	1	51.4	48.8	1/1	0/1
Zinc	QBT4	4	4	14.4–21.2	63.5	0/4	0/4
Consolidated Unit 16-029(q)-99							
Aluminum	ALLH	3	3	13700–14500	29200	0/3	0/3
Antimony	ALLH	3	0	[6.7–11.3]	0.83	0/3	3/3
Arsenic	ALLH	3	3	1.6–8.7	8.17	1/3	0/3
Barium	ALLH	3	3	387–1220	295	3/3	0/3
Beryllium	ALLH	3	3	1.1–1.1	1.83	0/3	0/3
Cadmium	ALLH	3	0	[0.69–0.88]	0.4	0/3	3/3
Calcium	ALLH	3	3	3270–3480	6120	0/3	0/3
Chromium	ALLH	3	3	8.7–10.5	19.3	0/3	0/3
Cobalt	ALLH	3	3	5.4–7.4	8.64	0/3	0/3
Copper	ALLH	3	3	9.3–15.8	14.7	1/3	0/3
Cyanide (Total)	ALLH	3	0	[0.59–0.68]	0.5	0/3	3/3
Iron	ALLH	3	3	13700–15400	21500	0/3	0/3
Lead	ALLH	3	3	14.8–41.7	22.3	1/3	0/3
Magnesium	ALLH	3	3	2030–2140	4610	0/3	0/3
Manganese	ALLH	3	3	247–423	671	0/3	0/3
Mercury	ALLH	3	1	[0.06]–0.08	0.1	0/3	0/3
Nickel	ALLH	3	3	8–9	15.4	0/3	0/3
Potassium	ALLH	3	3	1490–1740	3460	0/3	0/3
Selenium	ALLH	3	0	[0.19–2.4]	1.52	0/3	1/3
Silver	ALLH	3	0	[1.6–2.2]	1	0/3	3/3
Sodium	ALLH	3	3	116–137	915	0/3	0/3
Thallium	ALLH	3	1	0.24–0.24	0.73	0/3	0/3
Vanadium	ALLH	3	3	18.9–25.9	39.6	0/3	0/3
Zinc	ALLH	3	3	34.3–63.9	48.8	2/3	0/3

Table 7.4-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Decision-Level Data							
Consolidated Unit 16-029(h2)-99							
Aluminum	ALLH	23	23	4250–34300	29200	1/23	0/23
Aluminum	FILL	3	3	9100–12000	29200	0/3	0/3
Antimony	ALLH	19	0	[0.46–5.4]	0.83	0/19	7/19
Arsenic	ALLH	20	20	1.3–5.1	8.17	0/20	0/20
Arsenic	FILL	3	3	2.1–2.2	8.17	0/3	0/3
Barium	ALLH	23	23	51.7–677	295	2/23	0/23
Barium	FILL	3	3	130–160	295	0/3	0/3
Beryllium	ALLH	23	20	0.29–2.3	1.83	1/23	0/23
Beryllium	FILL	3	3	0.72–0.94	1.83	0/3	0/3
Cadmium	ALLH	23	0	[0.05–0.57]	0.4	0/23	8/23
Cadmium	FILL	3	0	[0.53–0.56]	0.4	0/3	3/3
Calcium	ALLH	23	23	960–4320	6120	0/23	0/23
Calcium	FILL	3	3	1800–3800	6120	0/3	0/3
Chromium	ALLH	23	23	2.9–16.2	19.3	0/23	0/23
Chromium	FILL	3	3	7.1–9.4	19.3	0/3	0/3
Cobalt	ALLH	23	23	2.3–13.2	8.64	4/23	0/23
Cobalt	FILL	3	3	5.9–6	8.64	0/3	0/3
Copper	ALLH	23	23	2.6–16.6	14.7	1/23	0/23
Copper	FILL	3	3	9.5–12	14.7	0/3	0/3
Iron	ALLH	23	23	4800–19400	21500	0/23	0/23
Iron	FILL	3	3	9900–12000	21500	0/3	0/3
Lead	ALLH	23	23	5.9–67	22.3	4/23	0/23
Lead	FILL	3	3	23–38	22.3	3/3	0/3
Magnesium	ALLH	23	23	660–3060	4610	0/23	0/23
Magnesium	FILL	3	3	1500–1900	4610	0/3	0/3
Manganese	ALLH	23	23	101–1280	671	2/23	0/23
Manganese	FILL	3	3	300–330	671	0/3	0/3
Mercury	ALLH	23	5	[0.01]–0.1	0.1	0/23	4/23
Mercury	FILL	3	0	[0.11–0.11]	0.1	0/3	3/3
Nickel	ALLH	23	23	2.6–14	15.4	0/23	0/23
Nickel	FILL	3	3	6–9.2	15.4	0/3	0/3
Potassium	ALLH	23	23	614–1910	3460	0/23	0/23
Potassium	FILL	3	3	1200–1700	3460	0/3	0/3
Selenium	ALLH	23	5	[0.23]–2.3	1.52	1/23	0/23

Table 7.4-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Silver	ALLH	23	0	[0.092–2.3]	1	0/23	4/23
Silver	FILL	3	0	[2.1–2.2]	1	0/3	3/3
Sodium	ALLH	23	23	39–1150	915	1/23	0/23
Sodium	FILL	3	3	70–87	915	0/3	0/3
Thallium	ALLH	23	13	0.29–3.2	0.73	3/23	3/23
Thallium	FILL	3	3	0.33–0.41	0.73	0/3	0/3
Uranium	ALLH	14	10	2.11–57.1	1.82	10/14	4/14
Vanadium	ALLH	23	23	8–30.5	39.6	0/23	0/23
Vanadium	FILL	3	3	19–22	39.6	0/3	0/3
Zinc	ALLH	23	23	9.5–260	48.8	2/23	0/23
Zinc	FILL	3	3	54–78	48.8	3/3	0/3
Consolidated Unit 16-029(q)-99							
Aluminum	ALLH	12	12	25–29000	29200	0/12	0/12
Aluminum	FILL	2	2	6870–35800	29200	1/2	0/2
Aluminum	QBT4	4	4	1200–9470	7340	1/4	0/4
Antimony	ALLH	12	2	[5.5]–7.9	0.83	2/12	10/12
Antimony	FILL	2	0	[0.74–12.4]	0.83	0/2	1/2
Antimony	QBT4	4	0	[0.67–7.5]	0.5	0/4	4/4
Arsenic	ALLH	12	12	0.29–7.2	8.17	0/12	0/12
Arsenic	FILL	2	2	0.69–3.8	8.17	0/2	0/2
Arsenic	QBT4	4	2	[0.28]–1.5	2.79	0/4	0/4
Barium	ALLH	12	12	54.9–2720	295	5/12	0/12
Barium	FILL	2	2	70.3–105	295	0/2	0/2
Barium	QBT4	4	4	34.3–702	46	3/4	0/4
Beryllium	ALLH	12	12	0.28–1.8	1.83	0/12	0/12
Beryllium	FILL	2	2	0.78–1.8	1.83	0/2	0/2
Beryllium	QBT4	4	3	[0.09]–0.89	1.21	0/4	0/4
Cadmium	ALLH	12	0	[0.57–0.88]	0.4	0/12	12/12
Cadmium	FILL	2	1	0.5–0.5	0.4	1/2	1/2
Cadmium	QBT4	4	1	0.31–0.31	1.63	0/4	0/4
Calcium	ALLH	12	12	1090–4580	6120	0/12	0/12
Calcium	FILL	2	2	1840–5680	6120	0/2	0/2
Calcium	QBT4	4	4	721–2480	2200	1/4	0/4
Chromium	ALLH	12	12	1.7–14.9	19.3	0/12	0/12
Chromium	FILL	2	2	3.9–19.7	19.3	1/2	0/2
Chromium	QBT4	4	4	0.83–5.9	7.14	0/4	0/4

Table 7.4-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Chromium hexavalent ion	ALLH	1	1	1.2	n/a	n/a	n/a
Cobalt	ALLH	12	11	1.5–13.8	8.64	1/12	0/12
Cobalt	FILL	2	2	1.5–8.3	8.64	0/2	0/2
Cobalt	QBT4	4	3	0.29–2.2	3.14	0/4	0/4
Copper	ALLH	12	12	2.5–18.1	14.7	1/12	0/12
Copper	FILL	2	2	4–13.7	14.7	0/2	0/2
Copper	QBT4	4	4	1.8–7.4	4.66	2/4	0/4
Cyanide (Total)	ALLH	12	0	[0.52–0.72]	0.5	0/12	12/12
Cyanide (Total)	FILL	2	0	[0.64–0.73]	0.5	0/2	2/2
Cyanide (Total)	QBT4	4	0	[0.57–0.64]	0.5	0/4	4/4
Iron	ALLH	12	12	19–19700	21500	0/12	0/12
Iron	FILL	2	2	7200–24100	21500	1/2	0/2
Iron	QBT4	4	4	2950–7120	14500	0/4	0/4
Lead	ALLH	12	12	1.4–128	22.3	2/12	0/12
Lead	FILL	2	2	3.8–12.2	22.3	0/2	0/2
Lead	QBT4	4	4	1.6–5.5	11.2	0/4	0/4
Magnesium	ALLH	12	12	427–3350	4610	0/12	0/12
Magnesium	FILL	2	2	1030–3820	4610	0/2	0/2
Magnesium	QBT4	4	4	381–1510	1690	0/4	0/4
Manganese	ALLH	12	12	136–1590	671	3/12	0/12
Manganese	FILL	2	2	164–277	671	0/2	0/2
Manganese	QBT4	4	4	77.2–125	482	0/4	0/4
Mercury	ALLH	12	1	0.02–0.02	0.1	0/12	2/12
Nickel	ALLH	12	12	3–15.2	15.4	0/12	0/12
Nickel	FILL	2	2	6–16.3	15.4	1/2	0/2
Nickel	QBT4	4	4	1.6–6.4	6.58	0/4	0/4
Potassium	ALLH	12	12	309–3020	3460	0/12	0/12
Potassium	FILL	2	2	922–2550	3460	0/2	0/2
Potassium	QBT4	4	4	268–1040	43700	0/4	0/4
Selenium	ALLH	12	3	[0.19]–0.51	1.52	0/12	1/12
Selenium	FILL	2	0	[0.56–2.6]	1.52	0/2	1/2
Selenium	QBT4	4	0	[0.5–0.56]	0.3	0/4	4/4
Silver	ALLH	12	0	[1.1–2.5]	1	0/12	12/12
Silver	FILL	2	0	[0.26–2.5]	1	0/2	1/2
Silver	QBT4	4	0	[0.23–1.3]	1	0/4	3/4

Table 7.4-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Sodium	ALLH	12	12	93.2–455	915	0/12	0/12
Sodium	FILL	2	2	339–348	915	0/2	0/2
Sodium	QBT4	4	4	154–203	2770	0/4	0/4
Thallium	ALLH	12	1	[0.2]–1.2	0.73	1/12	2/12
Vanadium	ALLH	12	12	4.2–32.9	39.6	0/12	0/12
Vanadium	FILL	2	2	5.9–30.4	39.6	0/2	0/2
Vanadium	QBT4	4	4	1.3–8.8	17	0/4	0/4
Zinc	ALLH	12	12	14.1–56.2	48.8	2/12	0/12
Zinc	FILL	2	2	18.6–47.7	48.8	0/2	0/2
Zinc	QBT4	4	4	10.4–21.7	63.5	0/4	0/4

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Values in brackets are below detection limits.

Table 7.4-3
Subaggregate 6 Frequency of Detection of Organic Chemicals in Soil, Fill, and Tuff at HE Machining Buildings and Associated Structures: Screening- and Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Screening-Level Data (Excavated Samples)					
Consolidated Unit 16-029(h2)-99					
Bis(2-ethylhexyl)phthalate	QBT4	4	2	0.028–[0.41]	2/4
RDX	QBT4	4	1	[0.96]–1.3	1/4
Trinitrobenzene[1,3,5-]	QBT4	4	2	[0.24]–2.3	2/4
Trinitrotoluene[2,4,6-]	QBT4	4	2	[0.24]–1.9	2/4
Consolidated Unit 16-029(q)-99					
Amino-2,6-dinitrotoluene[4-]	ALLH	3	3	0.296–0.584	3/3
Amino-4,6-dinitrotoluene[2-]	ALLH	3	3	0.272–0.674	3/3
HMX	ALLH	3	2	[0.184]–25.9	2/3
Methylene Chloride	ALLH	2	1	0.011–0.011	1/2
RDX	ALLH	3	3	0.229–164	3/3
Trichloroethane[1,1,1-]	ALLH	2	1	0.002–[0.007]	1/2
Trinitrotoluene[2,4,6-]	ALLH	3	2	[0.09]–0.688	2/3
Decision-Level Data					
Consolidated Unit 16-029(h2)-99					
Amino-2,6-dinitrotoluene[4-]	ALLH	20	3	[0.086]–0.58	3/20
Amino-4,6-dinitrotoluene[2-]	ALLH	20	3	[0.084]–1.3	3/20
Benzo(a)anthracene	ALLH	22	2	0.072–[0.44]	2/22
Benzo(a)anthracene	FILL	3	2	0.072–[0.68]	2/3
Benzo(a)pyrene	ALLH	22	2	0.08–[0.44]	2/22
Benzo(b)fluoranthene	ALLH	22	3	0.1–[0.44]	3/22
Benzo(b)fluoranthene	FILL	3	2	0.079–[0.68]	2/3
Benzo(g,h,i)perylene	ALLH	22	2	0.081–[0.44]	2/22
Benzo(k)fluoranthene	ALLH	20	2	0.064–[0.44]	2/20
Bis(2-ethylhexyl)phthalate	ALLH	22	1	0.11–[0.44]	1/22
Chrysene	ALLH	22	2	0.12–[0.44]	2/22
Di-n-butylphthalate	ALLH	22	3	0.041–[0.44]	3/22
Dinitrotoluene[2,4-]	ALLH	44	1	[0.000063]–0.075	1/44
Fluoranthene	ALLH	22	2	0.16–[0.44]	2/22
Fluoranthene	FILL	3	2	0.039–[0.68]	2/3
HMX	ALLH	22	3	[0.165]–98	3/22
Indeno(1,2,3-cd)pyrene	ALLH	22	2	0.085–[0.44]	2/22
Phenanthrene	ALLH	22	2	0.098–[0.44]	2/22
Pyrene	ALLH	22	2	0.18–[0.44]	2/22

Table 7.4-3 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Pyrene	FILL	3	2	0.036–[0.68]	2/3
RDX	ALLH	22	8	[0.168]–1200	8/22
Trinitrotoluene[2,4,6-]	ALLH	22	2	[0.086]–650	2/22
Consolidated Unit 16-029(q)-99					
Amino-2,6-dinitrotoluene[4-]	ALLH	10	2	[0.084]–0.292	2/10
Amino-4,6-dinitrotoluene[2-]	ALLH	10	2	[0.082]–0.265	2/10
Bis(2-ethylhexyl)phthalate	QBT4	4	1	0.04–[0.42]	1/4
Carbon Disulfide	ALLH	12	2	0.001–[0.008]	2/12
Dichlorodifluoromethane	ALLH	12	1	0.002–[0.016]	1/12
Di-n-butylphthalate	FILL	2	1	0.072–[0.42]	1/2
HMX	ALLH	12	1	[0.18]–0.278	1/12
HMX	QBT4	4	1	[0.181]–0.524	1/4
Methylene Chloride	ALLH	12	1	[0.0058]–0.012	1/12
Methylene Chloride	FILL	2	2	0.005–0.012	2/2
Methylene Chloride	QBT4	4	1	0.001–[0.013]	1/4
RDX	ALLH	12	6	[0.177]–1.74	6/12
RDX	FILL	2	1	[0.181]–0.698	1/2
RDX	QBT4	4	1	[0.176]–2.03	1/4
Toluene	ALLH	12	2	0.003–[0.008]	2/12
Trichloroethane[1,1,1-]	ALLH	12	1	0.002–[0.008]	1/12
Trichloroethene	ALLH	12	2	0.002–[0.008]	2/12
Trichlorofluoromethane	ALLH	12	3	0.002–[0.008]	3/12
Trichlorofluoromethane	QBT4	4	1	0.001–[0.006]	1/4
Trinitrobenzene[1,3,5-]	ALLH	12	1	[0.087]–0.091	1/12
Trinitrotoluene[2,4,6-]	ALLH	12	6	[0.09]–1.94	6/12
Trinitrotoluene[2,4,6-]	FILL	2	1	[0.092]–0.61	1/2
Trinitrotoluene[2,4,6-]	QBT4	4	3	[0.089]–1.05	3/4

Note: Values in brackets are below detection limits.

Table 7.4-4
Subaggregate 6 Historical Analytical Results of Inorganic Chemicals Greater Than Background Values in Soil, Fill, and Tuff at HE Machining Buildings and Associated Structures: Screening- and Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium
Soil Background Value[a]				**29200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**
QBT 2,3,4 Background Value				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**
Consolidated Unit 16-029(h2)-99—Screening-Level Data											
SWMU 16-025(i)											
16-05794	4.25–4.75	RE16-98-0011[b]	QBT4	13000	—[c]	2.8	1570 (J-)	—	—	3880	—
16-05794	5.75–6.75	RE16-98-0012[b]	QBT4	—	—	—	936 (J-)	—	—	—	—
SWMU 16-025(j)											
16-05796	6.42–6.67	RE16-98-0013[b]	QBT4	—	—	—	49.1 (J-)	—	—	—	—
16-05796	8.17–8.67	RE16-98-0014[b]	QBT4	—	—	—	172 (J-)	—	—	—	—
SWMU 16-029(h2)											
16-03383	3.5–4	0316-97-0106[b]	ALLH	—	—	—	—	—	—	—	—
Consolidated Unit 16-029(q)-99—Screening-Level Data											
AOC C-16-064											
16-02541	0–0.5	0316-96-0130[b]	ALLH	—	11.2 (UJ)	—	999	—	0.69 (U)	—	—
16-02541	0.5–1	0316-96-0199[b]	ALLH	—	11.3 (UJ)	—	387	—	0.7 (U)	—	—
SWMU 16-029(q)											
16-02404	0–0.5	0316-96-0063[b]	ALLH	—	6.7 (U)	8.7	1220 (J+)	—	0.88 (U)	—	—
Consolidated Unit 16-029(h2)-99—Decision-Level Data											
SWMU 16-025(d)											
16-04114	0–1	0316-97-0550	ALLH	—	—	—	—	—	—	—	—
SWMU 16-025(g)											
16-04123	0–1	0316-97-0584	ALLH	—	—	—	—	—	—	—	—

Table 7.4-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium
Soil Background Value[a]				**29200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**
QBT 2,3,4 Background Value				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**
SWMU 16-025(h)											
16-03401	3–3.33	0316-97-0104	ALLH	—	5.3 (U)	—	—	—	0.53 (U)	—	—
16-04129	0–1	0316-97-0554	ALLH	—	—	—	—	—	0.54 (U)	—	—
16-04129	0–1	0316-97-0585	FILL	—	—	—	—	—	0.56 (U)	—	—
16-04132	0–0.5	0316-97-0555	FILL	—	—	—	—	—	0.53 (U)	—	—
SWMU 16-025(j)											
16-04115	0–1	0316-97-0583	ALLH	—	—	—	—	—	—	—	—
16-05796	5–5.5	RE16-98-0010	ALLH	—	1.1 (U)	—	—	—	—	—	—
SWMU 16-029(h2)											
16-03381	3.5–3.6	RE16-98-0008	ALLH	—	1.3 (U)	—	677	—	—	—	—
16-03381	5.5–6.5	RE16-98-0009	ALLH	—	1.4 (U)	—	—	—	—	—	—
16-03382	0.5–1	0316-97-0105	ALLH	—	—	—	—	—	—	—	—
16-03382	2.5–3	0316-97-0112	ALLH	—	4.2 (U)	—	—	—	0.42 (U)	—	—
16-03383	3.5–4	0316-97-0113	ALLH	—	4.5 (U)	—	—	—	0.45 (U)	—	—
16-03386	2–2.5	0316-97-0107	ALLH	34300	—	—	408	2.3	—	—	—
16-03388	2–2.5	0316-97-0109	ALLH	—	—	—	—	—	—	—	—
16-03389	3.5–4	0316-97-0101	ALLH	—	5.4 (U)	—	—	—	0.54 (U)	—	—
16-03393	1.25–1.5	0316-97-0110	ALLH	—	—	—	—	—	0.57 (U)	—	—
16-03396	1.25–1.5	0316-97-0111	ALLH	—	—	—	—	—	0.55 (U)	—	—
16-03397	2.5–3	0316-97-0102	ALLH	—	—	—	—	—	—	—	—
16-03399	2–2.5	0316-97-0103	ALLH	—	—	—	—	—	—	—	—

Table 7.4-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium
Soil Background Value[a]				**29200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**
QBT 2,3,4 Background Value				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**
Consolidated Unit 16-029(q)-99—Decision-Level Data											
AOC C-16-064											
16-02541	1–1.5	0316-96-0162	ALLH	—	12 (UJ)	—	—	—	0.59 (U)	—	—
16-02541	1.5–2	0316-96-0163	ALLH	—	11 (UJ)	—	—	—	0.57 (U)	—	—
SWMU 16-017(f)-99											
16-02580	1–1.5	0316-96-0142	ALLH	—	6.7 (U)	—	—	—	0.88 (U)	—	—
16-02582	1–1.5	0316-96-0143	ALLH	—	6.6 (U)	—	—	—	0.86 (U)	—	—
SWMU 16-029(q)											
16-02255	0–0.5	0316-96-0128	ALLH	—	5.7 (U)	—	1010	—	0.75 (U)	—	—
16-02256	0–0.5	0316-96-0129	ALLH	—	5.5 (U)	—	598	—	0.73 (U)	—	—
16-02397	5–6	0316-96-0122	QBT4	9470	7.5 (UJ)	—	117 (J+)	—	—	2480	—
16-02397	6–7	0316-96-0152	QBT4	—	7 (UJ)	—	69.1 (J+)	—	—	—	—
16-02399	4.5–5	0316-96-0062	ALLH	—	6.6 (U)	—	1600 (J+)	—	0.87 (U)	—	—
16-02400	4.5–5	0316-96-0120	ALLH	—	6.2 (UJ)	—	—	—	0.74 (U)	—	—
16-02400	5–6	0316-96-0150	ALLH	—	6.5 (UJ)	—	—	—	0.77 (U)	—	—
16-02402	4.5–5	0316-96-0121	ALLH	—	6.2 (UJ)	—	1140 (J+)	—	0.74 (U)	—	—
16-02402	5–6	0316-96-0151	ALLH	—	7.9 (J-)	—	2720 (J+)	—	0.86 (U)	—	—
16-02404	7–8	0316-96-0144	QBT4	—	6.8 (UJ)	—	702 (J+)	—	—	—	—
16-02405	0–0.5	0316-96-0126	ALLH	—	5.5 (U)	—	1160	—	0.72 (U)	—	—
16-02406	0–0.5	0316-96-0127	ALLH	—	5.6 (J)	—	366	—	0.72 (U)	—	—
16-02407	4–4.5	0316-96-0061	FILL	35800	12.4 (UJ)	—	—	—	0.77 (U)	—	19.7
16-02407	7–8	0316-96-0069	QBT4	—	0.67 (U)	—	—	—	—	—	—
16-02412	4–4.5	0316-96-0060	ALLH	—	12.6 (UJ)	—	—	—	0.78 (U)	—	—
16-02412	7–8	0316-96-0068	FILL	—	—	—	—	—	0.5 (J)	—	—

Table 7.4-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Chromium Hexavalent Ion	Cobalt	Copper	Cyanide (Total)	Iron	Lead	Magnesium	Manganese
Soil Background Value[a]				**n/a[d]**	**8.64**	**14.7**	**0.5**	**21500**	**22.3**	**4610**	**671**
QBT 2,3,4 Background Value				**n/a**	**3.14**	**4.66**	**0.5**	**14500**	**11.2**	**1690**	**482**
Consolidated Unit 16-029(h2)-99—Screening-Level Data											
SWMU 16-025(i)											
16-05794	4.25–4.75	RE16-98-0011[b]	QBT4	—	—	6.8	—	—	—	2170	—
16-05794	5.75–6.75	RE16-98-0012[b]	QBT4	—	—	—	—	—	—	—	—
SWMU 16-025(j)											
16-05796	6.42–6.67	RE16-98-0013[b]	QBT4	—	—	—	—	—	—	—	—
16-05796	8.17–8.67	RE16-98-0014[b]	QBT4	—	—	—	—	—	—	—	—
SWMU 16-029(h2)											
16-03383	3.5–4	0316-97-0106[b]	ALLH	—	—	—	—	—	—	—	—
Consolidated Unit 16-029(q)-99—Screening-Level Data											
AOC C-16-064											
16-02541	0–0.5	0316-96-0130[b]	ALLH	—	—	—	0.67 (U)	—	41.7	—	—
16-02541	0.5–1	0316-96-0199[b]	ALLH	—	—	—	0.68 (U)	—	—	—	—
SWMU 16-029(q)											
16-02404	0–0.5	0316-96-0063[b]	ALLH	—	—	15.8	0.59 (U)	—	—	—	—
Consolidated Unit 16-029(h2)-99—Decision-Level Data											
SWMU 16-025(d)											
16-04114	0–1	0316-97-0550	ALLH	—	—	—	—	—	—	—	—
SWMU 16-025(g)											
16-04123	0–1	0316-97-0584	ALLH	—	—	16.6	—	—	—	—	—
SWMU 16-025(h)											
16-03401	3–3.33	0316-97-0104	ALLH	—	—	—	—	—	—	—	—
16-04129	0–1	0316-97-0554	ALLH	—	—	—	—	—	—	—	—

Table 7.4-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Chromium Hexavalent Ion	Cobalt	Copper	Cyanide (Total)	Iron	Lead	Magnesium	Manganese
Soil Background Value[a]				**n/a[d]**	**8.64**	**14.7**	**0.5**	**21500**	**22.3**	**4610**	**671**
QBT 2,3,4 Background Value				**n/a**	**3.14**	**4.66**	**0.5**	**14500**	**11.2**	**1690**	**482**
16-04129	0–1	0316-97-0585	FILL	—	—	—	—	—	38	—	—
16-04132	0–0.5	0316-97-0555	FILL	—	—	—	—	—	23	—	—
SWMU 16-025(j)											
16-04115	0–1	0316-97-0583	ALLH	—	9.3 (J)	—	—	—	67	—	—
16-05796	5–5.5	RE16-98-0010	ALLH	—	—	—	—	—	—	—	—
SWMU 16-029(h2)											
16-03381	3.5–3.6	RE16-98-0008	ALLH	—	—	—	—	—	—	—	—
16-03381	5.5–6.5	RE16-98-0009	ALLH	—	13.2 (J)	—	—	—	36.3	—	808
16-03382	0.5–1	0316-97-0105	ALLH	—	8.8	—	—	—	—	—	—
16-03382	2.5–3	0316-97-0112	ALLH	—	—	—	—	—	—	—	—
16-03383	3.5–4	0316-97-0113	ALLH	—	—	—	—	—	—	—	—
16-03386	2–2.5	0316-97-0107	ALLH	—	—	—	—	—	—	—	—
16-03388	2–2.5	0316-97-0109	ALLH	—	—	—	—	—	—	—	—
16-03389	3.5–4	0316-97-0101	ALLH	—	—	—	—	—	—	—	—
16-03393	1.25–1.5	0316-97-0110	ALLH	—	—	—	—	—	—	—	—
16-03396	1.25–1.5	0316-97-0111	ALLH	—	—	—	—	—	—	—	—
16-03397	2.5–3	0316-97-0102	ALLH	—	11 (J)	—	—	—	25.6	—	1280
16-03399	2–2.5	0316-97-0103	ALLH	—	—	—	—	—	28.4	—	—
Consolidated Unit 16-029(q)-99—Decision-Level Data											
AOC C-16-064											
16-02541	1–1.5	0316-96-0162	ALLH	—	—	—	0.59 (U)	—	—	—	850
16-02541	1.5–2	0316-96-0163	ALLH	—	—	—	0.57 (U)	—	—	—	—

Table 7.4-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Chromium Hexavalent Ion	Cobalt	Copper	Cyanide (Total)	Iron	Lead	Magnesium	Manganese
Soil Background Value[a]				**n/a[d]**	**8.64**	**14.7**	**0.5**	**21500**	**22.3**	**4610**	**671**
QBT 2,3,4 Background Value				**n/a**	**3.14**	**4.66**	**0.5**	**14500**	**11.2**	**1690**	**482**
SWMU 16-017(f)-99											
16-02580	1–1.5	0316-96-0142	ALLH	—	—	—	0.6 (U)	—	128	—	—
16-02582	1–1.5	0316-96-0143	ALLH	—	13.8	—	0.58 (U)	—	24.2	—	1590
SWMU 16-029(q)											
16-02255	0–0.5	0316-96-0128	ALLH	—	—	—	0.51 (U)	—	—	—	—
16-02256	0–0.5	0316-96-0129	ALLH	—	—	—	0.52 (U)	—	—	—	—
16-02397	5–6	0316-96-0122	QBT4	—	—	7.4	0.64 (U)	—	—	—	—
16-02397	6–7	0316-96-0152	QBT4	—	—	—	0.59 (U)	—	—	—	—
16-02399	4.5–5	0316-96-0062	ALLH	1.2	—	—	0.59 (U)	—	—	—	—
16-02400	4.5–5	0316-96-0120	ALLH	—	—	—	0.53 (U)	—	—	—	—
16-02400	5–6	0316-96-0150	ALLH	—	—	—	0.55 (U)	—	—	—	—
16-02402	4.5–5	0316-96-0121	ALLH	—	—	—	0.53 (U)	—	—	—	—
16-02402	5–6	0316-96-0151	ALLH	—	—	—	0.62 (U)	—	—	—	—
16-02404	7–8	0316-96-0144	QBT4	—	—	5.1 (J)	0.58 (U)	—	—	—	—
16-02405	0–0.5	0316-96-0126	ALLH	—	—	18.1	0.52 (U)	—	—	—	—
16-02406	0–0.5	0316-96-0127	ALLH	—	—	—	0.52 (U)	—	—	—	—
16-02407	4–4.5	0316-96-0061	FILL	—	—	—	0.73 (U)	24100	—	—	—
16-02407	7–8	0316-96-0069	QBT4	—	—	—	0.57 (U)	—	—	—	—
16-02412	4–4.5	0316-96-0060	ALLH	—	—	—	0.72 (U)	—	—	—	1210
16-02412	7–8	0316-96-0068	FILL	—	—	—	0.64 (U)	—	—	—	—

Table 7.4-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Mercury	Nickel	Selenium	Silver	Sodium	Thallium	Uranium	Zinc
Soil Background Value[a]				**0.1**	**15.4**	**1.52**	**1**	**915**	**0.73**	**1.82**	**48.8**
QBT 2,3,4 Background Value				**0.1**	**6.58**	**0.3**	**1**	**2770**	**1.10**	**2.40**	**63.5**
Consolidated Unit 16-029(h2)-99—Screening-Level Data											
SWMU 16-025(i)											
16-05794	4.25–4.75	RE16-98-0011[b]	QBT4	—	—	0.94 (U)	—	—	1.3 (U)	25.2 (U)	—
16-05794	5.75–6.75	RE16-98-0012[b]	QBT4	—	—	0.93 (U)	—	—	1.3 (U)	25.2 (U)	—
SWMU 16-025(j)											
16-05796	6.42–6.67	RE16-98-0013[b]	QBT4	—	—	0.89 (U)	—	—	1.2 (U)	25.2 (U)	—
16-05796	8.17–8.67	RE16-98-0014[b]	QBT4	—	—	0.89 (U)	—	—	1.2 (U)	25.2 (U)	—
SWMU 16-029(h2)											
16-03383	3.5–4	0316-97-0106[b]	ALLH	—	—	—	—	—	0.81 (J)	2.58	51.4
Consolidated Unit 16-029(q)-99—Screening-Level Data											
AOC C-16-064											
16-02541	0–0.5	0316-96-0130[b]	ALLH	—	—	2.4 (U)	2.2 (UJ)	—	—	—	54
16-02541	0.5–1	0316-96-0199[b]	ALLH	—	—	—	2.2 (UJ)	—	—	—	63.9
SWMU 16-029(q)											
16-02404	0–0.5	0316-96-0063[b]	ALLH	—	—	—	1.6 (U)	—	—	—	—
Consolidated Unit 16-029(h2)-99—Decision-Level Data											
SWMU 16-025(d)											
16-04114	0–1	0316-97-0550	ALLH	—	—	—	—	—	—	—	49.8
SWMU 16-025(g)											
16-04123	0–1	0316-97-0584	ALLH	—	—	—	—	—	—	—	—
SWMU 16-025(h)											
16-03401	3–3.33	0316-97-0104	ALLH	—	—	—	—	—	—	23.5 (J)	—
16-04129	0–1	0316-97-0554	ALLH	0.11 (U)	—	—	2.2 (U)	—	—	—	—
16-04129	0–1	0316-97-0585	FILL	0.11 (U)	—	—	2.2 (U)	—	—	—	78

Table 7.4-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Mercury	Nickel	Selenium	Silver	Sodium	Thallium	Uranium	Zinc
Soil Background Value[a]				**0.1**	**15.4**	**1.52**	**1**	**915**	**0.73**	**1.82**	**48.8**
QBT 2,3,4 Background Value				**0.1**	**6.58**	**0.3**	**1**	**2770**	**1.10**	**2.40**	**63.5**
16-04132	0–0.5	0316-97-0555	FILL	0.11 (U)	—	—	2.1 (U)	—	—	—	54
SWMU 16-025(j)											
16-04115	0–1	0316-97-0583	ALLH	—	—	—	—	—	—	—	260
16-05796	5–5.5	RE16-98-0010	ALLH	—	—	—	—	—	1.1 (U)	27.3 (U)	—
SWMU 16-029(h2)											
16-03381	3.5–3.6	RE16-98-0008	ALLH	—	—	—	—	—	1.3 (U)	31.9 (U)	—
16-03381	5.5–6.5	RE16-98-0009	ALLH	—	—	—	—	—	1.4 (U)	33.4 (U)	—
16-03382	0.5–1	0316-97-0105	ALLH	—	—	—	—	—	0.84 (J)	2.32	—
16-03382	2.5–3	0316-97-0112	ALLH	—	—	—	—	—	—	16.9(J)	—
16-03383	3.5–4	0316-97-0113	ALLH	—	—	—	—	—	—	20.4 (J)	—
16-03386	2–2.5	0316-97-0107	ALLH	—	—	—	—	1150	0.82 (J)	3.17	—
16-03388	2–2.5	0316-97-0109	ALLH	—	—	—	—	—	—	3.02	—
16-03389	3.5–4	0316-97-0101	ALLH	—	—	—	—	—	—	16.1 (U)	—
16-03393	1.25–1.5	0316-97-0110	ALLH	0.11 (U)	—	—	2.3 (UJ)	—	—	2.79	—
16-03396	1.25–1.5	0316-97-0111	ALLH	0.11 (U)	—	—	2.2 (UJ)	—	—	2.11	—
16-03397	2.5–3	0316-97-0102	ALLH	—	—	2.3	—	—	3.2	57.1	—
16-03399	2–2.5	0316-97-0103	ALLH	—	—	—	—	—	—	19.1 (J)	—
Consolidated Unit 16-029(q)-99—Decision-Level Data											
AOC C-16-064											
16-02541	1–1.5	0316-96-0162	ALLH	0.12 (U)	—	—	2.4 (U)	—	1.5 (U)	—	49
16-02541	1.5–2	0316-96-0163	ALLH	0.11 (U)	—	—	2.3 (U)	—	1.4 (U)	—	—
SWMU 16-017(f)-99											
16-02580	1–1.5	0316-96-0142	ALLH	—	—	—	1.6 (U)	—	—	—	—
16-02582	1–1.5	0316-96-0143	ALLH	—	—	—	1.6 (U)	—	—	—	—

Table 7.4-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Mercury	Nickel	Selenium	Silver	Sodium	Thallium	Uranium	Zinc
Soil Background Value[a]				**0.1**	**15.4**	**1.52**	**1**	**915**	**0.73**	**1.82**	**48.8**
QBT 2,3,4 Background Value				**0.1**	**6.58**	**0.3**	**1**	**2770**	**1.10**	**2.40**	**63.5**
SWMU 16-029(q)											
16-02255	0–0.5	0316-96-0128	ALLH	—	—	—	1.4 (U)	—	—	—	53.1
16-02256	0–0.5	0316-96-0129	ALLH	—	—	—	1.3 (U)	—	—	—	—
16-02397	5–6	0316-96-0122	QBT4	—	—	0.56 (UJ)	1.3 (U)	—	—	—	—
16-02397	6–7	0316-96-0152	QBT4	—	—	0.52 (UJ)	1.3 (U)	—	—	—	—
16-02399	4.5–5	0316-96-0062	ALLH	—	—	—	1.6 (U)	—	—	—	—
16-02400	4.5–5	0316-96-0120	ALLH	—	—	—	1.1 (U)	—	—	—	—
16-02400	5–6	0316-96-0150	ALLH	—	—	—	1.2 (U)	—	—	—	—
16-02402	4.5–5	0316-96-0121	ALLH	—	—	—	1.1 (U)	—	—	—	—
16-02402	5–6	0316-96-0151	ALLH	—	—	—	1.3 (U)	—	—	—	—
16-02404	7–8	0316-96-0144	QBT4	—	—	0.51 (UJ)	1.2 (U)	—	—	—	—
16-02405	0–0.5	0316-96-0126	ALLH	—	—	—	1.3 (U)	—	—	—	56.2
16-02406	0–0.5	0316-96-0127	ALLH	—	—	—	1.3 (U)	—	—	—	—
16-02407	4–4.5	0316-96-0061	FILL	—	16.3	2.6 (U)	2.5 (UJ)	—	—	—	—
16-02407	7–8	0316-96-0069	QBT4	—	—	0.5 (UJ)	—	—	—	—	—
16-02412	4–4.5	0316-96-0060	ALLH	—	—	2.6 (U)	2.5 (UJ)	—	1.2 (J)	—	—
16-02412	7–8	0316-96-0068	FILL	—	—	—	—	—	—	—	—

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

[a] Fill samples were compared to soil background values.

[b] Soil removed after sampling.

[c] — = If analyzed, sample result is less than background value.

[d] n/a = Not applicable; no background value available.

Table 7.4-5
Subaggregate 6 Historical Analytical Results of Organic Chemicals Detected in Soil, Fill, and Tuff at HE Machining Buildings and Associated Structures: Screening- and Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Amino-2,6-dinitrotoluene[4-]	Amino-4,6-dinitrotoluene[2-]	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Carbon Disulfide
Consolidated Unit 16-029(h2)-99—Screening-Level Data												
SWMU 16-025(i)												
16-05794	4.25–4.75	RE16-98-0011[a]	QBT4	—[b]	—	—	—	—	—	—	—	—
16-05794	5.75–6.75	RE16-98-0012[a]	QBT4	—	—	—	—	—	—	—	—	—
SWMU 16-025(j)												
16-05796	6.42–6.67	RE16-98-0013[a]	QBT4	—	—	—	—	—	—	—	0.056 (J)	—
16-05796	8.17–8.67	RE16-98-0014[a]	QBT4	—	—	—	—	—	—	—	0.028 (J)	—
Consolidated Unit 16-092(q)-99—Screening-Level Data												
SWMU 16-029(q)												
16-02404	0–0.5	0316-96-0063[a]	ALLH	0.515	0.674	—	—	—	—	—	—	—
AOC C-16-064												
16-02541	0–0.5	0316-96-0130[a]	ALLH	0.584	0.401	—	—	—	—	—	—	—
16-02541	0.5–1	0316-96-0199[a]	ALLH	0.296	0.272	—	—	—	—	—	—	—
Consolidated Unit 16-029(h2)-99—Decision-Level Data												
SWMU 16-025(h)												
16-03401	3–3.33	0316-97-0104	ALLH	—	—	—	—	—	—	—	—	—
16-04129	0–1	0316-97-0554	ALLH	—	—	0.072 (J)	0.08 (J)	0.2 (J)	0.081 (J)	0.064 (J)	—	—
16-04129	0–1	0316-97-0585	FILL	—	—	0.072 (J)	—	0.079 (J)	—	—	—	—

Table 7.4-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Amino-2,6-dinitrotoluene[4-]	Amino-4,6-dinitrotoluene[2-]	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Carbon Disulfide
SWMU 16-025(j)												
16-05796	5–5.5	RE16-98-0010	ALLH	—	—	—	—	—	—	—	—	—
SWMU 16-029(h2)												
16-03381	3.5–3.6	RE16-98-0008	ALLH	0.58	1.3	—	—	—	—	—	—	—
16-03381	5.5–6.5	RE16-98-0009	ALLH	—	—	—	—	—	—	—	0.11 (J)	—
16-03382	2.5–3	0316-97-0112	ALLH	0.331	0.903	—	—	—	—	—	—	—
16-03383	3.5–4	0316-97-0113	ALLH	—	—	—	—	—	—	—	—	—
16-03386	2–2.5	0316-97-0107	ALLH	—	—	—	—	—	—	—	—	—
16-03388	2–2.5	0316-97-0109	ALLH	0.553 (J+)	0.611 (J+)	—	—	—	—	—	—	—
16-03389	3.5–4	0316-97-0101	ALLH	—	—	—	—	—	—	—	—	—
16-03393	1.25–1.5	0316-97-0110	ALLH	—	—	—	—	—	—	—	—	—
16-03397	2.5–3	0316-97-0102	ALLH	—	—	—	—	—	—	—	—	—
16-03399	2–2.5	0316-97-0103	ALLH	—	—	—	—	0.1 (J)	—	—	—	—
Consolidated Unit 16-029(q)-99—Decision-Level Data												
SWMU 16-017(f)-99												
16-02580	1–1.5	0316-96-0142	ALLH	—	—	—	—	—	—	—	—	0.002 (J)
16-02582	1–1.5	0316-96-0143	ALLH	—	—	—	—	—	—	—	—	—
SWMU 16-029(q)												
16-02255	0–0.5	0316-96-0128	ALLH	—	—	—	—	—	—	—	—	—
16-02256	0–0.5	0316-96-0129	ALLH	—	—	—	—	—	—	—	—	—
16-02397	5–6	0316-96-0122	QBT4	—	—	—	—	—	—	—	—	—

Table 7.4-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Amino-2,6-dinitrotoluene[4-]	Amino-4,6-dinitrotoluene[2-]	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Carbon Disulfide
16-02397	6–7	0316-96-0152	QBT4	—	—	—	—	—	—	—	—	—
16-02399	4.5–5	0316-96-0062	ALLH	—	—	—	—	—	—	—	—	0.001 (J)
16-02400	4.5–5	0316-96-0120	ALLH	—	—	—	—	—	—	—	—	—
16-02400	5–6	0316-96-0150	ALLH	—	—	—	—	—	—	—	—	—
16-02402	4.5–5	0316-96-0121	ALLH	0.111	0.111	—	—	—	—	—	—	—
16-02402	5–6	0316-96-0151	ALLH	0.292	0.265	—	—	—	—	—	—	—
16-02404	7–8	0316-96-0144	QBT4	—	—	—	—	—	—	—	—	—
16-02405	0–0.5	0316-96-0126	ALLH	—	—	—	—	—	—	—	—	—
16-02406	0–0.5	0316-96-0127	ALLH	—	—	—	—	—	—	—	—	—
16-02407	4–4.5	0316-96-0061	FILL	—	—	—	—	—	—	—	—	—
16-02407	7–8	0316-96-0069	QBT4	—	—	—	—	—	—	—	0.04 (J)	—
16-02412	4–4.5	0316-96-0060	ALLH	—	—	—	—	—	—	—	—	—
16-02412	7–8	0316-96-0068	FILL	—	—	—	—	—	—	—	—	—

Table 7.4-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Chrysene	Dichlorodifluoromethane	Dichloroethene[cis-1,2-]	Di-n-butylphthalate	Dinitrotoluene[2,4-]	Fluoranthene	HMX	Indeno(1,2,3-cd)pyrene	Methylene Chloride
Consolidated Unit 16-029(h2)-99—Screening-Level Data												
SWMU 16-025(i)												
16-05794	4.25–4.75	RE16-98-0011[a]	QBT4	—	—	—	—	—	—	—	—	—
16-05794	5.75–6.75	RE16-98-0012[a]	QBT4	—	—	—	—	—	—	—	—	—
SWMU 16-025(j)												
16-05796	6.42–6.67	RE16-98-0013[a]	QBT4	—	—	—	—	—	—	—	—	—
16-05796	8.17–8.67	RE16-98-0014[a]	QBT4	—	—	—	—	—	—	—	—	—
Consolidated Unit 16-029(q)-99—Screening-Level Data												
SWMU 16-029(q)												
16-02404	0–0.5	0316-96-0063[a]	ALLH	—	—	—	—	—	—	0.401	—	—
AOC C-16-064												
16-02541	0–0.5	0316-96-0130[a]	ALLH	—	—	—	—	—	—	25.9	—	—
16-02541	0.5–1	0316-96-0199[a]	ALLH	—	—	—	—	—	—	—	—	0.011
Consolidated Unit 16-029(h2)-99—Decision-Level Data												
SWMU 16-025(h)												
16-03401	3–3.33	0316-97-0104	ALLH	—	—	—	—	—	—	—	—	—
16-04129	0–1	0316-97-0554	ALLH	0.12 (J)	—	—	—	—	0.16 (J)	—	0.085 (J)	—
16-04129	0–1	0316-97-0585	FILL	—	—	—	—	—	0.039 (J)	—	—	—
SWMU 16-025(j)												
16-05796	5–5.5	RE16-98-0010	ALLH	—	—	—	—	0.075 (J)	—	98 (J)	—	—

Table 7.4-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Chrysene	Dichlorodifluoromethane	Dichloroethene[cis-1,2-]	Di-n-butylphthalate	Dinitrotoluene[2,4-]	Fluoranthene	HMX	Indeno(1,2,3-cd)pyrene	Methylene Chloride
SWMU 16-029(h2)												
16-03381	3.5–3.6	RE16-98-0008	ALLH	—	—	—	—	—	—	—	—	—
16-03381	5.5–6.5	RE16-98-0009	ALLH	—	—	—	—	—	—	—	—	—
16-03382	2.5–3	0316-97-0112	ALLH	—	—	—	—	—	—	—	—	—
16-03383	3.5–4	0316-97-0113	ALLH	—	—	—	—	—	—	—	—	—
16-03386	2–2.5	0316-97-0107	ALLH	—	—	—	—	—	—	0.546 (J+)	—	—
16-03388	2–2.5	0316-97-0109	ALLH	—	—	—	—	—	—	0.677 (J+)	—	—
16-03389	3.5–4	0316-97-0101	ALLH	—	—	—	—	—	—	—	—	—
16-03393	1.25–1.5	0316-97-0110	ALLH	—	—	—	0.041 (J)	—	—	—	—	—
16-03397	2.5–3	0316-97-0102	ALLH	—	—	—	0.11 (J)	—	—	—	—	—
16-03399	2–2.5	0316-97-0103	ALLH	—	—	—	0.11 (J)	—	—	—	—	—
Consolidated Unit 16-029(q)-99—Decision-Level Data												
SWMU 16-017(f)-99												
16-02580	1–1.5	0316-96-0142	ALLH	—	—	—	—	—	—	—	—	—
16-02582	1–1.5	0316-96-0143	ALLH	—	—	—	—	—	—	—	—	—
SWMU 16-029(q)												
16-02255	0–0.5	0316-96-0128	ALLH	—	—	0.001 (J)	—	—	—	—	—	—
16-02256	0–0.5	0316-96-0129	ALLH	—	—	0.001 (J)	—	—	—	—	—	—
16-02397	5–6	0316-96-0122	QBT4	—	—	—	—	—	—	—	—	—
16-02397	6–7	0316-96-0152	QBT4	—	—	—	—	—	—	—	—	—
16-02399	4.5–5	0316-96-0062	ALLH	—	0.002 (J)	—	—	—	—	—	—	—

Table 7.4-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Chrysene	Dichlorodifluoromethane	Dichloroethene[cis-1,2-]	Di-n-butylphthalate	Dinitrotoluene[2,4-]	Fluoranthene	HMX	Indeno(1,2,3-cd)pyrene	Methylene Chloride
16-02400	4.5–5	0316-96-0120	ALLH	—	—	—	—	—	—	—	—	—
16-02400	5–6	0316-96-0150	ALLH	—	—	—	—	—	—	—	—	—
16-02402	4.5–5	0316-96-0121	ALLH	—	—	—	—	—	—	—	—	—
16-02402	5–6	0316-96-0151	ALLH	—	—	—	—	—	—	—	—	—
16-02404	7–8	0316-96-0144	QBT4	—	—	—	—	—	—	0.524	—	—
16-02405	0–0.5	0316-96-0126	ALLH	—	—	—	—	—	—	—	—	—
16-02406	0–0.5	0316-96-0127	ALLH	—	—	—	—	—	—	—	—	—
16-02407	4–4.5	0316-96-0061	FILL	—	—	—	0.072 (J)	—	—	—	—	0.012
16-02407	7–8	0316-96-0069	QBT4	—	—	—	—	—	—	—	—	0.001 (J)
16-02412	4–4.5	0316-96-0060	ALLH	—	—	—	—	—	—	0.278	—	0.012
16-02412	7–8	0316-96-0068	FILL	—	—	—	—	—	—	—	—	0.005 (J)

Table 7.4-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Phenanthrene	Pyrene	RDX	Toluene	Trichloroethane[1,1,1-]	Trichloroethene	Trichlorofluoromethane	Trinitrobenzene[1,3,5-]	Trinitrotoluene[2,4,6-]
Consolidated Unit 16-029(h2)-99—Screening-Level Data												
SWMU 16-025(i)												
16-05794	4.25–4.75	RE16-98-0011[a]	QBT4	—	—	1.3	—	—	—	—	1.6	0.89 (J+)
16-05794	5.75–6.75	RE16-98-0012[a]	QBT4	—	—	—	—	—	—	—	2.3	1.9 (J+)
SWMU 16-025(j)												
16-05796	6.42–6.67	RE16-98-0013[a]	QBT4	—	—	—	—	—	—	—	—	—
16-05796	8.17–8.67	RE16-98-0014[a]	QBT4	—	—	—	—	—	—	—	—	—
Consolidated Unit 16-029(q)-99—Screening-Level Data												
SWMU 16-029(q)												
16-02404	0–0.5	0316-96-0063[a]	ALLH	—	—	3.85	—	0.002 (J)	—	—	—	0.688
AOC C-16-064												
16-02541	0–0.5	0316-96-0130[a]	ALLH	—	—	164	—	—	—	—	—	0.3
16-02541	0.5–1	0316-96-0199[a]	ALLH	—	—	0.229	—	—	—	—	—	—
Consolidated Unit 16-029(h2)-99—Decision-Level Data												
SWMU 16-025(h)												
16-03401	3–3.33	0316-97-0104	ALLH	—	—	0.589	—	—	—	—	—	—
16-04129	0–1	0316-97-0554	ALLH	0.098 (J)	0.18 (J)	—	—	—	—	—	—	—
16-04129	0–1	0316-97-0585	FILL	—	0.036 (J)	—	—	—	—	—	—	—
SWMU 16-025(j)												
16-05796	5–5.5	RE16-98-0010	ALLH	—	—	1200	—	—	—	—	—	650
SWMU 16-029(h2)												
16-03381	3.5–3.6	RE16-98-0008	ALLH	—	—	3	—	—	—	—	—	—

Table 7.4-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Phenanthrene	Pyrene	RDX	Toluene	Trichloroethane[1,1,1-]	Trichloroethene	Trichlorofluoromethane	Trinitrobenzene[1,3,5-]	Trinitrotoluene[2,4,6-]
16-03381	5.5–6.5	RE16-98-0009	ALLH	—	—	—	—	—	—	—	—	—
16-03382	2.5–3	0316-97-0112	ALLH	—	—	0.388	—	—	—	—	—	—
16-03383	3.5–4	0316-97-0113	ALLH	—	—	0.186	—	—	—	—	—	—
16-03386	2–2.5	0316-97-0107	ALLH	—	—	2.89 (J+)	—	—	—	—	—	—
16-03388	2–2.5	0316-97-0109	ALLH	—	—	10 (J+)	—	—	—	—	—	0.669 (J+)
16-03389	3.5–4	0316-97-0101	ALLH	—	—	0.251	—	—	—	—	—	—
16-03393	1.25–1.5	0316-97-0110	ALLH	—	—	—	—	—	—	—	—	—
16-03397	2.5–3	0316-97-0102	ALLH	—	—	—	—	—	—	—	—	—
16-03399	2–2.5	0316-97-0103	ALLH	—	—	—	—	—	—	—	—	—
Consolidated Unit 16-029(q)-99—Decision-Level Data												
SWMU 16-017(f)-99												
16-02580	1–1.5	0316-96-0142	ALLH	—	—	—	—	—	—	—	—	—
16-02582	1–1.5	0316-96-0143	ALLH	—	—	—	—	0.002 (J)	—	—	—	—
SWMU 16-029(q)												
16-02255	0–0.5	0316-96-0128	ALLH	—	—	—	0.005	—	0.006	0.002 (J)	—	—
16-02256	0–0.5	0316-96-0129	ALLH	—	—	—	0.004 (J)	—	0.005	0.001 (J)	—	—
16-02397	5–6	0316-96-0122	QBT4	—	—	—	—	—	—	—	—	0.121
16-02397	6–7	0316-96-0152	QBT4	—	—	—	—	—	—	0.001 (J)	—	0.238
16-02399	4.5–5	0316-96-0062	ALLH	—	—	0.324	—	—	—	—	0.09	0.328
16-02400	4.5–5	0316-96-0120	ALLH	—	—	0.315	—	—	—	—	—	0.125
16-02400	5–6	0316-96-0150	ALLH	—	—	0.285	—	—	—	0.002 (J)	—	0.311
16-02402	4.5–5	0316-96-0121	ALLH	—	—	0.459	—	—	—	—	—	0.53

Table 7.4-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Phenanthrene	Pyrene	RDX	Toluene	Trichloroethane[1,1,1-]	Trichloroethene	Trichlorofluoromethane	Trinitrobenzene[1,3,5-]	Trinitrotoluene[2,4,6-]
16-02402	5–6	0316-96-0151	ALLH	—	—	1.69	—	—	—	—	—	1.94
16-02404	7–8	0316-96-0144	QBT4	—	—	2.03	—	—	—	—	—	1.05
16-02405	0–0.5	0316-96-0126	ALLH	—	—	—	0.003 (J)	—	0.002 (J)	0.002 (J)	—	—
16-02406	0–0.5	0316-96-0127	ALLH	—	—	—	0.004 (J)	—	0.003 (J)	0.002 (J)	—	—
16-02407	4–4.5	0316-96-0061	FILL	—	—	—	—	—	—	—	—	—
16-02407	7–8	0316-96-0069	QBT4	—	—	—	—	—	—	—	—	—
16-02412	4–4.5	0316-96-0060	ALLH	—	—	1.74	—	—	—	—	—	1.29
16-02412	7–8	0316-96-0068	FILL	—	—	0.698	—	—	—	—	—	0.61

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

[a] Soil removed after sampling.

[b] — = If analyzed, sample result is not detected.

Table 8.1-1
Subaggregate 7 Summary of Historical Samples Collected in Soil, Sediment, and Tuff at TA-16-280 Outfalls: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number				
				Cyanide	High Explosives	Inorganic Chemicals	SVOC	VOC
Consolidated Unit 16-003(h)-99								
16-01428	0–0.42	0316-95-0059	ALLH	924	923	925	923	—*
16-01428	0.33–0.67	0316-95-0060	ALLH	924	923	925	923	923
16-01428	3.5–5.5	0316-95-0061	QBT4	1022	1021	1023	1021	1021
16-01429	0–0.5	0316-95-0065	ALLH	307	306	308	306	—
16-01430	0–0.5	0316-95-0066	ALLH	307	306	308	306	—
16-01431	0–0.5	0316-95-0067	ALLH	307	306	308	306	—
16-01432	0–0.5	0316-95-0068	SED	307	306	308	306	—
16-01433	0–0.5	0316-95-0069	ALLH	307	306	308	306	—
16-01652	0–0.42	0316-95-0063	SED	—	—	—	—	923
16-01652	0–0.5	0316-95-0062	SED	924	923	925	923	—
16-01652	3.5–5.4	0316-95-0064	QBT4	1022	1021	1023	1021	1021

*— = The analysis was not requested.

Table 8.1-2
Subaggregate 7 Frequency of Detection of Inorganic Chemicals in Soil, Sediment, and Tuff at TA-16-280 Outfalls: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Aluminum	ALLH	6	6	2370–7120	29200	0/6	0/6
Aluminum	SED	2	2	4730–5420	15400	0/2	0/2
Aluminum	QBT4	2	2	941–1810	7340	0/2	0/2
Antimony	ALLH	6	0	[6.29–11.5]	0.83	0/6	6/6
Antimony	SED	2	0	[5.96–8]	0.83	0/2	2/2
Antimony	QBT4	2	0	[5.3–5.6]	0.5	0/2	2/2
Arsenic	ALLH	6	6	2.4–4.87	8.17	0/6	0/6
Arsenic	SED	2	2	1.78–4.13	3.98	1/2	0/2
Arsenic	QBT4	2	2	0.54–0.69	2.79	0/2	0/2
Barium	ALLH	6	6	38.3–136	295	0/6	0/6
Barium	SED	2	2	103–107	127	0/2	0/2
Barium	QBT4	2	2	14–122	46	1/2	0/2
Cadmium	ALLH	6	2	[0.629]–1.99	0.4	2/6	4/6
Cadmium	SED	2	1	[0.596]–0.821	0.4	1/2	1/2
Calcium	ALLH	6	6	1460–4890	6120	0/6	0/6
Calcium	SED	2	2	1940–2810	4420	0/2	0/2
Calcium	QBT4	2	2	543–1100	2200	0/2	0/2
Chromium	ALLH	6	6	6.13–28.8	19.3	1/6	0/6
Chromium	SED	2	2	3.97–9.44	10.5	0/2	0/2
Chromium	QBT4	2	2	51.8–277	7.14	2/2	0/2
Cobalt	ALLH	6	6	1.44–7.15	8.64	0/6	0/6
Cobalt	SED	2	2	4.19–5.41	4.73	1/2	0/2
Cobalt	QBT4	2	2	1.1–2.2	3.14	0/2	0/2
Copper	ALLH	6	6	14.1–86	14.7	5/6	0/6
Copper	SED	2	2	4.84–30.7	11.2	1/2	0/2
Copper	QBT4	2	2	1.2–2.1	4.66	0/2	0/2
Cyanide (Total)	ALLH	6	0	[0.637–2.4]	0.5	0/6	6/6
Cyanide (Total)	QBT4	2	0	[1.1–1.1]	0.5	0/2	2/2
Iron	ALLH	6	6	6650–9930	21500	0/6	0/6
Iron	SED	2	2	6080–9050	13800	0/2	0/2
Iron	QBT4	2	2	3130–3980	14500	0/2	0/2
Lead	ALLH	6	6	16.6–195	22.3	5/6	0/6
Lead	SED	2	2	13.5–73.8	19.7	1/2	0/2

Table 8.1-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Lead	QBT4	2	2	2.2–5.2	11.2	0/2	0/2
Magnesium	ALLH	6	6	666–1430	4610	0/6	0/6
Magnesium	SED	2	2	962–1220	2370	0/2	0/2
Magnesium	QBT4	2	2	269–675	1690	0/2	0/2
Manganese	ALLH	6	6	54.5–607	671	0/6	0/6
Manganese	SED	2	2	292–335	543	0/2	0/2
Manganese	QBT4	2	2	171–318	482	0/2	0/2
Mercury	ALLH	6	4	[0.062]–0.983	0.1	1/6	1/6
Mercury	SED	2	0	[0.059–0.228]	0.1	0/2	1/2
Nickel	ALLH	6	6	3.73–7.55	15.4	0/6	0/6
Nickel	SED	2	2	4.67–6.99	9.38	0/2	0/2
Nickel	QBT4	2	1	[1.6]–6.8	6.58	1/2	0/2
Potassium	ALLH	6	6	269–1030	3460	0/6	0/6
Potassium	SED	2	2	842–876	2690	0/2	0/2
Potassium	QBT4	2	2	405–425	43700	0/2	0/2
Selenium	SED	2	0	[0.302–0.391]	0.3	0/2	2/2
Silver	ALLH	6	0	[0.629–1.15]	1	0/6	1/6
Sodium	ALLH	6	6	354–748	915	0/6	0/6
Sodium	SED	2	2	311–536	1470	0/2	0/2
Sodium	QBT4	2	2	532–633	2770	0/2	0/2
Uranium	ALLH	6	6	2.77–5.78	1.82	6/6	0/6
Uranium	SED	2	2	2.72–3.47	2.22	2/2	0/2
Uranium	QBT4	2	2	1.13–1.27	2.4	0/2	0/2
Vanadium	ALLH	6	6	10.3–28.1	39.6	0/6	0/6
Vanadium	SED	2	2	12–23.1	19.7	1/2	0/2
Vanadium	QBT4	2	1	[1.1]–2.7	17	0/2	0/2
Zinc	ALLH	6	6	58.6–790	48.8	6/6	0/6
Zinc	SED	2	2	48.2–346	60.2	1/2	0/2
Zinc	QBT4	2	2	11.8–12.8	63.5	0/2	0/2

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Values in brackets are below detection limits.

Table 8.1-3
Subaggregate 7 Frequency of Detection of Organic Chemicals in Soil, Sediment, and Tuff at TA-16-280 Outfalls: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Acenaphthene	ALLH	6	5	0.46–240	5/6
Acenaphthene	QBT4	2	1	0.047–[0.37]	1/2
Acenaphthene	SED	2	1	[0.4]–15	1/2
Amino-4,6-dinitrotoluene[2-]	ALLH	6	1	[0.077]–0.103	1/6
Anthracene	ALLH	6	5	1–360	5/6
Anthracene	QBT4	2	1	0.11–[0.37]	1/2
Anthracene	SED	2	1	[0.4]–29	1/2
Benzo(a)anthracene	ALLH	6	5	[2.1]–640	5/6
Benzo(a)anthracene	QBT4	2	1	[0.37]–0.49	1/2
Benzo(a)anthracene	SED	2	2	0.18–76	2/2
Benzo(a)pyrene	ALLH	6	5	[2.1]–690	5/6
Benzo(a)pyrene	QBT4	2	1	[0.37]–0.56	1/2
Benzo(a)pyrene	SED	2	2	0.23–72	2/2
Benzo(b)fluoranthene	ALLH	6	5	[2.1]–940	5/6
Benzo(b)fluoranthene	QBT4	2	1	[0.37]–0.73	1/2
Benzo(b)fluoranthene	SED	2	2	0.34–110	2/2
Benzo(g,h,i)perylene	ALLH	6	5	1.4–300	5/6
Benzo(g,h,i)perylene	QBT4	2	1	0.33–[0.37]	1/2
Benzo(g,h,i)perylene	SED	2	2	0.11–27	2/2
Benzo(k)fluoranthene	ALLH	6	5	[2.1]–350	5/6
Benzo(k)fluoranthene	QBT4	2	1	0.3–[0.37]	1/2
Benzo(k)fluoranthene	SED	2	2	0.14–40	2/2
Benzoic Acid	ALLH	6	3	0.47–[1200]	3/6
Benzoic Acid	SED	2	1	0.12–[49]	1/2
Chrysene	ALLH	6	5	[2.1]–930	5/6
Chrysene	QBT4	2	1	[0.37]–0.74	1/2
Chrysene	SED	2	2	0.25–110	2/2
Dibenz(a,h)anthracene	ALLH	6	5	0.42–91	5/6
Dibenz(a,h)anthracene	QBT4	2	1	0.083–[0.37]	1/2
Dibenz(a,h)anthracene	SED	2	1	[0.4]–7.5	1/2
Dibenzofuran	ALLH	6	5	0.2–140	5/6
Dibenzofuran	SED	2	1	[0.4]–8.9	1/2
Di-n-butylphthalate	ALLH	6	1	[0.44]–0.58	1/6
Dinitrobenzene[1,3-]	ALLH	6	1	[0.07]–0.072	1/6
Dinitrotoluene[2,4-]	ALLH	12	3	[0.056]–5.94	3/12

Table 8.1-3 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Fluoranthene	ALLH	6	5	[2.1]–1600	5/6
Fluoranthene	QBT4	2	1	[0.37]–1.2	1/2
Fluoranthene	SED	2	2	0.46–180	2/2
Fluorene	ALLH	6	5	0.44–230	5/6
Fluorene	QBT4	2	1	0.047–[0.37]	1/2
Indeno(1,2,3-cd)pyrene	ALLH	6	5	1.6–340	5/6
Indeno(1,2,3-cd)pyrene	QBT4	2	1	0.33–[0.37]	1/2
Indeno(1,2,3-cd)pyrene	SED	2	2	0.12–30	2/2
Methylene Chloride	SED	1	1	0.015	1/1
Methylnaphthalene[2-]	ALLH	6	3	0.13–100	3/6
Methylnaphthalene[2-]	SED	2	1	[0.4]–6.4	1/2
Naphthalene	ALLH	6	5	0.23–300	5/6
Naphthalene	SED	2	1	[0.4]–15	1/2
Nitrobenzene	ALLH	12	1	[0.094]–0.488	1/12
Phenanthrene	ALLH	6	5	[2.1]–1400	5/6
Phenanthrene	QBT4	2	1	[0.37]–0.64	1/2
Phenanthrene	SED	2	2	0.17–120	2/2
Pyrene	ALLH	6	5	[2.1]–1300	5/6
Pyrene	QBT4	2	1	[0.37]–0.8	1/2
Pyrene	SED	2	2	0.35–150	2/2
Tetryl	ALLH	6	4	[0.096]–13.8	4/6
Tetryl	SED	2	1	[0.095]–0.591	1/2
Trichlorofluoromethane	SED	1	1	0.012	1/1
Trinitrobenzene[1,3,5-]	ALLH	6	1	[0.093]–0.898	1/6
Trinitrotoluene[2,4,6-]	ALLH	6	1	[0.082]–1.68	1/6

Note: Values in brackets are below detection limits.

Table 8.1-4
Subaggregate 7 Historical Analytical Results of Inorganic Chemicals Greater Than Background Values in Soil, Sediment, and Tuff at TA-16-280 Outfalls: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Antimony	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper	Cyanide (Total)
Soil Background Value				**0.83**	**8.17**	**295**	**0.4**	**19.3**	**8.64**	**14.7**	**0.5**
Sediment Background Value				**0.83**	**3.98**	**127**	**0.4**	**10.5**	**4.73**	**11.2**	**0.82**
QBT4 Background Value				**0.5**	**2.79**	**46**	**1.63**	**7.14**	**3.14**	**4.66**	**0.5**
Consolidated Unit 16-003(h)-99											
16-01428	0–0.42	0316-95-0059	ALLH	11.5 (U)	—*	—	1.99	28.8 (J-)	—	86 (J-)	2.4 (U)
16-01428	0.33–0.67	0316-95-0060	ALLH	7.15 (U)	—	—	0.715 (U)	—	—	19.5 (J-)	1.49 (U)
16-01428	3.5–5.5	0316-95-0061	QBT4	5.3 (U)	—	—	—	51.8	—	—	1.1 (U)
16-01429	0–0.5	0316-95-0065	ALLH	6.5 (U)	—	—	0.65 (U)	—	—	—	0.668 (U)
16-01430	0–0.5	0316-95-0066	ALLH	8 (U)	—	—	0.8 (U)	—	—	20.8	0.808 (U)
16-01431	0–0.5	0316-95-0067	ALLH	7.16 (U)	—	—	0.724	—	—	17.4	0.737 (U)
16-01432	0–0.5	0316-95-0068	SED	5.96 (U)	—	—	0.596 (U)	—	—	—	—
16-01433	0–0.5	0316-95-0069	ALLH	6.29 (U)	—	—	0.629 (U)	—	—	40.7	0.637 (U)
16-01652	0–0.5	0316-95-0062	SED	8 (U)	4.13	—	0.821	—	5.41 (J)	30.7 (J-)	1.65 (U)
16-01652	3.5–5.4	0316-95-0064	QBT4	5.6 (U)	—	122	—	277	—	—	1.1 (U)

Table 8.1-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Lead	Mercury	Nickel	Selenium	Silver	Uranium	Vanadium	Zinc
Soil Background Value				**22.3**	**0.1**	**15.4**	**1.52**	**1**	**1.82**	**39.6**	**48.8**
Sediment Background Value				**19.7**	**0.1**	**9.38**	**0.3**	**1**	**2.22**	**19.7**	**60.2**
QBT4 Background Value				**11.2**	**0.1**	**6.58**	**0.3**	**1**	**2.4**	**17**	**63.5**
Consolidated Unit 16-003(h)-99											
16-01428	0–0.42	0316-95-0059	ALLH	195 (J-)	0.983	—	—	1.15 (U)	5.78	—	790
16-01428	0.33–0.67	0316-95-0060	ALLH	95.9 (J-)	0.276 (U)	—	—	—	3.88	—	308
16-01428	3.5–5.5	0316-95-0061	QBT4	—	—	—	—	—	—	—	—
16-01429	0–0.5	0316-95-0065	ALLH	41.6	—	—	—	—	3.15	—	143
16-01430	0–0.5	0316-95-0066	ALLH	43.9	—	—	—	—	2.88	—	186
16-01431	0–0.5	0316-95-0067	ALLH	44.9	—	—	—	—	2.77	—	192
16-01432	0–0.5	0316-95-0068	SED	—	—	—	0.302 (U)	—	2.72	—	—
16-01433	0–0.5	0316-95-0069	ALLH	—	—	—	—	—	3.35	—	58.6
16-01652	0–0.5	0316-95-0062	SED	73.8 (J-)	0.228 (U)	—	0.391 (U)	—	3.47	23.1	346
16-01652	3.5–5.4	0316-95-0064	QBT4	—	—	6.8	—	—	—	—	—

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

*— = If analyzed, sample result is less than background value.

Table 8.1-5
Subaggregate 7 Historical Analytical Results of Organic Chemicals Detected in Soil, Sediment, and Tuff at TA-16-280 Outfalls: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Acenaphthene	Amino-4,6-dinitro-toluene[2-]	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Chrysene
Consolidated Unit 16-003(h)-99													
16-01428	0–0.42	0316-95-0059	ALLH	50	—*	100	260	220	360	77	150	—	310
16-01428	0.33–0.67	0316-95-0060	ALLH	240	0.103	360	640	690	940	300	350	—	930
16-01429	0–0.5	0316-95-0065	ALLH	0.46	—	1	3.8	4.2	7	1.4	2.9	0.47 (J)	4.4
16-01430	0–0.5	0316-95-0066	ALLH	0.74 (J)	—	1.8 (J)	6.4	7.6	11	4.1	3.8	1.2 (J)	8.5
16-01431	0–0.5	0316-95-0067	ALLH	0.69 (J)	—	1.8 (J)	6.6	7.9	12	3.3	5.1	0.87 (J)	8.8
16-01432	0–0.5	0316-95-0068	SED	—	—	—	0.18 (J)	0.23 (J)	0.34 (J)	0.11 (J)	0.14 (J)	0.12 (J)	0.25 (J)
16-01652	0–0.42	0316-95-0063	SED	—	—	—	—	—	—	—	—	—	—
16-01652	0–0.5	0316-95-0062	SED	15	—	29	76	72	110	27	40	—	110
16-01652	3.5–5.4	0316-95-0064	QBT4	0.047 (J)	—	0.11 (J)	0.49	0.56	0.73	0.33 (J)	0.3 (J)	—	0.74

Table 8.1-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Dibenz(a,h)anthracene	Dibenzofuran	Di-n-butylphthalate	Dinitrobenzene[1,3-]	Dinitrotoluene[2,4-]	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylene Chloride
Consolidated Unit 16-003(h)-99												
16-01428	0–0.42	0316-95-0059	ALLH	22	31	—	—	0.975	620	54	87	—
16-01428	0.33–0.67	0316-95-0060	ALLH	91 (J)	140	—	—	5.94	1600	230	340	—
16-01429	0–0.5	0316-95-0065	ALLH	0.42 (J)	0.2 (J)	—	—	—	12	0.44 (J)	1.6	—
16-01430	0–0.5	0316-95-0066	ALLH	1 (J)	0.3 (J)	—	—	—	17	0.66 (J)	4.5	—
16-01431	0–0.5	0316-95-0067	ALLH	0.85 (J)	0.3 (J)	0.58 (J)	0.072	0.063	17	0.66 (J)	3.8	—
16-01432	0–0.5	0316-95-0068	SED	—	—	—	—	—	0.46	—	0.12 (J)	—
16-01652	0–0.42	0316-95-0063	SED	—	—	—	—	—	—	—	—	0.015 (J)
16-01652	0–0.5	0316-95-0062	SED	7.5	8.9	—	—	—	180	—	30	—
16-01652	3.5–5.4	0316-95-0064	QBT4	0.083 (J)	—	—	—	—	1.2	0.047 (J)	0.33 (J)	—

Table 8.1-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Methylnaphthalene[2-]	Naphthalene	Nitrobenzene	Phenanthrene	Pyrene	Tetryl	Trichlorofluoromethane	Trinitrobenzene[1,3,5-]	Trinitrotoluene[2,4,6-]
Consolidated Unit 16-003(h)-99												
16-01428	0–0.42	0316-95-0059	ALLH	16 (J)	41	0.488	410	410	2.78	—	—	—
16-01428	0.33–0.67	0316-95-0060	ALLH	100 (J)	300	—	1400	1300	13.8	—	0.898	1.68
16-01429	0–0.5	0316-95-0065	ALLH	0.13 (J)	0.23 (J)	—	3.7	13	0.105	—	—	—
16-01430	0–0.5	0316-95-0066	ALLH	—	0.38 (J)	—	7.9	13	—	—	—	—
16-01431	0–0.5	0316-95-0067	ALLH	—	0.29 (J)	—	7.6	12	0.099	—	—	—
16-01432	0–0.5	0316-95-0068	SED	—	—	—	0.17 (J)	0.35 (J)	—	—	—	—
16-01652	0–0.42	0316-95-0063	SED	—	—	—	—	—	—	0.012 (J)	—	—
16-01652	0–0.5	0316-95-0062	SED	6.4	15	—	120	150	0.591	—	—	—
16-01652	3.5–5.4	0316-95-0064	QBT4	—	—	—	0.64	0.8	—	—	—	—

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

*— = If analyzed, sample result is not detected.

Table 8.2-1
Subaggregate 7 Summary of Historical Samples Collected in Soil, Fill, Sediment, and Tuff at TA-16-260 Outfalls: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number				
				Cyanide	High Explosives	Inorganic Chemicals	SVOC	VOC
SWMU 16-003(i)								
16-01412	0–0.5	0316-95-0070	SED	1083	1082	1084	1082	—*
16-01412	1–1.33	0316-95-0071	QBT4	1083	1082	1084	1082	1082
16-01412	3.5–5.5	0316-95-0072	QBT4	1083	1082	1084	1082	1082
16-01413	0–0.5	0316-95-0076	ALLH	310	309	311	309	—
16-01414	0–0.5	0316-95-0077	ALLH	310	309	311	309	—
16-01415	0–0.5	0316-95-0078	ALLH	310	309	311	309	—
16-01416	0–0.5	0316-95-0079	QBT4	310	309	311	309	—
16-01417	0–0.5	0316-95-0080	ALLH	310	309	311	309	—
16-01650	0–0.5	0316-95-0073	SED	1083	1082	1084	1082	—
16-01650	0.5–1	0316-95-0074	FILL	1083	1082	1084	1082	1082
16-01650	3–5	0316-95-0075	QBT4	1083	1082	1084	1082	1082
SWMU 16-003(j)								
16-01419	0–0.5	0316-95-0081	FILL	1083	1082	1084	1082	—
16-01419	0.5–1.17	0316-95-0082	ALLH	1083	1082	1084	1082	1082
16-01419	3.5–5.5	0316-95-0083	QBT4	1083	1082	1084	1082	1082
16-01420	0–0.5	0316-95-0087	ALLH	310	309	311	309	—
16-01421	0–0.5	0316-95-0088	ALLH	310	309	311	309	—
16-01422	0–0.5	0316-95-0089	ALLH	310	309	311	309	—
16-01423	0–0.5	0316-95-0090	ALLH	310	309	311	309	—
16-01424	0–0.5	0316-95-0091	SED	310	309	311	309	—
16-01651	0–0.5	0316-95-0084	SED	1083	1082	1084	1082	—
16-01651	0.58–1.08	0316-95-0085	ALLH	1083	1082	1084	1082	1082
16-01651	2.92–4.5	0316-95-0086	QBT4	1083	1082	1084	1082	1082

*— = The analysis was not requested.

Table 8.2-2
Subaggregate 7 Frequency of Detection of Inorganic Chemicals in Soil, Fill, Sediment, and Tuff at TA-16-260 Outfalls: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Aluminum	ALLH	10	10	2920–7150	29200	0/10	0/10
Aluminum	FILL	2	2	1860–7390	29200	0/2	0/2
Aluminum	SED	4	4	3800–9760	15400	0/4	0/4
Aluminum	QBT4	6	6	368–7780	7340	1/6	0/6
Antimony	ALLH	10	0	[5.22–5.9]	0.83	0/10	10/10
Antimony	FILL	2	0	[4.9–6]	0.83	0/2	2/2
Antimony	SED	4	0	[5.6–6.07]	0.83	0/4	4/4
Antimony	QBT4	6	0	[5.37–6.9]	0.5	0/6	6/6
Arsenic	ALLH	10	10	0.718–5.6	8.17	0/10	0/10
Arsenic	FILL	2	2	1.2–2.1	8.17	0/2	0/2
Arsenic	SED	4	4	1.9–2.9	3.98	0/4	0/4
Arsenic	QBT4	6	5	[0.23]–12.3	2.79	2/6	0/6
Barium	ALLH	10	10	56–175	295	0/10	0/10
Barium	FILL	2	2	48.2–172	295	0/2	0/2
Barium	SED	4	4	86.8–183	127	2/4	0/4
Barium	QBT4	6	6	10.4–105	46	2/6	0/6
Beryllium	ALLH	10	5	[0.46]–0.937	1.83	0/10	0/10
Beryllium	FILL	2	1	[0.39]–0.78	1.83	0/2	0/2
Beryllium	SED	4	2	[0.45]–0.8	1.31	0/4	0/4
Beryllium	QBT4	6	1	[0.45]–1	1.21	0/6	0/6
Cadmium	ALLH	10	0	[0.522–0.59]	0.4	0/10	10/10
Cadmium	FILL	2	0	[0.49–0.6]	0.4	0/2	2/2
Cadmium	SED	4	0	[0.56–0.607]	0.4	0/4	4/4
Calcium	ALLH	10	10	1080–2810	6120	0/10	0/10
Calcium	FILL	2	2	1260–2320	6120	0/2	0/2
Calcium	SED	4	4	1260–2620	4420	0/4	0/4
Calcium	QBT4	6	6	417–1910	2200	0/6	0/6
Chromium	ALLH	10	10	3.1–10.2	19.3	0/10	0/10
Chromium	FILL	2	2	3.8–7	19.3	0/2	0/2
Chromium	SED	4	4	4.9–8.5	10.5	0/4	0/4
Chromium	QBT4	6	6	3.69–202	7.14	4/6	0/6
Cobalt	ALLH	10	10	1.97–9	8.64	1/10	0/10
Cobalt	FILL	2	2	2.7–7.6	8.64	0/2	0/2

Table 8.2-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Cobalt	SED	4	4	2.78–10.3	4.73	3/4	0/4
Cobalt	QBT4	6	2	[1.1]–3.73	3.14	1/6	0/6
Copper	ALLH	10	10	3.1–11.1	14.7	0/10	0/10
Copper	FILL	2	2	6.5–6.9	14.7	0/2	0/2
Copper	SED	4	4	7.1–25.8	11.2	1/4	0/4
Copper	QBT4	6	6	1–7.35	4.66	1/6	0/6
Cyanide (Total)	ALLH	10	0	[1–1.2]	0.5	0/10	10/10
Cyanide (Total)	FILL	2	0	[1–1.3]	0.5	0/2	2/2
Cyanide (Total)	SED	4	0	[1.1–1.3]	0.82	0/4	4/4
Cyanide (Total)	QBT4	6	0	[1.1–1.5]	0.5	0/6	6/6
Iron	ALLH	10	10	6360–12000	21500	0/10	0/10
Iron	FILL	2	2	5140–11900	21500	0/2	0/2
Iron	SED	4	4	8560–12500	13800	0/4	0/4
Iron	QBT4	6	6	2090–10300	14500	0/6	0/6
Lead	ALLH	10	10	5.44–42.7	22.3	2/10	0/10
Lead	FILL	2	2	19.6–49	22.3	1/2	0/2
Lead	SED	4	4	15–30.3	19.7	2/4	0/4
Lead	QBT4	6	6	0.58–11.6	11.2	1/6	0/6
Magnesium	ALLH	10	10	544–1700	4610	0/10	0/10
Magnesium	FILL	2	2	479–1250	4610	0/2	0/2
Magnesium	SED	4	4	813–1860	2370	0/4	0/4
Magnesium	QBT4	6	6	106–1100	1690	0/6	0/6
Manganese	ALLH	10	10	135–636	671	0/10	0/10
Manganese	FILL	2	2	239–492	671	0/2	0/2
Manganese	SED	4	4	229–545	543	1/4	0/4
Manganese	QBT4	6	6	82.6–334	482	0/6	0/6
Mercury	ALLH	10	6	[0.048]–0.098	0.1	0/10	0/10
Mercury	SED	4	4	0.05–0.063	0.1	0/4	0/4
Mercury	QBT4	6	1	[0.049]–0.08	0.1	0/6	0/6
Nickel	ALLH	10	10	2.7–6.26	15.4	0/10	0/10
Nickel	FILL	2	2	2.2–5.4	15.4	0/2	0/2
Nickel	SED	4	4	4.1–7.8	9.38	0/4	0/4
Nickel	QBT4	6	3	[1.7]–3.5	6.58	0/6	0/6
Potassium	ALLH	10	10	541–1130	3460	0/10	0/10
Potassium	FILL	2	2	501–874	3460	0/2	0/2
Potassium	SED	4	4	579–1220	2690	0/4	0/4

Table 8.2-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Potassium	QBT4	6	6	199–738	43700	0/6	0/6
Selenium	SED	4	0	[0.28–0.316]	0.3	0/4	1/4
Selenium	QBT4	6	0	[0.268–0.35]	0.3	0/6	1/6
Sodium	ALLH	10	10	207–524	915	0/10	0/10
Sodium	FILL	2	2	289–529	915	0/2	0/2
Sodium	SED	4	4	331–442	1470	0/4	0/4
Sodium	QBT4	6	6	340–562	2770	0/6	0/6
Thallium	ALLH	10	1	[0.24]–0.26	0.73	0/10	0/10
Thallium	QBT4	6	2	[0.23]–0.84	1.1	0/6	0/6
Uranium	ALLH	10	10	0.925–3.51	1.82	9/10	0/10
Uranium	FILL	2	2	1.83–2.28	1.82	2/2	0/2
Uranium	SED	4	4	1.76–2.89	2.22	1/4	0/4
Uranium	QBT4	6	6	0.878–2.29	2.4	0/6	0/6
Vanadium	ALLH	10	10	9.1–25.8	39.6	0/10	0/10
Vanadium	FILL	2	2	8–27.4	39.6	0/2	0/2
Vanadium	SED	4	4	14.1–27.5	19.7	2/4	0/4
Vanadium	QBT4	6	5	[1.1]–12.3	17	0/6	0/6
Zinc	ALLH	10	10	21.6–107	48.8	7/10	0/10
Zinc	FILL	2	2	58.1–144	48.8	2/2	0/2
Zinc	SED	4	4	19.9–418	60.2	3/4	0/4
Zinc	QBT4	6	6	10–30.3	63.5	0/6	0/6

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Values in brackets are below detection limits.

Table 8.2-3
Subaggregate 7 Frequency of Detection of Organic Chemicals in Soil, Fill, Sediment, and Tuff at TA-16-260 Outfalls: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Benzo(a)anthracene	FILL	2	1	0.051–[0.42]	1/2
Benzo(a)pyrene	ALLH	10	2	0.084–[2]	2/10
Benzo(a)pyrene	FILL	2	1	0.084–[0.42]	1/2
Benzo(b)fluoranthene	ALLH	10	2	0.17–[2]	2/10
Benzo(b)fluoranthene	FILL	2	1	0.13–[0.42]	1/2
Benzo(k)fluoranthene	ALLH	10	1	0.072–[2]	1/10
Benzoic Acid	ALLH	10	3	0.098–[20]	3/10
Benzoic Acid	SED	4	2	0.064–[8.4]	2/4
Chrysene	ALLH	10	2	0.086–[2]	2/10
Chrysene	FILL	2	1	0.11–[0.42]	1/2
Chrysene	SED	4	1	0.31–[0.4]	1/4
Diethylphthalate	QBT4	6	1	0.076–[0.48]	1/6
Fluoranthene	ALLH	10	4	0.053–[2]	4/10
Fluoranthene	FILL	2	2	0.048–0.13	2/2
Fluoranthene	SED	4	3	0.062–[0.39]	3/4
Indeno(1,2,3-cd)pyrene	ALLH	10	1	0.056–[2]	1/10
Phenanthrene	ALLH	10	1	0.04–[2]	1/10
Phenanthrene	FILL	2	1	0.1–[0.42]	1/2
Phenanthrene	SED	4	1	0.042–[0.84]	1/4
Pyrene	ALLH	10	3	0.041–[2]	3/10
Pyrene	FILL	2	1	0.19–[0.42]	1/2
Pyrene	SED	4	3	0.051–[0.39]	3/4

Note: Values in brackets are below detection limits.

Table 8.2-4
Subaggregate 7 Historical Analytical Results of Inorganic Chemicals
Greater Than Background Values in Soil, Fill, Sediment, and Tuff at TA-16-260 Outfalls: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Aluminum	Antimony	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper
Soil Background Value[a]				**29200**	**0.83**	**8.17**	**295**	**0.4**	**19.3**	**8.64**	**14.7**
Sediment Background Value				**15400**	**0.83**	**3.98**	**127**	**0.4**	**10.5**	**4.73**	**11.2**
QBT4 Background Value				**7340**	**0.5**	**2.79**	**46**	**1.63**	**7.14**	**3.14**	**4.66**
SWMU 16-003(i)											
16-01412	0–0.5	0316-95-0070	SED	—[b]	5.6 (U)	—	183	0.56 (U)	—	10.3	—
16-01412	1–1.33	0316-95-0071	QBT4	7780	6.9 (U)	—	105	—	—	—	—
16-01412	3.5–5.5	0316-95-0072	QBT4	—	5.9 (U)	3.7	—	—	15.1	—	—
16-01413	0–0.5	0316-95-0076	ALLH	—	5.87 (U)	—	—	0.587 (U)	—	9	—
16-01414	0–0.5	0316-95-0077	ALLH	—	5.58 (U)	—	—	0.558 (U)	—	—	—
16-01415	0–0.5	0316-95-0078	ALLH	—	5.86 (U)	—	—	0.586 (U)	—	—	—
16-01416	0–0.5	0316-95-0079	QBT4	—	5.37 (U)	—	93.4	—	—	3.73 (J)	7.35
16-01417	0–0.5	0316-95-0080	ALLH	—	5.55 (U)	—	—	0.555 (U)	—	—	—
16-01650	0–0.5	0316-95-0073	SED	—	5.9 (U)	—	180	0.59 (U)	—	7.5	—
16-01650	0.5–1	0316-95-0074	FILL	—	6 (U)	—	—	0.6 (U)	—	—	—
16-01650	3–5	0316-95-0075	QBT4	—	5.6 (U)	—	—	—	20.6	—	—
SWMU 16-003(j)											
16-01419	0–0.5	0316-95-0081	FILL	—	4.9 (U)	—	—	0.49 (U)	—	—	—
16-01419	0.5–1.17	0316-95-0082	ALLH	—	5.8 (U)	—	—	0.58 (U)	—	—	—
16-01419	3.5–5.5	0316-95-0083	QBT4	—	5.7 (U)	—	—	—	127	—	—
16-01420	0–0.5	0316-95-0087	ALLH	—	5.7 (U)	—	—	0.57 (U)	—	—	—
16-01421	0–0.5	0316-95-0088	ALLH	—	5.78 (U)	—	—	0.578 (U)	—	—	—
16-01422	0–0.5	0316-95-0089	ALLH	—	5.9 (U)	—	—	0.59 (U)	—	—	—

Table 8.2-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Aluminum	Antimony	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper
Soil Background Value[a]				**29200**	**0.83**	**8.17**	**295**	**0.4**	**19.3**	**8.64**	**14.7**
Sediment Background Value				**15400**	**0.83**	**3.98**	**127**	**0.4**	**10.5**	**4.73**	**11.2**
QBT4 Background Value				**7340**	**0.5**	**2.79**	**46**	**1.63**	**7.14**	**3.14**	**4.66**
16-01423	0–0.5	0316-95-0090	ALLH	—	5.22 (U)	—	—	0.522 (U)	—	—	—
16-01424	0–0.5	0316-95-0091	SED	—	6.07 (U)	—	—	0.607 (U)	—	—	25.8
16-01651	0–0.5	0316-95-0084	SED	—	5.6 (U)	—	—	0.56 (U)	—	6	—
16-01651	0.58–1.08	0316-95-0085	ALLH	—	5.8 (U)	—	—	0.58 (U)	—	—	—
16-01651	2.92–4.5	0316-95-0086	QBT4	—	5.6 (U)	12.3	—	—	202	—	—

Table 8.2-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Cyanide (Total)	Lead	Manganese	Selenium	Uranium	Vanadium	Zinc
Soil Background Value[a]				**0.5**	**22.3**	**671**	**1.52**	**1.82**	**39.6**	**48.8**
Sediment Background Value				**0.82**	**19.7**	**543**	**0.3**	**2.22**	**19.7**	**60.2**
QBT4 Background Value				**0.5**	**11.2**	**482**	**0.3**	**2.4**	**17**	**63.5**
SWMU 16-003(i)										
16-01412	0–0.5	0316-95-0070	SED	1.2 (U)	—	545	—	—	25.5	—
16-01412	1–1.33	0316-95-0071	QBT4	1.5 (U)	—	—	0.35 (UJ)	—	—	—
16-01412	3.5–5.5	0316-95-0072	QBT4	1.2 (U)	—	—	—	—	—	—
16-01413	0–0.5	0316-95-0076	ALLH	1.2 (U)	—	—	—	2.43	—	49.5
16-01414	0–0.5	0316-95-0077	ALLH	1.1 (U)	—	—	—	3.51	—	76.2
16-01415	0–0.5	0316-95-0078	ALLH	1.2 (U)	—	—	—	1.94	—	60.3
16-01416	0–0.5	0316-95-0079	QBT4	1.1 (U)	11.6	—	—	—	—	—
16-01417	0–0.5	0316-95-0080	ALLH	1.1 (U)	—	—	—	1.96	—	—
16-01650	0–0.5	0316-95-0073	SED	1.2 (U)	21.2	—	—	—	27.5	64.5
16-01650	0.5–1	0316-95-0074	FILL	1.3 (U)	—	—	—	2.28	—	144
16-01650	3–5	0316-95-0075	QBT4	1.1 (U)	—	—	—	—	—	—
SWMU 16-003(j)										
16-01419	0–0.5	0316-95-0081	FILL	1 (U)	49	—	—	1.83	—	58.1
16-01419	0.5–1.17	0316-95-0082	ALLH	1.2 (U)	—	—	—	2.27	—	—
16-01419	3.5–5.5	0316-95-0083	QBT4	1.2 (U)	—	—	—	—	—	—
16-01420	0–0.5	0316-95-0087	ALLH	1.2 (U)	42.7	—	—	2.14	—	107
16-01421	0–0.5	0316-95-0088	ALLH	1.2 (U)	—	—	—	2.4	—	60.6
16-01422	0–0.5	0316-95-0089	ALLH	1.2 (U)	31.3	—	—	2.27	—	92.8
16-01423	0–0.5	0316-95-0090	ALLH	1 (U)	—	—	—	1.84	—	—

Table 8.2-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Cyanide (Total)	Lead	Manganese	Selenium	Uranium	Vanadium	Zinc
Soil Background Value[a]				**0.5**	**22.3**	**671**	**1.52**	**1.82**	**39.6**	**48.8**
Sediment Background Value				**0.82**	**19.7**	**543**	**0.3**	**2.22**	**19.7**	**60.2**
QBT4 Background Value				**0.5**	**11.2**	**482**	**0.3**	**2.4**	**17**	**63.5**
16-01424	0–0.5	0316-95-0091	SED	1.3 (U)	—	—	0.316 (U)	2.89	—	418
16-01651	0–0.5	0316-95-0084	SED	1.1 (U)	30.3	—	—	—	—	383
16-01651	0.58–1.08	0316-95-0085	ALLH	1.2 (U)	—	—	—	—	—	95.2
16-01651	2.92–4.5	0316-95-0086	QBT4	1.1 (U)	—	—	—	—	—	—

Source: Background values from LANL (1998, 59730, Table 6.0.1, p. 44).

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

[a] Fill samples were compared to soil background values.

[b] — = If analyzed, sample result is less than background value.

Table 8.2-5
Subaggregate 7 Historical Analytical Results of Organic Chemicals Detected in Soil, Fill, Sediment, and Tuff at TA-16-260 Outfalls: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzoic Acid	Chrysene	Diethylphthalate	Fluoranthene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene
SWMU 16-003(i)														
16-01414	0–0.5	0316-95-0077	ALLH	—*	0.095 (J)	0.18 (J)	0.072 (J)	0.098 (J)	0.086 (J)	—	0.088 (J)	0.056 (J)	—	0.089 (J)
16-01417	0–0.5	0316-95-0080	ALLH	—	—	—	—	—	—	—	—	—	—	0.041 (J)
16-01650	0–0.5	0316-95-0073	SED	—	—	—	—	0.064 (J)	—	—	0.072 (J)	—	—	0.051 (J)
16-01650	0.5–1	0316-95-0074	FILL	—	—	—	—	—	—	—	0.048 (J)	—	—	—
16-01650	3–5	0316-95-0075	QBT4	—	—	—	—	—	—	0.076 (J)	—	—	—	—
SWMU 16-003(j)														
16-01419	0–0.5	0316-95-0081	FILL	0.051 (J)	0.084 (J)	0.13 (J)	—	—	0.11 (J)	—	0.13 (J)	—	0.1 (J)	0.19 (J)
16-01421	0–0.5	0316-95-0088	ALLH	—	—	—	—	0.2 (J)	—	—	0.08 (J)	—	—	—
16-01422	0–0.5	0316-95-0089	ALLH	—	0.084 (J)	0.17 (J)	—	0.15 (J)	0.12 (J)	—	0.091 (J)	—	0.04 (J)	0.22 (J)
16-01424	0–0.5	0316-95-0091	SED	—	—	—	—	—	0.31 (J)	—	0.087 (J)	—	—	0.25 (J)
16-01651	0–0.5	0316-95-0084	SED	—	—	—	—	0.15 (J)	—	—	0.062 (J)	—	0.042 (J)	0.1 (J)
16-01651	0.58–1.08	0316-95-0085	ALLH	—	—	—	—	—	—	—	0.053 (J)	—	—	—

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

*— = If analyzed, sample result is not detected.

Table 9.2-1
Subaggregate 8 Summary of Historical Samples Collected in Soil and Sediment at Former Firing Sites: Screening- and Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number						
				Gamma Spectroscopy	High Explosives	Isotopic Uranium	Inorganic Chemicals	SVOC	Uranium	VOC
Screening-Level Data										
AOC 14-001(f)										
14-01032	0–0.08	0214-95-0053	ALLH	68714	—[a]	68714	—	69207	68716	—
14-01033	0–0.33	0214-95-0054	ALLH	68714	—	68714	—	69207	68716	—
14-01034	3.58–3.92	0214-95-0055	ALLH	69743	69881	69743	70268	69786	69761	69892
AOC C-14-008										
14-01103	0–0.5	0214-95-0056	ALLH	6529823	6530014	—	6529952	—	6529824	—
14-01104	0–0.5	0214-95-0057	ALLH	6529823	6530014	—	6529952	—	6529824	—
SWMU 14-002(a)										
14-01031	0–0.5	0214-95-0052[b]	ALLH	68714	—	68714	—	—	68716	—
14-01036	0–0.5	0214-95-0058	ALLH	68994	—	68994	—	—	69000	—
SWMU 14-009										
14-01044	0–0.5	0214-95-0066	ALLH	—	68962	—	69998	69207	—	—
14-01044	1–1.5	0214-95-0067	ALLH	—	68962	—	69998	69207	—	—
14-01045	0–0.5	0214-95-0068	ALLH	—	68962	—	69998	69207	—	—
14-01045	1–1.5	0214-95-0069	ALLH	—	68962	—	69998	69207	—	—
14-01046	0–0.5	0214-95-0070	ALLH	68994	68962	68994	69352	69207	69000	—
14-01047	0–0.41	0214-95-0071	ALLH	68994	68962	68994	69352	69207	69000	—
14-01048	0–0.41	0214-95-0072	ALLH	68994	68962	68994	69352	69207	69000	—
14-01049	0–0.5	0214-95-0073	ALLH	68714	69174	68714	69352	—	—	—
14-01050	0–0.41	0214-95-0074	ALLH	68714	69174	68714	69352	—	—	—

Table 9.2-1 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number						
				Gamma Spectroscopy	High Explosives	Isotopic Uranium	Inorganic Chemicals	SVOC	Uranium	VOC
SWMU 14-010										
14-01028	0–0.33	0214-95-0049[b]	SED	68714	—	68714	—	—	68716	—
14-01029	0–0.5	0214-95-0050[b]	ALLH	68714	—	68714	—	—	68716	—
14-01029	1.17–1.67	0214-95-0048	ALLH	68714	—	68714	—	—	68716	—
14-01030	0–0.5	0214-95-0051[b]	SED	68714	—	68714	—	—	68716	—
Consolidated Unit 14-002(a)-99										
14-01051	0–0.5	0214-95-0075	SED	68714	69174	68714	69998	—	—	—
Consolidated Unit 14-002(c)-99										
14-01089	0–0.5	0214-95-0115	ALLH	68169	—	68169	—	—	68277	—
14-01090	0–0.5	0214-95-0117	ALLH	68169	—	68169	—	—	68277	—
14-01091	0–0.5	0214-95-0118	ALLH	68169	—	68169	—	—	68277	—
14-01092	0–0.5	0214-95-0119	ALLH	68169	—	68169	—	—	68277	—
14-01099	0–0.5	0214-95-0127	ALLH	68994	69174	68994	69352	—	69000	—
14-01100	0–0.5	0214-95-0128	ALLH	68994	69174	68994	69352	—	69000	—
Decision-Level Data										
AOC 14-001(f)										
14-01032	0–0.83	0214-97-0009	ALLH	—	3179R	—	3180R	—	3181R	—
14-01033	0–0.66	0214-97-0010	ALLH	—	3179R	—	3180R	—	3181R	—
14-01034	0–1	0214-97-0011	ALLH	—	3179R	—	3180R	—	3181R	—
SWMU 14-002(a)										
14-01031	0–0.83	0214-97-0008	ALLH	—	3179R	—	3180R	—	3181R	—
14-01036	0–0.5	0214-97-0032	ALLH	—	—	3365R	—	—	—	—
14-01036	0–0.5	0214-97-0043	ALLH	—	3630R	—	—	—	—	—

Table 9.2-1 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number						
				Gamma Spectroscopy	High Explosives	Isotopic Uranium	Inorganic Chemicals	SVOC	Uranium	VOC
14-01037	0–0.5	0214-97-0033	SED	—	—	3365R	—	—	—	—
14-01037	0–0.5	0214-97-0044	SED	—	3630R	—	—	—	—	—
SWMU 14-009										
14-01044	0–0.5	0214-97-0013	ALLH	—	3392R	—	3393R	—	3394R	—
14-01045	0–0.5	0214-97-0014	ALLH	—	3392R	—	3393R	—	3394R	—
14-01046	0–0.5	0214-97-0015	ALLH	—	3392R	—	3393R	—	3394R	—
14-01047	0–0.5	0214-97-0016	ALLH	—	3392R	—	3393R	—	3394R	—
SWMU 14-010										
14-01030	0–0.83	0214-97-0007	ALLH	—	3179R	—	3180R	—	3181R	—
14-01038	0–0.5	0214-97-0034	SED	—	—	3365R	—	—	—	—
14-01038	0–0.5	0214-97-0045	SED	—	3628R	—	—	—	—	—
14-01039	0–0.5	0214-97-0035	SED	—	—	3365R	—	—	—	—
14-01039	0–0.5	0214-97-0046	SED	—	3628R	—	—	—	—	—
14-01040	0–0.5	0214-97-0036	SED	—	—	3365R	—	—	—	—
14-01040	0–0.5	0214-97-0047	SED	—	3628R	—	—	—	—	—
14-01041	0–0.5	0214-97-0037	SED	—	—	3365R	—	—	—	—
14-01041	0–0.5	0214-97-0050	SED	—	3628R	—	—	—	—	—
14-01042	0–0.5	0214-97-0041	SED	—	—	3365R	—	—	—	—
14-01042	0–0.5	0214-97-0048	SED	—	3628R	—	—	—	—	—
14-01043	0–0.08	0214-97-0042	SED	—	—	3365R	—	—	—	—
14-01043	0–0.5	0214-97-0049	SED	—	3628R	—	—	—	—	—

[a] — = The analysis was not requested.

[b] Soil removed after sampling.

Table 9.2-2
Subaggregate 8 Frequency of Detection of Inorganic Chemicals in Soil and Sediment at Former Firing Sites: Screening- and Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Screening-Level Data							
Consolidated Unit 14-002(a)-99							
Aluminum	ALLH	12	12	1540–6660	29200	0/12	0/12
Aluminum	SED	1	1	8750	15400	0/1	0/1
Antimony	ALLH	11	9	0.0379–4.37	0.83	1/11	2/11
Antimony	SED	1	1	0.113	0.83	0/1	0/1
Arsenic	ALLH	12	12	1.32–4.05	8.17	0/12	0/12
Arsenic	SED	1	1	2.7	3.98	0/1	0/1
Barium	ALLH	12	12	48–131	295	0/12	0/12
Barium	SED	1	1	122	127	0/1	0/1
Beryllium	ALLH	12	10	0.147–0.688	1.83	0/12	0/12
Beryllium	SED	1	1	0.657	1.31	0/1	0/1
Cadmium	ALLH	11	8	0.0247–0.691	0.4	1/11	2/11
Cadmium	SED	1	1	0.0984	0.4	0/1	0/1
Calcium	ALLH	12	12	1420–3870	6120	0/12	0/12
Calcium	SED	1	1	1540	4420	0/1	0/1
Chromium	ALLH	11	11	4.94–18.2	19.3	0/11	0/11
Chromium	SED	1	1	5.13	10.5	0/1	0/1
Cobalt	ALLH	11	11	1.65–8.51	8.64	0/11	0/11
Cobalt	SED	1	1	4	4.73	0/1	0/1
Copper	ALLH	12	11	[4.1]–449	14.7	7/12	0/12
Copper	SED	1	1	4.94	11.2	0/1	0/1
Iron	ALLH	11	11	5070–13400	21500	0/11	0/11
Iron	SED	1	1	8870	13800	0/1	0/1
Lead	ALLH	12	12	4.98–118	22.3	7/12	0/12
Lead	SED	1	1	13.7	19.7	0/1	0/1
Magnesium	ALLH	11	11	877–1670	4610	0/11	0/11
Magnesium	SED	1	1	1330	2370	0/1	0/1
Manganese	ALLH	11	11	89.1–690	671	1/11	0/11
Manganese	SED	1	1	259	543	0/1	0/1
Mercury	ALLH	12	10	0.00463–0.422	0.1	2/12	0/12
Mercury	SED	1	1	0.014	0.1	0/1	0/1
Nickel	ALLH	11	9	3.42–90.9	15.4	2/11	0/11

Table 9.2-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Nickel	SED	1	1	4.75	9.38	0/1	0/1
Potassium	ALLH	11	11	344–1250	3460	0/11	0/11
Potassium	SED	1	1	1130	2690	0/1	0/1
Selenium	ALLH	11	8	0.0926–0.629	1.52	0/11	0/11
Silver	ALLH	12	3	0.0968–0.131	1	0/12	2/12
Sodium	ALLH	11	9	63.2–327	915	0/11	0/11
Sodium	SED	1	1	64.8	1470	0/1	0/1
Thallium	ALLH	12	5	0.174–0.604	0.73	0/12	1/12
Uranium	ALLH	12	12	3.3–2010	1.82	12/12	0/12
Uranium	SED	2	2	8.56–1370	2.22	2/2	0/2
Vanadium	ALLH	11	11	10.4–23.2	39.6	0/11	0/11
Vanadium	SED	1	1	13.8	19.7	0/1	0/1
Zinc	ALLH	11	11	15.5–214	48.8	1/11	0/11
Zinc	SED	1	1	18.8	60.2	0/1	0/1
Consolidated Unit 14-002(c)-99							
Aluminum	ALLH	2	2	4940–8220	29200	0/2	0/2
Antimony	ALLH	2	2	0.0816–0.214	0.83	0/2	0/2
Arsenic	ALLH	2	2	2.6–2.8	8.17	0/2	0/2
Barium	ALLH	2	2	149–255	295	0/2	0/2
Beryllium	ALLH	2	2	0.553–0.671	1.83	0/2	0/2
Cadmium	ALLH	2	2	0.111–0.134	0.4	0/2	0/2
Calcium	ALLH	2	2	1580–1800	6120	0/2	0/2
Chromium	ALLH	2	2	4.47–7.25	19.3	0/2	0/2
Cobalt	ALLH	2	2	1.65–4.4	8.64	0/2	0/2
Copper	ALLH	2	2	67.7–448	14.7	2/2	0/2
Iron	ALLH	2	2	8930–10300	21500	0/2	0/2
Lead	ALLH	2	2	85.1–115	22.3	2/2	0/2
Magnesium	ALLH	2	2	1160–1480	4610	0/2	0/2
Manganese	ALLH	2	2	199–270	671	0/2	0/2
Mercury	ALLH	2	2	0.0412–0.622	0.1	1/2	0/2
Nickel	ALLH	2	2	3.6–5.87	15.4	0/2	0/2
Potassium	ALLH	2	2	779–1120	3460	0/2	0/2
Selenium	ALLH	2	1	0.0715–0.0715	1.52	0/2	0/2
Sodium	ALLH	2	2	52.5–123	915	0/2	0/2
Uranium	ALLH	6	6	2.73–6.92	1.82	6/6	0/6
Vanadium	ALLH	2	2	8.43–19.6	39.6	0/2	0/2

Table 9.2-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Zinc	ALLH	2	2	58.6–105	48.8	2/2	0/2
Decision-Level Data							
Consolidated Unit 14-002(a)-99							
Aluminum	ALLH	9	9	6070–42000	29200	3/9	0/9
Antimony	ALLH	9	0	[4.46–13]	0.83	0/9	9/9
Arsenic	ALLH	9	9	1.61–5.5	8.17	0/9	0/9
Barium	ALLH	9	9	157–1800	295	6/9	0/9
Beryllium	ALLH	9	9	0.607–2.1	1.83	1/9	0/9
Cadmium	ALLH	9	0	[0.446–0.64]	0.4	0/9	9/9
Calcium	ALLH	9	9	1590–5000	6120	0/9	0/9
Chromium	ALLH	9	9	5.82–21	19.3	1/9	0/9
Cobalt	ALLH	9	9	5.16–9.4	8.64	1/9	0/9
Copper	ALLH	9	9	4.94–12.3	14.7	0/9	0/9
Iron	ALLH	9	9	8110–22000	21500	1/9	0/9
Lead	ALLH	9	9	15–18	22.3	0/9	0/9
Magnesium	ALLH	9	9	1430–4100	4610	0/9	0/9
Manganese	ALLH	9	9	310–510	671	0/9	0/9
Mercury	ALLH	9	0	[0.045–0.13]	0.1	0/9	5/9
Nickel	ALLH	9	9	5.65–17	15.4	1/9	0/9
Potassium	ALLH	9	9	1190–3500	3460	1/9	0/9
Silver	ALLH	9	2	[0.446]–1.97	1	2/9	5/9
Sodium	ALLH	9	9	160–670	915	0/9	0/9
Thallium	ALLH	9	5	[0.18]–1.2	0.73	4/9	0/9
Uranium	ALLH	9	7	[2.98]–4.61	1.82	7/9	2/9
Vanadium	ALLH	9	9	17.5–32	39.6	0/9	0/9
Zinc	ALLH	9	9	20–71	48.8	3/9	0/9

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Values in brackets are below detection limits.

Table 9.2-3
Subaggregate 8 Frequency of Detection of Organic Chemicals in Soil and Sediment at Former Firing Sites: Screening- and Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Screening-Level Data					
Consolidated Unit 14-002(a)-99					
Acetone	ALLH	1	1	0.023	1/1
Bis(2-ethylhexyl)phthalate	ALLH	7	2	[0.0624]–7.08	2/7
HMX	ALLH	11	8	[0.1]–284	8/11
Methylene Chloride	ALLH	1	1	0.00285	1/1
RDX	ALLH	11	1	[0.1]–41.2	1/11
Trichlorofluoromethane	ALLH	1	1	0.0139	1/1
Trinitrotoluene[2,4,6-]	ALLH	12	1	[0.1]–0.331	1/12
Decision-Level Data					
Consolidated Unit 14-002(a)-99					
Amino-4,6-dinitrotoluene[2-]	ALLH	10	1	[0.082]–0.107	1/10
HMX	ALLH	10	1	[0.165]–47.5	1/10
HMX	SED	7	7	1.03–94.3	7/7
Trinitrotoluene[2,4,6-]	ALLH	10	1	[0.085]–0.131	1/10
Trinitrotoluene[2,4,6-]	SED	7	3	[0.085]–0.162	3/7

Note: Values in brackets are below detection limits.

Table 9.2-4
Subaggregate 8 Frequency of Detection of Radionuclides in Soil and Sediment at Former Firing Sites: Screening- and Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (pCi/g)	Background Value (pCi/g)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Screening-Level Data							
Consolidated Unit 14-002(a)-99							
Protactinium-231	ALLH	14	11	0.29–3.61	n/a*	n/a	n/a
Protactinium-231	SED	3	2	[0]–4.68	n/a	n/a	n/a
Protactinium-234	ALLH	12	2	[-0.0711]–0.536	n/a	n/a	n/a
Protactinium-234M	ALLH	14	8	[8.13]–473	n/a	n/a	n/a
Protactinium-234M	SED	3	1	[0]–295	n/a	n/a	n/a
Thorium-230	ALLH	12	12	0.485–0.963	2.29	0/12	0/12
Thorium-230	SED	3	3	0.624–1.13	2.29	0/3	0/3
Thorium-231	ALLH	12	2	[0.0825]–0.335	n/a	n/a	n/a
Thorium-231	SED	3	1	[0.202]–0.499	n/a	n/a	n/a
Thorium-234	ALLH	14	10	[0]–204	n/a	n/a	n/a
Thorium-234	SED	3	2	[2.54]–166	n/a	n/a	n/a
Uranium-234	ALLH	12	12	0.521–1.17	2.59	0/12	0/12
Uranium-234	SED	3	2	[0]–1.07	2.59	0/3	0/3
Uranium-235	ALLH	14	5	[0.141]–3.36	0.2	5/12	4/12
Uranium-235	SED	3	1	[0.23]–2.67	0.2	1/3	1/3
Uranium-238	ALLH	12	12	2.91–176	2.29	12/12	0/12
Uranium-238	SED	3	2	[0.255]–143	2.29	2/3	0/3
Consolidated Unit 14-002(c)-99							
Protactinium-231	ALLH	6	1	4.76–4.76	n/a	n/a	n/a
Protactinium-234M	ALLH	6	2	[4.73]–11.5	n/a	n/a	n/a
Thorium-230	ALLH	6	6	0.925–1.41	2.29	0/6	0/6
Thorium-231	ALLH	6	4	[0.452]–0.631	n/a	n/a	n/a
Thorium-234	ALLH	6	6	2.7–6.5	n/a	n/a	n/a
Uranium-234	ALLH	6	6	1.07–1.45	2.59	0/6	0/6
Uranium-235	ALLH	6	2	0.238–0.347	0.2	2/6	2/6
Uranium-238	ALLH	6	5	2.26–5.92	2.29	4/6	1/6
Uranium-234	ALLH	1	1	1.1583	2.59	0/1	0/1

Table 9.2-4 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (pCi/g)	Background Value (pCi/g)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Decision-Level Data							
Consolidated Unit 14-002(a)-99							
Uranium-234	SED	7	7	0.7703–3.4406	2.59	2/7	0/7
Uranium-235	SED	7	4	[0.0044]–0.3218	0.2	3/7	0/7
Uranium-238	ALLH	1	1	3.7676	2.29	1/1	0/1
Uranium-238	SED	7	7	1.6974–24.0455	2.29	5/7	0/7

Source: Background values from LANL 1998 (59730, Table 6.0-2, p. 45).
Note: Values in brackets are below detection limits.
*n/a = Not applicable; no background value available.

Table 9.2-5
Subaggregate 8 Historical Analytical Results of Inorganic Chemicals Greater Than Background Values in Soil and Sediment at Former Firing Sites: Screening- and Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Aluminum	Antimony	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead
Soil Background Value				**29200**	**0.83**	**295**	**1.83**	**0.4**	**19.3**	**8.64**	**14.7**	**21500**	**22.3**
Sediment Background Value				**15400**	**0.83**	**127**	**1.31**	**0.4**	**10.5**	**4.73**	**11.2**	**13800**	**19.7**
Screening-Level Data													
AOC 14-001(f)													
14-01032	0–0.08	0214-95-0053	ALLH	—[a]	—	—	—	—	—	—	—	—	—
14-01033	0–0.33	0214-95-0054	ALLH	—	—	—	—	—	—	—	—	—	—
14-01034	3.58–3.92	0214-95-0055	ALLH	—	4.37 (J)	—	—	0.691 (J)	—	—	449	—	118
AOC C-14-008													
14-01103	0–0.5	0214-95-0056	ALLH	—	8.2 (U)	—	—	1 (U)		—	—	—	—
14-01104	0–0.5	0214-95-0057	ALLH	—	8.3 (U)	—	—	1 (U)	—	—	—	—	—
SWMU 14-002(a)													
14-01031	0–0.5	0214-95-0052[b]	ALLH	—	—	—	—	—	—	—	—	—	—
14-01036	0–0.5	0214-95-0058	ALLH	—	—	—	—	—	—	—	—	—	—
SWMU 14-009													
14-01045	0–0.5	0214-95-0068	ALLH	—	—	—	—	—	—	—	—	—	39.3
14-01045	1–1.5	0214-95-0069	ALLH	—	—	—	—	—	—	—	21.1	—	—
14-01046	0–0.5	0214-95-0070	ALLH	—	—	—	—	—	—	—	65.3	—	36.8
14-01047	0–0.41	0214-95-0071	ALLH	—	—	—	—	—	—	—	42.5	—	49.9
14-01048	0–0.41	0214-95-0072	ALLH	—	—	—	—	—	—	—	20.1	—	27.1
14-01049	0–0.5	0214-95-0073	ALLH	—	—	—	—	—	—	—	41.6	—	89.3
14-01050	0–0.41	0214-95-0074	ALLH	—	—	—	—	—	—	—	22.8	—	25.7
SWMU 14-010													
14-01028	0–0.33	0214-95-0049[b]	SED	—	—	—	—	—	—	—	—	—	—

Table 9.2-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Aluminum	Antimony	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead
Soil Background Value				**29200**	**0.83**	**295**	**1.83**	**0.4**	**19.3**	**8.64**	**14.7**	**21500**	**22.3**
Sediment Background Value				**15400**	**0.83**	**127**	**1.31**	**0.4**	**10.5**	**4.73**	**11.2**	**13800**	**19.7**
14-01029	0–0.5	0214-95-0050[b]	ALLH	—	—	—	—	—	—	—	—	—	—
14-01029	1.17–1.67	0214-95-0048	ALLH	—	—	—	—	—	—	—	—	—	—
14-01030	0–0.5	0214-95-0051[b]	SED	—	—	—	—	—	—	—	—	—	—
Consolidated Unit 14-002(c)-99													
14-01089	0–0.5	0214-95-0115	ALLH	—	—	—	—	—	—	—	—	—	—
14-01090	0–0.5	0214-95-0117	ALLH	—	—	—	—	—	—	—	—	—	—
14-01091	0–0.5	0214-95-0118	ALLH	—	—	—	—	—	—	—	—	—	—
14-01092	0–0.5	0214-95-0119	ALLH	—	—	—	—	—	—	—	—	—	—
14-01099	0–0.5	0214-95-0127	ALLH	—	—	—	—	—	—	—	448	—	115
14-01100	0–0.5	0214-95-0128	ALLH	—	—	—	—	—	—	—	67.7	—	85.1
Decision-Level Data													
AOC 14-001(f)													
14-01032	0–0.83	0214-97-0009	ALLH	31000	13 (U)	1800	—	0.64 (U)	—	—	—	—	—
14-01033	0–0.66	0214-97-0010	ALLH	34000	12 (U)	460	—	0.6 (U)	—	9.4	—	—	—
14-01034	0–1	0214-97-0011	ALLH	—	12 (U)	—	—	0.6 (U)	—	—	—	—	—
SWMU 14-002(a)													
14-01031	0–0.83	0214-97-0008	ALLH	42000	13 (U)	860	2.1	0.64 (U)	21	—	—	22000	—
SWMU 14-009													
14-01044	0–0.5	0214-97-0013	ALLH	—	4.77 (U)	303	—	0.477 (U)	—	—	—	—	—
14-01045	0–0.5	0214-97-0014	ALLH	—	4.77 (U)	—	—	0.477 (U)	—	—	—	—	—
14-01046	0–0.5	0214-97-0015	ALLH	—	5.28 (U)	746	—	0.528 (U)	—	—	—	—	—
14-01047	0–0.5	0214-97-0016	ALLH	—	4.46 (U)	—	—	0.446 (U)	—	—	—	—	—
SWMU 14-010													
14-01030	0–0.83	0214-97-0007	ALLH	—	12 (U)	330	—	0.61 (U)	—	—	—	—	—

Table 9.2-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Manganese	Mercury	Nickel	Potassium	Silver	Sodium	Thallium	Uranium	Zinc
Soil Background Value				**671**	**0.1**	**15.4**	**3460**	**1**	**915**	**0.73**	**1.82**	**48.8**
Sediment Background Value				**543**	**0.1**	**9.38**	**2690**	**1**	**1470**	**0.73**	**2.22**	**60.2**
Screening-Level Data												
AOC 14-001(f)												
14-01032	0–0.08	0214-95-0053	ALLH	—	—	—	—	—	—	—	8.54	—
14-01033	0–0.33	0214-95-0054	ALLH	—	—	—	—	—	—	—	9.53	—
14-01034	3.58–3.92	0214-95-0055	ALLH	690	—	31.6 (J)	—	—	—	0.935 (U)	141	214
AOC C-14-008												
14-01103	0–0.5	0214-95-0056	ALLH	—	—	—	—	2.1 (U)	—	—	3.3	—
14-01104	0–0.5	0214-95-0057	ALLH	—	—	—	—	2.1 (U)	—	—	3.8	—
SWMU 14-002(a)												
14-01031	0–0.5	0214-95-0052[b]	ALLH	—	—	—	—	—	—	—	6.97	—
14-01036	0–0.5	0214-95-0058	ALLH	—	—	—	—	—	—	—	2010	—
SWMU 14-009												
14-01045	0–0.5	0214-95-0068	ALLH	—	—	—	—	—	—	—	—	—
14-01045	1–1.5	0214-95-0069	ALLH	—	—	—	—	—	—	—	—	—
14-01046	0–0.5	0214-95-0070	ALLH	—	0.422	—	—	—	—	—	64	—
14-01047	0–0.41	0214-95-0071	ALLH	—	0.241	—	—	—	—	—	29.9	—
14-01048	0–0.41	0214-95-0072	ALLH	—	—	90.9	—	—	—	—	123	—
14-01049	0–0.5	0214-95-0073	ALLH	—	—	—	—	—	—	—	—	—
14-01050	0–0.41	0214-95-0074	ALLH	—	—	—	—	—	—	—	—	—

Table 9.2-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Manganese	Mercury	Nickel	Potassium	Silver	Sodium	Thallium	Uranium	Zinc
SWMU 14-010												
14-01028	0–0.33	0214-95-0049[b]	SED	—	—	—	—	—	—	—	1370	—
14-01029	0–0.5	0214-95-0050[b]	ALLH	—	—	—	—	—	—	—	681	—
14-01029	1.17–1.67	0214-95-0048	ALLH	—	—	—	—	—	—	—	14.5	—
14-01030	0–0.5	0214-95-0051[b]	SED	—	—	—	—	—	—	—	8.56	—
Consolidated Unit 14-002(c)-99												
14-01089	0–0.5	0214-95-0115	ALLH	—	—	—	—	—	—	—	6.51	—
14-01090	0–0.5	0214-95-0117	ALLH	—	—	—	—	—	—	—	5.3	—
14-01091	0–0.5	0214-95-0118	ALLH	—	—	—	—	—	—	—	2.73	—
14-01092	0–0.5	0214-95-0119	ALLH	—	—	—	—	—	—	—	5.8	—
14-01099	0–0.5	0214-95-0127	ALLH	—	—	—	—	—	—	—	6.92	58.6
14-01100	0–0.5	0214-95-0128	ALLH	—	0.622	—	—	—	—	—	2.95	105
Decision-Level Data												
AOC 14-001(f)												
14-01032	0–0.83	0214-97-0009	ALLH	—	0.13 (U)	—	—	2.6 (U)	—	—	3.14	—
14-01033	0–0.66	0214-97-0010	ALLH	—	0.12 (U)	—	—	2.4 (U)	—	0.89	3.45	51
14-01034	0–1	0214-97-0011	ALLH	—	0.12 (U)	—	—	2.4 (U)	—	1.2	3.29	71
SWMU 14-002(a)												
14-01031	0–0.83	0214-97-0008	ALLH	—	0.13 (U)	17	3500	2.6 (U)	—	0.9	3.11	55
SWMU 14-009												
14-01044	0–0.5	0214-97-0013	ALLH	—	—	—	—	—	—	—	3.83	—
14-01045	0–0.5	0214-97-0014	ALLH	—	—	—	—	1.97	—	—	4.61	—
14-01046	0–0.5	0214-97-0015	ALLH	—	—	—	—	1.5	—	—	3.46 (U)	—
14-01047	0–0.5	0214-97-0016	ALLH	—	—	—	—	—	—	—	2.98 (U)	—

Table 9.2-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Manganese	Mercury	Nickel	Potassium	Silver	Sodium	Thallium	Uranium	Zinc
SWMU 14-010												
14-01030	0–0.83	0214-97-0007	ALLH	—	0.12 (U)	—	—	2.4 (U)	—	1	3.01	—

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

[a] — = If analyzed, sample result is not detected.

[b] Soil removed after sampling.

Table 9.2-6
Subaggregate 8 Historical Analytical Results of Organic Chemicals Detected in Soil and Sediment at Former Firing Sites: Screening- and Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Acetone	Amino-4,6-dinitrotoluene[2-]	Bis(2-ethylhexyl)phthalate	HMX	Methylene Chloride	RDX	Trichlorofluoromethane	Trinitrotoluene[2,4,6-]
Screening-Level Data											
AOC 14-001(f)											
14-01034	3.58–3.92	0214-95-0055	ALLH	0.023 (J)	—*	7.08 (J)	50.5	0.00285 (J)	41.2	0.0139 (J)	0.331
SWMU 14-009											
14-01045	0–0.5	0214-95-0068	ALLH	—	—	—	5.39 (J)	—	—	—	—
14-01045	1–1.5	0214-95-0069	ALLH	—	—	—	1.35	—	—	—	—
14-01046	0–0.5	0214-95-0070	ALLH	—	—	0.212 (J)	48 (J)	—	—	—	—
14-01047	0–0.41	0214-95-0071	ALLH	—	—	—	60.8 (J)	—	—	—	—
14-01048	0–0.41	0214-95-0072	ALLH	—	—	—	163	—	—	—	—
14-01049	0–0.5	0214-95-0073	ALLH	—	—	—	284	—	—	—	—
14-01050	0–0.41	0214-95-0074	ALLH	—	—	—	63	—	—	—	—
Decision-Level Data											
SWMU 14-002(a)											
14-01036	0–0.5	0214-97-0043	ALLH	—	—	—	47.5	—	—	—	—
14-01037	0–0.5	0214-97-0044	SED	—	—	—	29.9	—	—	—	—
SWMU 14-009											
14-01046	0–0.5	0214-97-0015	ALLH	—	0.107	—	—	—	—	—	0.131

Table 9.2-6 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Acetone	Amino-4,6-dinitrotoluene[2-]	Bis(2-ethylhexyl)phthalate	HMX	Methylene Chloride	RDX	Trichlorofluoromethane	Trinitrotoluene[2,4,6-]
SWMU 14-010											
14-01038	0–0.5	0214-97-0045	SED	—	—	—	94.3	—	—	—	0.093
14-01039	0–0.5	0214-97-0046	SED	—	—	—	61.9	—	—	—	—
14-01040	0–0.5	0214-97-0047	SED	—	—	—	1.03	—	—	—	—
14-01041	0–0.5	0214-97-0050	SED	—	—	—	1.38	—	—	—	0.162
14-01042	0–0.5	0214-97-0048	SED	—	—	—	2.19	—	—	—	—
14-01043	0–0.5	0214-97-0049	SED	—	—	—	1.29	—	—	—	0.162

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

*— = If analyzed, sample result is not detected.

Table 9.2-7
Subaggregate 8 Historical Analytical Results of Radionuclides Detected or Detected Greater Than Background Values in Soil and Sediment at Former Firing Sites: Screening- and Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Protactinium-231	Protactinium-234	Protactinium-234M	Thorium-231	Thorium-234	Uranium-234	Uranium-235	Uranium-238
Soil Background Value				**n/a[a]**	**n/a**	**n/a**	**n/a**	**n/a**	**2.59**	**0.2**	**2.29**
Sediment Background Value				**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**2.59**	**0.2**	**2.29**
Screening-Level Data											
AOC 14-001(f)											
14-01032	0–0.08	0214-95-0053	ALLH	2.06	—[b]	—	—	1.72	—	—	2.91
14-01033	0–0.33	0214-95-0054	ALLH	3.19	—	—	—	6.32	—	—	5.06
14-01034	3.58–3.92	0214-95-0055	ALLH	2.51	—	23.9	—	16	—	0.364	18
Consolidated Unit 14-002(c)-99											
14-01089	0–0.5	0214-95-0115	ALLH	—	—	—	0.631	4.96	—	0.238	4.02
14-01090	0–0.5	0214-95-0117	ALLH	—	—	11.5	0.469	6.5	—	0.347	5.92
14-01091	0–0.5	0214-95-0118	ALLH	—	—	—	0.489	2.96	—	—	—
14-01092	0–0.5	0214-95-0119	ALLH	—	—	10.3	0.517	3.85	—	—	3.83
14-01099	0–0.5	0214-95-0127	ALLH	4.76	—	—	—	2.89	—	—	4.35
14-01100	0–0.5	0214-95-0128	ALLH	—	—	—	—	2.7	—	—	—
SWMU 14-002(a)											
14-01031	0–0.5	0214-95-0052[b]	ALLH	3.02	—	—	0.275	7.17	—	—	7.25
14-01036	0–0.5	0214-95-0058	ALLH	2.49	0.407	473	—	204	—	3.36	176
SWMU 14-009											
14-01046	0–0.5	0214-95-0070	ALLH	2.82	—	29.1	0.335	10	—	—	9.91
14-01047	0–0.41	0214-95-0071	ALLH	3.61	0.536	38.5	—	18.1	—	—	17.1
14-01048	0–0.41	0214-95-0072	ALLH	3.05	—	149	—	—	—	1.22	58.5

Table 9.2-7 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Protactinium-231	Protactinium-234	Protactinium-234M	Thorium-231	Thorium-234	Uranium-234	Uranium-235	Uranium-238
Soil Background Value				**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**2.59**	**0.2**	**2.29**
Sediment Background Value				**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**2.59**	**0.2**	**2.29**
14-01049	0–0.5	0214-95-0073	ALLH	3.09	—	26.5	—	16.6	—	—	18.2
14-01050	0–0.41	0214-95-0074	ALLH	3.08	—	75.3	—	—	—	0.816	29.6
SWMU 14-010											
14-01028	0–0.33	0214-95-0049[c]	SED	2.77	—	295	—	166	—	2.67	143
14-01029	0–0.5	0214-95-0050[c]	ALLH	0.29	—	70.9	—	32.3	—	0.625	36
14-01029	1.17–1.67	0214-95-0048	ALLH	—	—	—	—	7.65	—	—	7.45
14-01030	0–0.5	0214-95-0051[c]	SED	4.68	—	—	0.499	3.37	—	—	3.49
Decision-Level Data											
SWMU 14-002(a)											
14-01036	0–0.5	0214-97-0032	ALLH	—	—	—	—	—	—	—	3.7676
14-01037	0–0.5	0214-97-0033	SED	—	—	—	—	—	3.3226	0.3211	20.2212
SWMU 14-010											
14-01038	0–0.5	0214-97-0034	SED	—	—	—	—	—	3.4406	0.3218	24.0455
14-01039	0–0.5	0214-97-0035	SED	—	—	—	—	—	—	0.2286	12.0008
14-01041	0–0.5	0214-97-0037	SED	—	—	—	—	—	—	—	3.3591
14-01042	0–0.5	0214-97-0041	SED	—	—	—	—	—	—	—	2.2975

Source: Background values from LANL (1998, 59730, Table 6.0-2, p. 45).

Note: Units are pCi/g.

[a] n/a = Not applicable; no background value available.

[b] — = If analyzed, sample result is less than background value or is not detected.

[c] Soil removed after sampling.

Table 9.3-1
Subaggregate 8 Summary of Historical Samples Collected in Soil and Sediment at HE Sump and Drainline: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number			
				Gamma Spectroscopy	Isotopic Uranium	SVOC	Uranium
Screening-Level Data							
SWMU 14-006							
14-01054	0–0.25	0214-95-0078	ALLH	68054	68054	—*	67991
14-01055	0–0.41	0214-95-0080	SED	68054	68054	—	67991
14-01056	0–0.33	0214-95-0081	SED	68054	68054	—	67991
14-01076	4–4	0214-95-0101	ALLH	68054	68054	68345	67992
14-01076	4–4	0214-95-0102	ALLH	68054	68054	68345	67992
14-01077	0–0.5	0214-95-0103	ALLH	68054	68054	68345	67992
14-01077	1.5–2	0214-95-0104	ALLH	68054	68054	68345	67992
14-01078	0–0.5	0214-95-0105	ALLH	68054	68054	68345	67992
14-01079	0–0.5	0214-95-0106	ALLH	68054	68054	68345	67992

* — = The analysis was not requested.

Table 9.3-2
Subaggregate 8 Frequency of Detection of Inorganic Chemicals in Soil and Sediment at HE Sump and Drainline: Screening-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Uranium	ALLH	7	7	3.36–9.41	1.82	7/7	0/7
Uranium	SED	2	2	4.51–13.6	2.22	2/2	0/2

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).

Table 9.3-3
Subaggregate 8 Frequency of Detection of Radionuclides in Soil and Sediment at HE Sump and Drainline: Screening-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (pCi/g)	Background Value (pCi/g)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Protactinium-231	ALLH	7	2	[0]–4.98	n/a*	n/a	n/a
Thorium-230	ALLH	7	7	0.908–1.21	2.29	0/7	0/7
Thorium-230	SED	2	1	1.07–1.07	2.29	0/2	0/2
Thorium-231	ALLH	7	3	[0.327]–0.535	n/a	n/a	n/a
Thorium-234	ALLH	7	7	1.45–2.9	n/a	n/a	n/a
Thorium-234	SED	2	2	2.26–6.27	n/a	n/a	n/a
Uranium-234	ALLH	7	7	0.908–1.3	2.59	0/7	0/7
Uranium-234	SED	2	2	1.06–1.16	2.59	0/2	0/2
Uranium-235	ALLH	7	1	[0.191]–0.287	0.2	1/7	1/7
Uranium-238	ALLH	7	2	[1.16]–2.43	2.29	1/7	0/7

Source: Background values from LANL 1998 (59730, Table 6.0-2, p. 45).
Note: Values in brackets are below detection limits.
*n/a = Not applicable; no background value available.

Table 9.3-4
Subaggregate 8 Historical Analytical Results of Inorganic Chemicals Detected Greater Than Background Values in Soil and Sediment at HE Sump and Drainline: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Uranium
Soil Background Value				**1.82**
Sediment Background Value				**2.22**
SWMU 14-006				
14-01054	0–0.25	0214-95-0078	ALLH	9.41
14-01055	0–0.41	0214-95-0080	SED	13.6
14-01056	0–0.33	0214-95-0081	SED	4.51
14-01076	4–4	0214-95-0101	ALLH	3.36
14-01076	4–4	0214-95-0102	ALLH	3.59
14-01077	0–0.5	0214-95-0103	ALLH	7.31
14-01077	1.5–2	0214-95-0104	ALLH	3.55
14-01078	0–0.5	0214-95-0105	ALLH	5.57
14-01079	0–0.5	0214-95-0106	ALLH	6.89

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).
Note: Units are mg/kg.

Table 9.3-5
Subaggregate 8 Historical Analytical Results of Radionuclides Detected or Detected Greater Than Background Values in Soil and Sediment at HE Sump and Drainline: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Protactinium-231	Thorium-231	Thorium-234	Uranium-235	Uranium-238
Soil Background Value				**n/a**[a]	**n/a**	**n/a**	**0.2**	**2.29**
Sediment Background Value				**n/a**	**n/a**	**n/a**	**0.2**	**2.29**
SWMU 14-006								
14-01054	0–0.25	0214-95-0078	ALLH	—[b]	0.401	2.9	—	2.43
14-01055	0–0.41	0214-95-0080	SED	—	—	2.26	—	—
14-01056	0–0.33	0214-95-0081	SED	—	—	6.27	—	—
14-01076	4–4	0214-95-0101	ALLH	—	—	1.9	—	—
14-01076	4–4	0214-95-0102	ALLH	—	0.535	2.39	—	—
14-01077	0–0.5	0214-95-0103	ALLH	4.46	—	2.23	—	—
14-01077	1.5–2	0214-95-0104	ALLH	—	—	1.92	—	—
14-01078	0–0.5	0214-95-0105	ALLH	4.98	—	1.45	—	—
14-01079	0–0.5	0214-95-0106	ALLH	—	0.355	2.42	0.287	—

Source: Background values from LANL (1998, 59730, Table 6.0-2, p. 45).
Note: Units are pCi/g.
[a] n/a = Not applicable; no background value available.
[b] — = If analyzed, sample result is less than background value or is not detected.

Table 9.4-1
Subaggregate 8 Summary of Historical Samples Collected in Soil and Sludge at Septic System: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number				
				Cyanide (Total)	Gamma Spectroscopy	High Explosives	Isotopic Uranium	SVOC
Screening-Level Data								
SWMU 14-007								
14-01080	4.5–5	0214-95-0107	ALLH	68395	68392	—*	68392	68694
14-01081	4.5–5	0214-95-0108	ALLH	68395	68392	—	68392	68694
14-01082	0–0	0214-95-0109	SLUDGE	68651	69264	—	69264	68663
14-01082	0–0	0214-95-0110	SLUDGE	—	—	69172	—	—
14-01083	0–0.5	0214-95-0111	ALLH	68395	68392	—	68392	68694
14-01083	1.5–2	0214-95-0112	ALLH	68395	68392	—	68392	68694
14-01085	0–0.5	0214-95-0113	ALLH	68395	68392	—	68392	68694
14-01086	0–0.5	0214-95-0114	ALLH	68395	68392	—	68392	68694

*— = The analysis was not requested.

Table 9.4-2
Subaggregate 8 Frequency of Detection of
Inorganic Chemicals in Soil at Septic System: Screening-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Cyanide (Total)	ALLH	6	4	0.0814–0.33	0.5	0/6	2/6

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).

Table 9.4-3
Subaggregate 8 Frequency of Detection of
Radionuclides in Soil at Septic System: Screening-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (pCi/g)	Background Value (pCi/g)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Protactinium-234M	ALLH	6	1	[1.5]–4.99	n/a*	n/a	n/a
Thorium-230	ALLH	6	6	1.17–1.4	2.29	0/6	0/6
Thorium-231	ALLH	6	6	0.319–0.677	n/a	n/a	n/a
Thorium-234	ALLH	6	6	2.45–4.27	n/a	n/a	n/a
Uranium-234	ALLH	6	6	1.08–1.45	2.59	0/6	0/6
Uranium-235	ALLH	6	3	[0.114]–0.397	0.2	3/6	1/6
Uranium-238	ALLH	6	5	1.81–4.27	2.29	4/6	1/6

Source: Background values from LANL 1998 (59730, Table 6.0-2, p. 45).
Note: Values in brackets are below detection limits.
*n/a = Not applicable; no background value available.

Table 9.4-4
Subaggregate 8 Historical Analytical Results for Inorganic Chemicals
Greater Than Background Values in Soil at Septic System: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Cyanide (Total)
Soil Background Value				**0.5**
SWMU 14-007				
14-01080	4.5–5	0214-95-0107	ALLH	9.8 (U)
14-01083	1.5–2	0214-95-0112	ALLH	9.9 (U)

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).
Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

Table 9.4-5
Subaggregate 8 Historical Analytical Results of Radionuclides Detected or Detected Greater Than Background Values in Soil at Septic System: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Protactinium-231	Thorium-231	Thorium-234	Uranium-235	Uranium-238
Soil Background Value				**n/a**[a]	**n/a**	**n/a**	**0.2**	**2.29**
Sediment Background Value				**n/a**	**n/a**	**n/a**	**0.2**	**2.29**
SWMU 14-007								
14-01080	4.5–5	0214-95-0107	ALLH	—[b]	0.319	2.5	—	—
14-01081	4.5–5	0214-95-0108	ALLH	4.99	0.508	2.97	0.303	2.51
14-01083	0–0.5	0214-95-0111	ALLH	—	0.368	3.76	0.397	3.38
14-01083	1.5–2	0214-95-0112	ALLH	—	0.677	2.61	—	2.49
14-01085	0–0.5	0214-95-0113	ALLH	—	0.343	4.27	0.256	4.27
14-01086	0–0.5	0214-95-0114	ALLH	—	0.608	2.45	—	—

Source: Background values from LANL (1998, 59730, Table 6.0-2, p. 45).
Note: Units are pCi/g.
[a] n/a = Not applicable; no background value available.
[b] — = If analyzed, sample result is less than background value or is not detected.

Table 9.5-1
Subaggregate 8 Summary of Historical Samples Collected in Soil at Removed Buildings: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number			
				Gamma Spectroscopy	Isotopic Uranium	SVOC	Uranium
Screening-Level Data							
AOC C-14-003							
14-01066	0–0.5	0214-95-0091	ALLH	68994	68994	—*	—
14-01067	0–0.25	0214-95-0092	ALLH	68994	68994	—	69000
AOC C-14-004							
14-01068	0–0.16	0214-95-0093	ALLH	—	—	68345	—
14-01069	0–0.16	0214-95-0094	ALLH	—	—	68345	—
AOC C-14-005							
14-01070	0–0.5	0214-95-0095	ALLH	—	—	—	67992
14-01071	0–0.41	0214-95-0096	ALLH	—	—	—	67992
AOC C-14-007							
14-01074	0–0.41	0214-95-0099	ALLH	—	—	68345	67992
14-01075	0–0.41	0214-95-0100	ALLH	—	—	68345	67991

*— = The analysis was not requested.

Table 9.5-2
Subaggregate 8 Frequency of Detection of
Inorganic Chemicals in Soil at Removed Buildings: Screening-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Uranium	ALLH	5	5	1.75–12	1.82	4/5	0/5

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).

Table 9.5-3
Subaggregate 8 Frequency of Detection of
Radionuclides in Soil at Removed Buildings: Screening-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (pCi/g)	Background Value (pCi/g)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Thorium-230	ALLH	2	2	1.04–1.16	2.29	0/2	0/2
Thorium-234	ALLH	2	2	1.62–6.1	n/a*	n/a	n/a
Uranium-234	ALLH	2	2	1.02–1.24	2.59	0/2	0/2

Source: Background values from LANL 1998 (59730, Table 6.0-2, p. 45).
*n/a = Not applicable; no background value available.

Table 9.5-4
Subaggregate 8 Historical Analytical Results of Inorganic Chemicals Detected
Greater Than Background Values in Soil at Removed Buildings: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Uranium
Soil Background Value				**1.82**
AOC C-14-005				
14-01070	0–0.5	0214-95-0095	ALLH	4.94
14-01071	0–0.41	0214-95-0096	ALLH	3.99
AOC C-14-007				
14-01074	0–0.41	0214-95-0099	ALLH	12
14-01075	0–0.41	0214-95-0100	ALLH	4.34

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).
Note: Units are mg/kg.

Table 9.5-5
Subaggregate 8 Historical Analytical Results of Radionuclides Detected in Soil at Removed Buildings: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Thorium-234
Soil Background Value				**n/a**
14-01066	0–0.5	0214-95-0091	ALLH	6.1
14-01067	0–0.25	0214-95-0092	ALLH	1.62

Source: Background values from LANL (1998, 59730, Table 6.0-2, p. 45).
Note: Units are pCi/g.
*n/a = Not applicable; no background value available.

Table 9.6-1
Subaggregate 8 Summary of Historical Samples Collected in Soil and Fill at Former HE Magazines: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number	
				High Explosives	Inorganic Chemicals
Screening-Level Data					
AOC C-14-001					
14-01095	0.5–0.92	0214-95-0122	ALLH	69881	70088
14-01096	0.5–1	0214-95-0124	ALLH	69881	69591
AOC C-14-009					
14-01097	0.67–1.17	0214-95-0125	ALLH	69174	69998
14-01098	0.58–1.08	0214-95-0126	FILL	69174	69998

Table 9.6-2
Subaggregate 8 Frequency of Detection of Inorganic Chemicals in Soil and Fill at Former HE Magazines: Screening-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Aluminum	ALLH	3	3	8620–11600	29200	0/3	0/3
Aluminum	FILL	1	1	7230	29200	0/1	0/1
Antimony	ALLH	3	2	0.135–0.159	0.83	0/3	1/3
Antimony	FILL	1	1	0.115	0.83	0/1	0/1
Arsenic	ALLH	3	3	2.36–3.06	8.17	0/3	0/3
Arsenic	FILL	1	1	2.45	8.17	0/1	0/1
Barium	ALLH	3	3	84.8–117	295	0/3	0/3
Barium	FILL	1	1	95.3	295	0/1	0/1
Beryllium	ALLH	3	3	0.604–0.807	1.83	0/3	0/3
Beryllium	FILL	1	1	0.55	1.83	0/1	0/1
Cadmium	ALLH	3	3	0.0311–0.23	0.4	0/3	0/3
Cadmium	FILL	1	1	0.0777	0.4	0/1	0/1
Calcium	ALLH	3	3	1980–23800	6120	1/3	0/3
Calcium	FILL	1	1	1970	6120	0/1	0/1
Chromium	ALLH	3	3	7.65–13.4	19.3	0/3	0/3
Chromium	FILL	1	1	6.27	19.3	0/1	0/1
Cobalt	ALLH	3	3	3.6–5.21	8.64	0/3	0/3
Cobalt	FILL	1	1	4.14	8.64	0/1	0/1
Copper	ALLH	3	3	4.06–104	14.7	1/3	0/3
Copper	FILL	1	1	2.78	14.7	0/1	0/1
Iron	ALLH	3	3	7770–12000	21500	0/3	0/3
Iron	FILL	1	1	9590	21500	0/1	0/1
Lead	ALLH	3	3	11.5–28.8	22.3	2/3	0/3
Lead	FILL	1	1	11.7	22.3	0/1	0/1
Magnesium	ALLH	3	3	1290–1750	4610	0/3	0/3
Magnesium	FILL	1	1	1290	4610	0/1	0/1
Manganese	ALLH	3	3	185–236	671	0/3	0/3
Manganese	FILL	1	1	314	671	0/1	0/1
Mercury	ALLH	3	3	0.0158–0.0393	0.1	0/3	0/3
Mercury	FILL	1	1	0.0211	0.1	0/1	0/1
Nickel	ALLH	3	3	5.6–7.3	15.4	0/3	0/3
Nickel	FILL	1	1	4.89	15.4	0/1	0/1
Potassium	ALLH	3	3	1160–1390	3460	0/3	0/3

Table 9.6-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Potassium	FILL	1	1	903	3460	0/1	0/1
Sodium	ALLH	3	3	103–242	915	0/3	0/3
Sodium	FILL	1	1	108	915	0/1	0/1
Thallium	ALLH	3	1	0.223–0.223	0.73	0/3	1/3
Vanadium	ALLH	3	3	16.8–18	39.6	0/3	0/3
Vanadium	FILL	1	1	16.1	39.6	0/1	0/1
Zinc	ALLH	3	3	20.6–57.3	48.8	1/3	0/3
Zinc	FILL	1	1	20.3	48.8	0/1	0/1

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).

Table 9.6-3
Subaggregate 8 Historical Analytical Results of Inorganic Chemicals Greater Than Background Values in Soil at Former HE Magazines: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Antimony	Calcium	Copper	Lead	Thallium	Zinc
Soil Background Value				**0.83**	**6120**	**14.7**	**22.3**	**0.73**	**48.8**
AOC C-14-001									
14-01095	0.5–0.92	0214-95-0122	ALLH	—*	23800	104	23.9	0.99 (U)	57.3
14-01096	0.5–1	0214-95-0124	ALLH	0.98 (U)	—	—	—	—	—
AOC C-14-009									
14-01097	0.67–1.17	0214-95-0125	ALLH	—	—	—	28.8	—	—

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Units are mg/kg. Data qualifiers are defined in Appendix A.
*— = If analyzed, sample result is less than background value or is not detected.

Table 10.1-1
Subaggregate 9 Summary of Historical Samples
Collected in Soil and Tuff at Firing Site G at TA-15 West: Screening- and Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number		
				Isotopic Uranium	Inorganic Chemicals	Uranium
Screening-Level Data						
AOC C-15-001						
15-02347	0–0.25	0215-95-0275	ALLH	—*	—	69304
15-02348	0–0.5	0215-95-0276	ALLH	—	—	69304
SWMU 15-004(g)						
15-02315	0–0.5	0215-95-0250	ALLH	—	70468	70066
15-02315	1.5–2	0215-95-0251	ALLH	—	70468	70066
15-02321	1.5–2	0215-95-0253	ALLH	—	70468	70066
15-02323	0–0.5	0215-95-0255	ALLH	—	70468	70066
15-02323	1.5–2	0215-95-0256	ALLH	—	70468	70066
15-02326	0–0.5	0215-95-0259	ALLH	—	70468	70066
15-02327	1.5–1.67	0215-95-0261	ALLH	—	70468	70066
15-02331	0–0.5	0215-95-0267	ALLH	—	70468	70066
SWMU 15-008(c)						
15-02343	0–0.5	0215-95-0273	ALLH	—	—	69304
15-02344	0–0.42	0215-95-0274	ALLH	—	—	69304
Decision-Level Data						
AOC C-15-001						
15-02347	0–0.33	0215-97-0093	ALLH	3582R	—	—
15-02347	1.5–1.67	0215-97-0094	QBT2	3582R	—	—
15-02348	0–0.5	0215-97-0095	ALLH	3582R	—	—
15-02348	1.5–1.83	0215-97-0096	QBT2	3582R	—	—

*— = The analysis was not requested.

Table 10.1-2
Subaggregate 9 Frequency of Detection of
Inorganic Chemicals in Soil at Firing Site G at TA-15 West: Screening-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Aluminum	ALLH	8	8	4480–16700	29200	0/8	0/8
Antimony	ALLH	8	8	0.0656–0.22	0.83	0/8	0/8
Arsenic	ALLH	8	8	1.68–2.87	8.17	0/8	0/8
Barium	ALLH	8	8	95.8–412	295	1/8	0/8
Beryllium	ALLH	8	8	0.381–1.01	1.83	0/8	0/8
Cadmium	ALLH	8	8	0.0619–0.538	0.4	1/8	0/8
Calcium	ALLH	8	8	1120–3650	6120	0/8	0/8
Chromium	ALLH	8	8	3.16–9.42	19.3	0/8	0/8
Cobalt	ALLH	8	8	2.08–5.04	8.64	0/8	0/8
Copper	ALLH	8	8	5.36–2730	14.7	4/8	0/8
Iron	ALLH	8	8	4380–12200	21500	0/8	0/8
Lead	ALLH	8	8	9.2–27.6	22.3	1/8	0/8
Magnesium	ALLH	8	8	625–2330	4610	0/8	0/8
Manganese	ALLH	8	8	121–341	671	0/8	0/8
Mercury	ALLH	8	8	0.00684–0.0266	0.1	0/8	0/8
Nickel	ALLH	8	8	3.14–7.99	15.4	0/8	0/8
Potassium	ALLH	8	8	431–2020	3460	0/8	0/8
Selenium	ALLH	8	7	0.0696–0.224	1.52	0/8	0/8
Sodium	ALLH	8	8	38.2–1870	915	2/8	0/8
Thallium	ALLH	8	5	0.11–0.209	0.73	0/8	0/8
Uranium	ALLH	12	12	2.32–2180	1.82	12/12	0/12
Vanadium	ALLH	8	8	8.26–20.5	39.6	0/8	0/8
Zinc	ALLH	8	8	17.2–81.2	48.8	2/8	0/8

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).

Table 10.1-3
Subaggregate 9 Frequency of Detection of
Radionuclides in Soil and Tuff at Firing Site G at TA-15 West: Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (pCi/g)	Background Value (pCi/g)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Uranium-234	ALLH	2	2	2.72–8.9	2.59	2/2	0/2
Uranium-234	QBT2	2	2	1.39–1.85	1.98	0/2	0/2
Uranium-235	ALLH	2	2	0.113–0.396	0.2	1/2	0/2
Uranium-238	ALLH	2	2	3.37–9.45	2.29	2/2	0/2
Uranium-238	QBT2	2	2	1.37–1.94	1.93	1/2	0/2

Source: Background values from LANL 1998 (59730, Table 6.0-2, p. 45).

Table 10.1-4
Subaggregate 9 Historical Analytical Results of Inorganic Chemicals Detected Greater Than Background Values in Soil at Firing Site G at TA-15 West: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Barium	Cadmium	Copper	Lead	Sodium	Uranium	Zinc
Soil Background Value				**295**	**0.4**	**14.7**	**22.3**	**915**	**1.82**	**48.8**
AOC C-15-001										
15-02347	0–0.25	0215-95-0275	ALLH	—*	—	—	—	—	55	—
15-02348	0–0.5	0215-95-0276	ALLH	—	—	—	—	—	14.2	—
SWMU 15-004(g)										
15-02315	0–0.5	0215-95-0251	ALLH	—	—	—	—	—	6.52	—
15-02315	1.5–2	0215-95-0251	ALLH	—	—	—	—	1870	2.94	—
15-02321	1.5–2	0215-95-0253	ALLH	—	—	—	—	1660	2.79	—
15-02323	0–0.5	0215-95-0255	ALLH	—	—	223	—	—	61.8	—
15-02323	1.5–2	0215-95-0256	ALLH	—	—	—	—	—	2.32	—
15-02326	0–0.5	0215-95-0259	ALLH	—	—	186	27.6	—	298	—
15-02327	1.5–1.67	0215-95-0261	ALLH	412	—	2730	—	—	637	81.2
15-02331	0–0.5	0215-95-0267	ALLH	—	0.538	26.6	—	—	38.3	51.3
SWMU 15-008(c)										
15-02343	0–0.5	0215-95-0273	ALLH	—	—	—	—	—	2180	—
15-02344	0–0.42	0215-95-0274	ALLH	—	—	—	—	—	1620	—

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).
Note: Units are mg/kg.
*— = If analyzed, sample result is less than background value.

Table 10.1-5
Subaggregate 9 Historical Analytical Results of Radionuclides Detected Greater Than Background Values in Soil and Tuff at Firing Site G at TA-15 West: Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Uranium-234	Uranium-235	Uranium-238
Soil Background Value				**2.59**	**0.2**	**2.29**
QBT2 Background Value				**1.98**	**0.09**	**1.93**
AOC C-15-001						
15-02347	0–0.33	0215-97-0093	ALLH	8.9	0.396	9.45
15-02348	0–0.5	0215-97-0095	ALLH	2.72	—*	3.37
15-02348	1.5–1.83	0215-97-0096	QBT2	—	—	1.94

Source: Background values from LANL (1998, 59730, Table 6.0-2, p. 45).
Note: Units are pCi/g.
*— = If analyzed, sample result is less than background value.

Table 10.3-1
Subaggregate 9 Summary of Historical Samples Collected in Soil at MDA Z at TA-15 West: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Screen Type	Request Number					
					Gross Alpha/Beta	Gross Gamma	Inorganic Chemicals	SVOC	Uranium	VOC
SWMU 15-007(b)										
15-02300	0–0.5	AAB3427	ALLH	CSTCV	—*	—	20993	—	—	—
15-02301	0–0.42	AAB3438	ALLH	CST_Off	—	—	18681	—	19509	—
15-02301	0–0.5	AAB3534	ALLH	CST_Off	—	—	—	18658	—	—
15-02301	0–0.5	AAB3534	ALLH	CSTRV	20391	20391	—	—	—	—
15-02301	1.5–2	AAB3422	ALLH	CST_Off	—	—	18687	—	19816	—
15-02301	1.5–2	AAB3539	ALLH	CST_Off	—	—	—	18658	—	18658
15-02301	1.5–2	AAB3422	ALLH	CSTCV	—	—	20982	—	—	—
15-02301	1.5–2	AAB3422	ALLH	CSTRV	21066	21066	—	—	—	—
15-02301	1.5–2	AAB3539	ALLH	CSTRV	20391	20391	—	—	—	—
15-02302	0–0.5	AAB3437	ALLH	CSTCV	—	—	20993	—	—	—
15-02302	1.5–2	AAB3443	ALLH	CST_Off	—	—	18687	—	19816	—
15-02302	1.5–2	AAB3540	ALLH	CST_Off	—	—	—	18658	—	18658
15-02302	1.5–2	AAB3443	ALLH	CSTCV	—	—	20982	—	—	—
15-02302	1.5–2	AAB3443	ALLH	CSTRV	21066	21066	—	—	—	—
15-02302	1.5–2	AAB3540	ALLH	CSTRV	20391	20391	—	—	—	—
15-02303	0–0.5	AAB3432	ALLH	CSTCV	—	—	20993	—	—	—
15-02303	1.5–2	AAB3424	ALLH	CST_Off	—	—	18687	—	19816	—
15-02303	1.5–2	AAB3541	ALLH	CST_Off	—	—	—	18658	—	18658
15-02303	1.5–2	AAB3424	ALLH	CSTCV	—	—	20982	—	—	—
15-02303	1.5–2	AAB3424	ALLH	CSTRV	21066	21066	—	—	—	—
15-02303	1.5–2	AAB3541	ALLH	CSTRV	20391	20391	—	—	—	—
15-02304	0.83–1.25	AAB3421	ALLH	CST_Off	—	—	18687	—	19816	—
15-02304	0.83–1.25	AAB3542	ALLH	CST_Off	—	—	—	18658	—	18658

Table 10.3-1 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Screen Type	Request Number					
					Gross Alpha/Beta	Gross Gamma	Inorganic Chemicals	SVOC	Uranium	VOC
15-02304	0.83–1.25	AAB3421	ALLH	CSTCV	—	—	20982	—	—	—
15-02304	0.83–1.25	AAB3421	ALLH	CSTRV	21066	21066	—	—	—	—
15-02304	0.83–1.25	AAB3542	ALLH	CSTRV	20391	20391	—	—	—	—
15-02305	0–0.5	AAB3428	ALLH	CST_Off	—	—	18681	—	19509	—
15-02305	0–0.5	AAB6080	ALLH	CST_Off	—	—	—	18696	—	—
15-02305	0–0.5	AAB3428	ALLH	CSTCV	—	—	20993	—	—	—
15-02306	0–0.5	AAB3431	ALLH	CST_Off	—	—	18681	—	19509	—
15-02306	0–0.5	AAB3538	ALLH	CST_Off	—	—	—	18658	—	—
15-02306	0–0.5	AAB3538	ALLH	CSTRV	20391	20391	—	—	—	—
15-02307	0–0.5	AAB3433	ALLH	CST_Off	—	—	18681	—	19509	—
15-02307	0–0.5	AAB3537	ALLH	CST_Off	—	—	—	18658	—	—
15-02307	0–0.5	AAB3433	ALLH	CSTCV	—	—	20993	—	—	—
15-02307	0–0.5	AAB3537	ALLH	CSTRV	20391	20391	—	—	—	—
15-02307	1–1.5	AAB3442	ALLH	CST_Off	—	—	18687	—	19816	—
15-02307	1–1.5	AAB3442	ALLH	CSTCV	—	—	20982	—	—	—
15-02307	1–1.5	AAB3442	ALLH	CSTRV	21066	21066	—	—	—	—
15-02307	1.5–2.5	AAB3543	ALLH	CST_Off	—	—	—	18658	—	18658
15-02307	1.5–2.5	AAB3543	ALLH	CSTRV	20391	20391	—	—	—	—
15-02308	0–0.5	AAB3430	ALLH	CST_Off	—	—	18681	—	19509	—
15-02308	0–0.5	AAB3533	ALLH	CST_Off	—	—	—	18658	—	—
15-02308	0–0.5	AAB3430	ALLH	CSTCV	—	—	20993	—	—	—
15-02308	0–0.5	AAB3533	ALLH	CSTRV	20391	20391	—	—	—	—
15-02310	0–0.5	AAB3429	ALLH	CST_Off	—	—	18681	—	19509	—
15-02310	0–0.5	AAB3535	ALLH	CST_Off	—	—	—	18658	—	—
15-02310	0–0.5	AAB3429	ALLH	CSTCV	—	—	20993	—	—	—
15-02310	0–0.5	AAB3535	ALLH	CSTRV	20391	20391	—	—	—	—

Table 10.3-1 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Screen Type	Request Number					
					Gross Alpha/Beta	Gross Gamma	Inorganic Chemicals	SVOC	Uranium	VOC
15-02311	0–0.5	AAB3435	ALLH	CST_Off	—	—	18681	—	19509	—
15-02311	0–0.5	AAB3536	ALLH	CST_Off	—	—	—	18658	—	—
15-02311	0–0.5	AAB3536	ALLH	CSTRV	20391	20391	—	—	—	—
15-02311	1.5–2	AAB3444	ALLH	CST_Off	—	—	18687	—	19816	—
15-02311	1.5–2	AAB3544	ALLH	CST_Off	—	—	—	18658	—	18658
15-02311	1.5–2	AAB3444	ALLH	CSTCV	—	—	20982	—	—	—
15-02311	1.5–2	AAB3444	ALLH	CSTRV	21066	21066	—	—	—	—
15-02311	1.5–2	AAB3544	ALLH	CSTRV	20391	20391	—	—	—	—

*— = The analysis was not requested.

Table 10.3-2
Subaggregate 9 Frequency of Detection of
Inorganic Chemicals in Soil at MDA Z at TA-15 West: Screening-Level Data

Analyte	Media	Screen Type	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
SWMU 15-007(b)								
Aluminum	ALLH	CST_Off	13	13	3110–18000	29200	0/13	0/13
Antimony	ALLH	CST_Off	13	0	[3.7–4]	0.83	0/13	13/13
Antimony	ALLH	CSTCV	13	5	4–5	0.83	5/13	8/13
Arsenic	ALLH	CST_Off	13	13	2.2–5	8.17	0/13	0/13
Arsenic	ALLH	CSTCV	13	1	[4]–6	8.17	0/13	0/13
Barium	ALLH	CST_Off	13	13	65.6–217	295	0/13	0/13
Barium	ALLH	CSTCV	13	13	232–675	295	12/13	0/13
Beryllium	ALLH	CST_Off	13	10	[0.72]–3.6	1.83	5/13	0/13
Cadmium	ALLH	CST_Off	13	2	[0.41]–1.2	0.4	2/13	11/13
Cadmium	ALLH	CSTCV	13	1	[3]–5	0.4	1/13	12/13
Calcium	ALLH	CST_Off	13	12	2300–39000	6120	8/13	0/13
Calcium	ALLH	CSTCV	13	13	0.62–20.6	6120	0/13	0/13
Chromium	ALLH	CST_Off	13	13	6.6–16.3	19.3	0/13	0/13
Chromium	ALLH	CSTCV	13	13	13–90	19.3	11/13	0/13
Copper	ALLH	CST_Off	13	12	[5.1]–127	14.7	10/13	0/13
Copper	ALLH	CSTCV	13	12	[8]–546	14.7	11/13	0/13
Iron	ALLH	CST_Off	13	13	6660–14800	21500	0/13	0/13
Iron	ALLH	CSTCV	13	13	1.601–2.76	21500	0/13	0/13
Lead	ALLH	CST_Off	13	13	4.8–52.9	22.3	5/13	0/13
Lead	ALLH	CSTCV	13	13	18–135	22.3	10/13	0/13
Magnesium	ALLH	CST_Off	13	13	1230–2980	4610	0/13	0/13
Manganese	ALLH	CST_Off	13	13	159–433	671	0/13	0/13
Manganese	ALLH	CSTCV	13	13	318–692	671	2/13	0/13
Mercury	ALLH	CST_Off	13	6	[0.1]–1.7	0.1	6/13	2/13
Mercury	ALLH	CSTCV	13	1	[5]–8	0.1	1/13	12/13
Nickel	ALLH	CST_Off	13	6	[5.2]–13	15.4	0/13	0/13
Nickel	ALLH	CSTCV	13	4	13–41	15.4	1/13	0/13
Potassium	ALLH	CST_Off	13	9	[495]–2740	3460	0/13	0/13
Potassium	ALLH	CSTCV	13	13	0.97–3.39	3460	0/13	0/13
Selenium	ALLH	CSTCV	13	0	[4–4]	1.52	0/13	13/13
Silver	ALLH	CST_Off	13	1	[0.61]–3.8	1	1/13	1/13

Table 10.3-2 (continued)

Analyte	Media	Screen Type	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Thorium	ALLH	CSTCV	13	12	[8]–31	14.6	9/13	0/13
Titanium	ALLH	CSTCV	13	13	1494–4209	n/a*	n/a	n/a
Uranium	ALLH	CST_Off	13	13	1.76–349	1.82	11/13	0/13
Uranium	ALLH	CSTCV	13	11	[8]–1378	1.82	11/13	2/13
Vanadium	ALLH	CST_Off	13	13	11.7–27.7	39.6	0/13	0/13
Zinc	ALLH	CST_Off	13	13	23.7–42.1	48.8	0/13	0/13
Zinc	ALLH	CSTCV	13	13	35–98	48.8	8/13	0/13

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Values in brackets are below detection limits.
*n/a = Not applicable; no background value available.

Table 10.3-3
Subaggregate 9 Frequency of Detection of
Organic Chemicals in Soil at MDA Z at TA-15 West: Screening-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
SWMU 15-007(b)					
Anthracene	ALLH	13	1	[0.32]–3.9	1/13
Benzo(a)anthracene	ALLH	13	2	[0.32]–4.2	2/13
Benzo(a)pyrene	ALLH	13	1	[0.32]–0.49	1/13
Benzo(b)fluoranthene	ALLH	13	1	[0.32]–0.98	1/13
Benzo(g,h,i)perylene	ALLH	13	1	[0.32]–0.64	1/13
Bis(2-ethylhexyl)phthalate	ALLH	13	4	[0.33]–4.7	4/13
Chrysene	ALLH	13	2	[0.32]–3.6	2/13
Di-n-butylphthalate	ALLH	13	1	[0.32]–0.53	1/13
Fluoranthene	ALLH	13	4	[0.32]–15	4/13
Indeno(1,2,3-cd)pyrene	ALLH	13	1	[0.32]–0.51	1/13
Phenanthrene	ALLH	13	2	[0.32]–17	2/13
Pyrene	ALLH	13	4	[0.32]–14	4/13

Note: Values in brackets are below detection limits.

Table 10.3-4
Subaggregate 9 Frequency of
Detection of Radionuclides in Soil at MDA Z at TA-15 West: Screening-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (pCi/g)	Background Value (pCi/g)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Gross Gamma	ALLH	18	1	[-4.4]–6.81	n/a*	n/a	n/a

Source: Background values from LANL 1998 (59730, Table 6.0-2, p. 45).
Note: Values in brackets are below detection limits.
*n/a = Not applicable; no background value available.

Table 10.3-5
Subaggregate 9 Historical Analytical Results of Inorganic Chemicals Greater Than Background Values in Soil at MDA Z at TA-15 West: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Screen Type	Antimony	Barium	Beryllium	Cadmium	Calcium	Chromium	Copper	Lead	Manganese
Soil Background Value					**0.83**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**14.7**	**22.3**	**671**
SWMU 15-007(b)													
15-02300	0–0.5	AAB3427	ALLH	CSTCV	5	492	—[a]	3 (U)	—	25	18	—	—
15-02301	0–0.42	AAB3438	ALLH	CST_Off	3.8 (U)	—	—	0.81	—	—	19	—	—
15-02301	1.5–2	AAB3422	ALLH	CST_Off	3.9 (U)	—	—	0.8 (U)	—	—	—	—	—
15-02301	1.5–2	AAB3422	ALLH	CSTCV	4 (U)	675	—	3 (U)	—	37	—	—	—
15-02302	0–0.5	AAB3437	ALLH	CSTCV	4 (U)	572	—	3 (U)	—	20	16	23	—
15-02302	1.5–2	AAB3443	ALLH	CST_Off	3.8 (U)	—	—	0.75 (U)	—	—	—	—	—
15-02302	1.5–2	AAB3443	ALLH	CSTCV	4 (U)	—	—	3 (U)	—	—	—	26	—
15-02303	0–0.5	AAB3432	ALLH	CSTCV	4 (U)	571	—	3 (U)	—	36	20	31	—
15-02303	1.5–2	AAB3424	ALLH	CST_Off	4 (U)	—	3	0.9 (U)	—	—	105	—	—
15-02303	1.5–2	AAB3424	ALLH	CSTCV	4 (U)	368	—	3 (U)	—	27	37	24	—
15-02304	0.83–1.25	AAB3421	ALLH	CST_Off	4 (U)	—	—	1.2	—	—	—	—	—
15-02304	0.83–1.25	AAB3421	ALLH	CSTCV	4 (U)	383	—	3 (U)	—	24	15	—	—
15-02305	0–0.5	AAB3428	ALLH	CST_Off	3.7 (U)	—	2.6	0.71 (U)	13400	—	49	38.6	—
15-02305	0–0.5	AAB3428	ALLH	CSTCV	4 (U)	381	—	3 (U)	—	22	47	45	—
15-02306	0–0.5	AAB3431	ALLH	CST_Off	3.7 (U)	—	—	0.99 (U)	7360	—	47.8	—	—
15-02307	0–0.5	AAB3433	ALLH	CST_Off	3.7 (U)	—	—	0.71 (U)	39000	—	127	23.4	—
15-02307	0–0.5	AAB3433	ALLH	CSTCV	4	505	—	3 (U)	—	72	394	105	686
15-02307	1–1.5	AAB3442	ALLH	CST_Off	3.7 (U)	—	—	0.77 (U)	30800	—	96.1	32.6	—
15-02307	1–1.5	AAB3442	ALLH	CSTCV	5	402	—	5	—	90	546	135	692
15-02308	0–0.5	AAB3430	ALLH	CST_Off	3.7 (U)	—	3.6	0.41 (U)	15900	—	111	30.8	—

Table 10.3-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Screen Type	Antimony	Barium	Beryllium	Cadmium	Calcium	Chromium	Copper	Lead	Manganese
Soil Background Value					**0.83**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**14.7**	**22.3**	**671**
15-02308	0–0.5	AAB3430	ALLH	CSTCV	4	329	—	3 (U)	—	24	102	68	—
15-02310	0–0.5	AAB3429	ALLH	CST_Off	3.7 (U)	—	3.5	0.41 (U)	17600	—	67.3	52.9	—
15-02310	0–0.5	AAB3429	ALLH	CSTCV	4 (U)	333	—	3 (U)	—	—	112	99	—
15-02311	0–0.5	AAB3435	ALLH	CST_Off	3.8 (U)	—	2.1	0.7 (U)	8140	—	33.6	—	—
15-02311	1.5–2	AAB3444	ALLH	CST_Off	3.9 (U)	—	—	0.9 (U)	10600	—	24.4	—	—
15-02311	1.5–2	AAB3444	ALLH	CSTCV	4	344	—	3 (U)	—	20	27	36	—

Table 10.3-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Screen Type	Mercury	Nickel	Selenium	Silver	Thorium	Titanium	Uranium	Zinc
Soil Background Value					**0.1**	**15.4**	**1.52**	**1**	**14.6**	**n/a[b]**	**1.82**	**48.8**
SWMU 15-007(b)												
15-02300	0–0.5	AAB3427	ALLH	CSTCV	5 (U)	—	4 (U)	—	—	4209	8 (U)	—
15-02301	0–0.42	AAB3438	ALLH	CST_Off	0.11 (U)	—	—	—	—	—	130	—
15-02301	1.5–2	AAB3422	ALLH	CST_Off	—	—	—	—	—	—	—	—
15-02301	1.5–2	AAB3422	ALLH	CSTCV	5 (U)	—	4 (U)	—	22	4122	11	49
15-02302	0–0.5	AAB3437	ALLH	CSTCV	5 (U)	—	4 (U)	—	15	3737	12	—
15-02302	1.5–2	AAB3443	ALLH	CST_Off	—	—	—	—	—	—	—	—
15-02302	1.5–2	AAB3443	ALLH	CSTCV	5 (U)	—	4 (U)	—	16	1494	8 (U)	—
15-02303	0–0.5	AAB3432	ALLH	CSTCV	5 (U)	—	4 (U)	—	—	3053	11	49
15-02303	1.5–2	AAB3424	ALLH	CST_Off	—	—	—	3.8	—	—	117 (J)	—
15-02303	1.5–2	AAB3424	ALLH	CSTCV	5 (U)	—	4 (U)	—	15	3856	187	59
15-02304	0.83–1.25	AAB3421	ALLH	CST_Off	0.11 (U)	—	—	—	—	—	5.71 (J)	—
15-02304	0.83–1.25	AAB3421	ALLH	CSTCV	5 (U)	—	4 (U)	—	—	2974	10	—
15-02305	0–0.5	AAB3428	ALLH	CST_Off	0.16 (J)	—	—	—	—	—	161	—
15-02305	0–0.5	AAB3428	ALLH	CSTCV	5 (U)	—	4 (U)	—	22	2932	167	59
15-02306	0–0.5	AAB3431	ALLH	CST_Off	—	—	—	—	—	—	47.1	—
15-02307	0–0.5	AAB3433	ALLH	CST_Off	0.78 (J)	—	—	1.4 (U)	—	—	136	—
15-02307	0–0.5	AAB3433	ALLH	CSTCV	5 (U)	—	4 (U)	—	—	2887	744	92
15-02307	1–1.5	AAB3442	ALLH	CST_Off	1.7	—	—	—	—	—	162 (J)	—
15-02307	1–1.5	AAB3442	ALLH	CSTCV	8	41	4 (U)	—	31	2612	1378	98
15-02308	0–0.5	AAB3430	ALLH	CST_Off	0.17 (J)	—	—	—	—	—	187	—
15-02308	0–0.5	AAB3430	ALLH	CSTCV	5 (U)	—	4 (U)	—	18	2188	337	61

Table 10.3-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Screen Type	Mercury	Nickel	Selenium	Silver	Thorium	Titanium	Uranium	Zinc
Soil Background Value					**0.1**	**15.4**	**1.52**	**1**	**14.6**	**n/a**[b]	**1.82**	**48.8**
15-02310	0–0.5	AAB3429	ALLH	CST_Off	—	—	—	—	—	—	349	—
15-02310	0–0.5	AAB3429	ALLH	CSTCV	5 (U)	—	4 (U)	—	17	2360	409	63
15-02311	0–0.5	AAB3435	ALLH	CST_Off	0.41 (J)	—	—	—	—	—	42	—
15-02311	1.5–2	AAB3444	ALLH	CST_Off	0.13	—	—	—	—	—	25.6 (J)	—
15-02311	1.5–2	AAB3444	ALLH	CSTCV	5 (U)	—	4 (U)	—	20	2488	51	—

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

[a] = If analyzed, sample result is less than background value.

[b] n/a = Not applicable; no background value available.

Table 10.3-6
Subaggregate 9 Historical Analytical Results of Organic Chemicals Detected in Soil at MDA Z at TA-15 West: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Bis(2-ethylhexyl)phthalate	Chrysene	Di-n-butylphthalate	Fluoranthene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene
SWMU 15-007(b)															
15-02305	0–0.5	AAB6080	ALLH	—*	—	—	—	—	—	—	—	0.5	—	—	0.46
15-02306	0–0.5	AAB3538	ALLH	—	—	—	—	—	—	—	—	0.54	—	—	0.65
15-02307	0–0.5	AAB3537	ALLH	—	—	—	—	—	4.7	—	0.53	—	—	—	—
15-02307	1.5–2.5	AAB3543	ALLH	—	—	—	—	—	0.7	—	—	—	—	—	—
15-02310	0–0.5	AAB3535	ALLH	—	—	—	—	—	0.67	—	—	—	—	—	—
15-02311	0–0.5	AAB3536	ALLH	—	0.89	0.49	0.98	0.64	3	0.9	—	2.4	0.51	1.2	2.5
15-02311	1.5–2	AAB3544	ALLH	3.9	4.2	—	—	—	—	3.6	—	15	—	17	14

Note: Units are mg/kg.

*— = If analyzed, sample result is not detected.

Table 10.3-7
Subaggregate 9 Historical Analytical Results of Radionuclides Detected in Soil at MDA Z at TA-15 West: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Gross Gamma
SWMU 15-007(b)				
15-02308	0–0.5	AAB3533	ALLH	6.81

Note: Units are pCi/g.

Table 10.5-1
Subaggregate 9 Summary of Historical Samples Collected in Soil, Fill, Tuff, and Sludge at the Hollow at TA-15 West: Screening- and Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number							
				Gamma Spectroscopy	High Explosives	Isotopic Uranium	Inorganic Chemicals	SVOC	TPH-DRO	Uranium	VOC
Screening-Level Data											
AOC C-15-010											
15-02551	1.5–2	0215-95-0137	ALLH	—*	—	—	71524	71478	—	70725	71436
15-02552	1.5–2	0215-95-0138	ALLH	—	—	—	71524	71478	—	70725	71436
SWMU 15-009(a)											
15-02559	0–0	0215-95-0151	SLUDGE	71441	71042	71441	71501	71377	—	70999	71522
SWMU 15-011(b)											
15-02388	0–0.5	0215-96-0704	ALLH	—	82462	—	82886	82474	—	82461	—
15-02388	0.83–1.33	0215-96-0705	ALLH	—	82462	—	82886	82474	—	82461	82481
SWMU 15-011(c)											
15-02557	0–0.5	0215-95-0147	ALLH	—	—	—	70317	70235	—	69761	—
15-02557	2.5–3	0215-95-0148	ALLH	—	—	—	70317	70235	—	69761	70446
15-02558	0–0.5	0215-95-0149	ALLH	—	—	—	70317	70235	—	69761	—
15-02558	1.5–2	0215-95-0150	ALLH	—	—	—	70317	70235	—	69761	70446
AOC 15-014(g)											
15-02553	0–0.5	0215-95-0008	ALLH	—	6528913	—	—	—	—	—	—
15-02553	0–0.5	0215-95-0139	ALLH	—	—	—	6528825	6528723	—	6528402	—
SWMU 15-014(i)											
15-02387	0–0.5	0215-96-0702	ALLH	—	82462	—	82886	82474	—	82461	—
15-02387	1–1.5	0215-96-0703	ALLH	—	82462	—	82886	82474	—	82461	82481
SWMU 15-014(j)											
15-02554	0–0.5	0215-95-0141	SLUDGE	—	—	—	71524	71076	—	70725	—
15-02554	1.33–1.67	0215-95-0142	ALLH	—	—	—	71524	71076	—	70725	71436

Table 10.5-1 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number							
				Gamma Spectroscopy	High Explosives	Isotopic Uranium	Inorganic Chemicals	SVOC	TPH-DRO	Uranium	VOC
15-02555	0–0.08	0215-95-0143	ALLH	—	—	—	71524	71076	—	70725	—
15-02556	0–0.5	0215-95-0145	ALLH	—	—	—	71524	71076	—	70725	—
15-02556	2.5–3	0215-95-0146	ALLH	—	—	—	71524	71076	—	70725	71436
Decision-Level Data											
AOC C-15-007											
15-02575	0–0.5	0215-97-0075	ALLH	—	—	—	3589R	3587R	—	—	—
15-02575	1–1.33	0215-97-0076	FILL	—	—	—	3589R	3587R	—	—	3587R
15-02575	2–2.33	0215-97-0077	QBT2	—	—	—	3589R	3587R	—	—	3587R
15-02576	0–0.5	0215-97-0078	FILL	—	—	—	3589R	3587R	—	—	—
15-02576	1–1.5	0215-97-0079	FILL	—	—	—	3589R	3587R	—	—	3587R
15-02576	2–2.5	0215-97-0080	QBT2	—	—	—	3589R	3587R	—	—	3587R
15-02577	0–0.5	0215-97-0081	FILL	—	—	—	3589R	3587R	—	—	—
15-02577	1–1.5	0215-97-0082	FILL	—	—	—	3589R	3587R	—	—	3587R
15-02577	2.5–2.92	0215-97-0083	QBT2	—	—	—	3589R	3587R	—	—	3587R
15-02578	0.5–1	0215-97-0084	FILL	—	—	—	3589R	3587R	—	—	3587R
15-02579	0–0.5	0215-97-0089	ALLH	—	—	—	—	3655R	—	—	—
15-02579	1.25–1.75	0215-97-0085	ALLH	—	—	—	3589R	3587R	—	—	3587R
15-02579	1.25–1.75	0215-97-0090	ALLH	—	—	—	—	3655R	—	—	—
15-02579	2.5–3	0215-97-0091	QBT2	—	—	—	—	3655R	—	—	—
15-02580	0.5–1	0215-97-0086	ALLH	—	—	—	3589R	3587R	—	—	3587R
15-02581	1.25–1.75	0215-97-0087	QBT2	—	—	—	3589R	3587R	—	—	3587R
AOC C-15-010											
15-02517	0–0.25	0215-97-0040	FILL	—	—	—	—	3524R	3524R	—	3524R
15-02517	3–3.5	0215-97-0041	QBT2	—	—	—	—	3524R	3524R	—	3524R
15-02517	6–6.5	0215-97-0042	QBT2	—	—	—	—	—	3524R	—	3524R

Table 10.5-1 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number							
				Gamma Spectroscopy	High Explosives	Isotopic Uranium	Inorganic Chemicals	SVOC	TPH-DRO	Uranium	VOC
15-02518	0–0.5	0215-97-0046	ALLH	—	—	—	—	3524R	3524R	—	3524R
15-02518	2.5–2.75	0215-97-0047	QBT2	—	—	—	—	3525R	3525R	—	3525R
15-02518	5–5.5	0215-97-0048	QBT2	—	—	—	—	3525R	3525R	—	3525R
15-02518	7.5–8	0215-97-0049	QBT2	—	—	—	—	3525R	3525R	—	3525R
15-02518	14.5–15	0215-97-0050	QBT2	—	—	—	—	3525R	3525R	—	3525R
15-02518	24.5–25	0215-97-0051	QBT2	—	—	—	—	3525R	3525R	—	3525R
15-02518	39.5–40	0215-97-0044	QBT2	—	—	—	—	3525R	3525R	—	3525R
15-02518	49.5–50	0215-97-0045	QBT2	—	—	—	—	3525R	3525R	—	3525R
15-02518	54.5–55	0215-97-0097	QBT2	—	—	—	—	3524R	3524R	—	3524R
15-02519	0–0.5	0215-97-0052	FILL	—	—	—	—	3524R	3524R	—	3524R
15-02519	3–3.5	0215-97-0053	FILL	—	—	—	—	3524R	3524R	—	3524R
15-02519	9–9.5	0215-97-0055	QBT2	—	—	—	—	3524R	3524R	—	3524R
15-02519	10–10.5	0215-97-0054	QBT2	—	—	—	—	3524R	3524R	—	3524R
15-02519	17–17.5	0215-97-0056	QBT2	—	—	—	—	3524R	3524R	—	3524R
15-02519	22.5–23	0215-97-0057	QBT2	—	—	—	—	3524R	3524R	—	3524R
15-02519	32.5–33	0215-97-0043	QBT2	—	—	—	—	3524R	3524R	—	3524R

*— = The analysis was not requested.

Table 10.5-2
Subaggregate 9 Frequency of Detection of Inorganic Chemicals in Soil, Fill, Tuff, and Sludge at the Hollow at TA-15 West: Screening- and Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Screening-Level Data							
Aluminum	SLUDGE	2	2	406–2790	n/a	n/a	n/a
Aluminum	ALLH	15	15	1040–12900	29200	0/15	0/15
Antimony	SLUDGE	2	1	[0.975]–1.31	n/a	n/a	n/a
Antimony	ALLH	15	7	0.144–2.08	0.83	1/15	8/15
Arsenic	SLUDGE	2	2	2.9–5.7	n/a	n/a	n/a
Arsenic	ALLH	15	14	1.13–3.81	8.17	0/15	0/15
Barium	SLUDGE	2	2	14.7–26.8	n/a	n/a	n/a
Barium	ALLH	15	14	8.07–96.5	295	0/15	0/15
Beryllium	SLUDGE	2	2	0.0316–0.964	n/a	n/a	n/a
Beryllium	ALLH	15	14	0.167–0.876	1.83	0/15	0/15
Cadmium	SLUDGE	2	2	0.396–2.56	n/a	n/a	n/a
Cadmium	ALLH	15	13	0.099–1.85	0.4	6/15	1/15
Calcium	SLUDGE	2	2	478–34600	n/a	n/a	n/a
Calcium	ALLH	15	15	46.9–2010	6120	0/15	0/15
Chromium	SLUDGE	2	2	4.52–5.35	n/a	n/a	n/a
Chromium	ALLH	15	15	1.12–11.4	19.3	0/15	0/15
Cobalt	SLUDGE	2	2	0.701–0.984	n/a	n/a	n/a
Cobalt	ALLH	15	14	0.173–3.67	8.64	0/15	0/15
Copper	SLUDGE	2	2	30.2–43	n/a	n/a	n/a
Copper	ALLH	15	15	2.75–155	14.7	9/15	0/15
Iron	SLUDGE	2	2	1860–7250	n/a	n/a	n/a
Iron	ALLH	15	15	1780–11000	21500	0/15	0/15
Lead	SLUDGE	2	2	15.4–21.3	n/a	n/a	n/a
Lead	ALLH	15	15	5.01–197	22.3	6/15	0/15
Magnesium	SLUDGE	2	2	297–7270	n/a	n/a	n/a
Magnesium	ALLH	15	15	183–1260	4610	0/15	0/15
Manganese	SLUDGE	2	2	76.6–122	n/a	n/a	n/a
Manganese	ALLH	15	15	61–292	671	0/15	0/15
Mercury	SLUDGE	2	2	0.213–0.308	n/a	n/a	n/a
Mercury	ALLH	15	14	0.0114–2.99	0.1	4/15	0/15
Nickel	SLUDGE	2	2	1.68–5.46	n/a	n/a	n/a
Nickel	ALLH	15	14	1.13–4.54	15.4	0/15	0/15
Potassium	SLUDGE	2	2	338–37000	n/a	n/a	n/a

Table 10.5-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Potassium	ALLH	15	15	159–1070	3460	0/15	0/15
Selenium	SLUDGE	2	1	[0.487]–2.65	n/a	n/a	n/a
Selenium	ALLH	15	3	[0.0444]–0.681	1.52	0/15	0/15
Silver	ALLH	15	4	0.515–5.76	1	3/15	2/15
Sodium	SLUDGE	2	2	75.6–51100	n/a	n/a	n/a
Sodium	ALLH	15	14	45.7–171	915	0/15	0/15
Thallium	ALLH	15	1	[0.0957]–0.718	0.73	0/15	13/15
Uranium	SLUDGE	2	1	[-0.09]–2.51	n/a	n/a	n/a
Uranium	ALLH	15	15	0.66–5.51	1.82	12/15	0/15
Vanadium	SLUDGE	2	2	5.87–7.03	n/a	n/a	n/a
Vanadium	ALLH	15	14	2.04–14.4	39.6	0/15	0/15
Zinc	SLUDGE	2	2	103–1160	n/a	n/a	n/a
Zinc	ALLH	15	15	20.6–1640	48.8	9/15	0/15
Decision-Level Data							
Aluminum	ALLH	3	3	1100–1800	29200	0/3	0/3
Aluminum	FILL	6	6	1100–2400	29200	0/6	0/6
Aluminum	QBT2	4	4	1000–2100	7340	0/4	0/4
Antimony	ALLH	3	0	[11–12]	0.83	0/3	3/3
Antimony	FILL	6	0	[11–12]	0.83	0/6	6/6
Antimony	QBT2	4	0	[11–12]	0.5	0/4	4/4
Arsenic	ALLH	3	3	1.3–2	8.17	0/3	0/3
Arsenic	FILL	6	6	1.6–2.5	8.17	0/6	0/6
Arsenic	QBT2	4	4	2–2.5	2.79	0/4	0/4
Barium	ALLH	3	3	26–43	295	0/3	0/3
Barium	FILL	6	6	31–71	295	0/6	0/6
Barium	QBT2	4	4	18–23	46	0/4	0/4
Beryllium	QBT2	4	1	[0.57]–0.66	1.21	0/4	0/4
Cadmium	ALLH	3	0	[0.56–0.62]	0.4	0/3	3/3
Cadmium	FILL	6	1	[0.55]–5.1	0.4	1/6	5/6
Calcium	ALLH	3	3	830–1600	6120	0/3	0/3
Calcium	FILL	6	6	820–1600	6120	0/6	0/6
Calcium	QBT2	4	4	600–790	2200	0/4	0/4
Chromium	ALLH	3	3	3–4.7	19.3	0/3	0/3
Chromium	FILL	6	6	3–11	19.3	0/6	0/6
Chromium	QBT2	4	4	1.6–2.5	7.14	0/4	0/4
Cobalt	ALLH	3	3	1.5–2	8.64	0/3	0/3

Table 10.5-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Cobalt	FILL	6	5	[1.1]–3.6	8.64	0/6	0/6
Cobalt	QBT2	4	1	[1.1]–1.2	3.14	0/4	0/4
Copper	ALLH	3	3	19–37	14.7	3/3	0/3
Copper	FILL	6	6	22–270	14.7	6/6	0/6
Copper	QBT2	4	4	3.3–18	4.66	2/4	0/4
Iron	ALLH	3	3	4400–5700	21500	0/3	0/3
Iron	FILL	6	6	4700–11000	21500	0/6	0/6
Iron	QBT2	4	4	5100–6400	14500	0/4	0/4
Lead	ALLH	3	3	21–23	22.3	1/3	0/3
Lead	FILL	6	6	22–39	22.3	5/6	0/6
Lead	QBT2	4	4	9.6–17	11.2	3/4	0/4
Magnesium	ALLH	3	3	430–640	4610	0/3	0/3
Magnesium	FILL	6	6	220–820	4610	0/6	0/6
Magnesium	QBT2	4	4	160–390	1690	0/4	0/4
Manganese	ALLH	3	3	110–190	671	0/3	0/3
Manganese	FILL	6	6	100–220	671	0/6	0/6
Manganese	QBT2	4	4	140–190	482	0/4	0/4
Mercury	ALLH	3	0	[0.11–0.12]	0.1	0/3	3/3
Mercury	FILL	6	0	[0.11–0.12]	0.1	0/6	6/6
Mercury	QBT2	4	0	[0.11–0.12]	0.1	0/4	4/4
Nickel	ALLH	3	2	[2.5]–14	15.4	0/3	0/3
Nickel	FILL	6	6	2.7–14	15.4	0/6	0/6
Nickel	QBT2	4	1	1.8–1.8	6.58	0/4	0/4
Potassium	ALLH	3	3	270–390	3460	0/3	0/3
Potassium	FILL	6	6	230–510	3460	0/6	0/6
Potassium	QBT2	4	4	240–440	43700	0/4	0/4
Selenium	FILL	6	1	[0.55]–1.3	1.52	0/6	0/6
Selenium	QBT2	4	0	[0.57–0.6]	0.3	0/4	4/4
Silver	ALLH	3	0	[2.2–2.5]	1	0/3	3/3
Silver	FILL	6	0	[2.2–2.4]	1	0/6	6/6
Silver	QBT2	4	0	[2.3–2.4]	1	0/4	4/4
Sodium	ALLH	3	3	82–140	915	0/3	0/3
Sodium	FILL	6	6	110–240	915	0/6	0/6
Sodium	QBT2	4	4	130–210	2770	0/4	0/4
Thallium	QBT2	4	1	[0.29]–0.33	1.1	0/4	0/4
Uranium	ALLH	3	3	1.85–3.42	1.82	3/3	0/3

Table 10.5-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Uranium	FILL	6	6	2.03–2.9	1.82	6/6	0/6
Uranium	QBT2	4	4	2.14–2.63	2.4	1/4	0/4
Vanadium	ALLH	3	3	5.8–7.6	39.6	0/3	0/3
Vanadium	FILL	6	6	4.7–11	39.6	0/6	0/6
Vanadium	QBT2	4	4	3.6–4.9	17	0/4	0/4
Zinc	ALLH	3	3	58–77	48.8	3/3	0/3
Zinc	FILL	6	6	59–110	48.8	6/6	0/6
Zinc	QBT2	4	4	39–53	63.5	0/4	0/4

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Values in brackets are below detection limits.
*n/a = Not applicable; no background value available.

Table 10.5-3
Subaggregate 9 Frequency of Detection of Organic Chemicals in Soil, Fill, Tuff, and Sludge at the Hollow at TA-15 West: Screening- and Decision-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Screening-Level Data					
Acenaphthene	ALLH	11	2	0.257–[32.3]	2/11
Acetone	ALLH	8	8	0.00376–0.0455	8/8
Acetone	SLUDGE	1	1	25.2	1/1
Anthracene	ALLH	15	2	0.295–[33.3]	2/15
Benzene	ALLH	8	1	0.0013–[0.002]	1/8
Benzo(a)anthracene	ALLH	15	2	[0.323]–1.79	2/15
Benzo(a)pyrene	ALLH	15	3	[0.323]–1.83	3/15
Benzo(b)fluoranthene	ALLH	15	3	[0.323]–2.92	3/15
Benzo(g,h,i)perylene	ALLH	15	3	[0.323]–0.85	3/15
Bis(2-ethylhexyl)phthalate	ALLH	15	1	[0.323]–0.59	1/15
Bis(2-ethylhexyl)phthalate	SLUDGE	2	1	7.19–[32.4]	1/2
Bromodichloromethane	ALLH	8	1	0.00116–[0.002]	1/8
Butanone[2-]	SLUDGE	1	1	7.79	1/1
Carbon Tetrachloride	ALLH	8	1	0.00156–[0.002]	1/8
Chlorobenzene	SLUDGE	1	1	24.2	1/1
Chrysene	ALLH	15	3	[0.323]–1.74	3/15
Dibenz(a,h)anthracene	ALLH	15	1	0.236–[33.3]	1/15
Dibenzofuran	ALLH	15	1	[0.323]–0.616	1/15
Dichlorobenzene[1,4-]	ALLH	23	1	0.00111–[33.3]	1/23
Dichlorodifluoromethane	ALLH	8	1	0.0011–[0.002]	1/8
Dichloroethene[cis-1,2-]	ALLH	8	1	[0.002]–0.00278	1/8
Dichloropropene[1,1-]	ALLH	8	1	0.00124–[0.002]	1/8
Ethylbenzene	ALLH	8	1	0.00126–[0.002]	1/8
Fluoranthene	ALLH	15	3	[0.323]–3.86	3/15
Fluorene	ALLH	15	2	0.216–[33.3]	2/15
Indeno(1,2,3-cd)pyrene	ALLH	15	2	[0.323]–0.88	2/15
Isopropylbenzene	ALLH	8	1	[0.002]–0.0054	1/8
Methylene Chloride	ALLH	8	7	0.0028–0.00744	7/8
Methylene Chloride	SLUDGE	1	1	1.14	1/1
Methylnaphthalene[2-]	ALLH	15	1	[0.323]–0.353	1/15
Naphthalene	ALLH	15	2	0.208–[33.3]	2/15
Phenanthrene	ALLH	15	3	[0.323]–3.01	3/15
Phenol	SLUDGE	2	1	26.3–[32.4]	1/2
Pyrene	ALLH	15	3	[0.323]–3.24	3/15

Table 10.5-3 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Tetrachloroethene	ALLH	8	2	0.0011–0.0042	2/8
Toluene	ALLH	8	2	0.0011–[0.002]	2/8
Toluene	SLUDGE	1	1	326	1/1
Trichloroethane[1,1,1-]	ALLH	8	3	0.00147–0.0066	3/8
Trichloroethene	ALLH	8	4	0.00158–0.0096	4/8
Trichlorofluoromethane	ALLH	8	1	0.00157–[0.002]	1/8
Xylene (Total)	ALLH	8	1	0.00236–[0.004]	1/8
Xylene[1,2-]	ALLH	8	1	0.00108–[0.002]	1/8
Decision-Level Data					
Acenaphthene	ALLH	6	3	0.058–[3.8]	3/6
Acenaphthene	QBT2	13	1	[0.36]–7.2	1/13
Anthracene	ALLH	6	3	0.16–4.1	3/6
Anthracene	QBT2	14	2	[0.36]–10	2/14
Benzo(a)anthracene	ALLH	6	4	0.32–5.1	4/6
Benzo(a)anthracene	FILL	9	5	0.17–[3.8]	5/9
Benzo(a)anthracene	QBT2	14	4	0.057–[75]	4/14
Benzo(a)pyrene	ALLH	6	5	0.059–6	5/6
Benzo(a)pyrene	FILL	9	5	0.23–[3.8]	5/9
Benzo(a)pyrene	QBT2	14	4	0.08–[75]	4/14
Benzo(b)fluoranthene	ALLH	6	5	0.062–6.4	5/6
Benzo(b)fluoranthene	FILL	8	4	0.18–[3.8]	4/8
Benzo(b)fluoranthene	QBT2	14	4	0.06–[75]	4/14
Benzo(g,h,i)perylene	ALLH	6	3	0.14–[3.8]	3/6
Benzo(g,h,i)perylene	QBT2	13	2	0.045–[75]	2/13
Benzo(k)fluoranthene	ALLH	5	3	[0.38]–3.2	3/5
Benzo(k)fluoranthene	FILL	6	2	0.17–[3.8]	2/6
Benzo(k)fluoranthene	QBT2	5	2	0.064–[0.4]	2/5
Bis(2-ethylhexyl)phthalate	ALLH	5	1	0.043–[3.8]	1/5
Bis(2-ethylhexyl)phthalate	QBT2	12	2	0.049–[75]	2/12
Butanone[2-]	QBT2	19	1	[0.022]–0.058	1/19
Butylbenzene[n-]	QBT2	19	10	[0.0054]–9.2	10/19
Butylbenzene[sec-]	QBT2	19	8	[0.0054]–3	8/19
Carbazole	ALLH	2	1	[0.38]–1.8	1/2
Carbazole	QBT2	9	1	[0.39]–4	1/9
Chlorotoluene[2-]	QBT2	19	1	[0.0054]–0.72	1/19
Chrysene	ALLH	6	4	0.37–6	4/6
Chrysene	FILL	9	5	0.17–[3.8]	5/9
Chrysene	QBT2	14	4	0.067–[75]	4/14

Table 10.5-3 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Dibenz(a,h)anthracene	ALLH	5	2	0.057–[3.8]	2/5
Dibenzofuran	ALLH	5	1	[0.38]–2.1	1/5
Dibenzofuran	QBT2	14	3	[0.36]–7.4	3/14
Dichloroethene[cis-1,2-]	QBT2	19	4	[0.0057]–7.9	4/19
Ethylbenzene	QBT2	19	8	[0.0054]–7.5	8/19
Fluoranthene	ALLH	6	5	0.082–15	5/6
Fluoranthene	FILL	9	5	0.32–[3.8]	5/9
Fluoranthene	QBT2	14	6	0.056–[75]	6/14
Fluorene	ALLH	5	2	0.072–[3.8]	2/5
Fluorene	QBT2	15	3	[0.36]–7.4	3/15
Hexachlorobutadiene	QBT2	27	1	[0.0057]–0.68	1/27
Hexanone[2-]	QBT2	19	1	0.014–[6]	1/19
Indeno(1,2,3-cd)pyrene	ALLH	6	3	0.15–[3.8]	3/6
Indeno(1,2,3-cd)pyrene	QBT2	13	3	0.048–[75]	3/13
Isopropylbenzene	QBT2	19	7	[0.0054]–2	7/19
Isopropyltoluene[4-]	QBT2	19	8	[0.0054]–2.8	8/19
Methylene Chloride	ALLH	3	1	[0.0058]–0.0067	1/3
Methylene Chloride	FILL	7	3	[0.0054]–0.013	3/7
Methylene Chloride	QBT2	19	14	0.0052–4.1	14/19
Methylnaphthalene[2-]	ALLH	5	1	[0.38]–1.6	1/5
Methylnaphthalene[2-]	QBT2	18	10	0.046–140	10/18
Naphthalene	ALLH	6	1	[0.0056]–5.9	1/6
Naphthalene	FILL	9	2	0.0026–[3.9]	2/9
Naphthalene	QBT2	33	21	0.0036–[75]	21/33
Phenanthrene	ALLH	6	5	0.045–17	5/6
Phenanthrene	FILL	9	4	[0.38]–1.5	4/9
Phenanthrene	QBT2	17	8	0.04–[75]	8/17
Propylbenzene[1-]	QBT2	19	7	[0.0054]–3.5	7/19
Pyrene	ALLH	6	5	0.079–13	5/6
Pyrene	FILL	9	5	0.32–[3.8]	5/9
Pyrene	QBT2	14	6	0.046–[75]	6/14
Tetrachloroethene	QBT2	19	4	0.0038–[1.5]	4/19
Toluene	FILL	7	2	[0.0054]–0.011	2/7
Toluene	QBT2	19	8	[0.0054]–4.3	8/19
TPH-DRO	ALLH	1	1	23	1/1
TPH-DRO	FILL	3	2	[6.2]–40	2/3
TPH-DRO	QBT2	15	15	6.2–19000	15/15
Trichlorobenzene[1,2,3-]	QBT2	15	1	[0.0057]–1.4	1/15

Table 10.5-3 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Trichlorobenzene[1,2,4-]	QBT2	27	1	[0.0057]–0.68	1/27
Trichloroethane[1,1,1-]	QBT2	19	3	0.0033–40	3/19
Trichloroethene	QBT2	19	6	[0.0054]–28	6/19
Trimethylbenzene[1,2,4-]	QBT2	19	10	[0.0054]–25	10/19
Trimethylbenzene[1,3,5-]	QBT2	19	9	0.0026–6.1	9/19
Xylene (Total)	QBT2	14	1	[0.0054]–0.29	1/14
Xylene[1,2-]	QBT2	12	5	[0.0058]–7.3	5/12
Xylene[1,3-]+Xylene[1,4-]	QBT2	8	5	[0.0057]–12	5/8

Note: Values in brackets are below detection limits.

Table 10.5-4
Subaggregate 9 Historical Analytical Results of Inorganic Chemicals
Greater Than Background Values in Soil, Fill, Tuff, and Sludge at the Hollow at TA-15 West: Screening- and Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium
Soil Background Value[a]				**29200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**
QBT2 Background Value				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**
Screening-Level Data											
AOC C-15-010											
15-02551	1.5–2	0215-95-0137	ALLH	—[b]	—	—	—	—	0.414 (J)	—	—
15-02552	1.5–2	0215-95-0138	ALLH	—	0.909 (U)	—	—	—	—	—	—
SWMU 15-009(a)											
15-02559	0–0	0215-95-0151	SLUDGE	406	1.31 (J)	5.7 (J)	26.8	0.0316 (J)	2.56 (J)	34600	5.35 (J)
SWMU 15-011(b)											
15-02388	0–0.5	0215-96-0704	ALLH	—	0.888 (U)	—	—	—	—	—	—
15-02388	0.83–1.33	0215-96-0705	ALLH	—	0.923 (U)	—	—	—	0.456	—	—
SWMU 15-011(c)											
15-02557	0–0.5	0215-95-0147	ALLH	—	—	—	—	—	—	—	—
15-02557	2.5–3	0215-95-0148	ALLH	—	—	—	—	—	—	—	—
15-02558	0–0.5	0215-95-0149	ALLH	—	—	—	—	—	—	—	—
15-02558	1.5–2	0215-95-0150	ALLH	—	—	—	—	—	—	—	—
AOC 15-014(g)											
15-02553	0–0.5	0215-95-0139	ALLH	—	9 (U)	—	—	—	1.1 (U)	—	—
SWMU 15-014(i)											
15-02387	0–0.5	0215-96-0702	ALLH	—	2.08 (J)	—	—	—	0.47	—	—
15-02387	1–1.5	0215-96-0703	ALLH	—	1.25 (U)	—	—	—	—	—	—

Table 10.5-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium
Soil Background Value[a]				**29200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**
QBT2 Background Value				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**
SWMU 15-014(j)											
15-02554	0–0.5	0215-95-0141	SLUDGE	2790	—	2.9	14.7	0.964	0.396 (J)	478	4.52
15-02554	1.33–1.67	0215-95-0142	ALLH	—	0.967 (U)	—	—	—	0.483 (J)	—	—
15-02555	0–0.08	0215-95-0143	ALLH	—	—	—	—	—	1.85	—	—
15-02556	0–0.5	0215-95-0145	ALLH	—	0.937 (U)	—	—	—	0.425 (J)	—	—
15-02556	2.5–3	0215-95-0146	ALLH	—	0.961 (U)	—	—	—	—	—	—
Decision-Level Data											
AOC C-15-007											
15-02575	0–0.5	0215-97-0075	ALLH	—	11 (UJ)	—	—	—	0.56 (U)	—	—
15-02575	1–1.33	0215-97-0076	FILL	—	11 (UJ)	—	—	—	5.1	—	—
15-02575	2–2.33	0215-97-0077	QBT2	—	12 (U)	—	—	—	—	—	—
15-02576	0–0.5	0215-97-0078	FILL	—	11 (UJ)	—	—	—	0.55 (U)	—	—
15-02576	1–1.5	0215-97-0079	FILL	—	11(U)	—	—	—	0.57 (U)	—	—
15-02576	2–2.5	0215-97-0080	QBT2	—	12 (UJ)	—	—	—	—	—	—
15-02577	0–0.5	0215-97-0081	FILL	—	11 (UJ)	—	—	—	0.55 (U)	—	—
15-02577	1–1.5	0215-97-0082	FILL	—	11 (UJ)	—	—	—	0.57 (U)	—	—
15-02577	2.5–2.92	0215-97-0083	QBT2	—	12 (UJ)	—	—	—	—	—	—
15-02578	0.5–1	0215-97-0084	FILL	—	12 (UJ)	—	—	—	0.59 (U)	—	—
15-02579	1.25–1.75	0215-97-0085	ALLH	—	12 (UJ)	—	—	—	0.62 (U)	—	—
15-02580	0.5–1	0215-97-0086	ALLH	—	11 (UJ)	—	—	—	0.57 (U)	—	—
15-02581	1.25–1.75	0215-97-0087	QBT2	—	11 (UJ)	—	—	—	—	—	—

Table 10.5-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel
Soil Background Value[a]				**8.64**	**14.7**	**21500**	**22.3**	**4610**	**671**	**0.1**	**15.4**
QBT2 Background Value				**3.14**	**4.66**	**14500**	**11.2**	**1690**	**482**	**0.1**	**6.58**
Screening-Level Data											
AOC C-15-010											
15-02551	1.5–2	0215-95-0137	ALLH	—	21.7	—	23.4	—	—	—	—
15-02552	1.5–2	0215-95-0138	ALLH	—	—	—	—	—	—	—	—
SWMU 15-009(a)											
15-02559	0–0	0215-95-0151	SLUDGE	0.984 (J)	43	1860	21.3	7270	76.6	0.213	5.46 (J)
SWMU 15-011(b)											
15-02388	0–0.5	0215-96-0704	ALLH	—	117	—	197	—	—	0.147	—
15-02388	0.83–1.33	0215-96-0705	ALLH	—	94	—	63.7	—	—	—	—
SWMU 15-011(c)											
15-02557	0–0.5	0215-95-0147	ALLH	—	—	—	—	—	—	—	—
15-02557	2.5–3	0215-95-0148	ALLH	—	—	—	—	—	—	0.175	—
15-02558	0–0.5	0215-95-0149	ALLH	—	—	—	—	—	—	—	—
15-02558	1.5–2	0215-95-0150	ALLH	—	—	—	—	—	—	—	—
AOC 15-014(g)											
15-02553	0–0.5	0215-95-0139	ALLH	—	24.5	—	60.1	—	—	0.26	—
SWMU 15-014(i)											
15-02387	0–0.5	0215-96-0702	ALLH	—	97.8	—	37.7	—	—	—	—
15-02387	1–1.5	0215-96-0703	ALLH	—	53.5	—	—	—	—	—	—
SWMU 15-014(j)											
15-02554	0–0.5	0215-95-0141	SLUDGE	0.701 (J)	30.2 (J)	7250 (J)	15.4	297	122 (J)	0.308 (J)	1.68
15-02554	1.33–1.67	0215-95-0142	ALLH	—	21.5	—	—	—	—	—	—

Table 10.5-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel
Soil Background Value[a]				**8.64**	**14.7**	**21500**	**22.3**	**4610**	**671**	**0.1**	**15.4**
QBT2 Background Value				**3.14**	**4.66**	**14500**	**11.2**	**1690**	**482**	**0.1**	**6.58**
15-02555	0–0.08	0215-95-0143	ALLH	—	155	—	101	—	—	2.99	—
15-02556	0–0.5	0215-95-0145	ALLH	—	149	—	—	—	—	—	—
15-02556	2.5–3	0215-95-0146	ALLH	—	—	—	—	—	—	—	—
Decision-Level Data											
AOC C-15-007											
15-02575	0–0.5	0215-97-0075	ALLH	—	19	—	—	—	—	0.11 (UJ)	—
15-02575	1–1.33	0215-97-0076	FILL	—	110	—	39	—	—	0.11 (UJ)	—
15-02575	2–2.33	0215-97-0077	QBT2	—	—	—	15	—	—	0.12 (UJ)	—
15-02576	0–0.5	0215-97-0078	FILL	—	22	—	24	—	—	0.11 (U)	—
15-02576	1–1.5	0215-97-0079	FILL	—	49	—	29	—	—	0.11 (U)	—
15-02576	2–2.5	0215-97-0080	QBT2	—	10	—	12	—	—	0.12 (UJ)	—
15-02577	0–0.5	0215-97-0081	FILL	—	270	—	24	—	—	0.11 (UJ)	—
15-02577	1–1.5	0215-97-0082	FILL	—	38	—	24	—	—	0.11 (UJ)	—
15-02577	2.5–2.92	0215-97-0083	QBT2	—	—	—	—	—	—	0.12 (UJ)	—
15-02578	0.5–1	0215-97-0084	FILL	—	31	—	—	—	—	0.12 (UJ)	—
15-02579	1.25–1.75	0215-97-0085	ALLH	—	37	—	—	—	—	0.12 (U)	—
15-02580	0.5–1	0215-97-0086	ALLH	—	33	—	23	—	—	0.11 (UJ)	—
15-02581	1.25–1.75	0215-97-0087	QBT2	—	18	—	17	—	—	0.11 (UJ)	—

Table 10.5-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Potassium	Selenium	Silver	Sodium	Thallium	Uranium	Vanadium	Zinc
Soil Background Value[a]				**3460**	**1.52**	**1**	**915**	**0.73**	**1.82**	**39.6**	**48.8**
QBT2 Background Value				**43700**	**0.3**	**1**	**2770**	**1.1**	**2.4**	**17**	**63.5**
Screening-Level Data											
AOC C-15-010											
15-02551	1.5–2	0215-95-0137	ALLH	—	—	—	—	—	2.61	—	54.7
15-02552	1.5–2	0215-95-0138	ALLH	—	—	—	—	0.909 (U)	2.46	—	—
SWMU 15-009(a)											
15-02559	0–0	0215-95-0151	SLUDGE	37000	2.65 (J)	—	51100	—	—	5.87 (J)	1160
SWMU 15-011(b)											
15-02388	0–0.5	0215-96-0704	ALLH	—	—	5.76	—	1.24 (U)	2.85	—	116
15-02388	0.83–1.33	0215-96-0705	ALLH	—	—	—	—	1.2 (U)	3.65	—	107
SWMU 15-011(c)											
15-02557	0–0.5	0215-95-0147	ALLH	—	—	—	—	0.971 (U)	—	—	—
15-02557	2.5–3	0215-95-0148	ALLH	—	—	—	—	0.971 (U)	—	—	—
15-02558	0–0.5	0215-95-0149	ALLH	—	—	—	—	0.935 (U)	5.51	—	—
15-02558	1.5–2	0215-95-0150	ALLH	—	—	—	—	0.962 (U)	—	—	—
AOC 15-014(g)											
15-02553	0–0.5	0215-95-0139	ALLH	—	—	2.2 (U)	—	1.1 (U)	2	—	127
SWMU 15-014(i)											
15-02387	0–0.5	0215-96-0702	ALLH	—	—	2.48	—	—	3.07	—	79.2
15-02387	1–1.5	0215-96-0703	ALLH	—	—	1.25 (U)	—	1.15 (U)	1.89	—	57
SWMU 15-014(j)											
15-02554	0–0.5	0215-95-0141	SLUDGE	338	—	—	75.6 (J)	—	2.51	7.03	103
15-02554	1.33–1.67	0215-95-0142	ALLH	—	—	—	—	0.967 (U)	2.15	—	69.3
15-02555	0–0.08	0215-95-0143	ALLH	—	—	1.89	—	0.942 (U)	3.44	—	1640

Table 10.5-4 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Potassium	Selenium	Silver	Sodium	Thallium	Uranium	Vanadium	Zinc
Soil Background Value[a]				**3460**	**1.52**	**1**	**915**	**0.73**	**1.82**	**39.6**	**48.8**
QBT2 Background Value				**43700**	**0.3**	**1**	**2770**	**1.1**	**2.4**	**17**	**63.5**
15-02556	0–0.5	0215-95-0145	ALLH	—	—	—	—	0.937 (U)	2.39	—	100
15-02556	2.5–3	0215-95-0146	ALLH	—	—	—	—	0.961 (U)	2	—	—
Decision-Level Data											
AOC C-15-007											
15-02575	0–0.5	0215-97-0075	ALLH	—	—	2.2 (U)	—	—	3.42	—	58
15-02575	1–1.33	0215-97-0076	FILL	—	—	2.2 (U)	—	—	2.56	—	110
15-02575	2–2.33	0215-97-0077	QBT2	—	0.59 (UJ)	2.4 (U)	—	—	—	—	—
15-02576	0–0.5	0215-97-0078	FILL	—	—	2.2 (U)	—	—	2.8	—	59
15-02576	1–1.5	0215-97-0079	FILL	—	—	2.3 (U)	—	—	2.9	—	75
15-02576	2–2.5	0215-97-0080	QBT2	—	0.6 (U)	2.4 (U)	—	—	2.63	—	—
15-02577	0–0.5	0215-97-0081	FILL	—	—	2.2 (U)	—	—	2.62	—	71
15-02577	1–1.5	0215-97-0082	FILL	—	—	2.3 (U)	—	—	2.03	—	63
15-02577	2.5–2.92	0215-97-0083	QBT2	—	0.6 (U)	2.4 (U)	—	—	—	—	—
15-02578	0.5–1	0215-97-0084	FILL	—	—	2.4 (U)	—	—	2.35	—	110
15-02579	1.25–1.75	0215-97-0085	ALLH	—	—	2.5 (U)	—	—	1.94	—	77
15-02580	0.5–1	0215-97-0086	ALLH	—	—	2.3 (U)	—	—	1.85	—	67
15-02581	1.25–1.75	0215-97-0087	QBT2	—	0.57 (U)	2.3 (U)	—	—	—	—	—

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

[a] Fill samples were compared to soil background values.

[b] — = If analyzed, sample result is less than background value.

Table 10.5-5
Subaggregate 9 Historical Analytical Results of Organic Chemicals Detected in Soil, Fill, Tuff, and Sludge at the Hollow at TA-15 West: Screening- and Decision-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Acenaphthene	Acetone	Anthracene	Benzene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene
Screening-Level Data											
AOC C-15-010											
15-02551	1.5–2	0215-95-0137	ALLH	0.257 (J)	0.0136	0.295 (J)	—*	—	0.824	1.28	0.448
15-02552	1.5–2	0215-95-0138	ALLH	0.883	0.0324 (J)	1.79	—	1.79	1.83	2.92	0.85
SWMU 15-009(a)											
15-02559	0–0	0215-95-0151	SLUDGE	—	25.2	—	—	—	—	—	—
SWMU 15-011(b)											
15-02388	0.83–1.33	0215-96-0705	ALLH	—	0.0103	—	—	—	—	—	—
SWMU 15-011(c)											
15-02557	2.5–3	0215-95-0148	ALLH	—	0.018	—	—	—	—	—	—
15-02558	1.5–2	0215-95-0150	ALLH	—	0.00376 (J)	—	—	—	—	—	—
AOC 15-014(g)											
15-02553	0–0.5	0215-95-0139	ALLH	—	—	—	—	0.46	0.47	0.6	0.38
SWMU 15-014(i)											
15-02387	1–1.5	0215-96-0703	ALLH	—	0.0092 (J)	—	—	—	—	—	—
SWMU 15-014(j)											
15-02554	1.33–1.67	0215-95-0142	ALLH	—	0.0132	—	0.0013 (J)	—	—	—	—
15-02556	2.5–3	0215-95-0146	ALLH	—	0.0455	—	—	—	—	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Acenaphthene	Acetone	Anthracene	Benzene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene
Decision-Level Data											
AOC C-15-007											
15-02576	1–1.5	0215-97-0079	FILL	—	—	—	—	0.17 (J)	0.23 (J)	0.18 (J)	—
15-02576	2–2.5	0215-97-0080	QBT2	—	—	—	—	0.095 (J)	0.13 (J)	0.12 (J)	0.045 (J)
15-02577	2.5–2.92	0215-97-0083	QBT2	—	—	—	—	—	—	—	—
15-02578	0.5–1	0215-97-0084	FILL	—	—	—	—	0.41 (J)	0.42 (J)	0.35 (J)	—
15-02579	0–0.5	0215-97-0089	ALLH	3	—	4.1	—	5.1	6	6.4	3
15-02579	1.25–1.75	0215-97-0085	ALLH	0.058 (J)	—	0.16 (J)	—	0.32 (J)	0.42	0.33 (J)	0.14 (J)
15-02579	1.25–1.75	0215-97-0090	ALLH	—	—	—	—	—	0.059 (J)	0.062 (J)	—
15-02579	2.5–3	0215-97-0091	QBT2	—	—	—	—	—	—	—	—
15-02580	0.5–1	0215-97-0086	ALLH	—	—	—	—	0.44 (J)	0.64 (J)	0.55 (J)	—
15-02581	1.25–1.75	0215-97-0087	QBT2	—	—	—	—	0.057 (J)	0.08 (J)	0.06 (J)	—
AOC C-15-010											
15-02517	0–0.25	0215-97-0040	FILL	—	—	—	—	0.69 (J-)	0.7 (J-)	—	—
15-02517	3–3.5	0215-97-0041	QBT2	—	—	2.1 (J-)	—	0.88 (J-)	0.89 (J-)	1.6 (J-)	—
15-02517	6–6.5	0215-97-0042	QBT2	—	—	—	—	—	—	—	—
15-02518	0–0.5	0215-97-0046	ALLH	0.41 (J-)	—	0.63 (J-)	—	1.3 (J-)	1.5 (J-)	2.6 (J-)	0.73 (J-)
15-02518	2.5–2.75	0215-97-0047	QBT2	7.2 (J-)	—	10 (J-)	—	12 (J-)	11 (J-)	18 (J-)	6.4 (J-)
15-02518	5–5.5	0215-97-0048	QBT2	—	—	—	—	—	—	—	—
15-02518	7.5–8	0215-97-0049	QBT2	—	—	—	—	—	—	—	—
15-02518	14.5–15	0215-97-0050	QBT2	—	—	—	—	—	—	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Acenaphthene	Acetone	Anthracene	Benzene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene
15-02518	24.5–25	0215-97-0051	QBT2	—	—	—	—	—	—	—	—
15-02518	39.5–40	0215-97-0044	QBT2	—	—	—	—	—	—	—	—
15-02518	49.5–50	0215-97-0045	QBT2	—	—	—	—	—	—	—	—
15-02518	54.5–55	0215-97-0097	QBT2	—	—	—	—	—	—	—	—
15-02519	0–0.5	0215-97-0052	FILL	—	—	—	—	0.64 (J-)	0.7 (J-)	1.2 (J-)	—
15-02519	3–3.5	0215-97-0053	FILL	—	—	—	—	0.48 (J-)	0.46 (J-)	0.84 (J-)	—
15-02519	9–9.5	0215-97-0055	QBT2	—	—	—	—	—	—	—	—
15-02519	10–10.5	0215-97-0054	QBT2	—	—	—	—	—	—	—	—
15-02519	17–17.5	0215-97-0056	QBT2	—	—	—	—	—	—	—	—
15-02519	22.5–23	0215-97-0057	QBT2	—	—	—	—	—	—	—	—
15-02519	32.5–33	0215-97-0043	QBT2	—	—	—	—	—	—	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Bromodichloromethane	Butanone[2-]	Butylbenzene[n-]	Butylbenzene[sec-]	Carbazole	Carbon Tetrachloride
Screening-Level Data											
AOC C-15-010											
15-02551	1.5–2	0215-95-0137	ALLH	—	—	—	—	—	—	—	—
15-02552	1.5–2	0215-95-0138	ALLH	—	—	—	—	—	—	—	—
SWMU 15-009(a)											
15-02559	0–0	0215-95-0151	SLUDGE	—	7.19 (J)	—	7.79 (J)	—	—	—	—
SWMU 15-011(b)											
15-02388	0.83–1.33	0215-96-0705	ALLH	—	—	—	—	—	—	—	—
SWMU 15-011(c)											
15-02557	2.5–3	0215-95-0148	ALLH	—	—	—	—	—	—	—	—
15-02558	1.5–2	0215-95-0150	ALLH	—	—	—	—	—	—	—	—
AOC 15-014(g)											
15-02553	0–0.5	0215-95-0139	ALLH	—	0.59	—	—	—	—	—	—
SWMU 15-014(i)											
15-02387	1–1.5	0215-96-0703	ALLH	—	—	—	—	—	—	—	—
SWMU 15-014(j)											
15-02554	1.33–1.67	0215-95-0142	ALLH	—	—	0.00116 (J)	—	—	—	—	0.00156 (J)
15-02556	2.5–3	0215-95-0146	ALLH	—	—	—	—	—	—	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Bromodichloromethane	Butanone[2-]	Butylbenzene[n-]	Butylbenzene[sec-]	Carbazole	Carbon Tetrachloride
Decision-Level Data											
AOC C-15-007											
15-02576	1–1.5	0215-97-0079	FILL	0.17 (J)	—	—	—	—	—	—	—
15-02576	2–2.5	0215-97-0080	QBT2	0.12 (J)	0.049 (J)	—	—	—	—	—	—
15-02577	2.5–2.92	0215-97-0083	QBT2	—	—	—	—	—	—	—	—
15-02578	0.5–1	0215-97-0084	FILL	0.46 (J)	—	—	—	—	—	—	—
15-02579	0–0.5	0215-97-0089	ALLH	3.2	—	—	—	—	—	1.8 (J)	—
15-02579	1.25–1.75	0215-97-0085	ALLH	0.42	0.043 (J)	—	—	—	—	—	—
15-02579	1.25–1.75	0215-97-0090	ALLH	—	—	—	—	—	—	—	—
15-02579	2.5–3	0215-97-0091	QBT2	—	—	—	—	—	—	—	—
15-02580	0.5–1	0215-97-0086	ALLH	0.56 (J)	—	—	—	—	—	—	—
15-02581	1.25–1.75	0215-97-0087	QBT2	0.064 (J)	0.059 (J)	—	—	—	—	—	—
AOC C-15-010											
15-02517	0–0.25	0215-97-0040	FILL	—	—	—	—	—	—	—	—
15-02517	3–3.5	0215-97-0041	QBT2	—	—	—	—	—	—	—	—
15-02517	6–6.5	0215-97-0042	QBT2	—	—	—	—	—	—	—	—
15-02518	0–0.5	0215-97-0046	ALLH	—	—	—	—	—	—	—	—
15-02518	2.5–2.75	0215-97-0047	QBT2	—	—	—	—	—	—	4 (J-)	—
15-02518	5–5.5	0215-97-0048	QBT2	—	—	—	—	—	—	—	—
15-02518	7.5–8	0215-97-0049	QBT2	—	—	—	—	—	—	—	—
15-02518	14.5–15	0215-97-0050	QBT2	—	—	—	—	7.5	2.4	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Bromodichloromethane	Butanone[2-]	Butylbenzene[n-]	Butylbenzene[sec-]	Carbazole	Carbon Tetrachloride
15-02518	24.5–25	0215-97-0051	QBT2	—	—	—	—	2.1	0.31 (J)	—	—
15-02518	39.5–40	0215-97-0044	QBT2	—	—	—	—	7.7	3	—	—
15-02518	49.5–50	0215-97-0045	QBT2	—	—	—	—	0.68 (J)	—	—	—
15-02518	54.5–55	0215-97-0097	QBT2	—	—	—	0.058	0.0055 (J)	—	—	—
15-02519	0–0.5	0215-97-0052	FILL	—	—	—	—	—	—	—	—
15-02519	3–3.5	0215-97-0053	FILL	—	—	—	—	—	—	—	—
15-02519	9–9.5	0215-97-0055	QBT2	—	—	—	—	9.2	2.6	—	—
15-02519	10–10.5	0215-97-0054	QBT2	—	—	—	—	6.8	1.8	—	—
15-02519	17–17.5	0215-97-0056	QBT2	—	—	—	—	8.1	2.8	—	—
15-02519	22.5–23	0215-97-0057	QBT2	—	—	—	—	4.4	1.9	—	—
15-02519	32.5–33	0215-97-0043	QBT2	—	—	—	—	6.3	2.2	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Chlorobenzene	Chlorotoluene[2-]	Chrysene	Dibenz(a,h)anthracene	Dibenzofuran	Dichlorobenzene[1,4-]	Dichloroethene[cis-1,2-]
Screening-Level Data										
AOC C-15-010										
15-02551	1.5–2	0215-95-0137	ALLH	—	—	0.956	—	—	—	—
15-02552	1.5–2	0215-95-0138	ALLH	—	—	1.74	0.236 (J)	0.616	—	—
SWMU 15-009(a)										
15-02559	0–0	0215-95-0151	SLUDGE	24.2	—	—	—	—	—	—
SWMU 15-011(b)										
15-02388	0.83–1.33	0215-96-0705	ALLH	—	—	—	—	—	—	—
SWMU 15-011(c)										
15-02557	2.5–3	0215-95-0148	ALLH	—	—	—	—	—	—	—
15-02558	1.5–2	0215-95-0150	ALLH	—	—	—	—	—	—	—
AOC 15-014(g)										
15-02553	0–0.5	0215-95-0139	ALLH	—	—	0.51	—	—	—	—
SWMU 15-014(i)										
15-02387	1–1.5	0215-96-0703	ALLH	—	—	—	—	—	—	—
SWMU 15-014(j)										
15-02554	1.33–1.67	0215-95-0142	ALLH	—	—	—	—	—	0.00111 (J)	—
15-02556	2.5–3	0215-95-0146	ALLH	—	—	—	—	—	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Chlorobenzene	Chlorotoluene[2-]	Chrysene	Dibenz(a,h)anthracene	Dibenzofuran	Dichlorobenzene[1,4-]	Dichloroethene[cis-1,2-]
Decision-Level Data										
AOC C-15-007										
15-02576	1–1.5	0215-97-0079	FILL	—	—	0.17 (J)	—	—	—	—
15-02576	2–2.5	0215-97-0080	QBT2	—	—	0.11 (J)	—	—	—	—
15-02577	2.5–2.92	0215-97-0083	QBT2	—	—	—	—	—	—	—
15-02578	0.5–1	0215-97-0084	FILL	—	—	0.45 (J)	—	—	—	—
15-02579	0–0.5	0215-97-0089	ALLH	—	—	6	0.77 (J)	2.1	—	—
15-02579	1.25–1.75	0215-97-0085	ALLH	—	—	0.37 (J)	0.057 (J)	—	—	—
15-02579	1.25–1.75	0215-97-0090	ALLH	—	—	—	—	—	—	—
15-02579	2.5–3	0215-97-0091	QBT2	—	—	—	—	—	—	—
15-02580	0.5–1	0215-97-0086	ALLH	—	—	0.5 (J)	—	—	—	—
15-02581	1.25–1.75	0215-97-0087	QBT2	—	—	0.067 (J)	—	—	—	—
AOC C-15-010										
15-02517	0–0.25	0215-97-0040	FILL	—	—	0.63 (J-)	—	—	—	—
15-02517	3–3.5	0215-97-0041	QBT2	—	—	0.85 (J-)	—	—	—	—
15-02517	6–6.5	0215-97-0042	QBT2	—	—	—	—	—	—	0.01
15-02518	0–0.5	0215-97-0046	ALLH	—	—	1.3 (J-)	—	—	—	—
15-02518	2.5–2.75	0215-97-0047	QBT2	—	—	9.5 (J-)	—	4.8 (J-)	—	—
15-02518	5–5.5	0215-97-0048	QBT2	—	—	—	—	—	—	—
15-02518	7.5–8	0215-97-0049	QBT2	—	—	—	—	—	—	—
15-02518	14.5–15	0215-97-0050	QBT2	—	—	—	—	7.4 (J)	—	0.31 (J)
15-02518	24.5–25	0215-97-0051	QBT2	—	—	—	—	—	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Chlorobenzene	Chlorotoluene[2-]	Chrysene	Dibenz(a,h)anthracene	Dibenzofuran	Dichlorobenzene[1,4-]	Dichloroethene[cis-1,2-]
15-02518	39.5–40	0215-97-0044	QBT2	—	—	—	—	—	—	—
15-02518	49.5–50	0215-97-0045	QBT2	—	—	—	—	—	—	—
15-02518	54.5–55	0215-97-0097	QBT2	—	—	—	—	—	—	—
15-02519	0–0.5	0215-97-0052	FILL	—	—	0.6 (J-)	—	—	—	—
15-02519	3–3.5	0215-97-0053	FILL	—	—	0.41 (J-)	—	—	—	—
15-02519	9–9.5	0215-97-0055	QBT2	—	—	—	—	5 (J-)	—	2.3
15-02519	10–10.5	0215-97-0054	QBT2	—	—	—	—	—	—	7.9
15-02519	17–17.5	0215-97-0056	QBT2	—	—	—	—	—	—	—
15-02519	22.5–23	0215-97-0057	QBT2	—	0.72 (J)	—	—	—	—	—
15-02519	32.5–33	0215-97-0043	QBT2	—	—	—	—	—	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Dichlorodifluoromethane	Dichloroethene[cis-1,2-]	Dichloropropene[1,1-]	Ethylbenzene	Fluoranthene	Fluorene	Hexachlorobutadiene	Hexanone[2-]
Screening-Level Data											
AOC C-15-010											
15-02551	1.5–2	0215-95-0137	ALLH	—	—	—	—	—	—	1.77	0.216 (J)
15-02552	1.5–2	0215-95-0138	ALLH	—	—	—	—	—	—	3.86	0.864
SWMU 15-009(a)											
15-02559	0–0	0215-95-0151	SLUDGE	—	—	—	—	—	—	—	—
SWMU 15-011(b)											
15-02388	0.83–1.33	0215-96-0705	ALLH	0.0011 (J)	—	—	—	—	—	—	—
SWMU 15-011(c)											
15-02557	2.5–3	0215-95-0148	ALLH	—	—	—	—	—	—	—	—
15-02558	1.5–2	0215-95-0150	ALLH	—	—	—	—	—	—	—	—
AOC 15-014(g)											
15-02553	0–0.5	0215-95-0139	ALLH	—	—	—	—	—	—	0.98	—
SWMU 15-014(i)											
15-02387	1–1.5	0215-96-0703	ALLH	—	—	—	—	—	—	—	—
SWMU 15-014(j)											
15-02554	1.33–1.67	0215-95-0142	ALLH	—	—	0.00124 (J)	0.00126 (J)	—	0.00126 (J)	—	—
15-02556	2.5–3	0215-95-0146	ALLH	—	0.0028	—	—	—	—	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Dichlorodifluoromethane	Dichloroethene[cis-1,2-]	Dichloropropene[1,1-]	Ethylbenzene	Fluoranthene	Fluorene	Hexachlorobutadiene	Hexanone[2-]
Decision-Level Data											
AOC C-15-007											
15-02576	1–1.5	0215-97-0079	FILL	—	—	—	—	0.32 (J)	—	—	—
15-02576	2–2.5	0215-97-0080	QBT2	—	—	—	—	0.2 (J)	—	—	—
15-02577	2.5–2.92	0215-97-0083	QBT2	—	—	—	—	0.056 (J)	—	—	—
15-02578	0.5–1	0215-97-0084	FILL	—	—	—	—	0.86 (J)	—	—	—
15-02579	0–0.5	0215-97-0089	ALLH	—	—	—	—	15	3.4	—	—
15-02579	1.25–1.75	0215-97-0085	ALLH	—	—	—	—	0.74	0.072 (J)	—	—
15-02579	1.25–1.75	0215-97-0090	ALLH	—	—	—	—	0.082 (J)	—	—	—
15-02579	2.5–3	0215-97-0091	QBT2	—	—	—	—	0.067 (J)	—	—	—
15-02580	0.5–1	0215-97-0086	ALLH	—	—	—	—	0.97 (J)	—	—	—
15-02581	1.25–1.75	0215-97-0087	QBT2	—	—	—	—	0.1 (J)	—	—	—
AOC C-15-010											
15-02517	0–0.25	0215-97-0040	FILL	—	—	—	—	1.4 (J-)	—	—	—
15-02517	3–3.5	0215-97-0041	QBT2	—	—	—	—	1.8 (J-)	—	—	—
15-02517	6–6.5	0215-97-0042	QBT2	—	—	—	—	—	—	—	—
15-02518	0–0.5	0215-97-0046	ALLH	—	—	—	—	2.8 (J-)	—	—	—
15-02518	2.5–2.75	0215-97-0047	QBT2	—	—	—	—	24 (J-)	7.4 (J-)	—	—
15-02518	5–5.5	0215-97-0048	QBT2	—	—	—	—	—	—	—	—
15-02518	7.5–8	0215-97-0049	QBT2	—	—	—	—	—	—	—	—
15-02518	14.5–15	0215-97-0050	QBT2	—	—	—	5.8	—	—	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Dichlorodifluoromethane	Dichloroethene[cis-1,2-]	Dichloropropene[1,1-]	Ethylbenzene	Fluoranthene	Fluorene	Hexachlorobutadiene	Hexanone[2-]
15-02518	24.5–25	0215-97-0051	QBT2	—	—	—	0.98	—	—	—	—
15-02518	39.5–40	0215-97-0044	QBT2	—	—	—	7.1	—	—	—	—
15-02518	49.5–50	0215-97-0045	QBT2	—	—	—	—	—	—	0.68	—
15-02518	54.5–55	0215-97-0097	QBT2	—	—	—	—	—	—	—	0.014 (J)
15-02519	0–0.5	0215-97-0052	FILL	—	—	—	—	1.3 (J-)	—	—	—
15-02519	3–3.5	0215-97-0053	FILL	—	—	—	—	0.91 (J-)	—	—	—
15-02519	9–9.5	0215-97-0055	QBT2	—	—	—	6.4	—	6.3 (J-)	—	—
15-02519	10–10.5	0215-97-0054	QBT2	—	—	—	3.2	—	4.8 (J-)	—	—
15-02519	17–17.5	0215-97-0056	QBT2	—	—	—	7.5	—	—	—	—
15-02519	22.5–23	0215-97-0057	QBT2	—	—	—	1.7	—	—	—	—
15-02519	32.5–33	0215-97-0043	QBT2	—	—	—	3.7	—	—	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Indeno(1,2,3-cd)pyrene	Isopropylbenzene	Isopropyltoluene[4-]	Methylene Chloride	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Phenol
Screening-Level Data											
AOC C-15-010											
15-02551	1.5–2	0215-95-0137	ALLH	0.465	—	—	0.00361 (J)	—	0.208 (J)	1.5	—
15-02552	1.5–2	0215-95-0138	ALLH	0.88	—	—	0.00744 (J)	0.353	0.999	3.01	—
SWMU 15-009(a)											
15-02559	0–0	0215-95-0151	SLUDGE	—	—	—	1.14 (J)	—	—	—	26.3 (J)
SWMU 15-011(b)											
15-02388	0.83–1.33	0215-96-0705	ALLH	—	—	—	0.004 (J)	—	—	—	—
SWMU 15-011(c)											
15-02557	2.5–3	0215-95-0148	ALLH	—	—	—	0.00345 (J)	—	—	—	—
15-02558	1.5–2	0215-95-0150	ALLH	—	—	—	—	—	—	—	—
AOC 15-014(g)											
15-02553	0–0.5	0215-95-0139	ALLH	—	—	—	—	—	—	0.73	—
SWMU 15-014(i)											
15-02387	1–1.5	0215-96-0703	ALLH	—	—	—	0.0028 (J)	—	—	—	—
SWMU 15-014(j)											
15-02554	1.33–1.67	0215-95-0142	ALLH	—	0.0054	—	0.00347 (J)	—	—	—	—
15-02556	2.5–3	0215-95-0146	ALLH	—	—	—	0.00388 (J)	—	—	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Indeno(1,2,3-cd)pyrene	Isopropylbenzene	Isopropyltoluene[4-]	Methylene Chloride	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Phenol
Decision-Level Data											
AOC C-15-007											
15-02576	1–1.5	0215-97-0079	FILL	—	—	—	—	—	—	—	—
15-02576	2–2.5	0215-97-0080	QBT2	0.049 (J)	—	—	—	—	—	0.11 (J)	—
15-02577	2.5–2.92	0215-97-0083	QBT2	—	—	—	—	—	—	0.04 (J)	—
15-02578	0.5–1	0215-97-0084	FILL	—	—	—	—	—	—	0.62 (J)	—
15-02579	0–0.5	0215-97-0089	ALLH	3	—	—	—	1.6 (J)	5.9	17	—
15-02579	1.25–1.75	0215-97-0085	ALLH	0.15 (J)	—	—	—	—	—	0.57	—
15-02579	1.25–1.75	0215-97-0090	ALLH	—	—	—	—	—	—	0.045 (J)	—
15-02579	2.5–3	0215-97-0091	QBT2	—	—	—	—	—	—	0.061 (J)	—
15-02580	0.5–1	0215-97-0086	ALLH	—	—	—	—	—	—	0.56 (J)	—
15-02581	1.25–1.75	0215-97-0087	QBT2	0.048 (J)	—	—	—	—	—	0.062 (J)	—
AOC C-15-010											
15-02517	0–0.25	0215-97-0040	FILL	—	—	—	0.013 (J+)	—	0.0026 (J)	1.1 (J-)	—
15-02517	3–3.5	0215-97-0041	QBT2	—	—	—	0.0067	—	0.0036 (J)	2.1 (J-)	—
15-02517	6–6.5	0215-97-0042	QBT2	—	—	—	0.0088	—	—	—	—
15-02518	0–0.5	0215-97-0046	ALLH	0.58 (J-)	—	—	0.0067	—	—	3.2 (J-)	—
15-02518	2.5–2.75	0215-97-0047	QBT2	5.3 (J-)	—	—	0.008	3.6 (J-)	14 (J-)	33 (J-)	—
15-02518	5–5.5	0215-97-0048	QBT2	—	—	—	—	—	—	—	—
15-02518	7.5–8	0215-97-0049	QBT2	—	—	—	0.0052 (J)	—	—	—	—
15-02518	14.5–15	0215-97-0050	QBT2	—	1.4	2	1.9	10	26 (J)	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Indeno(1,2,3-cd)pyrene	Isopropylbenzene	Isopropyltoluene[4-]	Methylene Chloride	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Phenol
15-02518	24.5–25	0215-97-0051	QBT2	—	—	2	2	—	4.2	—	—
15-02518	39.5–40	0215-97-0044	QBT2	—	2	2	1.4	52	19	—	—
15-02518	49.5–50	0215-97-0045	QBT2	—	—	—	0.92	2.3	1.9	—	—
15-02518	54.5–55	0215-97-0097	QBT2	—	—	—	0.01	0.046 (J)	0.021	—	—
15-02519	0–0.5	0215-97-0052	FILL	—	—	—	0.0059	—	0.0027 (J)	1.5 (J-)	—
15-02519	3–3.5	0215-97-0053	FILL	—	—	—	0.0088	—	—	1.3 (J-)	—
15-02519	9–9.5	0215-97-0055	QBT2	—	1.8	3	1.8	140 (J-)	31 (J-)	9.3 (J-)	—
15-02519	10–10.5	0215-97-0054	QBT2	—	0.81 (J)	3	4.1	71 (J-)	8.8 (J-)	—	—
15-02519	17–17.5	0215-97-0056	QBT2	—	2	2	1.7	60 (J-)	23	5.6 (J-)	—
15-02519	22.5–23	0215-97-0057	QBT2	—	0.71 (J)	2	2	40 (J-)	7.2	—	—
15-02519	32.5–33	0215-97-0043	QBT2	—	0.89 (J)	3	1.7	63 (J-)	17	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Propylbenzene[1-]	Pyrene	Tetrachloroethene	Toluene	TPH-DRO	Trichlorobenzene[1,2,3-]	Trichlorobenzene[1,2,4-]	Trichloroethane[1,1,1-]
Screening-Level Data											
AOC C-15-010											
15-02551	1.5–2	0215-95-0137	ALLH	—	1.84	—	—	—	—	—	0.00153 (J)
15-02552	1.5–2	0215-95-0138	ALLH	—	3.24	—	—	—	—	—	—
SWMU 15-009(a)											
15-02559	0–0	0215-95-0151	SLUDGE	—	—	—	326 (J)	—	—	—	—
SWMU 15-011(b)											
15-02388	0.83–1.33	0215-96-0705	ALLH	—	—	0.0042	0.0011 (J)	—	—	—	0.007
SWMU 15-011(c)											
15-02557	2.5–3	0215-95-0148	ALLH	—	—	—	—	—	—	—	—
15-02558	1.5–2	0215-95-0150	ALLH	—	—	—	—	—	—	—	—
AOC 15-014(g)											
15-02553	0–0.5	0215-95-0139	ALLH	—	0.9	—	—	—	—	—	—
SWMU 15-014(i)											
15-02387	1–1.5	0215-96-0703	ALLH	—	—	—	—	—	—	—	—
SWMU 15-014(j)											
15-02554	1.33–1.67	0215-95-0142	ALLH	—	—	0.0011 (J)	0.00177 (J)	—	—	—	—
15-02556	2.5–3	0215-95-0146	ALLH	—	—	—	—	—	—	—	0.00147 (J)

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Propylbenzene[1-]	Pyrene	Tetrachloroethene	Toluene	TPH-DRO	Trichlorobenzene[1,2,3-]	Trichlorobenzene[1,2,4-]	Trichloroethane[1,1,1-]
Decision-Level Data											
AOC C-15-007											
15-02576	1–1.5	0215-97-0079	FILL	—	0.32 (J)	—	—	—	—	—	—
15-02576	2–2.5	0215-97-0080	QBT2	—	0.16 (J)	—	—	—	—	—	—
15-02577	2.5–2.92	0215-97-0083	QBT2	—	0.046 (J)	0.01	—	—	—	—	—
15-02578	0.5–1	0215-97-0084	FILL	—	0.84 (J)	—	—	—	—	—	—
15-02579	0–0.5	0215-97-0089	ALLH	—	13	—	—	—	—	—	—
15-02579	1.25–1.75	0215-97-0085	ALLH	—	0.58	—	—	—	—	—	—
15-02579	1.25–1.75	0215-97-0090	ALLH	—	0.079 (J)	—	—	—	—	—	—
15-02579	2.5–3	0215-97-0091	QBT2	—	0.066 (J)	—	—	—	—	—	—
15-02580	0.5–1	0215-97-0086	ALLH	—	0.81 (J)	—	—	—	—	—	—
15-02581	1.25–1.75	0215-97-0087	QBT2	—	0.1 (J)	—	—	—	—	—	—
AOC C-15-010											
15-02517	0–0.25	0215-97-0040	FILL	—	1.9 (J-)	—	0.01	40	—	—	—
15-02517	3–3.5	0215-97-0041	QBT2	—	2.6 (J-)	—	0.01	17	—	—	—
15-02517	6–6.5	0215-97-0042	QBT2	—	—	0.0038 (J)	0.01	2200	—	—	0.2
15-02518	0–0.5	0215-97-0046	ALLH	—	4.5 (J-)	—	—	23	—	—	—
15-02518	2.5–2.75	0215-97-0047	QBT2	—	35 (J-)	—	—	160	—	—	—
15-02518	5–5.5	0215-97-0048	QBT2	—	—	—	—	6.2	—	—	—
15-02518	7.5–8	0215-97-0049	QBT2	—	—	—	—	670	—	—	0.0033 (J)
15-02518	14.5–15	0215-97-0050	QBT2	2.7	—	—	1.4	13000	—	—	—
15-02518	24.5–25	0215-97-0051	QBT2	0.35 (J)	—	—	—	10000	—	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Propylbenzene[1-]	Pyrene	Tetrachloroethene	Toluene	TPH-DRO	Trichlorobenzene[1,2,3-]	Trichlorobenzene[1,2,4-]	Trichloroethane[1,1,1-]
15-02518	39.5–40	0215-97-0044	QBT2	3.5	—	0.88 (J)	1.7	12000	1.4	—	—
15-02518	49.5–50	0215-97-0045	QBT2	—	—	—	—	2200	—	0.68	—
15-02518	54.5–55	0215-97-0097	QBT2	—	—	—	—	56	—	—	—
15-02519	0–0.5	0215-97-0052	FILL	—	2 (J-)	—	—	11	—	—	—
15-02519	3–3.5	0215-97-0053	FILL	—	1.4 (J-)	—	0.01	—	—	—	—
15-02519	9–9.5	0215-97-0055	QBT2	3.1	—	—	4.3	14000	—	—	—
15-02519	10–10.5	0215-97-0054	QBT2	—	—	—	0.77 (J)	12000	—	—	40
15-02519	17–17.5	0215-97-0056	QBT2	3.5	—	—	1.9	12000	—	—	—
15-02519	22.5–23	0215-97-0057	QBT2	0.73 (J)	—	—	—	7400	—	—	—
15-02519	32.5–33	0215-97-0043	QBT2	1.3 (J)	—	1.2 (J)	0.85 (J)	19000	—	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Trimethylbenzene[1,3,5-]	Xylene (Total)	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]
Screening-Level Data										
AOC C-15-010										
15-02551	1.5–2	0215-95-0137	ALLH	0.006	—	—	—	—	—	—
15-02552	1.5–2	0215-95-0138	ALLH	—	—	—	—	—	—	—
SWMU 15-009(a)										
15-02559	0–0	0215-95-0151	SLUDGE	—	—	—	—	—	—	—
SWMU 15-011(b)										
15-02388	0.83–1.33	0215-96-0705	ALLH	0.01	—	—	—	—	—	—
SWMU 15-011(c)										
15-02557	2.5–3	0215-95-0148	ALLH	—	—	—	—	—	—	—
15-02558	1.5–2	0215-95-0150	ALLH	—	0.00157 (J)	—	—	—	—	—
AOC 15-014(g)										
15-02553	0–0.5	0215-95-0139	ALLH	—	—	—	—	—	—	—
SWMU 15-014(i)										
15-02387	1–1.5	0215-96-0703	ALLH	—	—	—	—	—	—	—
SWMU 15-014(j)										
15-02554	1.33–1.67	0215-95-0142	ALLH	0.00158 (J)	—	—	—	0.00236 (J)	0.00108 (J)	—
15-02556	2.5–3	0215-95-0146	ALLH	0.008	—	—	—	—	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Trimethylbenzene[1,3,5-]	Xylene (Total)	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]
Decision-Level Data										
AOC C-15-007										
15-02576	1–1.5	0215-97-0079	FILL	—	—	—	—	—	—	—
15-02576	2–2.5	0215-97-0080	QBT2	—	—	—	—	—	—	—
15-02577	2.5–2.92	0215-97-0083	QBT2	—	—	—	—	—	—	—
15-02578	0.5–1	0215-97-0084	FILL	—	—	—	—	—	—	—
15-02579	0–0.5	0215-97-0089	ALLH	—	—	—	—	—	—	—
15-02579	1.25–1.75	0215-97-0085	ALLH	—	—	—	—	—	—	—
15-02579	1.25–1.75	0215-97-0090	ALLH	—	—	—	—	—	—	—
15-02579	2.5–3	0215-97-0091	QBT2	—	—	—	—	—	—	—
15-02580	0.5–1	0215-97-0086	ALLH	—	—	—	—	—	—	—
15-02581	1.25–1.75	0215-97-0087	QBT2	—	—	—	—	—	—	—
AOC C-15-010										
15-02517	0–0.25	0215-97-0040	FILL	—	—	—	—	—	—	—
15-02517	3–3.5	0215-97-0041	QBT2	—	—	—	—	—	—	—
15-02517	6–6.5	0215-97-0042	QBT2	—	—	—	—	—	—	—
15-02518	0–0.5	0215-97-0046	ALLH	—	—	—	—	—	—	—
15-02518	2.5–2.75	0215-97-0047	QBT2	0.006	—	—	—	—	—	—
15-02518	5–5.5	0215-97-0048	QBT2	—	—	—	—	—	—	—
15-02518	7.5–8	0215-97-0049	QBT2	0.009	—	—	—	—	—	—
15-02518	14.5–15	0215-97-0050	QBT2	0.35 (J)	—	17	3.9	—	—	—
15-02518	24.5–25	0215-97-0051	QBT2	—	—	2.4	1.4	—	—	—

Table 10.5-5 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Trimethylbenzene[1,3,5-]	Xylene (Total)	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]
15-02518	39.5–40	0215-97-0044	QBT2	0.87 (J)	—	19	4.4	—	7.3	—
15-02518	49.5–50	0215-97-0045	QBT2	—	—	1.2	—	0.29	—	—
15-02518	54.5–55	0215-97-0097	QBT2	—	—	0.007	0.0026 (J)	—	—	—
15-02519	0–0.5	0215-97-0052	FILL	—	—	—	—	—	—	—
15-02519	3–3.5	0215-97-0053	FILL	—	—	—	—	—	—	—
15-02519	9–9.5	0215-97-0055	QBT2	—	—	25	6.1	—	7	12
15-02519	10–10.5	0215-97-0054	QBT2	28	—	18	5	—	5.6	7.7
15-02519	17–17.5	0215-97-0056	QBT2	—	—	20	4.6	—	5	11
15-02519	22.5–23	0215-97-0057	QBT2	—	—	7.5	2.3	—	—	2.3
15-02519	32.5–33	0215-97-0043	QBT2	2.5	—	20	5.8	—	6.1	7.2

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

*— = If analyzed, sample result is not detected.

Table 10.6-1
Subaggregate 9 Summary of Historical
Samples Collected in Sludge from Septic Systems at TA-15 West: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Request Number				
				High Explosives	Inorganic Chemicals	SVOC	Uranium	VOC
SWMU 15-009(f)								
15-02541	0–0	0215-95-0155	SLUDGE	71042	71501	71377	70999	71522
SWMU 15-009(k)								
15-02542	0–0	0215-95-0157	SLUDGE	71042	—*	71377	70999	71522
15-02542	0–0	0215-96-0706	SLUDGE	—	82538	—	—	—

*— = The analysis was not requested.

Table 10.6-2
Subaggregate 9 Frequency of Detection of
Inorganic Chemicals in Sludge from Septic Systems at TA-15 West: Screening-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Aluminum	SLUDGE	2	2	37.6–1680	n/a*	n/a	n/a
Antimony	SLUDGE	2	0	[10–10]	n/a	n/a	n/a
Arsenic	SLUDGE	2	2	4.49–5.79	n/a	n/a	n/a
Barium	SLUDGE	2	2	15.8–92.8	n/a	n/a	n/a
Beryllium	SLUDGE	2	2	0.0196–0.138	n/a	n/a	n/a
Cadmium	SLUDGE	2	1	0.172–0.172	n/a	n/a	n/a
Calcium	SLUDGE	2	2	77800–104000	n/a	n/a	n/a
Chromium	SLUDGE	2	1	1.48–1.48	n/a	n/a	n/a
Cobalt	SLUDGE	2	2	5.01–7.75	n/a	n/a	n/a
Copper	SLUDGE	2	1	3.51–3.51	n/a	n/a	n/a
Iron	SLUDGE	2	2	375–1200	n/a	n/a	n/a
Lead	SLUDGE	2	1	2–2	n/a	n/a	n/a
Magnesium	SLUDGE	2	2	8110–8660	n/a	n/a	n/a
Manganese	SLUDGE	2	2	70.2–84	n/a	n/a	n/a
Mercury	SLUDGE	2	2	0.097–0.159	n/a	n/a	n/a
Nickel	SLUDGE	2	2	15.5–18.5	n/a	n/a	n/a
Potassium	SLUDGE	2	2	36100–54600	n/a	n/a	n/a
Selenium	SLUDGE	2	1	1.44–1.44	n/a	n/a	n/a
Silver	SLUDGE	2	0	[10–10]	n/a	n/a	n/a
Sodium	SLUDGE	2	2	34600–85400	n/a	n/a	n/a
Thallium	SLUDGE	2	0	[10–10]	n/a	n/a	n/a
Uranium	SLUDGE	2	2	0.91–0.92	n/a	n/a	n/a
Vanadium	SLUDGE	2	2	0.693–3.6	n/a	n/a	n/a
Zinc	SLUDGE	2	2	29.8–84.2	n/a	n/a	n/a

Note: Values in brackets are below detection limits.
*n/a = Not applicable; no background value available.

Table 10.6-3
Subaggregate 9 Frequency of Detection of
Organic Chemicals in Sludge from Septic Systems at TA-15 West: Screening-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Methylene Chloride	SLUDGE	2	2	1–1.03	2/2

Note: Values in brackets are below detection limits.

Table 10.6-4
Subaggregate 9 Historical Analytical Results of Inorganic Chemicals Detected in Sludge from Septic Systems at TA-15 West: Screening-Level Data

Part 1

Location ID	Depth (ft bgs)	Sample ID	Media	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead
SWMU 15-009(f)														
15-02541	0–0	0215-95-0155	SLUDGE	1680	4.49 (J)	92.8	0.138 (J)	0.172 (J)	77800	1.48 (J)	5.01 (J)	3.51 (J)	1200	2 (J)
SWMU 15-009(k)														
15-02542	0–0	0215-95-0157	SLUDGE	—*	—	—	—	—	—	—	—	—	—	—
15-02542	0–0	0215-96-0706	SLUDGE	37.6 (J)	5.79 (J)	15.8	0.0196 (J)	—	104000	—	7.75 (J)	—	375	—

Part 2

Location ID	Depth (ft bgs)	Sample ID	Media	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Sodium	Uranium	Vanadium	Zinc
SWMU 15-009(f)													
15-02541	0–0	0215-95-0155	SLUDGE	8110	70.2	0.159 (J)	15.5	36100	1.44 (J)	34600	0.92	3.6 (J)	29.8
SWMU 15-009(k)													
15-02542	0–0	0215-95-0157	SLUDGE	—	—	—	—	—	—	—	0.91	—	—
15-02542	0–0	0215-96-0706	SLUDGE	8660	84	0.097 (J)	18.5	54600	—	85400	—	0.693 (J)	84.2

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

*— = If analyzed, sample result is less than background value.

Table 10.6-5
Subaggregate 9 Historical Analytical Results of
Organic Chemicals Detected in Sludge from Septic Systems at TA-15 West: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Methylene Chloride
SWMU 15-009(f)				
15-02541	0–0	0215-95-0155	SLUDGE	1.03 (J)
SWMU 15-009(k)				
15-02542	0–0	0215-95-0157	SLUDGE	1 (J)

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

Table 10.7-1
Subaggregate 9 Summary of Historical Samples Collected in Soil at Outfalls at TA-15 West: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Screen Type	Request Number		
					Inorganic Chemicals	SVOC	VOC
SWMU 15-014(a)							
15-02531	0–0.5	0215-95-0159	ALLH	AN95	71387	70384	—*
15-02531	2.17–2.67	0215-95-0160	ALLH	AN95	71387	70384	70809
15-02532	0–0.5	0215-95-0161	ALLH	AN95	71387	70384	—
15-02532	1.67–2.17	0215-95-0162	ALLH	AN95	71387	70384	70809
15-02533	0–0.5	0215-95-0163	ALLH	AN95	71387	70384	—
15-02533	0.5–0.83	0215-95-0164	ALLH	AN95	71387	70384	70809
15-02534	0–0.5	0215-95-0165	ALLH	AN95	71387	70384	—
SWMU 15-014(b)							
15-02535	0–0.5	0215-95-0167	ALLH	AN95	70317	70235	—
15-02535	2.5–3	0215-95-0168	ALLH	AN95	70317	70235	70446
15-02536	0–0.5	0215-95-0169	ALLH	AN95	70317	70235	—
15-02536	2.5–3	0215-95-0170	ALLH	AN95	70317	70235	70446
15-02537	0–0.33	0215-95-0171	ALLH	AN95	70317	70235	—
15-02537	0.75–1.25	0215-95-0172	ALLH	AN95	70317	70235	70446
15-02538	0–0.5	0215-95-0173	ALLH	AN95	70317	70235	—
15-02538	2.5–3	0215-95-0174	ALLH	AN95	70317	70235	70446
15-02539	0–0.41	0215-95-0175	ALLH	AN95	70317	70235	—
15-02539	0.83–1.25	0215-95-0176	ALLH	AN95	70317	70235	70446
15-02540	0–0.5	0215-95-0177	ALLH	AN95	70317	70235	—
15-02540	1.83–2.08	0215-95-0178	ALLH	AN95	70317	70235	70446

*— = The analysis was not requested.

Table 10.7-2
Subaggregate 9 Frequency of Detection of Inorganic Chemicals in Soil at Outfalls at TA-15 West: Screening-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Background Value (mg/kg)	Frequency of Detects Greater Than Background Value	Frequency of Nondetects Greater Than Background Value
Aluminum	ALLH	17	17	2120–22900	29200	0/17	0/17
Antimony	ALLH	19	13	0.0611–0.418	0.83	0/19	2/19
Arsenic	ALLH	18	18	0.674–5.85	8.17	0/18	0/18
Barium	ALLH	18	18	18–205	295	0/18	0/18
Beryllium	ALLH	18	18	0.207–1.72	1.83	0/18	0/18
Cadmium	ALLH	18	18	0.0813–0.561	0.4	4/18	0/18
Calcium	ALLH	18	18	530–3670	6120	0/18	0/18
Chromium	ALLH	17	17	1.77–12.4	19.3	0/17	0/17
Cobalt	ALLH	18	18	0.679–6.6	8.64	0/18	0/18
Copper	ALLH	18	18	1.35–17.4	14.7	2/18	0/18
Iron	ALLH	18	18	2370–17400	21500	0/18	0/18
Lead	ALLH	19	19	3.47–16	22.3	0/19	0/19
Magnesium	ALLH	17	17	387–3190	4610	0/17	0/17
Manganese	ALLH	18	18	34.3–470	671	0/18	0/18
Mercury	ALLH	17	14	0.00489–0.0267	0.1	0/17	0/17
Nickel	ALLH	19	19	1.67–18.9	15.4	1/19	0/19
Potassium	ALLH	18	18	311–1950	3460	0/18	0/18
Selenium	ALLH	19	3	0.17–0.24	1.52	0/19	0/19
Silver	ALLH	17	5	[0.917]–107	1	5/17	0/17
Sodium	ALLH	19	19	56.9–243	915	0/19	0/19
Thallium	ALLH	19	1	0.306	0.73	0/19	12/19
Vanadium	ALLH	18	18	3.03–21	39.6	0/18	0/18
Zinc	ALLH	18	18	10.9–315	48.8	3/18	0/18

Source: Background values from LANL 1998 (59730, Table 6.0-1, p. 44).
Note: Values in brackets are below detection limits.

Table 10.7-3
Subaggregate 9 Frequency of Detection of
Organic Chemicals in Soil at Outfalls at TA-15 West: Screening-Level Data

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Acenaphthene	ALLH	19	2	[0.323]–8.74	2/19
Acetone	ALLH	9	8	0.00598–0.0768	8/9
Anthracene	ALLH	19	2	[0.323]–18.3	2/19
Benzo(a)pyrene	ALLH	19	5	0.199–27.3	5/19
Benzo(b)fluoranthene	ALLH	19	6	0.322–55.4	6/19
Butanone[2-]	ALLH	9	1	[0.00107]–0.00237	1/9
Chrysene	ALLH	18	4	0.217–[13.3]	4/18
Dibenz(a,h)anthracene	ALLH	18	1	[0.323]–5.44	1/18
Dibenzofuran	ALLH	18	1	[0.323]–5.3	1/18
Dichlorobenzene[1,3-]	ALLH	25	1	0.00101–[13.3]	1/25
Fluoranthene	ALLH	18	6	[0.323]–76	6/18
Fluorene	ALLH	18	1	[0.323]–8.74	1/18
Indeno(1,2,3-cd)pyrene	ALLH	18	4	0.169–17.5	4/18
Methylene Chloride	ALLH	9	3	[0.002]–0.00353	3/9
Naphthalene	ALLH	18	1	[0.323]–5.01	1/18
Phenanthrene	ALLH	17	6	0.208–63.1	6/17
Pyrene	ALLH	17	6	[0.323]–64.2	6/17
Toluene	ALLH	9	1	0.00107–[0.002]	1/9
Xylene (Total)	ALLH	9	2	0.00107–[0.004]	2/9

Note: Values in brackets are below detection limits.

Table 10.7-4
Subaggregate 9 Historical Analytical Results of Inorganic Chemicals Greater Than Background Values in Soil at Outfalls at TA-15 West: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Antimony	Cadmium	Copper	Nickel	Silver	Thallium	Zinc
Soil Background Value				**0.83**	**0.4**	**14.7**	**15.4**	**1**	**0.73**	**48.8**
SWMU 15-014(a)										
15-02531	2.17–2.67	0215-95-0160	ALLH	—*	—	—	—	3.67	—	—
15-02532	0–0.5	0215-95-0161	ALLH	—	—	17.4	—	107 (J)	—	—
15-02532	1.67–2.17	0215-95-0162	ALLH	—	—	—	—	3.56	—	—
15-02533	0–0.5	0215-95-0163	ALLH	—	—	—	18.9	6.2	—	—
15-02533	0.5–0.83	0215-95-0164	ALLH	—	—	—	—	1.1	—	—
SWMU 15-014(b)										
15-02535	0–0.5	0215-95-0167	ALLH	—	0.422 (J)	—	—	—	0.935 (U)	—
15-02535	2.5–3	0215-95-0168	ALLH	—	—	—	—	—	0.917 (U)	—
15-02536	0–0.5	0215-95-0169	ALLH	—	0.519	14.8	—	—	0.99 (U)	315
15-02536	2.5–3	0215-95-0170	ALLH	—	—	—	—	—	0.971 (U)	—
15-02537	0–0.33	0215-95-0171	ALLH	—	—	—	—	—	0.935 (U)	52
15-02537	0.75–1.25	0215-95-0172	ALLH	0.99 (U)	—	—	—	—	0.99 (U)	—
15-02538	0–0.5	0215-95-0173	ALLH	—	0.561	—	—	—	0.943 (U)	141
15-02538	2.5–3	0215-95-0174	ALLH	—	—	—	—	—	0.935 (U)	—
15-02539	0–0.41	0215-95-0175	ALLH	—	—	—	—	—	0.926 (U)	—
15-02539	0.83–1.25	0215-95-0176	ALLH	—	0.522	—	—	—	0.926 (U)	—
15-02540	0–0.5	0215-95-0177	ALLH	—	—	—	—	—	0.943 (U)	—
15-02540	1.83–2.08	0215-95-0178	ALLH	0.962 (U)	—	—	—	—	0.962 (U)	—

Source: Background values from LANL (1998, 59730, Table 6.0-1, p. 44).
Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.
*— = If analyzed, sample result is less than background value.

Table 10.7-5
Subaggregate 9 Historical Analytical Results of
Organic Chemicals Detected in Soil at Outfalls at TA-15 West: Screening-Level Data

Location ID	Depth (ft bgs)	Sample ID	Media	Acenaphthene	Acetone	Anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Butanone[2-]	Chrysene	Dibenz(a,h)anthracene	Dibenzofuran	Dichlorobenzene[1,3-]
SWMU 15-014(a)													
15-02531	2.17–2.67	0215-95-0160	ALLH	—*	0.0194	—	—	—	—	—	—	—	—
15-02532	1.67–2.17	0215-95-0162	ALLH	—	0.0128	—	—	—	—	—	—	—	0.00101 (J)
15-02533	0.5–0.83	0215-95-0164	ALLH	—	—	—	—	—	—	—	—	—	—
SWMU 15-014(b)													
15-02535	0–0.5	0215-95-0167	ALLH	8.74	—	18.3	27.3	55.4	—	—	5.44	5.3	—
15-02535	2.5–3	0215-95-0168	ALLH	—	0.0123	—	1.31 (J)	0.849 (J)	—	0.967 (J)	—	—	—
15-02536	0–0.5	0215-95-0169	ALLH	2.05 (J)	—	3.17 (J)	8.43	12.3	—	11.7	—	—	—
15-02536	2.5–3	0215-95-0170	ALLH	—	0.00598 (J)	—	—	—	—	—	—	—	—
15-02537	0–0.33	0215-95-0171	ALLH	—	—	—	0.199 (J)	0.328 (J)	—	0.291 (J)	—	—	—
15-02537	0.75–1.25	0215-95-0172	ALLH	—	0.0444	—	—	—	—	—	—	—	—
15-02538	0–0.5	0215-95-0173	ALLH	—	—	—	0.52	1	—	—	—	—	—
15-02538	2.5–3	0215-95-0174	ALLH	—	0.0201	—	—	—	—	—	—	—	—
15-02539	0–0.41	0215-95-0175	ALLH	—	—	—	—	0.322 (J)	—	0.217 (J)	—	—	—
15-02539	0.83–1.25	0215-95-0176	ALLH	—	0.0768 (J)	—	—	—	0.00237 (J)	—	—	—	—
15-02540	1.83–2.08	0215-95-0178	ALLH	—	0.0113 (J)	—	—	—	—	—	—	—	—

Table 10.10-3 (continued)

Location ID	Depth (ft bgs)	Sample ID	Media	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylene Chloride	Naphthalene	Phenanthrene	Pyrene	Toluene	Xylene (Total)
SWMU 15-014(a)												
15-02531	2.17–2.67	0215-95-0160	ALLH	—	—	—	0.00353 (J)	—	—	—	0.00107 (J)	—
15-02532	1.67–2.17	0215-95-0162	ALLH	—	—	—	0.00291 (J)	—	—	—	—	0.00107 (J)
15-02533	0.5–0.83	0215-95-0164	ALLH	—	—	—	—	—	—	—	—	0.00112 (J)
SWMU 15-014(b)												
15-02535	0–0.5	0215-95-0167	ALLH	76	8.74	17.5	—	5.01	63.1	64.2	—	—
15-02535	2.5–3	0215-95-0168	ALLH	2.21	—	—	—	—	1.75	1.7	—	—
15-02536	0–0.5	0215-95-0169	ALLH	20.8	—	5.72	—	—	16	18.3	—	—
15-02536	2.5–3	0215-95-0170	ALLH	—	—	—	—	—	—	—	—	—
15-02537	0–0.33	0215-95-0171	ALLH	0.427	—	0.169 (J)	—	—	0.208 (J)	0.377	—	—
15-02537	0.75–1.25	0215-95-0172	ALLH	—	—	—	—	—	—	—	—	—
15-02538	0–0.5	0215-95-0173	ALLH	1.05	—	0.386	—	—	0.534	1.02	—	—
15-02538	2.5–3	0215-95-0174	ALLH	—	—	—	—	—	—	—	—	—
15-02539	0–0.41	0215-95-0175	ALLH	0.467	—	—	—	—	0.237 (J)	0.398	—	—
15-02539	0.83–1.25	0215-95-0176	ALLH	—	—	—	0.00328 (J)	—	—	—	—	—
15-02540	1.83–2.08	0215-95-0178	ALLH	—	—	—	—	—	—	—	—	—

Notes: Units are mg/kg. Data qualifiers are defined in Appendix A.

*— = If analyzed, sample result is not detected.

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Appendix A

Acronyms and Abbreviations, Glossary,
Metric Conversion Table, and Data Qualifier Definitions

A-1.0 ABBREVIATIONS AND ACRONYMS

AOC	area of concern
BV	background value
CEARP	Comprehensive Environmental Assessment and Response Program
ChemVan	CST Mobile Chemical Analytical Laboratory
COPC	chemical of potential concern
CST	Chemical Science and Technology (Division)
CVAAS	cold vapor atomic absorption spectrometry
D&D	decontamination and decommissioning
DL	detection limit
DOE	U.S. Department of Energy
DRO	diesel range organic
EP	Environmental Programs
EPA	U.S. Environmental Protection Agency
EQL	estimated quantitation limit
ER	Environmental Restoration (Project)
ERDB	environmental restoration database
FV	fallout value
GFAAS	graphite furnace atomic absorption spectrometry
HE	high explosive(s)
HEWTF	High Explosive Water Treatment Facility
HIR	historical investigation report
HMX	high-melting explosive [also 1,3,5,7-tetranitro-1,3,5,7-tetrazocine]
HWFP	Hazardous Waste Facility Permit (the Laboratory's)
ICS	interference-check samples
ID	Identification
LANL or the Laboratory	Los Alamos National Laboratory
LCS	laboratory control sample
MDA	material disposal area
MDL	method detection limit
MS	matrix spike
NAD	North American Datum
NaI	sodium iodide
NFA	no further action

NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
NOD	notice of deficiency
OU	operable unit
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCOC	potential contaminant of concern
%RSD/%	percent relative standard deviation divided by the percent difference
PETN	pentaerythritol tetranitrate
PHERMEX	Pulsed High-Energy Radiographic Machine Emitting X-rays (facility)
QA	quality assurance
QC	quality control
RADVan	CST Mobile Radiological Analysis Laboratory
RCRA	Resource Conservation and Recovery Act
RDX	research department explosive [also hexahydro-1,3,5-trinitro-1,3,5-triazine]
RFI	RCRA facility investigation
RPD	relative percent difference
RPF	Records Processing Facility
SCL	sample collection log
SMO	Sample Management Office
SOP	standard operating procedure
SOW	statement of work
SVOC	semivolatile organic compound
SWMU	solid waste management unit
TA	technical area
TAL	target analyte list
TNT	2,4,6-trinitrotoluene
TPH	total petroleum hydrocarbons
UST	underground storage tank
VCA	voluntary corrective action
VCP	vitrified clay pipe
VOC	volatile organic compound
WWII	World War II
XRF	x-ray fluorescence

A-2.0 GLOSSARY

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.

alpha radiation—A form of particle *radiation* that is highly ionizing and has low penetration. Alpha radiation consists of two protons and two neutrons bound together into a particle that is identical to a helium nucleus and can be written as He^{2+}.

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.

area of concern—(1) A *release* that warrants investigation or *remediation*, whether or not it is associated with a specific *solid waste management unit* (SWMU). (2) An area at Los Alamos National Laboratory[0] that may have had a release of a *hazardous waste* or a *hazardous*

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.

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 level—(1) The concentration of a substance in an environmental *medium* (air, water, or *soil*) that occurs naturally or is not the result of human activities. (2) In exposure *assessment*, the concentration of a substance in a defined control area over a fixed period of time before, during, or after a data-gathering operation.

background radiation—The amount of *radioactivity* naturally present in the environment, including cosmic rays from space and natural *radiation* from *soils* and rock.

background sample—A *sample* collected from an area or *site* that is similar to the one being studied but known, or thought, to be free from constituents of concern.

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

beta radiation—High-energy electrons emitted by certain types of radioactive nuclei, such as potassium-40. The beta particles emitted are a form of ionizing *radiation* also known as beta rays.

blank—A s*ample* 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.

borehole—(1) A hole drilled or bored into the ground, usually for exploratory or economic purposes. (2) A hole into which *casing*, screen, and other materials may be installed to construct a well.

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.

calibration blank—A *calibration standard* prepared to contain negligible or unmeasurable amounts of *analytes*. A calibration blank is used to establish the zero concentration point for analytical measurement *calibrations*.

calibration standard—A *sample* prepared to contain known amounts of *analytes* of interest and other constituents required for an *analysis*.

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

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, including molecules that contain *radionuclides*.

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. *Pueblo Canyon Aggregate Area Investigation Work Plan*

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. A COPC remains a concern until *exposure pathways* and receptors are evaluated in a *site* specific human-health *risk assessment*. (Also see *chemical of potential ecological concern*.)

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.

Compliance Order on Consent (Consent Order)—An enforcement *document* signed by the New Mexico Environment Department, the *U.S. Department of Energy*, and 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 *Hazardous Waste Facility Permit*.

composite sample—A *sample* collected over a temporal or spatial range that typically consists of a series of discrete equal samples which have been combined or composited.

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) Any *chemical* (including *radionuclides*) present in environmental media or on structural debris above *background levels*. (2) According to the New Mexico Environment Department (NMED) *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 NMED Consent Order, the term “contaminant” does not include radionuclides or the radioactive portion of *mixed waste*.)

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

curie—A unit of *radioactivity* defined as the quantity of any radioactive nuclide that has an activity of 3.7×10^{10} disintegrations per second (dps).

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 comprise 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.

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. (Resource Conservation and Recovery Act, 40 Code of Federal Regulations [CFR] 260.10)

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*. (40 Code of Federal Regulations [CFR] 260.10)

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.

effluent—Wastewater (treated or untreated) that flows out of a *treatment* plant, sewer, or industrial *outfall*. Generally refers to wastes discharged into surface waters.

Environmental Restoration (ER) Project—A Los Alamos National Laboratory project established in 1989 as part of a *U.S. Department of Energy* nationwide program. The ER Project's specific purposes are (1) to investigate hazardous and/or *radioactive materials* that may be present in the environment as a result of past Laboratory operations, (2) to determine if the materials currently pose an unacceptable *risk* to human health or the environment, and (3) to remediate (clean up, stabilize, or restore) those *sites* where contamination is still present.

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 Restoration Project* funding.

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

ER identification (ER ID) number—A unique identifier assigned by the *Environmental Restoration (ER) Project*'s Records Processing Facility to each *document* when it is submitted as a final *record*. The ER ID number signals the end of the document process.

error—The quantifiable difference between an observed value and the true value of a parameter being measured.

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 via *soil*, water, or food.

exposure unit—The bounded area or volume within which a person or other *receptor* could be exposed to *contaminants* that have been *released* into the environment.

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 (40 Code of Federal Regulations 260.10).

fallout radionuclides—*Radionuclides* that are present at globally elevated levels in the environment as a result of fallout from atomic weapons tests. The Los Alamos National Laboratory (the Laboratory) *background data* sets consist of *environmental surveillance samples* taken from marginal and regional locations for the following radionuclides associated with fallout: tritium, cesium-137, americium-241, plutonium-238, plutonium-239/240, and strontium-90. Samples were collected from regional and marginal locations in the Laboratory's vicinity that were (1) representative of geological media found within Laboratory boundaries, and (2) were not impacted by Laboratory operations.

Federal Register—The official daily publication for Rules, Proposed Rules, and Notices from federal agencies and organizations, as well as Executive Orders and other presidential documents.

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 matrix spike—A known amount of a *field sample* to which a known amount of a *target analyte* has been added and used to compute the proportion of the added analyte that is recovered upon *analysis*.

field reagent blank—See *field blank*.

field sample—See *sample*.

field split—A *field sample* that has been homogenized and divided, in the field, into equally representative portions which are submitted for *analysis*. (Also see *split sample*.)

fill—A material that has been imported and typically consists of disturbed *soils* mixed with crushed Bandelier Tuff or other rock types.

focused data validation—A technically based *analyte*-, *sample*-, and data-use-specific process that extends the *qualification* of data beyond 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. (Also see *data validation*.)

gamma radiation—A form of electromagnetic, high-energy ionizing *radiation* emitted from a nucleus. Gamma rays are essentially the same as x-rays (though at higher energy) and require heavy shielding, such as concrete or steel, to be blocked.

Hazardous and Solid Waste Amendments (HSWA)—The HSWA of 1984 (Public Law No. 98-616, 98 Stat. 3221), 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 New Mexico Environment Department's *Consent Order*, any constituent identified in Appendix VIII to 40 Code of Federal Regulations (CFR) 261 (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 samples—*Samples* of on-site air particulates, *soil*, or water and materials collected at waste sites that are known, or thought, to meet the definition of a hazard class per 49 Code of Federal Regulations 171.8. The term "hazardous samples" does not refer to *Resource Conservation and Recovery Act hazardous wastes* unless so stated.

hazardous waste—(1) *Solid waste* (as defined in 40 Code of Federal Regulations [CFR] 261.2) that is a listed *hazardous waste* (as provided in 40 CFR Subpart D), or a waste that 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 New Mexico Environment Department's *Consent Order*, any solid waste or combination of solid wastes which, 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 Facility Permit[0]—The *permit* 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*.

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 and by regulations promulgated under the Act.

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. (Laboratory Implementation Requirement 404-00-02.3)

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—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*. Module VIII incorporates requirements from the *Hazardous and Solid Waste Amendments*, including the requirement of *corrective actions* for *releases* from *solid waste management units*.

hydrogen-ion activity (pH)—The effective concentration (activity) of dissociated hydrogen ions (H+); a measure of the acidity or *alkalinity* of a solution that is numerically equal to 7 for neutral solutions, increases with alkalinity, and decreases as acidity increases.

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.

instrument detection limit (IDL)—A measure of instrument *sensitivity* without any consideration for contributions to the signal from reagents. The IDL is calculated as follows: Three times the average of the standard deviations obtained on three nonconsecutive days from the *analysis* of a standard solution, with seven consecutive measurements of that solution per day. The standard solution must be prepared at a concentration of three to five times the instrument manufacturer's estimated IDL.

interim measure—An action that can be implemented to minimize or prevent *migration* of *contaminants*, and to minimize or prevent actual or potential human or ecological exposure to contaminants, while long-term final *corrective action* remedies are evaluated and, if necessary, implemented.

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 which 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. (U.S. Environmental Protection Agency, January 1992. Publication 9345.3-03FS)

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 that are defined by and used in the *Environmental Restoration (ER) Project* 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 ER Project *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 Restoration Project standard operating procedure*.

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

matrix spike—An *aliquot* of a *sample* spiked with a known concentration of *target analyte(s)*. 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*. (Also see *matrix spike duplicate*.)

matrix spike duplicate—An intralaboratory duplicate *sample* spiked with a known amount of *target analyte(s)*. Spiking typically occurs before sample preparation and *analysis*. (Also see *matrix spike*.)

maximum contaminant level (MCL)—Under the Safe Drinking Water Act, the maximum permissible level of a *contaminant* in water that is delivered to any user of a public water system serving 15 or more connections and 25 or more people. MCLs are enforceable standards and take into account the feasibility and cost of attaining the standards.

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).

minimum detectable activity (MDA)—For the *analysis* of *radionuclides*, the lowest detectable *radioactivity* for a given analytical technique. The following equation is used to calculate the MDA unless otherwise noted or approved by Los Alamos National Laboratory. (Note: "MDA" here should not to be confused with *material disposal area)*:

$$\mathrm{MDA} = \frac{4.65(\mathrm{BKG})^{0.5} + 2.71}{2.22 \times \mathrm{EFF} \times \mathrm{V} \times \mathrm{T_s} \times \mathrm{Y}} \quad ,$$

where BKG = the total background counts,

EFF = the fraction detector efficiency,

V = the volume or unit weight,

T_s = the sample count duration, and

Y = the fractional chemical recovery obtained from the *tracer* recovery.

Depending on the type of analysis, other terms may also be required in the denominator (e.g., gamma abundance).

model—A schematic description of a physical, biological, or social system, theory, or phenomenon that accounts for its known or inferred properties and may be used for the further study of its characteristics.

National Pollutant Discharge Elimination System—The national program for issuing, modifying, revoking and reissuing, terminating, monitoring, and enforcing *permits* to discharge wastewater or storm water, and for imposing and enforcing pretreatment requirements under the Clean Water Act.

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

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

notice of deficiency (NOD)—A written notification from the *administrative authority* to a *facility* owner/operator following the review of a *permit* application or other permit-related plan or report. The NOD requests additional information before a decision can be made regarding the original plan or report.

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. If NMED issues a notice of disapproval for a document, it may include written instructions for modifying and resubmitting the document. (Note: Notices of disapproval have grown out of the NMED's *Consent Order*. *Notices of deficiency* are used more broadly by NMED and have been in use for a longer time. Generally, the acronym NOD is used for a notice of deficiency.)

operable units (OUs)—At Los Alamos National Laboratory, 24 areas originally established for administering the *Environmental Restoration Project*. 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.

outfall—A place where *effluent* is discharged into receiving waters.

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.

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 (40 Code of Federal Regulations 270.2).

permit modification—A change to a condition in Los Alamos National Laboratory's *Hazardous Waste Facility Permit*, initiated either by a request from the permittee or by the *administrative authority*'s action.

polychlorinated biphenyl (PCB)—Any chemical substance that is limited to the biphenyl molecule which 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.

potential release site (PRS)—A potentially contaminated *site* at Los Alamos National Laboratory. PRSs are further divided into *solid waste management units* (SWMUs) and *areas of contamination* (AOCs).

prepared sample—A *sample* that has been treated to render it amenable to *analysis*. The sample preparation may include additives or treatments such as digestate, distillate, electroplate, extract, filter retentate, filtrate, homogenate, precipitate, pulverized/sieved portion of sample, or residue.

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* which, 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*.

radiation—A stream of particles or electromagnetic waves emitted by atoms and molecules of a radioactive substance as a result of nuclear decay. The particles or waves emitted can consist of neutrons, positrons, alpha particles, beta particles, or *gamma radiation*.

radioactive material—For purposes of complying with U.S. Department of Transportation regulations, any material having a specific activity (activity per unit mass of the material) greater than 2 nanocuries per gram (nCi/g) and in which the *radioactivity* is evenly distributed.

radioactive waste—Waste that by either monitoring and *analysis* or acceptable knowledge or both has been determined to contain added (or concentrated and naturally occurring) *radioactive material* or activation products or that does not meet radiological *release* criteria.

radioactivity (radioactive decay; radioactive disintegration)—The spontaneous change in an atom by the emission of charged particles and/or gamma rays.

radionuclide—Radioactive particle (human-made or natural) with a distinct atomic weight number; can have as long a life as *soil* or water pollutants.

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.

reference set—A hard-copy compilation of reference items cited in *Environmental Restoration Project documents*.

regulatory standard—Media-specific *contaminant* concentration levels of potential concern which are mandated by federal or state legislation or regulation (e.g., the Safe Drinking Water Act, New Mexico Water Quality Control Commission regulations).

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.

reporting limit (RL)—The numerical value that an analytical laboratory (in conjunction with its client) selects for determining if a *target analyte* has been detected. Results below the RL are considered to be undetected, whereas results above the RL are considered to be detected. The RLs are not necessarily based on instrument *sensitivity*. RLs can be established at the *instrument detection limit*, *method detection limit*, *estimated quantitation limit*, or *contract-required detection limit*.

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*.

routine data validation—The process of reviewing analytical data relative to quantitative routine acceptance criteria. The objective of routine *data validation* is twofold:

1. To estimate the technical quality of the data relative to minimum national standards adopted by the *Environmental Restoration Project*
2. 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 either by sheet flow or adjacent stream channels.

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* which is exclusive of the *analytes* of interest. Together, the matrix and the analytes of interest form the sample.

screening action level (SAL)—A *chemical's medium*-specific concentration level; it is calculated by using conservative criteria below which it is generally assumed that no potential for unacceptable *risk* to human health exists. The derivation of a SAL is based on conservative exposure and on land use assumptions. However, if an applicable *regulatory standard* exists that is less than the value derived by risk-based computations, it will be used for the SAL.

sediment—(1) A mass of fragmented inorganic solid that comes from the weathering of rock and is carried or dropped by air, water, gravity, or ice. (2) A mass that is accumulated by any other natural agent and that forms in layers on the Earth's surface (e.g., sand, gravel, silt, mud, fill, or loess). (3) A solid material that is not in solution and is either distributed through the liquid or has settled out of the liquid.

site—An area or place that falls under the jurisdiction of the *U.S. Environmental Protection Agency* and/or a state for *corrective action*.

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. (U.S. Environmental Protection Agency, May 1994. Publication EPA-520/R-94/004)

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

soil—A sample media group that includes soil and can include artificial fill materials. "Soil" refers to a material that overlies bedrock and has been subject to soil-forming processes. The sample media group of soil includes soils from all soil horizons.

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* which 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 onetime spills from production areas and sites in which wastes have not been managed (e.g., product storage areas). (2) According to the New Mexico Environment Department (NMED) *Consent Order*, any discernible site at which solid waste has been placed at any time, and from which NMED 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.

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

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* which 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. (40 Code of Federal Regulations 260.10) (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.

underground storage tank—A tank located at least partially underground and designed to hold gasoline or other petroleum products or *chemicals*.

unrestricted area—Any area, whose access is not controlled by a licensee for purposes of protecting individuals from exposure to *radiation* and *radioactive materials*, and any area used for residential quarters. (10 Code of Federal Regulations 60.2) (Also see *restricted area*.)

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.

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.

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

Analytical Suites and Results
(on CD included with this document)

Appendix C

Historical Survey Location Data

Table C-1
Historical Survey Location Data

Location ID	SWMU	X Coordinate	Y Coordinate	GL Elevation
16-03-21708	16-026(l)	1611186.2	1764811.63	7582.071
16-03-21712	16-026(j)	1611897.84	1764953.2	7568.21
16-03-21713	16-026(j)	1611894.44	1764994.21	7567.437
16-06542	16-020	1612014.052	1764770.934	7511.883
16-06555	16-020	1611826.163	1764753.284	7525.127
16-06562	16-020	1611729.734	1764742.203	7531.366
16-06564	16-020	1611684.593	1764728.075	7533.698
16-06568	16-020	1611639.633	1764758.218	7537.501
16-06573	16-020	1611550.633	1764775.153	7554.734
16-06583	16-020	1611476.416	1764839.381	7561.961
16-06587	16-020	1611495.7	1764885.949	7563.141
16-06588	16-020	1611490.456	1764887.668	7562.275
16-06591	16-020	1611502.996	1764909.494	7564.018
16-06593	16-020	1612042.68	1764765.315	7510.206
16-21953	16-026(l)	1611182.24	1764787.47	7582.054
16-21954	16-026(l)	1611163.14	1764802.31	7582.411
16-21955	16-026(l)	1611185.72	1764823.9	7582.357
16-21957	16-026(i)	1611641.3	1764560.09	7573.571
16-21958	16-026(i)	1611612.66	1764568.31	7573.851
16-21959	16-026(i)	1611645.5	1764533.67	7573.147
16-21960	16-026(i)	1611609.67	1764540.58	7573.565
16-01573	16-020	1611447.07	1764862.76	7571.04
16-01574	16-020	1611449.77	1764859.2	7570.93
16-01575	16-020	1611768.46	1764720.4	7543.29
16-01576	16-020	1611767.59	1764723.75	7543.38
16-01577	16-020	1611998	1764756.55	7530.91
16-01578	16-020	1611996.02	1764760.88	7530.56
16-01579	16-020	1611448.66	1764860.92	7570.41
16-01580	16-020	1611438.11	1764838.69	7568
16-01581	16-020	1611433.26	1764817.79	7567.59
16-01582	16-020	1611431.98	1764792.9	7567.44
16-01583	16-020	1611429.82	1764768.91	7566.16
16-01584	16-020	1611767.78	1764721.69	7542.34
16-01585	16-020	1611997.22	1764758.85	7530.45
16-02168	16-020	1612362.13	1764819.33	7507.52
16-02169	16-020	1612363.54	1764821.52	7507.53
16-02170	16-020	1612362.3	1764812.89	7507.53
16-02656	Drainage	1613634.46	1764932.79	7443.18

Table C-1 (continued)

Location ID	SWMU	X Coordinate	Y Coordinate	GL Elevation
16-02703	16-019	1613267.2	1764666.7	7549.6
16-02749	Drainage	1612541.544	1764918.304	7498.6
16-02750	Drainage	1612720.96	1765028.872	7485.9
16-02751	Drainage	1612907.152	1765080.909	7475.9
16-02752	Drainage	1613060.158	1765091.988	7467.9
16-02753	Drainage	1613291.451	1765068.504	7457.2
16-02754	Drainage	1613487.824	1765042.84	7450.6
16-02755	Drainage	1613645.132	1764942.741	7442
16-05907	16-019	1613094.103	1764960.555	7517.479
16-05908	16-019	1613070.518	1764978.841	7509.65
16-05909	16-019	1613076.262	1764993.752	7498.785
16-05910	Drainage	1613086.304	1765043.101	7483.327
16-05911	Drainage	1613103.769	1765077.694	7469.564
16-06122	Drainage	1613602	1764995	0
16-06502	16-019	1612934.73	1764831.247	7553.282
16-06503	16-019	1612957.122	1764871.575	7546.895
16-06504	16-019	1613024.684	1764928.96	7538.317
16-06505	16-019	1613024.22	1764964.76	7522.462
16-06506	16-019	1613121.959	1764937.039	7527.305
16-06507	16-019	1613002.098	1764844.098	7547.211
16-06508	16-019	1613056.515	1764933.104	7534.436
16-06509	16-019	1612996.972	1764951.812	7528.865
16-06510	16-019	1612991.424	1765019.496	7498.852
16-06511	16-019	1613120.733	1764961.35	7513.667
16-06512	16-019	1613126.086	1764995.373	7499.997
16-06513	16-019	1613198.745	1764939.904	7519.921
16-06514	16-019	1613169.613	1764935.198	7523.498
16-06515	16-019	1613099.828	1764997.761	7500.872
16-06516	16-019	1613230.264	1764973.591	7499.97
16-06517	16-019	1613367.655	1764978.358	7487.678
16-06518	16-019	1613198.826	1764972.707	7502.159
16-06519	16-019	1613379.308	1764924.148	7512.278
16-06520	16-019	1613111.092	1764748.408	7550.809
16-06521	Drainage	1613083.405	1765042.727	7483.246
16-06522	16-019	1613415.578	1764868.456	7532.436
16-06523	16-019	1613447.644	1764882.406	7517.204
16-06524	16-019	1613468.491	1764897.857	7502.319
16-06525	16-019	1613482.438	1764912.18	7494.793
16-06526	16-019	1613518.496	1764932.567	7498.977

Table C-1 (continued)

Location ID	SWMU	X Coordinate	Y Coordinate	GL Elevation
16-06527	16-019	1613279.025	1764892.628	7534.412
16-06528	16-019	1613235.998	1764886.407	7538.413
16-06529	16-019	1613159.76	1764894.202	7539.999
16-06530	16-019	1613052.14	1764899.968	7542.691
16-06531	16-019	1612921.308	1764886.677	7548.647
16-06532	16-019	1612998.045	1764868.335	7547.129
16-06533	16-019	1613114.285	1764883.214	7543.172
16-06534	16-019	1613203.642	1764877.733	7538.987
16-06537	16-019	1613119.979	1764826.294	7547.997
16-06538	16-019	1613199.535	1764759.117	7547.501
16-06539	16-019	1613273.962	1764766.342	7544.938
16-01226	16-010(m)	1616487.62	1764047.68	7442.57
16-01230	16-010(m)	1616528.37	1763914.53	7420.4
16-01232	16-010(m)	1616548.58	1763847.63	7417.22
16-01233	16-010(m)	1616559.03	1763814.43	7416.96
16-01234	16-010(m)	1616569.29	1763781.19	7414.05
16-01235	16-010(m)	1616579.22	1763748.57	7410.04
16-01236	16-010(m)	1616590.92	1763710.86	7404.5
16-01237	16-010(l)	1616325.89	1763792.53	7413.57
16-01239	16-010(l)	1616359.04	1763850.95	7412.86
16-01240	16-010(l)	1616373.16	1763876.76	7414.02
16-01246	16-010(l)	1616440.26	1763996.02	7432.68
16-01272	16-010(i)	1616753.4	1763959.28	7425.48
16-01278	16-010(i)	1616766.02	1763960.93	7426.23
16-01282	16-010(k)	1616480.82	1764043.12	7442.12
16-01283	16-010(k)	1616479.89	1764014.21	7438.97
16-01284	16-010(k)	1616478.77	1763984.99	7434.34
16-01285	16-010(k)	1616477.8	1763956.16	7427.78
16-01286	16-010(k)	1616476.85	1763927.1	7423.25
16-01287	16-010(k)	1616475.73	1763898.24	7420.73
16-01288	16-010(k)	1616474.73	1763869.48	7417.81
16-01289	16-010(k)	1616473.7	1763839.97	7414.89
16-01290	16-010(k)	1616472.64	1763810.97	7411.56
16-01296	16-010(i)	1616757.97	1763957.67	7426.01
16-01297	16-010(i)	1616763.63	1763970.87	7424.77
16-01298	16-010(i)	1616765.98	1763971.19	7425.53
16-01299	16-010(i)	1616762.36	1763972.16	7425.18
16-01300	16-010(i)	1616743.45	1763976.45	7424.53
16-01301	16-010(i)	1616727.31	1763928.78	7421.86

Table C-1 (continued)

Location ID	SWMU	X Coordinate	Y Coordinate	GL Elevation
16-01302	16-010(i)	1616720.23	1763877.02	7418.26
16-01303	16-010(i)	1616697.5	1763814.45	7412.44
16-01304	16-010(n)	1616526.23	1764050.41	7438.39
16-01307	16-010(n)	1616599.59	1764018.64	7434.21
16-01311	16-010(n)	1616701.24	1763980.64	7429.72
16-01313	16-010(i)	1616749.6	1763960.75	7425.28
16-01329	16-028(a)	1616434.42	1763560.26	7384.23
16-01330	16-028(a)	1616432.11	1763524.91	7372.8
16-01331	16-028(a)	1616437.24	1763499.96	7366.74
16-01332	16-028(a)	1616452.76	1763464.11	7363.03
16-01333	16-028(a)	1616453.99	1763445.9	7360.71
16-01341	16-005(g)	1616585.42	1763699.73	7404.28
16-01349	16-010(h)	1616480.98	1764065.8	7444.39
16-01351	16-010(h)	1616501.4	1764075.3	7446.3
16-01352	16-010(h)	1616493	1764068.92	7444.99
16-01660	16-005(g)	–	–	–
16-03-21917	16-010(h)	–	–	–
16-03-21918	16-010(h)	–	–	–
16-04193	C-16-017	1610694.97	1764245.67	7604.62
16-04194	C-16-017	1610696.72	1764253.87	7604.26
16-05870	16-017(i)-99	1610308.1	1763177.1	7640
16-05874	16-017(i)-99	1610346.8	1763232.9	7640.7
16-05878	16-017(i)-99	1610353.3	1763262.1	7641.2
16-05879	16-017(i)-99	1610348.8	1763268.5	7641.5
16-09002	16-016(b)	–	–	–
16-09004	16-016(b)	–	–	–
16-09005	16-016(b)	–	–	–
16-04143	16-034(e)	1611125.4	1764139.43	7590.66
16-04145	16-034(e)	1611114.16	1764154.63	7591.01
16-04147	16-034(c)	1611121.22	1764163.29	7590.46
16-04151	16-034(c)	1611128.38	1764166.18	7590.22
16-04152	16-034(f)	1611071.26	1764193.14	7593.53
16-04156	16-034(f)	1611083.07	1764190.89	7592.28
16-04158	16-034(d)	1611061.52	1764205.18	7594.38
16-04161	16-034(d)	1611055.44	1764205.07	7594.67
16-04162	16-024(f)	1611097.95	1764270.3	7594.69
16-04165	16-024(f)	1611100.3	1764269.6	7594.62
16-04168	16-024(g)	1611049.59	1764313.25	7598.19
16-04171	16-024(g)	1611049.87	1764311.87	7598.01

Table C-1 (continued)

Location ID	SWMU	X Coordinate	Y Coordinate	GL Elevation
16-04174	16-025(n)	1611237.42	1764348.97	7593.22
16-04175	16-025(n)	1611222.26	1764353.11	7594.09
16-04179	16-025(m)	1611147.55	1764340.9	7595.87
16-04181	16-025(m)	1611137.06	1764336.02	7595.86
16-04184	16-025(o)	1611039.26	1764418.52	7595.8
16-04186	16-025(o)	1611046.68	1764409.01	7595.9
16-04188	16-024(h)	1611286.16	1764230.93	7590.02
16-04189	16-024(h)	1611283.39	1764270.87	7590.43
16-02397	16-029(q)	1611082.2	1763554.61	7598.6
16-02399	16-029(q)	1611051.31	1763531.37	7599.81
16-02400	16-029(q)	1611108.17	1763525.69	7600.63
16-02402	16-029(q)	1611071.83	1763529.87	7600.21
16-02404	16-029(q)	1611039.12	1763553.43	7601.62
16-02405	16-029(q)	1611040.34	1763573.71	7601.45
16-02406	16-029(q)	1611037.54	1763615.31	7601.07
16-02407	16-029(q)	1611098.83	1763574.79	7598.6
16-02412	16-029(q)	1611116.97	1763532.51	7598.6
16-02541	C-16-064	1611092.99	1763501.03	7605.63
16-02580	16-017(f)-99	1611133.9	1763554.58	7604
16-02582	16-017(f)-99	1611127.32	1763549.98	7603.66
16-03381	16-029(h2)	1611849.683	1763448.675	7595.25
16-03382	16-029(h2)	1611845.773	1763428.781	7595.807
16-03383	16-029(h2)	1611841.824	1763409.161	7597.314
16-03386	16-029(h2)	1611871.839	1763561.472	7592.057
16-03388	16-029(h2)	1611858.28	1763492.467	7594.152
16-03389	16-029(h2)	1611841.587	1763408.186	7597.328
16-03393	16-029(h2)	1611823.411	1763316.497	7596.649
16-03396	16-029(h2)	1611805.319	1763216.072	7599.792
16-03397	16-029(h2)	1611799.535	1763179.962	7602.004
16-03399	16-029(h2)	1611884.461	1763242.382	7598.418
16-03401	16-025(h)	1611929.636	1763200.757	7599.193
16-04114	16-025(d)	1611864.09	1763145.79	7603.21
16-04115	16-025(j)	1611866	1763101.43	7603.19
16-04118	16-025(j)	1611875.42	1763087.06	7603.27
16-04119	16-025(j)	1611865.74	1763089.4	7603.43
16-04123	16-025(g)	1611808.65	1763141.13	7602.97
16-04124	16-025(g)	1611816.25	1763150.12	7603
16-04125	16-025(g)	1611808.15	1763151.08	7602.63
16-04129	16-025(h)	1611888.74	1763216.42	7599.56

Table C-1 (continued)

Location ID	SWMU	X Coordinate	Y Coordinate	GL Elevation
16-04132	16-025(h)	1611878.7	1763230.12	7599.08
16-04136	16-024(c)	1611350.09	1763626.06	7600.02
16-04139	16-025(b)	1611096.66	1763901.56	7598.8
16-05794	16-025(i)	1611962.029	1763147.558	7599.909
16-05796	16-025(j)	1611906.489	1763094.558	7602.578
16-01412	16-003(i)	1612856.68	1763994.45	7556.57
16-01413	16-003(i)	1612876.5	1763935.49	7555.44
16-01414	16-003(i)	1612884.91	1763915.44	7555.17
16-01415	16-003(i)	1612889.13	1763902.21	7554.98
16-01416	16-003(i)	1612931.32	1763786.03	7554.45
16-01417	16-003(i)	1612963.74	1763712.97	7554.02
16-01419	16-003(j)	1613125.77	1763677.03	7554.31
16-01420	16-003(j)	1613136.32	1763678.96	7553.72
16-01421	16-003(j)	1613149.69	1763695.1	7554.03
16-01422	16-003(j)	1613162.63	1763708.83	7553.39
16-01423	16-003(j)	1613217.63	1763812.64	7552.72
16-01424	16-003(j)	1613326.63	1763931.46	7551.28
16-01428	16-003(h)-99	1612453.36	1763498.16	7576.16
16-01429	16-003(h)-99	1612460.69	1763516.8	7576.56
16-01430	16-003(h)-99	1612462.03	1763537.18	7576.08
16-01431	16-003(h)-99	1612458.11	1763558.06	7575.87
16-01432	16-003(h)-99	1612549.15	1763645.99	7567.71
16-01433	16-003(h)-99	1612692.8	1763628.72	7565.61
16-01650	16-003(i)	1612874.63	1763942.17	7554.98
16-01651	16-003(j)	1613129.89	1763677.25	7554.31
16-01652	16-003(h)-99	1612459.09	1763505.52	7575.36
14-01028	14-010	1619694.7	1763954.9	7395.8
14-01029	14-010	1619701	1763934.8	7393.1
14-01030	14-010	1619714.8	1763924.6	7390.7
14-01031	14-002(a)	1619682.7	1763973.3	7401.3
14-01032	14-001(f)	1619687.4	1764009.8	7402.7
14-01033	14-001(f)	1619682	1764010.8	7402.6
14-01034	14-001(f)	1619679.9	1764010.8	7398.9
14-01036	14-002(a)	1619680.5	1763965.1	7401.1
14-01037	14-002(a)	1619684.809	1763971.492	7399.86
14-01038	14-002(a)	1619692.557	1763957.087	7395.4
14-01039	14-010	1619695.985	1763963.56	7397.25
14-01040	14-010	1619720.308	1763926.41	7389.87
14-01041	14-010	1619725.009	1763926.517	7389.33

Table C-1 (continued)

Location ID	SWMU	X Coordinate	Y Coordinate	GL Elevation
14-01042	14-010	1619729.549	1763924.218	7388.49
14-01043	14-010	1619733.96	1763920.526	7387.91
14-01044	14-009	1619597.1	1763974.9	7390.4
14-01045	14-009	1619621	1763977.8	7400.3
14-01046	14-009	1619613.6	1763967	7392.2
14-01047	14-009	1619606.5	1763959.1	7386.7
14-01048	14-009	1619604.9	1763942.8	7381
14-01049	14-009	1619574.5	1763939.1	7370.6
14-01050	14-009	1619542.3	1763911.4	7363.4
14-01051	14-002(a)-99	1619504	1764067.1	7381.6
14-01054	14-006	1620499.8	1763896	7352.9
14-01055	14-006	1620519.9	1763876.2	7349
14-01056	14-006	1620585.6	1763857.8	7342.8
14-01066	C-14-003	1620302	1764120	7385.4
14-01067	C-14-003	1620310.3	1764127.2	7383.2
14-01068	C-14-004	1620264.1	1763973	7386.5
14-01069	C-14-004	1620260.9	1763957.8	7386.1
14-01070	C-14-005	1620370.7	1764170.5	7378.3
14-01071	C-14-005	1620377.5	1764168.2	7377.3
14-01074	C-14-007	1620172.3	1763976.4	7388.5
14-01075	C-14-007	1620169.8	1763970.5	7387.9
14-01076	14-006	1620424.9	1763959	7379.8
14-01077	14-006	1620467.6	1763937.9	7367.7
14-01078	14-006	1620477.1	1763933.3	7364.1
14-01079	14-006	1620486.8	1763917.6	7358
14-01080	14-007	1620600	1764141.3	7365.3
14-01081	14-007	1620620.3	1764136.1	7364.5
14-01082	14-007	1620464.1	1764117.9	7375
14-01083	14-007	1620565.8	1764160	7365.7
14-01085	14-007	1620576.3	1764159.1	7365.6
14-01086	14-007	1620587.7	1764159.4	7365.3
14-01089	14-002(c)-99	1620710.3	1763851.9	7355
14-01090	14-002(c)-99	1620704.4	1763861.7	7355.6
14-01091	14-002(c)-99	1620734.7	1763858.3	7358.8
14-01092	14-002(c)-99	1620744.6	1763856.8	7354.7
14-01095	C-14-001	1619161.9	1764213.3	7423.2
14-01096	C-14-001	1619169.1	1764221.6	7426.2
14-01097	C-14-009	1620814	1763926.8	7350.5
14-01098	C-14-009	1620818.9	1763924	7350.4

Table C-1 (continued)

Location ID	SWMU	X Coordinate	Y Coordinate	GL Elevation
14-01099	14-002(c)-99	1620740.4	1763792	7341.7
14-01100	14-002(c)-99	1620733	1763764.6	7336.4
14-01103	C-14-008	–	–	–
14-01104	C-14-008	–	–	–
15-02300	15-007(b)	1623786.851	1759845.571	7221.1
15-02301	15-007(b)	1623836.851	1759845.571	7221.7
15-02302	15-007(b)	1623786.851	1759795.571	7218.05
15-02303	15-007(b)	1623836.851	1759795.571	7219.69
15-02304	15-007(b)	1623786.851	1759745.571	7216.24
15-02305	15-007(b)	1623836.851	1759745.571	7217.62
15-02306	15-007(b)	1623886.851	1759745.571	7218.27
15-02307	15-007(b)	1623836.851	1759695.571	7216.15
15-02308	15-007(b)	1623886.851	1759695.571	7216.1
15-02310	15-007(b)	1623886.851	1759645.571	7206.17
15-02311	15-007(b)	1623936.851	1759645.571	7214.2
15-02315	15-004(g)	1624152.6	1759754.3	7221.1
15-02321	15-004(g)	1624274.6	1759595.3	7217.5
15-02323	15-004(g)	1624474.2	1759644.7	7207.1
15-02326	15-004(g)	1624274.2	1759544.6	7215
15-02327	15-004(g)	1624374.2	1759544.6	7212.5
15-02331	15-004(g)	1624274.1	1759444.6	7206.5
15-02343	15-008(c)	1624339	1759372.7	7199.2
15-02344	15-008(c)	1624345.3	1759394.9	7197.9
15-02347	C-15-001	1624408.8	1759444.7	7204.7
15-02348	C-15-001	1624416.4	1759436	7204.3
15-02387	15-014(i)	–	–	–
15-02388	15-011(b)	–	–	–
15-02517	C-15-010	1622833.072	1762570.354	7225.47
15-02518	C-15-010	1622818.462	1762573.781	7225.49
15-02519	C-15-010	1622823.95	1762572.12	7225.37
15-02531	15-014(a)	1622357.9	1761423	7265.7
15-02532	15-014(a)	1622314.6	1761433	7263
15-02533	15-014(a)	1622298.9	1761466.5	7260.7
15-02534	15-014(a)	1622243.4	1761506.3	7252
15-02535	15-014(b)	1622514.1	1761490.7	7267.9
15-02536	15-014(b)	1622496	1761465.7	7265.5
15-02537	15-014(b)	1622470.6	1761553.2	7263.2
15-02538	15-014(b)	1622485.9	1761489.3	7265.4
15-02539	15-014(b)	1622431.9	1761610.5	7258.8

Table C-1 (continued)

Location ID	SWMU	X Coordinate	Y Coordinate	GL Elevation
15-02540	15-014(b)	1622406.4	1761655.7	7252.3
15-02541	15-009(f)	1622566.9	1761590.8	7267.6
15-02542	15-009(k)	1622514	1761582.7	7263.9
15-02551	C-15-010	1622828.4	1762573	7225.3
15-02552	C-15-010	1622821.4	1762568.2	7225.3
15-02553	15-014(g)	1622771.2	1762689.8	7224.9
15-02554	15-014(j)	1622737.6	1762693.7	7224
15-02555	15-014(j)	1622719.7	1762693.7	7224.2
15-02556	15-014(j)	1622703.2	1762690	7223.4
15-02557	15-011(c)	1622496.4	1762489.3	7157.5
15-02558	15-011(c)	1622565.6	1762400.1	7219.4
15-02559	15-009(a)	1622715.1	1762596.1	7224.6
15-02575	C-15-007	1622648.116	1762577.836	7224.4
15-02576	C-15-007	1622645.969	1762578.667	7224.29
15-02577	C-15-007	1622644.089	1762580.085	7223.99
15-02578	C-15-007	1622641.249	1762583.474	7223.96
15-02579	C-15-007	1622639.885	1762584.886	7223.74
15-02580	C-15-007	1622640.204	1762579.404	7224.23
15-02581	C-15-007	1622645.246	1762584.436	7224.05

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Appendix D

Field-Screening Sample Data

Table D-1
Subaggregate 1, Silver Outfall, SWMU 16-020, Pre-Excavation Field-Screening Data

Pre-Excavation XRF Field Screening Data Table					
PRS 16-020, TA-16, Ag Outfall Channel Width Delineation					
Sample Location	Date Collected	Time Collected	Ag ppm	Crlo ppm	Crhi ppm
300'-7.5' North	9/12/00	1428	3,195	0	150,000
300'-5.0' North	9/12/00	1427	757	0	170,000
300'-2.5' North	9/12/00	1426	3,634	0	0
300'-2.5' South	9/12/00	1415	508	0	0
300'-5.0' South	9/12/00	1420	278	0	0
300'-7.5' South	9/12/00	1421	468	0	0
300'-10.0' South	9/12/00	1422	524	0	0
300'-12.5' South	9/12/00	1423	652	0	0
300'-15.0' South	9/12/00	1424	122	0	0
425'-20.0' North	9/12/00	1450	306	310	0
425'-17.5' North	9/12/00	1448	539	0	22,700
425'-15.0' North	9/12/00	1447	1,200	260	0
425'-12.5' North	9/12/00	1445	2,354	230	0
425'-10.0' North	9/12/00	1442	819	150	0
425'-7.5' North	9/12/00	1440	214	150	0
425'-5.0' North	9/12/00	1436	4,272	420	0
425'-2.5' North	9/12/00	1435	5,423	290	0
425'-2.5' South	9/12/00	1451	3,734	0	560
425'-5.0' South	9/12/00	1452	2,672	140	0
425'-7.5' South	9/12/00	1454	266	140	0
526'-15.0' North	9/12/00	1518	512	110	310
526'-12.5' North	9/12/00	1517	753	90	0
526'-10.0' North	9/12/00	1516	530	360	0
526'-7.5' North	9/12/00	1515	797	31	270
526'-5.0' North	9/12/00	1514	1,227	23	0
526'-2.5' North	9/12/00	1513	463	410	530
526'-2.5' South	9/12/00	1505	70	57,000	0
526'-5.0' South	9/12/00	1507	44	40,000	0
526'-7.5' South	9/12/00	1510	23	61,000	420
526'-10.0' South	9/12/00	1511	30	330	0
526'-12.5' South	9/12/00	1512	0	250	0
738'-7.5' North	9/12/00	1527	153	0	0
738'-5.0' North	9/12/00	1526	657	230	0
738'-2.5' North	9/12/00	1526	305	170	580
738'-2.5' South	9/12/00	1530	195	0	0
738'-5.0' South	9/12/00	1532	56	190	0
738'-7.5' South	9/12/00	1534	59	360	0
738'-10.0' South	9/12/00	1535	0	0	0

Table D-2
Subaggregate 1, Silver Outfall, SWMU 16-020, Post-Excavation Field-Screening Data

PRS 16-020, TA-16, Silver Outfall

Post-Excavation XRF Field Screening Sample Data Table

Sample ID	Location ID	Description	Collection Date	Collection Time	Ag (1) ppm	Ag (2) ppm	Ag (3) ppm	Ag (avg) ppm	CrLo (1) ppm	CrLo (2) ppm	CrLo (3) ppm	CrLo (avg) ppm	CrHi (1) ppm	CrHi (2) ppm	CrHi (3) ppm	CrHi (avg) ppm	PAH (ppm)	OD450
RE16-00-1700	16-06539	738' South	9/22/00	1335	48	32	21	34	0	0	0	0	0	0	0	0	N/A	N/A
RE16-00-1701	16-06540	738' Center	9/22/00	1325	0	20	0	7	132	176	0	103	0	0	0	0	N/A	N/A
RE16-00-1702	16-06541	738' North	9/22/00	1330	306	252	254	271	0	212	218	143	0	0	0	0	N/A	N/A
RE16-00-1703	16-06542	700' South	9/22/00	1338	0	0	130	43	830	850	0	560	0	0	430	143	N/A	N/A
RE16-00-1704	16-06543	700' Center	9/22/00	1340	29	39	50	39	0	0	133	44	0	0	290	97	N/A	N/A
RE16-00-1705	16-06544	700' North	9/22/00	1342	44	98	122	88	0	119	0	40	270	0	0	90	N/A	N/A
RE16-00-1706	16-06545	650' South	9/22/00	1347	556	528	533	539	0	0	0	0	0	0	440	147	N/A	N/A
RE16-00-1707	16-06546	650' Center	9/22/00	1345	126	144	84	118	100	0	0	33	0	0	380	127	N/A	N/A
RE16-00-1708	16-06547	650' North	9/22/00	1348	0	0	0	0	0	0	0	0	0	0	0	0	N/A	N/A
RE16-00-1709	16-06548	600' South	9/22/00	1408	339	295	304	313	125	0	0	42	0	0	0	0	N/A	N/A
RE16-00-1710	16-06549	600' Center	9/22/00	1406	234	270	241	246	0	0	233	78	0	0	398	133	N/A	N/A
RE16-00-1711	16-06550	600' North	9/22/00	1410	220	190	227	212	0	0	0	0	0	0	0	0	N/A	N/A
RE16-00-1712	16-06551	550' South	9/22/00	1412	207	211	191	203	142	0	0	47	0	0	0	0	N/A	N/A
RE16-00-1713	16-06552	550' Center	9/22/00	1414	339	317	341	332	140	229	223	197	0	0	0	0	N/A	N/A
RE16-00-1714	16-06553	550' North	9/22/00	1416	263	216	226	235	0	158	144	100	0	0	0	0	N/A	N/A
RE16-00-1715	16-06554	500' South	9/22/00	1425	221	183	196	200	79	279	220	193	0	710	0	237	N/A	N/A
RE16-00-1716	16-06555	500' Center	9/22/00	1427	298	239	39	192	0	0	0	0	0	0	0	0	N/A	N/A
RE16-00-1717	16-06556	500' North	9/22/00	1428	1413	1468	1543	1475	0	144	0	48	0	0	0	0	N/A	N/A
RE16-00-1718	16-06557	450' South	9/22/00	1521	105	91	145	114	0	0	0	0	0	0	0	0	N/A	N/A
RE16-00-1719	16-06558	450' Center	9/22/00	1522	104	71	93	89	0	0	133	44	0	0	0	0	N/A	N/A
RE16-00-1720	16-06559	450' North	9/22/00	1524	1231	1218	1210	1220	91	0	0	30	0	0	0	0	N/A	N/A
RE16-00-1721	16-06560	400' South	9/22/00	1528	129	121	110	120	135	0	0	45	460	0	390	283	N/A	N/A
RE16-00-1722	16-06561	400' Center	9/22/00	1529	257	257	276	263	0	0	0	0	0	0	0	0	N/A	N/A
RE16-00-1723	16-06562	400' North	9/22/00	1530	1709	1659	1653	1674	320	260	160	247	0	0	0	0	N/A	N/A
RE1[illegible]00-1724	16-06563	350' South	9/22/00	1531	217	212	240	223	0	0	113	38	0	0	0	0	N/A	N/A
RE[illegible]-1725	16-06564	350' Center	9/22/00	1533	624	646	660	643	0	163	86	83	0	0	0	0	N/A	N/A
RE16-00-1726	16-06565	350' North	9/22/00	1534	128	158	164	150	86	0	0	29	0	0	0	0	N/A	N/A
RE16-00-1727	16-06566	300' South	9/22/00	1537	268	294	289	284	0	0	207	69	0	280	0	93	N/A	N/A
RE16-00-1728	16-06567	300' Center	9/22/00	1536	493	448	509	483	0	96	0	32	450	0	0	150	N/A	N/A
RE16-00-1729	16-06568	300' North	9/22/00	1538	5001	5075	5040	5039	190	0	0	63	0	0	0	0	N/A	N/A
RE16-00-1730	16-06569	250' South	9/22/00	1541	941	940	889	923	85	0	193	93	0	0	0	0	N/A	N/A
RE16-00-1731	16-06570	250' Center	9/22/00	1540	444	456	418	439	0	0	72	24	0	0	350	117	N/A	N/A
RE16-00-1732	16-06571	250' North	9/22/00	1543	1366	1424	1487	1426	141	0	0	47	0	0	0	0	N/A	N/A
RE16-00-1733	16-06572	200' South	9/22/00	1544	1987	1895	2038	1973	290	210	128	209	0	0	0	0	N/A	N/A
RE16-00-1734	16-06573	200' Center	9/22/00	1545	179	223	186	196	290	200	130	207	0	600	0	200	N/A	N/A
RE16-00-1735	16-06574	200' North	9/22/00	1546	2451	3118	3086	2885	0	230	0	77	0	0	610	203	N/A	N/A
RE16-00-1736	16-06575	150' South	9/22/00	1548	72	113	119	101	0	0	0	0	0	0	310	103	N/A	N/A

Table D-2 (continued)

PRS 16-020, TA-16, Silver Outfall

Post-Excavation XRF Field Screening Sample Data Table

Sample ID	Location ID	Description	Collection Date	Collection Time	Ag (1) ppm	Ag (2) ppm	Ag (3) ppm	Ag (avg) ppm	CrLo (1) ppm	CrLo (2) ppm	CrLo (3) ppm	CrLo (avg) ppm	CrHi (1) ppm	CrHi (2) ppm	CrHi (3) ppm	CrHi (avg) ppm	PAH (ppm)	OD450
RE16-00-1737	16-06576	150' Center	9/22/00	1549	852	859	860	857	0	0	91	30	0	0	0	0	N/A	N/A
RE16-00-1738	16-06577	150' North	9/22/00	1550	537	548	577	554	0	0	90	30	0	0	0	0	N/A	N/A
RE16-00-1739	16-06578	100' East	9/22/00	1553	1098	1189	1251	1179	0	0	192	64	0	0	0	0	<1.0	0.07
RE16-00-1740	***16-06579***	***100' Center***	***9/22/00***	***1554***	***3727***	***3815***	***3817***	***3786***	***404***	***368***	***349***	***374***	***630***	***780***	***350***	***580***	***>1.0***	***0.04***
RE16-00-1741	16-06580	100' West	9/22/00	1555	2901	2709	2879	2830	0	232	94	109	0	550	0	183	>1.0	0.03
RE16-00-1742	***16-06581***	***75' East***	***9/22/00***	***1556***	***1248***	***1345***	***1282***	***1292***	***0***	***0***	***180***	***53***	***0***	***280***	***0***	***93***	***>1.0***	***0.04***
RE16-00-1743	16-06582	75' Center	9/22/00	1557	3043	3140	3045	3076	86	210	316	204	0	0	0	0	<1.0	0.06
RE16-00-1744	***16-06583***	***75' West***	***9/22/00***	***1558***	***3858***	***3986***	***4026***	***3957***	***264***	***0***	***182***	***149***	***0***	***630***	***0***	***210***	***>1.0***	***0.03***
RE16-00-1745	16-06584	50' East	9/22/00	1601	1841	2051	2036	1976	0	17030	105	5712	0	0	0	0	>1.0	0.03
RE16-00-1746	***16-06585***	***50' Center***	***9/22/00***	***1600***	***1776***	***1859***	***1793***	***1809***	***169***	***0***	***93***	***87***	***0***	***510***	***0***	***170***	***>1.0***	***0.03***
RE16-00-1747	16-06586	50' West	9/22/00	1602	3688	3839	3964	3830	280	0	200	160	0	450	0	150	>1.0	0.03
RE16-00-1748	***16-06587***	***25' East***	***9/22/00***	***1605***	***77***	***55***	***26***	***53***	***0***	***140***	***191***	***110***	***0***	***0***	***0***	***0***	***ND***	***0.15***
RE16-00-1749	16-06588	25' Center	9/22/00	1605	870	990	1146	1002	194	0	0	65	0	0	0	0	>1.0	0.03
RE16-00-1750	***16-06589***	***25' West***	***9/22/00***	***1604***	***2073***	***2196***	***2155***	***2141***	***0***	***232***	***174***	***135***	***0***	***0***	***0***	***0***	***>1.0***	***0.04***
RE16-00-1751	16-06590	0' East	9/22/00	1611	54	72	43	56	104	0	0	35	0	0	0	0	>1.0	0.04
RE16-00-1752	***16-06591***	***0' Center***	***9/22/00***	***1610***	***89***	***78***	***76***	***74***	***103***	***210***	***117***	***143***	***0***	***0***	***0***	***0***	***<1.0***	***0.12***
RE[illegible]0-1753	16-06592	0' West	9/22/00	1611	42	267	249	186	142	0	133	92	0	0	0	0	ND	0.16

Bold & Italic identify readings >1,000 ppm total Ag

Table D-3
Subaggregate 2, MDA-R, SWMU 16-019, Field-Screening Data

Screening Sample ID	Location ID	Location Description	Date Collected	Depth Interval Collected	Associated Sample Ids	Ba Screening Result (in ppm)	HE Spot Test Results	Rad Screening Results (cpm)
RE16-00-1569	16-6532	BH-1	9/9/00	1.5-2.5 ft	RE16-00-0230	441	Negative	12100
RE16-00-1570	16-6532	BH-1	9/9/00	2.5-5.0 ft		248.8	Negative	12400
RE16-00-1571	16-6532	BH-1	9/9/00	5.0-6.0 ft		137.9	Negative	11100
RE16-00-1572	16-6532	BH-1	9/9/00	6.0-7.5 ft		47.5	Negative	11700
RE16-00-1573	16-6532	BH-1	9/9/00	7.5-8.5 ft		187.91	Negative	12230
RE16-00-1574	16-6532	BH-1	9/9/00	8.5-10.0 ft	RE16-00-0237	225	Negative	13100
RE16-00-1575	16-6533	BH-2	9/10/00	1.0-2.5 ft		525	Negative	11100
RE16-00-1576	16-6533	BH-2	9/10/00	2.5-3.5 ft	RE16-00-0231	569	Negative	12100
RE16-00-1577	16-6533	BH-2	9/10/00	3.5-5.0 ft		523	Negative	13100
RE16-00-1578	16-6533	BH-2	9/10/00	5.0-6.0 ft		165.2	Negative	11200
RE16-00-1579	16-6533	BH-2	9/10/00	6.0-7.5 ft		221.5	Negative	11400
RE16-00-1580	16-6533	BH-2	9/10/00	7.5-8.5 ft		175.9	Negative	11950
RE16-00-1581	16-6533	BH-2	9/10/00	9.0-10.0 ft	RE16-00-0238	65.2	Negative	11950
RE16-00-1582	16-6534	BH-3	9/10/00	0-1.0 ft		523	Negative	13420
RE16-00-1583	16-6534	BH-3	9/10/00	1.0-2.5 ft	RE16-00-0232	596	Negative	13490
RE16-00-1584	16-6534	BH-3	9/10/00	2.5-3.5 ft		153.3	Negative	12400
RE16-00-1585	16-6534	BH-3	9/10/00	3.5-5.0 ft		171.3	Negative	13010
RE16-00-1586	16-6534	BH-3	9/10/00	5.0-6.0 ft		99.3	Negative	11400

Table D-3 (continued)

Screening Sample ID	Location ID	Location Description	Date Collected	Depth Interval Collected	Associated Sample Ids	Ba Screening Result (in ppm)	HE Spot Test Results	Rad Screening Results (cpm)
RE16-00-1587	16-6534	BH-3	9/10/00	6.0-7.5 ft	RE16-00-0239	125.3	Negative	12160
RE16-00-1588	16-6527	BH-4	9/10/00	0-1.0 ft	RE16-00-0225	423	Negative	12400
RE16-00-1589	16-6527	BH-4	9/10/00	1.0-2.5 ft		497	Negative	12100
RE16-00-1590	16-6527	BH-4	9/10/00	2.5-3.5 ft		395	Negative	11200
RE16-00-1591	16-6527	BH-4	9/10/00	3.5-5.0 ft		242.9	Negative	10500
RE16-00-1592	16-6527	BH-4	9/10/00	5.0-6.0 ft		238	Negative	12800
RE16-00-1609	16-6527	BH-4	9/10/00	6.0-7.5 ft			Negative	
RE16-00-1610	16-6528	BH-5	9/10/00	1.0-2.5 ft	RE16-00-0226	484	Negative	12200
RE16-00-1611	16-6528	BH-5	9/10/00	2.5-3.5 ft		397	Negative	12000
RE16-00-1612	16-6528	BH-5	9/10/00	3.5-5.0 ft	RE16-00-0256	332	Negative	12100
RE16-00-1613	16-6529	BH-6	9/10/00	0-1.0 ft			Negative	
RE16-00-1614	16-6529	BH-6	9/10/00	1.0-2.5 ft	RE16-00-0234	437	Negative	12400
RE16-00-1615	16-6529	BH-6	9/10/00	2.5-3.5 ft		427	Negative	12250
RE16-00-1616	16-6529	BH-6	9/10/00	3.5-5.0 ft		413	Negative	12500
RE16-00-1617	16-6529	BH-6	9/10/00	5.0-6.0 ft		297	Negative	12200
RE16-00-1618	16-6529	BH-6	9/10/00	6.0-7.5 ft		203.7	Negative	12200
RE16-00-1619	16-6529	BH-6	9/10/00	7.5-8.5 ft			Negative	
RE16-00-1620	16-6529	BH-6	9/10/00	9.0-10.0 ft		188.8	Negative	12100
RE16-00-1621	16-6529	BH-6	9/10/00	10.0-11.0 ft		100.8	Negative	11850
RE16-00-1622	16-6529	BH-6	9/10/00	11.0-12.5 ft		11.8	Negative	11250
RE16-00-1623	16-6529	BH-6	9/10/00	12.5-13.5 ft		147.1	Negative	11180

Table D-3 (continued)

Screening Sample ID	Location ID	Location Description	Date Collected	Depth Interval Collected	Associated Sample Ids	Ba Screening Result (in ppm)	HE Spot Test Results	Rad Screening Results (cpm)
RE16-00-1624	16-6529	BH-6	9/10/00	13.5-15.0 ft		146.8	Negative	11850
RE16-00-1625	16-6529	BH-6	9/16/00	15.0-16.0 ft		127.6	Negative	129000
RE16-00-1626	16-6529	BH-6	9/16/00	16.0-17.5 ft		125.7	Negative	12720
RE16-00-1627	16-6529	BH-6	9/16/00	17.5-18.5 ft		94.7	Negative	14100
RE16-00-1628	16-6529	BH-6	9/16/00	18.5-20.0 ft	RE16-00-0227	97.4	Negative	14000
RE16-00-1629	16-6530	BH-7	9/17/00	0-2.5 ft				
RE16-00-1630	16-6530	BH-7	9/17/00	2.5-5.0 ft	RE16-00-0228	5608	Negative	12650
RE16-00-1631	16-6530	BH-7	9/17/00	5.0-7.5 ft		374	Negative	12250
RE16-00-1632	16-6530	BH-7	9/17/00	7.5-10.0 ft		1219	Negative	12150
RE16-00-1633	16-6530	BH-7	9/17/00	10.0-11.0 ft	RE16-00-0235	293	Negative	12500
RE16-00-1634	16-6535	BH-7c	9/17/00	10.0-11.0 ft	RE16-00-0258	175	Negative	12150
RE16-00-1797	16-6531	BH-8	9/17/00	0-2.5 ft	RE16-00-0229	312	Negative	12900
RE16-00-1604	16-6531	BH-8	9/17/00	2.5-3.5 ft		208	Negative	12850
RE16-00-1798	16-6531	BH-8	9/17/00	3.5-5.0 ft		199	Negative	11650
RE16-00-1605	16-6531	BH-8	9/17/00	5.0-7.5 ft		233	Negative	12500
RE16-00-1607	16-6531	BH-8	9/18/00	7.5-10.0 ft		128.8	Negative	12600
RE16-00-1608	16-6531	BH-8	9/18/00	10.0-12.5 ft	RE16-00-0236	322	Negative	11700
RE16-00-1500	16-6613	A-1	9/3/00	0-6 in		243.9	Negative	14300

Table D-3 (continued)

Screening Sample ID	Location ID	Location Description	Date Collected	Depth Interval Collected	Associated Sample Ids	Ba Screening Result (in ppm)	HE Spot Test Results	Rad Screening Results (cpm)
RE16-00-1501	16-6614	A-2	9/3/00	not collected				12700
RE16-00-1502	16-6615	A-3	9/3/00	0-6 in		190	Negative	14300
RE16-00-1503	16-6616	A-4	9/3/00	0-6 in		228.6	Negative	14300
RE16-00-1504	16-6617	A-5	9/3/00	0-6 in		85.7	Negative	15700
RE16-00-1505	16-6618	B-1	9/3/00	0-6 in		82.3	Negative	14900
RE16-00-1506	16-6619	B-2	9/3/00	0-6 in		198.4	Negative	16600
RE16-00-1507	16-6620	B-3	9/3/00	0-6 in		264.2	Negative	15100
RE16-00-1508	16-6621	B-4	9/3/00	0-6 in		212.7	Negative	16000
RE16-00-1509	16-6622	B-5	9/3/00	0-6 in		140.1	Negative	17000
RE16-00-1510	16-6623	C-1	9/3/00	0-6 in		222.1	Negative	15000
RE16-00-1511	16-6624	C-2	9/3/00	not collected				13700
RE16-00-1512	16-6625	C-3	9/3/00	0-6 in		868	Negative	14600
RE16-00-1513	16-6626	C-4	9/3/00	0-6 in		91.9	Negative	14800
RE16-00-1514	16-6627	C-5	9/3/00	0-6 in		312	Negative	17100
RE16-00-1515	16-6628	D-1	9/3/00	0-6 in		1533	Negative	13800
RE16-00-1516	16-6629	D-2	9/3/00	not collected				12400
RE16-00-1517	16-6630	D-3	9/3/00	0-6 in		1222	Negative	12600
RE16-00-1518	16-6631	D-4	9/3/00	0-6 in		936	Negative	14300
RE16-00-1519	16-6632	D-5	9/3/00	0-6 in		26.2	Negative	15500
RE16-00-1520	16-6633	E-1	9/3/00	0-6 in		1054	Negative	15100
RE16-00-1521	16-6634	E-2	9/3/00	0-6 in		508	Negative	14900
RE16-00-1522	16-6635	E-3	9/3/00	not collected				15700
RE16-00-1523	16-6502	E-4	9/3/00	0-6 in	RE16-00-0200	4836	Negative	13300
RE16-00-1524	16-6636	E-5	9/3/00	0-6 in		2010	Negative	13400

Table D-3 (continued)

Screening Sample ID	Location ID	Location Description	Date Collected	Depth Interval Collected	Associated Sample Ids	Ba Screening Result (in ppm)	HE Spot Test Results	Rad Screening Results (cpm)
RE16-00-1525	16-6637	E-6	9/3/00	0-6 in		647	Negative	12100
RE16-00-1526	16-6638	E-7	9/3/00	0-6 in		1528	Negative	15200
RE16-00-1527	16-6639	E-8	9/3/00	0-6 in		477	Negative	13500
RE16-00-1528	16-6640	F-1	9/3/00	0-6 in		781	Negative	14300
RE16-00-1529	16-6641	F-2	9/3/00	0-6 in		581	Negative	15300
RE16-00-1530	16-6642	F-3	9/3/00	0-6 in		460	Negative	14800
RE16-00-1531	16-6643	F-4	9/3/00	0-6 in		1886	Negative	13200
RE16-00-1532	16-6503	F-5	9/3/00	0-6 in	RE16-00-0201	1522	Negative	15600
RE16-00-1533	16-6644	F-6	9/3/00	0-6 in		1445	Negative	14200
RE16-00-1534	16-6645	F-7	9/3/00	0-6 in		1957	Negative	16300
RE16-00-1535	16-6646	G-1	9/3/00	0-6 in		444	Negative	16200
RE16-00-1536	16-6647	G-2	9/3/00	0-6 in		298	Negative	17000
RE16-00-1538	16-6648	G-3	9/3/00	0-6 in		1085	Negative	13700
RE16-00-1539	16-6507	G-4	9/3/00	0-6 in	RE16-00-0205	3004	Negative	14100
RE16-00-1540	16-6649	G-5	9/3/00	0-6 in		1242	Negative	15600
RE16-00-1541	16-6650	G-6	9/3/00	0-6 in		2053	Negative	12500
RE16-00-1542	16-6509	G-7	9/3/00	0-6 in	RE16-00-0207 RE16-00-0247	3531	Negative	14400
RE16-00-1543	16-6510	G-8	9/3/00	0-6 in	RE16-00-0208 RE16-00-0248	6114	Negative	12300
RE16-00-1544	16-6651	H-1	9/3/00	0-6 in		470	Negative	13400
RE16-00-1545	16-6652	H-2	9/3/00	0-6 in		597	Negative	12500
RE16-00-1546	16-6653	H-3	9/3/00	0-6 in		1525	Negative	13000

Table D-3 (continued)

Screening Sample ID	Location ID	Location Description	Date Collected	Depth Interval Collected	Associated Sample Ids	Ba Screening Result (in ppm)	HE Spot Test Results	Rad Screening Results (cpm)
RE16-00-1547	16-6654	H-4	9/3/00	0-6 in		1610	Negative	13000
RE16-00-1548	16-6655	H-5	9/3/00	0-6 in		1052	Negative	13000
RE16-00-1549	16-6504	H-6	9/3/00	0-6 in	RE16-00-0343	2311	Negative	13200
RE16-00-1550	16-6505	H-7	9/3/00	0-6 in	RE16-00-0344	2981	Negative	15700
RE16-00-1551	16-6656	I-1	9/3/00	0-6 in		3534	Negative	15000
RE16-00-1552	16-6657	I-2	9/3/00	0-6 in		1430	Negative	12200
RE16-00-1553	16-6658	I-3	9/3/00	0-6 in		1061	Negative	12000
RE16-00-1554	16-6659	I-4	9/3/00	0-6 in		7382	Negative	13100
RE16-00-1555	16-6660	I-5	9/3/00	0-6 in		3056	Negative	13900
RE16-00-1556	16-6508	I-6	9/3/00	0-6 in	RE16-00-0326 RE16-00-0327	79480	Negative	13400
RE16-00-1557	16-6506	I-7	9/3/00	0-6 in		180000	Negative	13600
RE16-00-1558	16-6661	I-8	9/3/00	0-6 in		4231	Negative	12400
RE16-00-1559	16-6520	J-1	9/3/00	0-6 in	RE16-00-0210 RE16-00-0241 RE16-00-0250	17610	Negative	11400
RE16-00-1560	16-6662	J-2	9/3/00	0-6 in		3979	Negative	13400

Table D-3 (continued)

Screening Sample ID	Location ID	Location Description	Date Collected	Depth Interval Collected	Associated Sample Ids	Ba Screening Result (in ppm)	HE Spot Test Results	Rad Screening Results (cpm)
RE16-00-1561	16-6537	J-3	9/3/00	0-6 in	RE16-00-0211 RE16-00-0251	15830	Negative	13300
RE16-00-1562	16-6663	J-4	9/3/00	0-6 in		2014	Negative	13700
RE16-00-1563	16-6664	J-5	9/3/00	0-6 in		686	Negative	14600
RE16-00-1564	16-6514	J-6	9/3/00	0-6 in	RE16-00-0212 RE16-00-0252	5388	Negative	13800
RE16-00-1565	16-6515	J-7	9/3/00	0-6 in	RE16-00-0213 RE16-00-0253	9563	Negative	15600
RE16-00-1566	16-6665	K-1	9/3/00	0-6 in		1676	Negative	18200
RE16-00-1567	16-6666	K-2	9/3/00	0-6 in		3820	Negative	14800
RE16-00-1568	16-6667	K-3	9/3/00	not collected				15000
RE16-00-1750	16-6668	K-4	9/3/00	not collected				14200
RE16-00-1751	16-6669	K-5	9/3/00	0-6 in		2665	Negative	14000
RE16-00-1752	16-6511	K-6	9/3/00	0-6 in	RE16-00-0328 RE16-00-0329	5159	Negative	14200
RE16-00-1753	16-6512	K-7	9/3/00	0-6 in	RE16-00-0330 RE16-00-0331	10410	Negative	13100

Table D-3 (continued)

Screening Sample ID	Location ID	Location Description	Date Collected	Depth Interval Collected	Associated Sample Ids	Ba Screening Result (in ppm)	HE Spot Test Results	Rad Screening Results (cpm)
RE16-00-1754	16-6670	K-8	9/3/00	0-6 in		2058	Negative	13800
RE16-00-1755	16-6538	L-1	9/3/00	0-6 in	RE16-00-0332 RE16-00-0333	11320	Negative	13100
RE16-00-1756	16-6671	L-2	9/3/00	not collected				13700
RE16-00-1757	16-6672	L-3	9/3/00	not collected				13700
RE16-00-1758	16-6673	L-4	9/3/00	not collected				14000
RE16-00-1759	16-6674	L-5	9/3/00	0-6 in		1993	Negative	14800
RE16-00-1760	16-6513	L-6	9/3/00	0-6 in	RE16-00-0334 RE16-00-0335	7683	Negative	16600
RE16-00-1761	16-6518	L-7	9/3/00	0-6 in	RE16-00-0342 RE16-00-0345	3828	Negative	15600
RE16-00-1762	16-6675	M-1	9/3/00	not collected				17700
RE16-00-1763	16-6676	M-2	9/3/00	not collected				17500
RE16-00-1764	16-6677	M-3	9/3/00	not collected				17100
RE16-00-1765	16-6678	M-4	9/3/00	0-6 in		2306	Negative	14400
RE16-00-1766	16-6679	M-5	9/3/00	0-6 in		2523	Negative	14000
RE16-00-1767	16-6680	M-6	9/3/00	0-6 in		1025	Negative	14200

Table D-3 (continued)

Screening Sample ID	Location ID	Location Description	Date Collected	Depth Interval Collected	Associated Sample Ids	Ba Screening Result (in ppm)	HE Spot Test Results	Rad Screening Results (cpm)
RE16-00-1768	16-6516	M-7	9/3/00	0-6 in	RE16-00-0336	6777	Negative	14600
RE16-00-1769	16-6681	M-8	9/3/00	0-6 in		832	Negative	12900
RE16-00-1770	16-6539	N-1	9/3/00	0-6 in	RE16-00-0338 RE16-00-0339 RE16-00-0240	9880	Negative	13600
RE16-00-1771	16-6682	N-2	9/3/00	not collected				14800
RE16-00-1772	16-6683	N-3	9/3/00	not collected				14200
RE16-00-1773	16-6684	N-4	9/3/00	0-6 in		1301	Negative	14000
RE16-00-1774	16-6685	N-5	9/3/00	0-6 in		1051	Negative	14700
RE16-00-1775	16-6686	N-6	9/3/00	0-6 in		718	Negative	17400
RE16-00-1776	16-6687	N-7	9/3/00	0-6 in		1693	Negative	16900
RE16-00-1777	16-6688	O-1	9/8/00	0-6 in		3538	Negative	18000
RE16-00-1778	16-6689	O-2	9/8/00	0-6 in		3322	Negative	15500
RE16-00-1779	16-6690	O-3	9/8/00	0-6 in		3147	Negative	14300
RE16-00-1780	16-6691	O-4	9/8/00	0-6 in		1009	Negative	13900
RE16-00-1781	16-6692	O-5	9/8/00	0-6 in		585	Negative	13400
RE16-00-1782	16-6693	P-1	9/8/00	0-6 in		501	Negative	13500
RE16-00-1783	16-6694	P-2	9/8/00	0-6 in		849	Negative	13100
RE16-00-1784	16-6519	P-3	9/8/00	0-6 in	RE16-00-0248	192.9	Negative	13900

Table D-3 (continued)

Screening Sample ID	Location ID	Location Description	Date Collected	Depth Interval Collected	Associated Sample Ids	Ba Screening Result (in ppm)	HE Spot Test Results	Rad Screening Results (cpm)
RE16-00-1785	16-6517	P-4	9/8/00	0-6 in	RE16-00-0340 RE16-00-0341	4158	Negative	14800
RE16-00-1786	16-6695	P-5	9/8/00	0-6 in		2834	Negative	17100
RE16-00-1787	16-6696	Q-1	9/8/00	0-6 in		385	Negative	16300
RE16-00-1788	16-6697	Q-2	9/8/00	0-6 in		676	Negative	16100
RE16-00-1789	16-6698	Q-3	9/8/00	0-6 in		408	Negative	15200
RE16-00-1790	16-6699	Q-4	9/8/00	0-6 in		1717	Negative	13900
RE16-00-1791	16-6700	Q-5	9/8/00	0-6 in		505	Negative	13100
RE16-00-1792	16-6701	R-1	9/8/00	0-6 in		693	Negative	17400
RE16-00-1793	16-6702	R-2	9/8/00	0-6 in		351	Negative	17800
RE16-00-1794	16-6703	R-3	9/8/00	0-6 in		445	Negative	16800
RE16-00-1795	16-6704	R-4	9/8/00	0-6 in		325	Negative	17900
RE16-00-1796	16-6705	R-5	9/8/00	0-6 in		339	Negative	14800

Table D-4
Subaggregate 3, Basket Wash House, SWMU 16-010(h), Field-Screening Data

Sample ID	Location ID	NaI_2 Detector	HE Spot Test
0316-95-0303	16-1352	13540 cpm	Negative
0316-95-0304	16-1352	14320 cpm	Negative
0316-95-0305	16-1351	12110 cpm	Negative
0316-95-0306	16-1351	12150 cpm	Negative
0316-95-0307	16-1349	12380 cpm	Negative
0316-95-0308	16-1349	13340 cpm	Negative
0316-95-1616	16-1350	250 cpm	Negative
0316-95-1617	16-1349	190 cpm	Negative
0316-95-1618	16-1352	No reading	Negative
0316-95-1619	16-1353	No reading	Negative
0316-95-1620	16-1354	No reading	Negative

Table D-5
Subaggregate 3, Structure 16-392, Filter Bed, SWMU 16-010(i), Field-Screening Data

Sample ID	Location ID	NaI_2 Detector	HE Spot Test
0316-95-0309	16-1296	10124 cpm	Positive
0316-95-0310	16-1296	12140 cpm	Positive
0316-95-0311	16-1272	11290 cpm	Positive
0316-95-0312	16-1272	11390 cpm	Positive
0316-95-0313	16-1278	11470 cpm	Positive
0316-95-0314	16-1278	11260 cpm	Positive
Rad Survey	16-1271	17380 cpm	Negative
Rad Survey	16-1272	16230 cpm	Negative
Rad Survey	16-1273	19080 cpm	Negative
Rad Survey	16-1274	17400 cpm	Negative
Rad Survey	16-1296	13640 cpm	Negative
Rad Survey	16-1275	18270 cpm	Negative
Rad Survey	16-1276	20000 cpm	Negative
Rad Survey	16-1277	16510 cpm	Negative
Rad Survey	16-1278	20700 cpm	Negative
Rad Survey	16-1279	14720 cpm	Negative
Rad Survey	16-1280	14470 cpm	Negative
Rad Survey	16-1281	14480 cpm	Negative
Rad Survey	16-1282	14490 cpm	Negative

Table D-6
Subaggregate 3, Structure 16-1129, Filter Trough, SWMU 16-010(k), Field-Screening Data

Sample ID	Location ID	NaI_2 Detector	Barium by XRF	HE Spot Test
0316-95-0333	16-1282	NA	1293	Positive
0316-95-0334	16-1283	NA	345	Positive
0316-95-0335	16-1284	NA	400	Positive
0316-95-0336	16-1285	NA	498	Positive
0316-95-0337	16-1286	NA	384	Positive
0316-95-0338	16-1287	NA	632	Positive
0316-95-0339	16-1288	NA	638	Positive
0316-95-0340	16-1289	NA	686	Positive
0316-95-0341	16-1290	NA	773	Positive
0316-95-0378	16-1290	NA	773	Positive
0316-95-0379	16-1289	NA	686	Positive
0316-95-1557	16-1292	9730 cpm	347	Negative
0316-95-1558	16-1291	9820 cpm	619	Negative
0316-95-1559	16-1290	9810 cpm	773	Positive
0316-95-1560	16-1289	9810 cpm	686	Positive
0316-95-1561	16-1288	9620 cpm	638	Positive
0316-95-1562	16-1287	9630 cpm	632	Positive
0316-95-1563	16-1286	9710 cpm	384	Positive
0316-95-1564	16-1285	9720 cpm	498	Positive
0316-95-1565	16-1284	9470 cpm	400	Positive
0316-95-1566	16-1283	9850 cpm	345	Positive
0316-95-1567	16-1282	9810 cpm	1293	Positive

Table D-7
Subaggregate 3, Structure 16-1134, Filter Trough, SWMU 16-010(l), Field-Screening Data

Sample ID	Location ID	NaI_2 Detector	Barium by XRF	HE Spot Test
0316-95-0323	16-1237	N/A	699	Positive
0316-95-0324	16-1239	N/A	606	Positive
0316-95-0325	16-1240	N/A	891	Negative
0316-95-0326	16-1246	N/A	826	Negative
0316-95-0376	16-1237	N/A	699	Positive
0316-95-0377	16-1239	N/A	606	Positive
0316-95-1460	16-1237	No reading	699	Positive
0316-95-1461	16-1238	No reading	606	Negative
0316-95-1462	16-1239	9960 cpm	843	Positive
0316-95-1463	16-1240	9370 cpm	891	Negative
0316-95-1464	16-1241	9700 cpm	438	Negative
0316-95-1465	16-1242	9100 cpm	569	Negative
0316-95-1466	16-1243	8550 cpm	367	Negative
0316-95-1467	16-1244	9090 cpm	442	Negative
0316-95-1468	16-1245	9800 cpm	398	Negative
0316-95-1469	16-1246	9600 cpm	826	Negative
0316-95-1470	16-1247	9940 cpm	691	Negative
0316-95-1471	16-1248	8550 cpm	392	Negative
0316-95-1472	16-1249	9650 cpm	494	Negative
0316-95-1473	16-1250	9540 cpm	565	Negative
0316-95-1474	16-1251	10020 cpm	515	Negative
0316-95-1475	16-1252	9160 cpm	316	Negative
0316-95-1476	16-1253	9550 cpm	460	Negative
0316-95-1477	16-1254	9380 cpm	292	Negative

Table D-8
Subaggregate 3, Structure 16-1135, Filter Trough, SWMU 16-010(m), Field-Screening Data

Sample ID	Location ID	NaI_2 Detector	Barium by XRF	HE Spot Test
0316-95-0343	16-1226	12170 cpm	343 ppm	Positive
0316-95-0344	16-1230	12310 cpm	787 ppm	Negative
0316-95-0345	16-1232	13320 cpm	731 ppm	Negative
0316-95-0346	16-1233	13240 cpm	472 ppm	Positive
0316-95-0348	16-1234	15320 cpm	921 ppm	Positive
0316-95-0349	16-1235	14320 cpm	476 ppm	Positive
0316-95-0380	16-1236	13330 cpm	384 ppm	Positive
0316-95-2019	16-1236	No reading	384 ppm	Positive
0316-95-0381	16-1236	No reading	384 ppm	Positive
0316-95-1568	16-1236	No reading	533 ppm	Positive
0316-95-1569	16-1235	No reading	476 ppm	Positive
0316-95-1570	16-1234	No reading	921 ppm	Positive
0316-95-1571	16-1233	No reading	472 ppm	Positive
0316-95-1572	16-1232	No reading	731 ppm	Negative
0316-95-1573	16-1231	No reading	475 ppm	Negative
0316-95-1574	16-1230	No reading	787 ppm	Negative
0316-95-1575	16-1229	No reading	389 ppm	Negative
0316-95-1576	16-1228	No reading	412 ppm	Negative
0316-95-1577	16-1227	No reading	532 ppm	Negative
0316-95-1578	16-1226	No reading	343 ppm	Positive

Table D-9
Subaggregate 3, Structure 16-1136, Filter Trough, SWMU 16-010(n), Field-Screening Data

Sample ID	Location ID	NaI_2 Detector	Barium by XRF	HE Spot Test
0316-95-0353	16-1304	13320 cpm	330 ppm	Negative
0316-95-0354	16-1307	12120 cpm	341 ppm	Negative
0316-95-0355	16-1311	12360 cpm	337 ppm	Negative
0316-95-0356	16-1313	12360 cpm	no reading	Positive
0316-95-0382	16-1313	15650 cpm	no reading	Negative
0316-95-1579	16-1313	No reading	no reading	Negative
0316-95-1580	16-1312	No reading	278 ppm	Negative
0316-95-1581	16-1311	No reading	337 ppm	Negative
0316-95-1582	16-1310	No reading	249 ppm	Negative
0316-95-1583	16-1309	No reading	191 ppm	Negative
0316-95-1584	16-1308	No reading	247 ppm	Negative
0316-95-1585	16-1307	No reading	341 ppm	Negative
0316-95-1586	16-1306	No reading	321 ppm	Negative
0316-95-1587	16-1305	No reading	208 ppm	Negative
0316-95-1588	16-1304	No reading	330 ppm	Negative

Table D-10
Subaggregate 3, Structure 16-393,
Filter Bed, SWMU 16-005(g), Field-Screening Data

Sample ID	Location ID	Screening Method/Results
0316-95-1633	16-1341	XRF(Ba) 432.2 ppm
0316-95-1634	16-1341	XRF(Ba) 347.3 ppm
0316-95-1635	16-1341	XRF(Ba) 301.8 ppm
0316-95-1636	16-1341	XRF(Ba) 134.9 ppm

Table D-11
Subaggregate 5, HE Magazine, SWMU 16-024(f), Field-Screening Data

SCREENING SAMPLE NO.	LOCATION ID	DEPTH (FT)	LAB SAMPLE NO.	HE SPOT TEST	RAD SCREEN	D-TECH RDX (MG/KG)	D-TECH TNT (MG/KG)
0316-97-4162 southwest quadrant	16-4162	0 - 1	0316-97-0564	negative	background	< 0.5	1.5 - 3.0
0316-97-4163 northwest quadrant	16-4163	0 - 1	NA[a]	negative	background	0.5 - 1.5	< 0.5
0316-97-4164 northeast quadrant	16-4164	0 - 1	NA	negative	background	< 0.5	0.5 - 1.5
0316-97-4165 southeast quadrant	16-4165	0 - 1	0316-97-0588	negative	background	< 0.5	0.5 - 1.5
0316-97-4166 center	16-4166	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4197 door	16-4197	0 - 1	NA	negative	background	< 0.5	0.5 - 1.5

Table D-12
Subaggregate 5, HE Magazine, SWMU 16-024(g), Field-Screening Data

SCREENING SAMPLE NO.	LOCATION ID	DEPTH (FT)	LAB SAMPLE NO.	HE SPOT TEST	RAD SCREEN	D-TECH RDX (MG/KG)	D-TECH TNT (MG/KG)
0316-97-4167 southwest quadrant	16-4167	0 - 1	NA[a]	negative	background	< 0.5	< 0.5
0316-97-4168 northwest quadrant	16-4168	0 - 1	0316-97-0565	negative	background	< 0.5	< 0.5
0316-97-4169 northeast quadrant	16-4169	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4170 southeast quadrant	16-4170	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4171 center	16-4171	0 - 1	0316-97-0589	negative	background	0.5 - 1.5	< 0.5
0316-97-4199 door	16-4199	0 - 1	NA	negative	background	< 0.5	< 0.5

Table D-13
Subaggregate 5, X-Ray/Gamma-Ray Building, SWMU 16-025(m), Field-Screening Data

SCREENING SAMPLE NO.	LOCATION ID	DEPTH (FT)	LAB SAMPLE NO.	HE SPOT TEST	RAD SCREEN	D-TECH RDX (MG/KG)	D-TECH TNT (MG/KG)
0316-97-4177 southwest quadrant	16-4177	0 - 1	NA[a]	negative	background	< 0.5	< 0.5
0316-97-4178 northwest quadrant	16-4178	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4179 northeast quadrant	16-4179	0 - 1	0316-97-0568	negative	background	0.5 - 1.5	< 0.5
0316-97-4180 southeast quadrant	16-4180	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4181 center	16-4181	0 - 1	0316-97-0569	negative	background	< 0.5	< 0.5

Table D-14
Subaggregate 5, Source Hutment, SWMU 16-025(n), Field-Screening Data

SCREENING SAMPLE NO.	LOCATION ID	DEPTH (FT)	LAB SAMPLE NO.	HE SPOT TEST	RAD SCREEN	D-TECH RDX (MG/KG)	D-TECH TNT (MG/KG)
0316-97-4172 southwest quadrant	16-4172	0 - 1	NA[a]	negative	background	< 0.5	0.5 - 1.5
0316-97-4173 southeast quadrant	16-4173	0 - 1	NA	negative	background	< 0.5	0.5 - 1.5
0316-97-4174 northeast quadrant	16-4174	0 - 1	0316-97-0566	negative	background	0.5 - 1.5	0.5 - 1.5
0316-97-4175 northwest quadrant	16-4175	0 - 1	0316-97-0567	negative	background	0.5 - 1.5	< 0.5
0316-97-4176 center	16-4176	0 - 1	NA	negative	background	< 0.5	< 0.5

Table D-15
Subaggregate 5, Source Hutment, SWMU 16-025(o), Field-Screening Data

SCREENING SAMPLE NO.	LOCATION ID	DEPTH (FT)	LAB SAMPLE NO.	HE SPOT TEST	RAD SCREEN	D-TECH RDX (MG/KG)	D-TECH TNT (MG/KG)
0316-97-4182 southeast quadrant	16-4182	0 - 1	NA[a]	negative	background	< 0.5	< 0.5
0316-97-4183 northeast quadrant	16-4183	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4184 northwest quadrant	16-4184	0 - 1	0316-97-0570	negative	background	< 0.5	0.5 - 1.5
0316-97-4185 southwest quadrant	16-4185	0 - 1	NA	negative	background	0.5 - 1.5	< 0.5
0316-97-4186 center	16-4186	0 - 1	0316-97-0571	negative	background	< 0.5	0.5 - 1.5

Table D-16
Subaggregate 5, Warehouse, SWMU 16-034(c), Field-Screening Data

SCREENING SAMPLE NO.	LOCATION ID	DEPTH (FT)	LAB SAMPLE NO.	HE SPOT TEST	RAD SCREEN	D-TECH RDX (MG/KG)	D-TECH TNT (MG/KG)
0316-97-4147 southwest quadrant	16-4147	0 - 1	0316-97-0586	negative	background	< 0.5	0.5 - 1.5
0316-97-4148 northwest quadrant	16-4148	0 - 1	NA[a]	negative	background	< 0.5	< 0.5
0316-97-4149 northeast quadrant	16-4149	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4150 southeast quadrant	16-4150	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4151 center	16-4151	0 - 1	0316-97-0560	negative	background	0.5 - 1.5	< 0.5

Table D-17
Subaggregate 5, Machine Shop, SWMU 16-034(d), Field-Screening Data

SCREENING SAMPLE NO.	LOCATION ID	DEPTH (FT)	LAB SAMPLE NO.	HE SPOT TEST	RAD SCREEN	D-TECH RDX (MG/KG)	D-TECH TNT (MG/KG)
0316-97-4157 southeast quadrant	16-4157	0 - 1	NA[a]	negative	background	< 0.5	< 0.5
0316-97-4158 northeast quadrant	16-4158	0 - 1	0316-97-0587	negative	background	< 0.5	1.5 - 3.0
0316-97-4159 northwest quadrant	16-4159	0 - 1	NA	negative	background	< 0.5	0.5 - 1.5
0316-97-4160 southwest quadrant	16-4160	0 - 1	NA	negative	background	< 0.5	0.5 - 1.5
0316-97-4161 center	16-4161	0 - 1	0316-97-0563	negative	background	< 0.5	0.5 - 1.5

Table D-18
Subaggregate 5, Storage Building, SWMU 16-034(e), Field-Screening Data

SCREENING SAMPLE NO.	LOCATION ID	DEPTH (FT)	LAB SAMPLE NO.	HE SPOT TEST	RAD SCREEN	D-TECH RDX (MG/KG)	D-TECH TNT (MG/KG)
0316-97-4142 southwest quadrant	16-4142	0 - 1	NA[a]	negative	background	0.5 - 1.5	< 0.5
0316-97-4143 southeast quadrant	16-4143	0 - 1	0316-97-0558	negative	background	0.5 - 1.5	0.5 - 1.5
0316-97-4144 northeast quadrant	16-4144	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4145 northwest quadrant	16-4145	0 - 1	0316-97-0559	negative	background	< 0.5	0.5 - 1.5
0316-97-4146 center	16-4146	0 - 1	NA	negative	background	< 0.5	< 0.5

Table D-19
Subaggregate 5, Laboratory, SWMU 16-034(f), Field-Screening Data

SCREENING SAMPLE NO.	LOCATION ID	DEPTH (FT)	LAB SAMPLE NO.	HE SPOT TEST	RAD SCREEN	D-TECH RDX (MG/KG)	D-TECH TNT (MG/KG)
0316-97-4152 southwest quadrant	16-4152	0 - 0.83	0316-97-0562	negative	background	0.5 - 1.5	0.5 - 1.5
0316-97-4153 southeast quadrant	16-4153	0 - 0.83	NA*	negative	background	< 0.5	< 0.5
0316-97-4154 northwest quadrant	16-4154	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4155 northeast quadrant	16-4155	0 - 1	NA	negative	background	< 0.5	0.5 - 1.5
0316-97-4156 center	16-4156	0 - 1	0316-97-0561	negative	background	< 0.5	0.5 - 1.5

Table D-20
Subaggregate 6, HE Magazine, SWMU 16-024(c), Field-Screening Data

SCREENING SAMPLE NO.	LOCATION ID	DEPTH (FT)	LAB SAMPLE NO.	HE SPOT TEST	RAD SCREEN	D-TECH RDX (MG/KG)	D-TECH TNT (MG/KG)
0316-97-4133 northeast quadrant	16-4133	0 - 1	NA[a]	negative	background	< 0.5	0.5 - 1.5
0316-97-4134 northwest quadrant	16-4134	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4135 southwest quadrant	16-4135	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4136 southeast quadrant	16-4136	0 - 1	0316-97-0556	negative	background	< 0.5	0.5 - 1.5
0316-97-4200 door	16-4200	0 - 1	NA	negative	background	< 0.5	< 0.5

Table D-21
Subaggregate 6, Equipment Control Building, SWMU 16-025(d), Field-Screening Data

SCREENING SAMPLE NO.	LOCATION ID	DEPTH (FT)	LAB SAMPLE NO.	HE SPOT TEST	RAD SCREEN	D-TECH RDX (MG/KG)	D-TECH TNT (MG/KG)
0316-97-4111 northwest quadrant	16-4111	0 - 1	NA[a]	negative	background	< 0.5	< 0.5
0316-97-4112 northeast quadrant	16-4112	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4113 southeast quadrant	16-4113	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4114 southwest quadrant	16-4114	0 - 1	0316-97-0550	negative	background	0.5 - 1.5	< 0.5

Table D-22
Subaggregate 6, HE Machining Building, SWMU 16-025(g), Field-Screening Data

SCREENING SAMPLE NO.	LOCATION ID	DEPTH (FT)	LAB SAMPLE NO.	HE SPOT TEST	RAD SCREEN	D-TECH RDX (MG/KG)	D-TECH TNT (MG/KG)
0316-97-4120 northwest quadrant	16-4120	0 - 1	NA[a]	negative	background	< 0.5	< 0.5
0316-97-4121 northeast quadrant	16-4121	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4122 southeast quadrant	16-4122	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4123 southwest quadrant	16-4123	0 - 1	0316-97-0584	negative	background	< 0.5	< 0.5
0316-97-4124 center	16-4124	0 - 1	0316-97-0553	negative	background	< 0.5	< 0.5
0316-97-4125 door	16-4125	0 - 1	0316-97-0552	negative	background	< 0.5	0.5 - 1.5

[a] NA = Not analyzed

Table D-23
Subaggregate 6, HE Machining Building, SWMU 16-025(h), Field-Screening Data

SCREENING SAMPLE NO.	LOCATION ID	DEPTH (FT)	LAB SAMPLE NO.	HE SPOT TEST	RAD SCREEN	D-TECH RDX (MG/KG)	D-TECH TNT (MG/KG)
0316-97-4127 northeast quadrant	16-4127	0 - 1	NA[a]	negative	background	< 0.5	< 0.5
0316-97-4128 northwest quadrant	16-4128	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4129 southeast quadrant	16-4129	0 - 1	0316-97-0585	negative	background	0.5 - 1.5	0.5 - 1.5
0316-97-4130 southwest quadrant	16-4130	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4131 center	16-4131	0 - 1	0316-97-0554	negative	background	< 0.5	< 0.5
0316-97-4132 door	16-4132	0 - 0.5	0316-97-0555	negative	background	< 0.5	< 0.5

Table D-24
Subaggregate 6, HE Machining Building, SWMU 16-025(j), Field-Screening Data

SCREENING SAMPLE NO.	LOCATION ID	DEPTH (FT)	LAB SAMPLE NO.	HE SPOT TEST	RAD SCREEN	D-TECH RDX (MG/KG)	D-TECH TNT (MG/KG)
0316-97-4115 northwest quadrant	16-4115	0 - 1	0316-97-0583	negative	background	< 0.5	< 0.5
0316-97-4116 northeast quadrant	16-4116	0 - 1	NA[a]	negative	background	< 0.5	< 0.5
0316-97-4117 southeast quadrant	16-4117	0 - 1	NA	negative	background	< 0.5	< 0.5
0316-97-4118 door	16-4118	0 - 1	0316-97-0551	negative	background	< 0.5	< 0.5
0316-97-4119 southwest quadrant	16-4119	0 - 1	0316-97-0582	negative	background	< 0.5	< 0.5

Table D-25
Subaggregate 7, 16-260 Outfall,
SWMU 16-003(i), Field-Screening Data

Sample ID	Location ID	NaI_2 Detector
0316-95-0070	16-1412	12180 cpm
0316-95-0071	16-1412	12730 cpm
0316-95-0072	16-1412	12670 cpm
0316-95-0073	16-1450	12610 cpm
0316-95-0074	16-1450	12130 cpm
0316-95-0075	16-1450	12060 cpm
0316-95-0076	16-1413	14000 cpm
0316-95-0077	16-1414	14000 cpm
0316-95-0078	16-1415	13000 cpm
0316-95-0079	16-1416	16000 cpm
0316-95-0080	16-1417	14000 cpm
0316-95-1152	16-1413	14000 cpm
0316-95-1153	16-1414	15000 cpm
0316-95-1154	16-1415	14000 cpm
0316-95-1155	16-1678	14000 cpm
0316-95-1156	16-1679	15000 cpm
0316-95-1157	16-1416	15000 cpm
0316-95-1158	16-1681	15000 cpm
0316-95-1159	16-1417	14000 cpm
0316-95-1160	16-1683	15000 cpm
0316-95-1161	16-1684	16000 cpm

Table D-26
Subaggregate 7, 16-280 Outfall, SWMU 16-030(d), Field-Screening Data

Sample ID	Location ID	PID Reading	NaI_2 Detector
0316-95-0059	16-1428	3 ppm	2301cpm
0316-95-0060	16-1428	0.5 ppm	2446 cpm
0316-95-0061	16-1428	14 ppm	12320 cpm
0316-95-0062	16-1652	2 ppm	2247 cpm
0316-95-0064	16-1652	N/A	12810 cpm
0316-95-0065	16-1652	N/A	15000 cpm
0316-95-0066	16-1429	N/A	14000 cpm
0316-95-0067	16-1430	N/A	14000 cpm
0316-95-0068	16-1431	N/A	15000 cpm
0316-95-0069	16-1432	N/A	15000 cpm
0316-95-1181	16-1433	N/A	15000 cpm
0316-95-1182	16-1429	N/A	14000 cpm
0316-95-1183	16-1430	N/A	13000 cpm
0316-95-1184	16-1431	N/A	15000 cpm
0316-95-1185	16-1728	N/A	16000 cpm
0316-95-1186	16-1729	N/A	16000 cpm
0316-95-1187	16-1432	N/A	19000 cpm
0316-95-1188	16-1732	N/A	15000 cpm
0316-95-1189	16-1733	N/A	19000 cpm
0316-95-1190	16-1733	N/A	15000 cpm
0316-95-1191	16-1735	N/A	16000 cpm
0316-95-1192	16-1736	N/A	14000 cpm
0316-95-1193	16-1737	N/A	16000 cpm

Table D-27
Subaggregate 8, TA-14 Firing Sites, Field-Screening Data

PRS or AOC	Sample #	Depth (inches)	XRF Data Pb (ppm)	XRF Data U (ppm)	Ludlum 2210 Rad Data (cpm)	Analytical Data Pb (ppm)	Analytical Data U (ppm)
12-004(b)	0212-95-0045	0 - 6	-6.9	20	2515	33.8	*
12-004(b)	0212-95-0046	24 - 30	-30	18	2159	13.8	*
14-010	0214-95-0048	14 - 20	4.1	36	2541	15.7	14.5
14-010	0214-95-0049	0 - 4	12	200	2689	54.2	1370
14-010	0214-95-0050	0 - 6	-18	218	2640	26.6	681
14-010	0214-95-0051	0 - 6	-26	17.9	2620	25.4	8.56
14-010	0214-95-0052	0 - 6	-50	11.9	2623	2.4	6.97
14-001(f)	0214-95-0053	0 - 1	-18	13.4	1886	11.7	8.54
14-001(f)	0214-95-0054	0 - 4	39	15.7	1880	63.9	9.53
14-001(f)	0214-95-0055	43 - 47	20	61	2167	131.0	141
14-002(a)	0214-95-0058	0 - 6	-15	140	2236	9.0	2010
14-009	0214-95-0066	0 - 6	-35	62	2782	8.7	NA
14-009	0214-95-0067	12 - 18	-19	41	2805	5.0	NA
14-009	0214-95-0068	0 - 6	6.5	94	2042	39.3	NA
14-009	0214-95-0069	12 - 18	4.2	16	1872	15.5	NA
14-009	0214-95-0070	0 - 6	-0.6	38	2484	36.8	64
14-009	0214-95-0071	0 - 5	15	39	2654	49.9	29.9
14-009	0214-95-0072	0 - 5	23	82	3750	27.1	123
14-009	0214-95-0073	0 - 6	-23	62	3064	89.3	*
14-009	0214-95-0074	0 - 5	10	57	2992	25.7	*
14-009	0214-95-0075	0 - 6	-18	24	3256	13.7	*
14-004(c)	0214-95-0076	0 - 6	23	22.2	2097	64.5	*
14-004(b)	0214-95-0077	0 - 4	59	21.5	2044	44.5	13.4
Aggregate 4	0214-95-0078	0 - 3	-5.6	16.6	1280	24.7	9.41
Aggregate 4	0214-95-0079	0 - 5	-18	39	1444	27.6	12.6
Aggregate 4	0214-95-0080	0 - 5	18	27	1444	21.5	13.6
Aggregate 4	0214-95-0081	0 - 4	-47	14.6	1282	19.8	4.51
Aggregate 4	0214-95-0082	0 - 3	-65	23.6	1277	6.6	3.46
Aggregate 4	0214-95-0083	0 - 6	-56	140.1	1308	5.6	1.88
Aggregate 4	0214-95-0084	0 - 6	-31	9.5	2331	9.8	1.75
Aggregate 4	0214-95-0085	0 - 4	-30	22	2567	8.2	3.2
Aggregate 4	0214-95-0086	0 - 5	-8.3	29	3301	9.0	2.49
Aggregate 4	0214-95-0087	0 - 6	-42	24.3	2358	6.3	1.58
Aggregate 4	0214-95-0088	0 - 4	-0.3	15	2237	34.0	7.29
Aggregate 4	0214-95-0089	0 - 5	-29	35	3074	4.2	1.47
Aggregate 4	0214-95-0090	0 - 6	-21	40.1	2475	13.0	4.59
C-14-003	0214-95-0091	0 - 6	-23	-5.8	2015	7.6	*
C-14-003	0214-95-0092	0 - 3	-29	29	2166	10.0	17.4
C-14-004	0214-95-0093	0 - 2	-30	34	2106	Not submitted for analytical	
C-14-004	0214-95-0094	0 - 2	-0.2	23	2125	Not submitted for analytical	
C-14-005	0214-95-0095	0 - 6	7.1	21	2123	22.6	4.94
C-14-005	0214-95-0096	0 - 5	57	33	2089	129.0	3.99
C-14-006	0214-95-0097	0 - 6	-30	24	2258	13.0	NA

Table D-27 (continued)

PRS or AOC	Sample #	Depth (inches)	XRF Data Pb (ppm)	XRF Data U (ppm)	Ludium 2210 Rad Data (cpm)	Analytical Data Pb (ppm)	Analytical Data U (ppm)
C-14-006	0214-95-0098	0 - 6	-21	24	2261	9.8	NA
C-14-007	0214-95-0099	0 - 5	-24	29	2207	31.5	12
C-14-007	0214-95-0100	0 - 5	-24	17.1	2076	16.9	4.34
C-14-008	0214-95-0056	0 -6	-31	17	3036	10.3	*
C-14-008	0214-95-0057	0 -6	-7.1	16	2966	12.4	*
14-006	0214-95-0101	48 - 48	-47	34	1844	17.5	3.36
14-006	0214-95-0102	48 - 48	-17	14	1617	13.9	3.59
14-006	0214-95-0103	0 - 6	3.9	22.8	2000	46.5	7.31
14-006	0214-95-0104	18 - 24	-42	17.1	2208	13.5	3.55
14-006	0214-95-0105	0 - 6	15	17.3	2060	22.8	5.57
14-006	0214-95-0106	0 - 6	-21	10.4	2570	17.2	6.89
14-007	0214-95-0107	54 - 60	-54	21.1	2627	10.3	*
14-007	0214-95-0108	54 - 60	-38	32	2663	11.0	*
14-007	0214-95-0111	0 - 6	-21	23	2473	33.0	*
14-007	0214-95-0112	18 - 24	-17	31	2684	14.0	*
14-007	0214-95-0113	0 - 6	-40	15.9	2426	18.1	*
14-007	0214-95-0114	0 - 6	-32	26	2376	14.0	*
14-002(d,e)	0214-95-0115	0 - 6	-12	35	2581	37.7	6.51
14-002(d,e)	0214-95-0116	0 - 6	-11	14	2581	41.4	6.53
14-002(d,e)	0214-95-0117	0 - 6	-39	31	2448	14.4	5.3
14-002(d,e)	0214-95-0118	0 - 6	-35	30	2407	15.4	2.73
14-002(d,e)	0214-95-0119	0 - 6	-29	28	2523	21.1	6.68
14-003	0214-95-0120	6 - 12	1804	28	2506	5380.0	64.2
14-003	0214-95-0121	6 - 12	224	14	2537	13100.0	2.58
C-14-001	0214-95-0122	6 - 11	-26	16	2554	23.9	NA
C-14-001	0214-95-0123	6 - 11	-34	7.7	2554	22.6	NA
C-14-001	0214-95-0124	6 - 12	-66	33	2557	11.5	NA
C-14-009	0214-95-0125	8 - 14	-8.7	25	2376	28.8	NA
C-14-009	0214-95-0126	7 - 13	-33	18.6	2257	11.7	NA
Aggregate 6	0214-95-0127	0 - 6	127	19	2427	115.0	6.92
Aggregate 6	0214-95-0128	0 - 6	92	35	2715	85.1	2.95
Aggregate 6	0214-95-0129	0 - 6	301	54	3042	290.0	13.2
Aggregate 6	0214-95-0130	0 - 6	-15	11.1	2680	48.4	3.37

Table D-28
Subaggregate 9, TA-15 West, Field-Screening Data

PRS or AOC	Sample #	Depth (inches)	XRF Data Pb (ppm)	XRF Data U (ppm)	LIBS Be (ppm)	Ludlum 2210 Rad Data (cpm)	Analytical Data Pb (ppm)	Analytical Data U (ppm)	Analytical Data Be (ppm)
15-010(a)	0215-95-0131	83 - 83	59	11.5	NA	2697	133.00	*	0.565
15-010(a)	0215-95-0132	81 - 81	-20	19	NA	2774	53.30	*	0.664
C-15-010	0215-95-0137	18 - 24	13	39	NA	2473	23.40	2.61	0.471
C-15-010	0215-95-0138	18 - 24	-24	58	NA	2504	5.01	4.47	0.167
15-006(c)	0215-95-0139	0 - 6	18	11	NA	2436	60.1	2	1.1
15-014(j)	0215-95-0141	0 - 6	1.0	41	NA	2207	15.40	2.51	0.964
15-014(j)	0215-95-0142	16 - 20	-38	44	NA	1778	13.90	2.15	0.803
15-014(j)	0215-95-0143	0 - 1	144	16	NA	2314	101.00	3.44	0.365
15-014(j)	0215-95-0145	0 - 6	-17	43	NA	2283	18.60	2.39	0.363
15-014(j)	0215-95-0146	30 - 36	-24	22	NA	2417	7.71	2	0.403
15-011(c)	0215-95-0147	0 - 6	-29	45	NA	3378	6.84	1.03	0.400
15-011(c)	0215-95-0148	30 - 36	-25	36	NA	3274	6.69	1.62	0.383
15-011(c)	0215-95-0149	0 - 6	-41	24	NA	2509	15.30	5.51	0.783
15-011(c)	0215-95-0150	18 - 24	-62	25	NA	2516	10.60	0.66	0.876
15-014(a)	0215-95-0159	0 - 6	-11	39	NA	2375	3.47	*	0.241
15-014(a)	0215-95-0160	26 - 32	-21	44	NA	2491	6.10	*	0.264
15-014(a)	0215-95-0161	0 - 6	-28	23	NA	2292	8.46	*	0.214
15-014(a)	0215-95-0162	20 - 26	-45	19.1	NA	2279	4.70	*	0.207
15-014(a)	0215-95-0163	0 - 6	-15	36	NA	2002	7.56	*	0.231
15-014(a)	0215-95-0164	6 - 10	-40	35	NA	2065	3.66	*	0.255
15-014(a)	0215-95-0165	0 - 6	-26	24	NA	2467	10.70	*	0.284
15-014(b)	0215-95-0167	0 - 6	-14	26	NA	2164	12.60	*	0.783
15-014(b)	0215-95-0168	30 - 36	-35	21	NA	2304	12.60	*	0.878
15-014(b)	0215-95-0169	0 - 6	-47	32	NA	2123	9.51	*	0.328
15-014(b)	0215-95-0170	30 - 36	-43	27	NA	2053	9.88	*	1.030
15-014(b)	0215-95-0171	0 - 4	-46	27	NA	2079	3.69	*	0.830
15-014(b)	0215-95-0172	9 - 15	-44	19	NA	2358	3.90	*	0.607

Table D-28 (continued)

PRS or AOC	Sample #	Depth (Inches)	XRF Data Pb (ppm)	XRF Data U (ppm)	LIBS Be (ppm)	Ludlum 2210 Rad Data (cpm)	Analytical Data Pb (ppm)	Analytical Data U (ppm)	Analytical Data Be (ppm)
15-014(b)	0215-95-0173	0 - 6	-18	19	NA	2010	13.90	-	0.649
15-014(b)	0215-95-0174	30 - 36	-45	19	NA	2051	13.40	-	0.893
15-014(b)	0215-95-0175	0 - 5	-48	15	NA	2152	11.50	-	0.587
15-014(b)	0215-95-0176	10 - 15	-39	33	NA	2076	16.00	-	1.720
15-014(b)	0215-95-0177	0 - 6	-56	18	NA	2319	7.99	-	0.378
15-014(b)	0215-95-0178	22 - 25	-68	35	NA	2401	4.49	-	0.314
15-005(b)	0215-95-0179	0 - 6	-22	28	NA	2856	12.80	4.67	0.742
15-005(b)	0215-95-0180	18 - 24	-33	20	NA	2765	9.53	2.59	0.645
15-005(b)	0215-95-0181	0 - 6	-40	27	NA	2749	12.20	3.65	0.713
15-005(b)	0215-95-0182	18 - 24	-54	22	NA	2506	11.90	3.51	1.030
15-005(c)	0215-95-0183	18 - 24	-21	31	NA	2563	10.80	2.46	0.987
15-005(c)	0215-95-0184	18 - 24	-41	29	NA	2719	10.70	3.71	0.889
15-014(h)	0215-95-0191	0 - 6	-9.3	13	NA	2480	Not Submitted for Analysis		
15-014(h)	0215-95-0192	30 - 36	-32	25.4	NA	2297	Not Submitted for Analysis		
15-014(h)	0215-95-0193	0 - 6	16	13	NA	2453	Not Submitted for Analysis		
15-014(h)	0215-95-0194	18 - 24	-20	12	NA	2542	Not Submitted for Analysis		
15-014(h)	0215-95-0195	0 - 6	37	20	NA	2930	37.20	-	0.435
15-014(h)	0215-95-0196	30 - 36	-29	31	NA	2543	8.72	-	0.958
15-014(h)	0215-95-0197	0 - 6	-47	15	NA	2568	16.60	-	0.657
15-014(h)	0215-95-0198	16 - 22	-25	39	NA	2565	9.07	-	0.561
15-010(b)	0215-95-0201	0 - 6	2.0	27	NA	2291	Not Submitted for Analysis		
15-010(b)	0215-95-0202	20 - 24	-18	19	NA	2519	Not Submitted for Analysis		
15-010(b)	0215-95-0203	0 - 6	-50	28	NA	2882	Not Submitted for Analysis		
15-002	0215-95-0205	0 - 6	-21	20	NA	2667	14.20	2.24	0.849
15-002	0215-95-0206	18 - 24	25	9.9	NA	2487	12.90	3.15	0.656
15-002	0215-95-0207	0 - 6	7.9	29	NA	2399	22.10	5.94	0.692
15-002	0215-95-0208	18 - 24	-18	17	NA	2685	12.40	3.18	0.838

Table D-28 (continued)

PRS or AOC	Sample #	Depth (inches)	XRF Data Pb (ppm)	XRF Data U (ppm)	LIBS Be (ppm)	Ludlum 2210 Rad Data (cpm)	Analytical Data Pb (ppm)	Analytical Data U (ppm)	Analytical Data Be (ppm)
15-007(a)	0215-95-0209	0 - 6	-28	13	NA	2426	Not Submitted for Analysis		
15-007(a)	0215-95-0210	18 - 24	-44	8.2	NA	2292	Not Submitted for Analysis		
15-007(a)	0215-95-0211	40 - 46	-30	35	NA	2401	9.19	1.78	0.947
15-007(a)	0215-95-0212	0 - 6	-36	25	NA	2450	11.40	2.61	0.386
15-007(a)	0215-95-0213	18 - 24	-52	28	NA	2263	12.70	2.06	0.973
15-007(a)	0215-95-0214	50 - 56	-39	19.4	NA	2419	Not Submitted for Analysis		
15-007(a)	0215-95-0215	0 - 6	1.7	26	NA	2308	25.60	3.32	0.742
15-007(a)	0215-95-0216	18 - 24	0.4	26	NA	2378	33.20	2.77	0.612
15-007(a)	0215-95-0217	33 - 39	470	22.3	NA	2406	106.00	1.9	0.634
15-007(a)	0215-95-0218	0 - 6	6.2	22	NA	2541	14.40	2.79	0.711
15-007(a)	0215-95-0219	18 - 24	-16	18	NA	2358	Not Submitted for Analysis		
15-007(a)	0215-95-0220	26 - 32	-49	21.4	NA	2263	Not Submitted for Analysis		
15-007(a)	0215-95-0221	0 - 6	-28	0.6	NA	2060	Not Submitted for Analysis		
15-007(a)	0215-95-0222	18 - 24	-26	35	NA	2048	13.20	5.84	0.578
15-007(a)	0215-95-0223	29 - 35	4.0	21.9	NA	2110	26.00	2.96	0.705
15-007(a)	0215-95-0224	0 - 6	245	28	NA	2424	198.00	2.73	0.622
15-007(a)	0215-95-0225	18 - 24	-38	26	NA	2350	Not Submitted for Analysis		
15-007(a)	0215-95-0226	48 - 54	-34	19.6	NA	2375	Not Submitted for Analysis		
15-007(a)	0215-95-0227	0 - 6	-15	14	NA	2221	Not Submitted for Analysis		
15-007(a)	0215-95-0228	18 - 24	9.5	29	NA	2277	11.50	2.09	0.709
15-007(a)	0215-95-0229	30 - 36	-35	26	NA	2593	15.00	1.85	0.686
C-15-005	0215-95-0230	0 - 6	-18	18	NA	2068	28.40	13.6	0.328
C-15-005	0215-95-0231	18 - 24	-28	13	NA	2041	15.20	2.9	0.920
C-15-005	0215-95-0232	0 - 6	-34	16	NA	2020	Not Submitted for Analysis		
C-15-005	0215-95-0233	18 - 24	-16	19	NA	2296	29.50	1.29	0.795
C-15-006	0215-95-0234	0 - 6	-10	23	NA	2183	13.90	2.87	0.670
C-15-006	0215-95-0235	18 - 24	-31	0.08	NA	2133	Not Submitted for Analysis		

Table D-28 (continued)

PRS or AOC	Sample #	Depth (inches)	XRF Data Pb (ppm)	XRF Data U (ppm)	LIBS Be (ppm)	Ludlum 2210 Rad Data (cpm)	Analytical Data Pb (ppm)	Analytical Data U (ppm)	Analytical Data Be (ppm)
C-15-011	0215-95-0245	72-78	-32	12.8	NA	2288	Not Submitted for Analysis		
C-15-011	0215-95-0246	120-126	NA	NA	NA	2381	Not Submitted for Analysis		
15-001	0215-95-0247	0 - 3	-13	12	NA	1762	6.20	4.88	0.447
15-001	0215-95-0248	0 - 6	-18	12	NA	1637	5.01	6.37	0.276
15-001	0215-95-0249	0 - 4	-54	19.9	NA	1927	4.77	3.26	0.417
15-004(g)	0215-95-0250	0 - 6	-55	17	NA	2743	10.90	6.52	0.720
15-004(g)	0215-95-0251	18 - 24	-37	34	NA	2763	9.20	2.94	0.884
15-004(g)	0215-95-0252	0 - 6	-20	23	NA	2640	Not Submitted for Analysis		
15-004(g)	0215-95-0253	18 - 24	-32	9.0	NA	2708	9.48	2.79	1.010
15-004(g)	0215-95-0254	0 - 6	-14	51	NA	2620	Not Submitted for Analysis		
15-004(g)	0215-95-0255	0 - 6	-37	42	NA	2671	13.50	61.8	0.726
15-004(g)	0215-95-0256	18 - 24	-38	31	NA	2366	10.90	2.32	0.929
15-004(g)	0215-95-0257	0 - 6	-15	28	NA	2406	Not Submitted for Analysis		
15-004(g)	0215-95-0258	18 - 24	-28	9.8	NA	2371	Not Submitted for Analysis		
15-004(g)	0215-95-0259	0 - 6	13	160	NA	2448	27.60	298	0.524
15-004(g)	0215-95-0260	0 - 6	-5.9	65	NA	2516	Not Submitted for Analysis		
15-004(g)	0215-95-0261	18 - 20	-14	374	NA	3050	15.40	637	0.381
15-004(g)	0215-95-0262	0 - 6	-40	44	NA	1829	Not Submitted for Analysis		
15-004(g)	0215-95-0263	0 - 6	-8.4	20	NA	2003	Not Submitted for Analysis		
15-004(g)	0215-95-0264	18 - 24	-38	27	NA	1979	Not Submitted for Analysis		
15-004(g)	0215-95-0265	0 - 6	-49	17	NA	2561	Not Submitted for Analysis		
15-004(g)	0215-95-0266	18 - 24	-39	20	NA	2407	Not Submitted for Analysis		
15-004(g)	0215-95-0267	0 - 6	21	17	NA	2421	13.70	38.3	0.808
15-004(g)	0215-95-0268	0 - 6	-24	43	NA	2328	Not Submitted for Analysis		
15-004(g)	0215-95-0269	0 - 6	-32	35	NA	2062	Not Submitted for Analysis		
15-004(g)	0215-95-0270	18 - 24	-23	23	NA	2155	Not Submitted for Analysis		
15-004(g)	0215-95-0271	0 - 6	-37	9.4	NA	1837	Not Submitted for Analysis		

Table D-28 (continued)

PRS or AOC	Sample #	Depth (inches)	XRF Data Pb (ppm)	XRF Data U (ppm)	LIBS Be (ppm)	Ludlum 2210 Rad Data (cpm)	Analytical Data Pb (ppm)	Analytical Data U (ppm)	Analytical Data Be (ppm)
15-004(g)	0215-95-0272	18 - 24	-28	19	NA	1729	Not Submitted for Analysis		
15-008(c)	0215-95-0273	0 - 6	1.8	922	NA	3449	46.40	2180	33.400
15-008(c)	0215-95-0274	0 - 5	-32	744	NA	3557	43.90	1620	260.000
C-15-001	0215-95-0275	0 - 3	-43	46	NA	2675	23.20	55	0.825
C-15-001	0215-95-0276	0 - 6	-19	39	NA	2374	20.00	14.2	0.884
15-004(h)	0215-95-0277	0 - 6	-10	29	NA	2819	191.10	33	0.673
15-004(h)	0215-95-0278	18 - 24	-31	22	NA	2469	6.08	2.8	0.627
15-004(h)	0215-95-0279	0 - 6	-16	17.8	NA	2357	11.40	5.07	0.615
15-004(h)	0215-95-0280	18 - 24	-1.9	2.5	NA	2144	7.83	3.86	0.716
15-004(h)	0215-95-0281	0 - 2	-42	54	NA	2616	21.40	29.9	0.457
15-004(h)	0215-95-0282	0 - 6	-23	30	NA	2219	15.80	24.7	1.060
15-004(h)	0215-95-0283	18 - 24	-25	26	NA	2445	7.85	4.57	0.708
15-004(h)	0215-95-0284	0 - 6	-13	26.7	NA	2336	12.80	33	0.358
15-004(h)	0215-95-0285	18 - 24	-21	25	NA	2380	13.20	3.24	0.681
15-004(h)	0215-95-0286	0 - 5	-45	25	NA	2783	7.50	4.12	0.319
15-004(h)	0215-95-0287	18 - 24	-25	19	NA	2518	8.84	3.89	0.714
15-004(h)	0215-95-0288	0 - 6	-61	34.2	NA	2868	9.11	22.9	0.238
15-004(h)	0215-95-0289	0 - 6	93	253	NA	2716	82.70	510	0.350
15-004(h)	0215-95-0290	18 - 24	139	46	NA	2513	132.00	131	0.253
15-004(h)	0215-95-0291	0 - 4	-50	23.1	NA	1863	Not Submitted for Analysis		
15-004(h)	0215-95-0292	12 - 16	-34	-0.5	NA	1942	Not Submitted for Analysis		
15-004(h)	0215-95-0293	0 - 6	-20	19	NA	2730	Not Submitted for Analysis		
15-004(h)	0215-95-0294	18 - 22	-25	24	NA	2687	Not Submitted for Analysis		
15-004(h)	0215-95-0295	0 - 6	-22	22	NA	2947	Not Submitted for Analysis		
15-004(h)	0215-95-0296	18 - 24	-38	23	NA	2911	Not Submitted for Analysis		
15-004(h)	0215-95-0297	0 - 6	-35	22	NA	2861	Not Submitted for Analysis		
15-004(h)	0215-95-0298	18 - 24	2.3	16.4	NA	2935	Not Submitted for Analysis		

Table D-28 (continued)

PRS or AOC	Sample #	Depth (inches)	XRF Data Pb (ppm)	XRF Data U (ppm)	LIBS Be (ppm)	Ludlum 2210 Rad Data (cpm)	Analytical Data Pb (ppm)	Analytical Data U (ppm)	Analytical Data Be (ppm)
15-004(h)	0215-95-0299	0 - 4	39	55	NA	2432	38.90	35.3	0.643
15-004(h)	0215-95-0300	0 - 6	-4.5	29	NA	2672	Not Submitted for Analysis		
15-004(h)	0215-95-0301	0 - 4	-4.1	13	NA	2856	Not Submitted for Analysis		
15-004(h)	0215-95-0302	0 - 6	-28	33.4	NA	2702	3.91	11.7	0.707
15-004(h)	0215-95-0303	18 - 24	-47	10	NA	2982	Not Submitted for Analysis		
15-004(h)	0215-95-0304	0 - 6	-18	63	NA	2306	13.90	75.9	1.100
15-004(h)	0215-95-0305	13 - 19	-28	36	NA	2414	6.91	6.79	0.626
15-004(h)	0215-95-0308	0 - 6	2.1	16	NA	2947	Not Submitted for Analysis		
15-004(h)	0215-95-0309	18 - 24	-24	15	NA	2911	Not Submitted for Analysis		
15-014(b)	0215-95-0312	0-6	-14	-26	NA	2167	15.00		0.678
15-005(b)	0215-95-0314	0 - 6	-22	28	NA	2656	12.90	4.5	0.630
15-007(a)	0215-95-0316	0 - 6	6.2	22	NA	2541	15.70	4.32	0.666
15-014(h)	0215-95-0318	0 - 6	-9.3	13	NA	2480	Not Submitted for Analysis		
15-006(c)	0215-95-0400	0 - 6	-47	49	<1	3100	Not Submitted for Analysis		
15-006(c)	0215-95-0403	0 - 8	-37	47	<1	2989	Not Submitted for Analysis		
15-006(c)	0215-95-0406	0 - 6	1.0	67	<1	3046	Not Submitted for Analysis		
15-006(c)	0215-95-0407	13 - 19	-40	49	<1	3065	Not Submitted for Analysis		
15-006(c)	0215-95-0409	0 - 6	4.3	61	<1	2858	Not Submitted for Analysis		
15-006(c)	0215-95-0412	0 - 5	76	129	NA	5024	118	140	4
15-006(c)	0215-95-0413	5 - 9	-32	109	NA	3175	Not Submitted for Analysis		
15-006(c)	0215-95-0415	0 - 5	261	256	NA	3560	160	170	3.6
15-006(c)	0215-95-0416	7 - 13	-3.1	51	NA	3196	Not Submitted for Analysis		
15-006(c)	0215-95-0418	0 - 6	870	866	NA	3346	802	740	22.6
15-006(c)	0215-95-0419	0 - 6	886	852	NA	3346	907	890	15.6
15-006(c)	0215-95-0420	6 - 8	120	303	NA	3341	91.3	370	1.2
15-006(c)	0215-95-0422	0 - 6	390	282	36.86	3260	341	260	3.8
15-006(c)	0215-95-0423	12 - 18	6.6	123	<1	3220			

Table D-28 (continued)

PRS or AOC	Sample #	Depth (inches)	XRF Data Pb (ppm)	XRF Data U (ppm)	LIBS Be (ppm)	Ludlum 2210 Rad Data (cpm)	Analytical Data Pb (ppm)	Analytical Data U (ppm)	Analytical Data Be (ppm)
15-006(c)	0215-95-0425	0 - 6	324	178	61.2	3303	228	260	5.5
15-006(c)	0215-95-0426	12 - 18	9.8	66	<1	2557	Not Submitted for Analysis		
15-006(c)	0215-95-0428	0 - 6	76.3	171	46.53	3676	630	160	2.2
15-006(c)	0215-95-0429	18 - 24	54	909	24.53	3901	164	1100	4.1
15-006(c)	0215-95-0430	26 - 32	13	796	3.2	3561	29.7	1500	3.6
15-006(c)	0215-95-0431	0 - 6	237	1237	168.45	4051	281	1700	27.7
15-006(c)	0215-95-0432	18 - 24	117	734	43.18	3547	47.7	45000	4
15-006(c)	0215-95-0433	24 - 30	19	317	6.46	3543	92	230	3.3
15-006(c)	0215-95-0434	0 - 6	-1.9	184	<1	3691	Not Submitted for Analysis		
15-006(c)	0215-95-0435	12 - 18	-13	130	<1	3570	Not Submitted for Analysis		
15-006(c)	0215-95-0437	0 - 6	74	117	<1	2960	Not Submitted for Analysis		
15-006(c)	0215-95-0438	6 - 12	-6.1	64	<1	2842	Not Submitted for Analysis		
15-006(c)	0215-95-0440	0 - 6	22	55	<1	3105	Not Submitted for Analysis		
15-006(c)	0215-95-0441	0 - 6	19	79	<1	3105	Not Submitted for Analysis		
15-006(c)	0215-95-0442	6 - 12	-24	65	<1	3019	Not Submitted for Analysis		
15-006(c)	0215-95-0444	0 - 6	148	116	0.77	2842	Not Submitted for Analysis		
15-006(c)	0215-95-0445	8 - 14	32	52	<1	2754	Not Submitted for Analysis		
15-006(c)	0215-95-0447	0 - 6	-25	27	<1	2689	Not Submitted for Analysis		
15-006(c)	0215-95-0448	15 - 21	-29	25	<1	2685	Not Submitted for Analysis		
15-006(c)	0215-95-0450	0 - 6	-23	92	0.74	2773	84.2	64	3.3
15-006(c)	0215-95-0451	12 - 18	-7.3	44	<1	2687	Not Submitted for Analysis		
15-006(c)	0215-95-0453	0 - 6	295	725	78.52	3235	356	970	13.3
15-006(c)	0215-95-0454	15 - 21	71	411	27.45	3130	79.7	420	3.1
15-006(c)	0215-95-0456	0 - 6	950	343	47.57	2658	553	260	18
15-006(c)	0215-95-0457	7 - 13	8.9	64	0.26	2776	Not Submitted for Analysis		
15-006(c)	0215-95-0459	0 - 6	726	324	31.5	2971	287	620	10.7
15-006(c)	0215-95-0460	6 - 12	273	145	8.69	2977	Not Submitted for Analysis		

Table D-28 (continued)

PRS or AOC	Sample #	Depth (Inches)	XRF Data Pb (ppm)	XRF Data U (ppm)	LIBS Be (ppm)	Ludlum 2210 Rad Data (cpm)	Analytical Data Pb (ppm)	Analytical Data U (ppm)	Analytical Data Be (ppm)
15-006(c)	0215-95-0462	0 - 6	191	317	29.8	2939	Not Submitted for Analysis		
15-006(c)	0215-95-0463	0 - 6	133	234	24.2	2939	Not Submitted for Analysis		
15-006(c)	0215-95-0464	16 - 22	-42	82	20.2	2947	Not Submitted for Analysis		
15-006(c)	0215-95-0466	0 - 6	-26	37	<0.2	2506	Not Submitted for Analysis		
15-006(c)	0215-95-0467	8 - 14	-77	43	<0.2	2922	Not Submitted for Analysis		
15-006(c)	0215-95-0469	0 - 6	-33	9.5	<0.2	2584	Not Submitted for Analysis		
15-006(c)	0215-95-0470	18 - 24	-29	38	<1	2587	Not Submitted for Analysis		
15-006(c)	0215-95-0471	34 - 40	-11	39	<0.2	2505	Not Submitted for Analysis		
15-006(c)	0215-95-0472	0 - 6	-16	11	<0.2	2539	Not Submitted for Analysis		
15-006(c)	0215-95-0473	15 - 21	-49	27	<0.2	2481	Not Submitted for Analysis		
15-006(c)	0215-95-0475	0 - 6	95	292	20.9	4447	Not Submitted for Analysis		
15-006(c)	0215-95-0476	18 - 24	309	274	<0.2	4032	234	170	1.4
15-006(c)	0215-95-0477	26 - 32	43	189	2.13	4145	77.1	110	2
15-006(c)	0215-95-0478	0 - 6	41	708	6.2	3989	Not Submitted for Analysis		
15-006(c)	0215-95-0479	9 - 15	-23	86	<0.2	4196	Not Submitted for Analysis		
15-006(c)	0215-95-0481	0 - 6	-39	133	0.60	3617	Not Submitted for Analysis		
15-006(c)	0215-95-0482	6 - 12	-37	218	<0.2	3654	18.1	120	1.2
15-006(c)	0215-95-0484	0 - 6	181	602	37.3	3665	132	670	13.2
15-006(c)	0215-95-0485	0 - 6	175	615	33.0	3685	180	510	24.1
15-006(c)	0215-95-0488	0 - 6	189	178	13.1	3434	Not Submitted for Analysis		
15-006(c)	0215-95-0491	0 - 6	190	346	12.3	3303	Not Submitted for Analysis		
15-006(c)	0215-95-0492	6 - 12	17	92	2.01	3576	Not Submitted for Analysis		
15-006(c)	0215-95-0494	0 - 6	34	67	0.29	3598	Not Submitted for Analysis		
15-006(c)	0215-95-0495	9 - 15	41	33	<0.2	3371	Not Submitted for Analysis		
15-006(c)	0215-95-0497	0 - 6	39	56	1.18	3155	Not Submitted for Analysis		
15-006(c)	0215-95-0498	0 - 6	-38	65	29.71	3262	8.7	41	1.2
15-006(c)	0215-95-0499	0 - 6	31	46	22.36	3266	Not Submitted for Analysis		

Table D-28 (continued)

FRS or AOC	Sample #	Depth (inches)	XRF Data Pb (ppm)	XRF Data U (ppm)	LIBS Be (ppm)	Ludlum 2210 Rad Data (cpm)	Analytical Data Pb (ppm)	Analytical Data U (ppm)	Analytical Data Be (ppm)
15-006(c)	0215-95-0500	0 - 3	-59	34	0.96	3127	Not Submitted for Analysis		
15-006(c)	0215-95-0501	0 - 6	-25	34	0.68	3216	Not Submitted for Analysis		
15-006(c)	0215-95-0502	0 - 6	-50	54	1.15	3122	Not Submitted for Analysis		
15-006(c)	0215-95-0503	0 - 3	-57	57	1.25	3320	17.7	11	16.4
15-006(c)	0215-95-0504	0 - 2	-11	91	2.17	3455	21.4	110	1.8
15-006(c)	0215-95-0505	0 - 4	-33	37	0.68	3493	Not Submitted for Analysis		
15-006(c)	0215-95-0506	0 - 6	11	110	5.72	3287	49.5	130	1.6
15-006(c)	0215-95-0507	0 - 6	218	641	11.4	3169	280	3.3	3.3
15-006(c)	0215-95-0508	0 - 6	174	514	10.62	3169	167	1.1	4.5
15-006(c)	0215-95-0509	0 - 6	655	100	2.84	6632	580	8.5	1.5
15-006(c)	0215-95-0510	0 - 6	-11	65	1.58	3018	18.4	23	1.2
15-006(c)	0215-95-0511	0 - 6	-12	58	1.19	3053	Not Submitted for Analysis		
15-006(c)	0215-95-0512	0 - 6	-38	56	1.07	3392	Not Submitted for Analysis		
15-006(c)	0215-95-0513	0 - 6	-27	79	1.89	3080	10.9	49	1.1
15-006(c)	0215-95-0514	0 - 6	0.4	173	1.49	3652	18.8	96	1.2
15-006(c)	0215-95-0515	0 - 6	-56	63	1.24	3026	6.8	4.8	1.1
15-006(c)	0215-95-0516	0 - 6	-56	45	1.26	3117	Not Submitted for Analysis		
15-006(c)	0215-95-0517	0 - 6	-36	31	<1	3517	Not Submitted for Analysis		
15-006(c)	0215-95-0518	0 - 4	-30	47	<1	4027	9.5	3.9	1
15-006(c)	0215-95-0519	0 - 6	-35	22.6	<1	3297	Not Submitted for Analysis		
15-006(c)	0215-95-0520	0 - 6	-73	43	<0.2	2815	Not Submitted for Analysis		
15-006(c)	0215-95-0522	0 - 6	279	72	<0.2	2833	Not Submitted for Analysis		
15-006(c)	0215-95-0525	0 - 7	-15	112	<0.2	3212	Not Submitted for Analysis		
15-006(c)	0215-95-0526	0 - 6	9.4	93	<0.2	2758	Not Submitted for Analysis		
15-006(c)	0215-95-0527	0 - 6	30	88	<0.2	2758	Not Submitted for Analysis		
15-006(c)	0215-95-0528	14 - 20	41	35	<0.2	2912	Not Submitted for Analysis		
15-006(c)	0215-95-0529	0 - 4	370	214	0.2	3022	446	250	5.6

Table D-28 (continued)

PRS or AOC	Sample #	Depth (inches)	XRF Data Pb (ppm)	XRF Data U (ppm)	LIBS Be (ppm)	Ludlum 2210 Rad Data (cpm)	Analytical Data Pb (ppm)	Analytical Data U (ppm)	Analytical Data Be (ppm)
15-006(c)	0215-95-0531	0 - 6	442	191	12.3	3005	257	140	6.2
15-006(c)	0215-95-0532	7 - 13	355	136	5.73	2861	266	140	3.5
15-006(c)	0215-95-0533	0 - 1	346	84	1.04	2724	Not Submitted for Analysis		
15-006(c)	0215-95-0535	0 - 6	2314	143	4.49	2764	132000	100	3.9
15-006(c)	0215-95-0536	6 - 12	159	77	<0.2	2800	229	37	1.5
15-006(c)	0215-95-0537	0 - 3	293	211	18.9	2769	267	200	7.9
15-006(c)	0215-95-0539	0 - 6	314	105	1.23	2626	422	110	2.3
15-006(c)	0215-95-0541	0 - 6	310	84	6.85	2114	160	390	4.6
15-006(c)	0215-95-0542	6 - 12	0.3	58	1.37	2229	38.1	30	3.3
15-006(d)	0215-95-0543	0 - 6	-22	25	0.84	2606	Not Submitted for Analysis		
15-006(d)	0215-95-0544	18 - 24	-38	42	1.60	2357	Not Submitted for Analysis		
15-006(d)	0215-95-0545	88 - 94	-52	39	1.57	2350	6.1	2.6	1.5
15-006(d)	0215-95-0546	0 - 6	-24	4.3	1.24	2328	Not Submitted for Analysis		
15-006(d)	0215-95-0547	0 - 6	-19	16.4	0.94	2328	Not Submitted for Analysis		
15-006(d)	0215-95-0548	18 - 24	-37	51	1.65	2255	7.7	2.4	1.1
15-006(d)	0215-95-0550	0 - 6	-45	10.0	1.04	2408	Not Submitted for Analysis		
15-006(d)	0215-95-0551	9 - 15	-64	41	1.82	2291	Not Submitted for Analysis		
15-006(d)	0215-95-0553	0 - 6	-34	10	1.24	1871	Not Submitted for Analysis		
15-006(d)	0215-95-0554	18 - 24	-50	23	1.22	1784	Not Submitted for Analysis		
15-006(d)	0215-95-0555	35 - 41	-40	29	1.10	1810	8.8	2.5	1.2
15-006(d)	0215-95-0556	0 - 6	25	25	0.75	1745	77	5.4	1
15-006(d)	0215-95-0557	18 - 24	-35	30	0.94	1608	Not Submitted for Analysis		
15-006(d)	0215-95-0558	41 - 47	-4.7	19	NA	1746	Not Submitted for Analysis		
15-006(d)	0215-95-0559	0 - 6	-38	11	0.86	1722	Not Submitted for Analysis		
15-006(d)	0215-95-0560	18 - 24	-20	41	0.80	1661	Not Submitted for Analysis		
15-006(d)	0215-95-0561	38 - 44	-71	17	1.23	1677	Not Submitted for Analysis		
15-006(d)	0215-95-0562	0 - 6	-32	28	1.08	2258			

Table D-28 (continued)

PRS or AOC	Sample #	Depth (inches)	XRF Data Pb (ppm)	XRF Data U (ppm)	LIBS Be (ppm)	Ludlum 2210 Rad Data (cpm)	Analytical Data Pb (ppm)	Analytical Data U (ppm)	Analytical Data Be (ppm)
15-006(d)	0215-95-0563	18 - 24	-1.2	11	1.16	2304	Not Submitted for Analysis		
15-006(d)	0215-95-0564	51 - 57	-42	16	0.76	2112	Not Submitted for Analysis		
15-006(d)	0215-95-0565	0 - 6	-48	34	0.91	2569	14	17	1.2
15-006(d)	0215-95-0566	18 - 24	-20	13	0.78	2372	Not Submitted for Analysis		
15-006(d)	0215-95-0567	33 - 39	-39	29	1.16	2499	9.1	1.8	1.1
15-006(d)	0215-95-0568	0 - 6	-30	26	0.91	2340	Not Submitted for Analysis		
15-006(d)	0215-95-0569	0 - 6	-30	35	0.97	2340	Not Submitted for Analysis		
15-006(d)	0215-95-0570	8 - 14	-38	24	0.98	2573	Not Submitted for Analysis		
15-006(d)	0215-95-0572	0 - 6	-28	46	1.19	2340	9.8	4.6	1.1
15-006(d)	0215-95-0573	18 - 24	-23	20	0.94	2287	Not Submitted for Analysis		
15-006(d)	0215-95-0574	30 - 40	-16	27	0.62	2330	17	2.1	1.2
15-006(d)	0215-95-0575	0 - 6	-71	40	1.40	2655	7.8	5.7	1.2
15-006(d)	0215-95-0576	15 - 21	-47	49	1.51	2869	6.6	2.4	1.2
15-006(d)	0215-95-0578	0 - 6	-38	24	1.21	2398	8.8	7.2	1.1
15-006(d)	0215-95-0579	11 - 17	-19	42	1.03	2615	Not Submitted for Analysis		
15-006(d)	0215-95-0581	0 - 6	-17	22	0.71	2149	Not Submitted for Analysis		
15-006(d)	0215-95-0582	8 - 14	-48	43	1.33	2100	7.3	2.6	1.2
15-006(d)	0215-95-0584	0 - 6	-48	51	1.14	2206	14	17	1.2
15-006(d)	0215-95-0585	8 - 14	-83	41	1.50	2414	Not Submitted for Analysis		
15-006(d)	0215-95-0587	0 - 6	-17	42	1.06	2382	13	29	1.1
15-006(d)	0215-95-0588	18 - 24	-7.7	21	1.35	2700	Not Submitted for Analysis		
15-006(d)	0215-95-0589	30 - 36	-47	32	1.01	2643	12	2.7	1.1
15-006(d)	0215-95-0590	0 - 6	-31	33	0.91	2486	Not Submitted for Analysis		
15-006(d)	0215-95-0591	0 - 6	-6.5	21	0.98	2486	Not Submitted for Analysis		
15-006(d)	0215-95-0592	12 - 18	-37	31	1.11	2496	Not Submitted for Analysis		
15-006(d)	0215-95-0594	0 - 6	-43	19	1.06	2689	Not Submitted for Analysis		
15-006(d)	0215-95-0595	10 - 16	23	26	0.70	2471	Not Submitted for Analysis		

Table D-28 (continued)

PRS or AOC	Sample #	Depth (inches)	XRF Data Pb (ppm)	XRF Data U (ppm)	LIBS Be (ppm)	Ludlum 2210 Rad Data (cpm)	Analytical Data Pb (ppm)	Analytical Data U (ppm)	Analytical Data Be (ppm)
15-006(d)	0215-95-0597	0 - 6	-4.2	33	0.65	2524	Not Submitted for Analysis		
15-006(d)	0215-95-0598	6 - 10	-27	29	1.41	2473	Not Submitted for Analysis		
15-006(d)	0215-95-0600	0 - 6	-20	25	1.60	2376	Not Submitted for Analysis		
15-006(d)	0215-95-0601	18 - 24	-46	9.9	0.90	2629	Not Submitted for Analysis		
15-006(d)	0215-95-0602	28 - 34	-2.4	26	0.79	2540	Not Submitted for Analysis		
15-006(d)	0215-95-0603	0 - 6	-36	31	0.92	2616	Not Submitted for Analysis		
15-006(d)	0215-95-0604	6 - 12	-39	39	0.31	2720	Not Submitted for Analysis		
15-006(d)	0215-95-0606	0 - 6	-27	23	1.21	2448	Not Submitted for Analysis		
15-006(d)	0215-95-0607	11 - 17	-35	36	0.75	2418	Not Submitted for Analysis		
15-006(d)	0215-95-0609	0 - 6	-0.5	26	1.19	2146	44.7	4.7	1.1
15-006(d)	0215-95-0610	12 - 18	-49	50	1.60	2132	5.6	3.5	1.2
15-006(d)	0215-95-0612	0 - 6	-27	39	NA	2248	22	25	1.1
15-006(d)	0215-95-0613	0 - 6	-2.4	24	0.85	2248	13	6.4	1.1
15-006(d)	0215-95-0614	14 - 20	-28	49	1.94	2694	7.9	3.7	1.2
15-006(d)	0215-95-0616	0 - 6	-45	28	1.26	2484	Not Submitted for Analysis		
15-006(d)	0215-95-0617	0 - 6	-25	33	0.83	2380	Not Submitted for Analysis		
15-006(d)	0215-95-0618	0 - 4	-28	33	1.44	2660	8.8	9.2	1.1
15-006(d)	0215-95-0619	0 - 6	-23	25	1.02	2317	31	8.4	1.1
15-006(d)	0215-95-0620	0 - 6	-40	35	0.93	2720	9.7	14	1.1
15-006(d)	0215-95-0621	0 - 6	-52	50	1.41	2922	Not Submitted for Analysis		
15-006(d)	0215-95-0622	0 - 6	-41	40	0.94	2521	14	18	1.4
15-006(d)	0215-95-0623	0 - 6	-16	28	1.82	2894	Not Submitted for Analysis		
15-008(g)	0215-95-0624	0 - 6	-32	0.04	0.95	2082	3.3	0.68	1

Appendix E

CEARP Sample Data

Table E-1
Subaggregate 9, Firing Site G, CEARP VOC Sample Data

AREA	TA-15	TA-15	TA-15
LOCATION	INACTIVE FS	INACTIVE FS	INACTIVE FS
TYPE OF LOCATION	G-POINT	G-POINT	G-POINT
SAMPLE NUMBER	LA83501XX	LA83502XX	LA83503XX
MEDIA	SOIL	SOIL	SOIL
UNITS	ug/kg	ug/kg	ug/kg
SDG NUMBER	LA31401XA	LA31401XA	LA31401XA
FIELD MEASUREMENTS			
Depth (ft)	0-0.5	0-0.5	0-0.5
TARGET COMPOUNDS			
Methylene Chloride	---	---	38 B
Total (Allowed) Hold Time	7(14)d	7(14)d	9(14)d
ELEVated/DECReased CRQL	ELEV	ELEV	DECR
Dilution Factor	1.000	1.000	1.000

Table E-2
Subaggregate 9, Firing Site G, CEARP Inorganics Sample Data

AREA	TA-15	TA-15	TA-15
LOCATION	INACTIVE FS	INACTIVE FS	INACTIVE FS
TYPE OF LOCATION	G-POINT	G-POINT	G-POINT
SAMPLE NUMBER	LA83501XW	LA83502XW	LA83503XW
MEDIA	SOIL	SOIL	SOIL
UNITS	mg/kg	mg/kg	mg/kg
SDG NUMBER	LA60502XW	LA60502XW	LA60502XW
FIELD MEASUREMENTS			
Depth (ft)	0-0.5	0-0.5	0-0.5
ANALYTES			
Antimony	---	---	---
Arsenic	---	---	---
Barium	345	586	149
Beryllium	67.6	180	132
Cadmium	4.5 B	---	9.2
Chromium	35.9	108	47.1
Copper	158	616	1470
Lead[b]	---	---	---
Mercury	NR	NR	NR
Nickel	19.9	51.5	20.3
Selenium	---	---	---
Silver	---	16.5	---
Thallium	---	---	---
Zinc	72.2	146	649
% Solids	87.1	88.0	87.5
Total (Allowed) Hold Time[a]	8(182)d	8(182)d	8(182)d
Total (Allowed) Hold Time[b]			

a. ICP.
b. GFAAS.

Table E-3
Subaggregate 9, Firing Site G, CEARP HE Sample Data

AREA	TA-15	TA-15	TA-15
LOCATION	INACTIVE FS	INACTIVE FS	INACTIVE FS
TYPE OF LOCATION	G-POINT	G-POINT	G-POINT
SAMPLE NUMBER	LA83501XY	LA83502XY	LA83503XY
MEDIA	SOIL	SOIL	SOIL
UNITS	ug/g	ug/g	ug/g
SDG NUMBER	LANL002	LANL002	LANL002
FIELD MEASUREMENTS			
Depth (ft)	0-0.50	0-0.50	0-0.50
ANALYTES			
None detected			
Total (Allowed) Hold Time	8(14)d	8(14)d	8(14)d

Table E-4
Subaggregate 9, Firing Site G, CEARP RAD Sample Data

AREA	TA-08	TA-08	TA-08	TA-15	TA-15
LOCATION	INACTIVE FS	INACTIVE FS	INACTIVE FS	INACTIVE FS	INACTIVE FS
TYPE OF LOCATION	MOUNDS	MOUNDS	MOUNDS	G-POINT	G-POINT
SAMPLE NUMBER	LA83405W	LA83406D	LA83406W	LA83501D	LA83501W
MEDIA	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	pCi/kgW	pCi/kgD	pCi/kgW	ug/kgD	pCi/kgW
Alpha Emitters					
Thorium - 230	na	na	na	na	na
Thorium - 232[a]	<13280 ±970	na	<11120 ±850	na	<14400 ±1000
Uranium - 234	----	na	----	na	----
Uranium - 235	842 ±71.0	na	90.0 ±27.0	na	7560 ±500
Uranium - 238[a]	<13150 ±980	na	<10110 ±850	na	<14400 ±1200
Uranium - 238[b]	23100 ±3900	na	----	na	675000 ±49000
Uranium (all isotopes)[c]	na	2000 ±200	na	1320000 ±132000	na
Plutonium - 238	na	<29.0	na	na	na
Plutonium - 239,240	na	147 ±38.0	na	na	na
Beta Emitters					
Strontium - 90	na	<450	na	na	na
Gamma Emitters					
Potassium - 40	16800 ±1200	na	20200 ±1700	na	20800 ±1600
Manganese - 54	----	na	----	na	----
Cobalt - 56	----	na	----	na	----
Cobalt - 60	----	na	----	na	35.0 ±20.0
Cesium - 137	384 ±36.0	na	459 ±42.0	na	41.0 ±25.0

a. Total unbroken chain activity in equilibrium.
b. Activity in excess of U238 natural chain.
c. Units are ug (/L, /kgW, or /kgD) instead of pCi (/L, /kgW, or /kgD).
d. This column contains the results of the radiological screening run.

Table E-4 (continued)
Subaggregate 9, Firing Site G, CEARP RAD Sample Data

AREA	TA-15	TA-15	TA-15	TA-15	TA-05
LOCATION	INACTIVE FS	INACTIVE FS	INACTIVE FS	INACTIVE FS	D&D'D F.S
TYPE OF LOCATION	G-POINT	G-POINT	G-POINT	G-POINT	X-CHAMBER
SAMPLE NUMBER	LA83502D	LA83502W	LA83503D	LA83503W	LA83601D
MEDIA	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	ug/kgD	pCi/kgW	ug/kgD	pCi/kgW	pCi/kgD
Alpha Emitters					
Thorium - 230	na	na	na	na	1400 ±300
Thorium - 232[a]	na	<9640 ±860	na	<14300 ±1100	na
Uranium - 234	na	----	na	350000 ±140000	na
Uranium - 235	na	21500 ±1300	na	18700 ±1100	na
Uranium - 238[a]	na	<10400 ±1300	na	<13700 ±1200	na
Uranium - 238[b]	na	2190000 ±190000	na	1880000 ±150000	na
Uranium (all isotopes)[c]	6800000 ±680000	na	5140000 ±514000	na	116000 ±11600
Plutonium - 238	na	na	na	na	na
Plutonium - 239,240	na	na	na	na	na
Beta Emitters					
Strontium - 90	na	na	na	na	na
Gamma Emitters					
Potassium - 40	na	14200 ±2300	na	22700 ±1700	na
Manganese - 54	na	----	na	----	na
Cobalt - 56	na	----	na	----	na
Cobalt - 60	na	----	na	----	na
Cesium - 137	na	136 ±64.0	na	----	na

a. Total unbroken chain activity in equilibrium.
b. Activity in excess of U238 natural chain.
c. Units are ug (/L, /kgW, or /kgD) instead of pCi (/L, /kgW, or /kgD).
d. This column contains the results of the radiological screening run.

Table E-5
Subaggregate 9, MDA-Z, CEARP VOC Sample Data

AREA	TA-22	TA-22	TA-22	TA-15	TA-15	TA-15	TA-15
LOCATION	MARSHY AREA	MARSHY AREA	MARSHY AREA	OPEN DUMP	OPEN DUMP	OPEN DUMP	OPEN DUMP
TYPE OF LOCATION	DISPOSAL	DISPOSAL	DISPOSAL	MDA-Z	MDA-Z	MDA-Z	MDA-Z
SAMPLE NUMBER	LA81501XX	LA81502XX	LA81503XX	LA85101XX	LA85102XX	LA85103XX	LA85104XX
MEDIA	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SDG NUMBER	LA82003XA	LA82003XA	LA81503XX	LA81503XX	LA81503XX	LA81503XX	LA81503XX
FIELD MEASUREMENTS							
Depth (ft)	0-1	0-1	0-1	0-0.5	0-0.5	0-0.5	0-0.5
TARGET COMPOUNDS							
Acetone	---	---	---	---	---	---	23 B
1,1,1-Trichloroethane	6 J	---	5 J	3 J	2 J	2 J	2 J
Toluene	---	---	---	---	---	---	4 J
Ethylbenzene	---	---	---	---	---	---	---
TENTATIVELY IDENTIFIED COMPOUNDS							
Aromatic	---	---	---	---	---	---	12 J
C4 Benzene	---	---	---	---	---	---	---
Terpene C10H16	---	---	---	---	---	---	26 J
Terpene C10H16	---	---	---	---	---	---	15 J
Terpene C10H16	---	---	---	---	---	---	25 J
Terpene C10H16O	---	---	---	---	---	---	---
Terpene C10H16O	---	---	---	---	---	---	---
Total (Allowed) Hold Time	12(14)d	12(14)d	16(14)d*	11(14)d	13(14)d	11(14)d	11(14)d
ELEVated/DECReased CRQL	ELEV	DECR	ELEV	ELEV	ELEV	ELEV	ELEV
Dilution Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Table E-6
Subaggregate 9, MDA-Z, CEARP HE Sample Data

AREA	TA-15	TA-15	TA-15	TA-15	TA-15
LOCATION	OPEN DUMP	OPEN DUMP	OPEN DUMP	OPEN DUMP	OPEN DUMP
TYPE OF LOCATION	MDA-Z	MDA-Z	MDA-Z	MDA-Z	MDA-Z
SAMPLE NUMBER	LA81301XY	LA81302XY	LA81303XY	LA81304XY	LA81305XY
MEDIA	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	ug/g	ug/g	ug/g	ug/g	ug/g
SDG NUMBER	LANL003	LANL003	LANL003	LANL003	LANL003
FIELD MEASUREMENTS					
Depth (ft)	0-0.25	0-0.25	0-0.25	0-0.25	0-0.25
ANALYTES					
None detected					
Total (Allowed) Hold Time	8(14)d	8(14)d	8(14)d	8(14)d	8(14)d

Table E-7
Subaggregate 9, MDA-Z, CEARP Inorganics Sample Data

AREA	TA-15	TA-15	TA-15	TA-15
LOCATION	OPEN DUMP	OPEN DUMP	OPEN DUMP	OPEN DUMP
TYPE OF LOCATION	MDA-Z	MDA-Z	MDA-Z	MDA-Z
SAMPLE NUMBER	LA85101XW	LA85102XW	LA85103XW	LA85104XW
MEDIA	SOIL	SOIL	SOIL	SOIL
UNITS	mg/kg	mg/kg	mg/kg	mg/kg
SDG NUMBER	LA31101XW	LA31101XW	LA20101XW	LA20101XW
FIELD MEASUREMENTS				
Depth (ft)	0-0.5	0-0.5	0-0.5	0-0.5
ANALYTES				
Antimony	---	---	---	---
Arsenic	---	---	---	---
Barium	129	67.5	76.6	111
Beryllium	2.0	3.3	10.2	1.2
Cadmium	2.6 B	---	---	3.2 B
Chromium	10.8	7.6	---	---
Copper	44.3	126	71.2	---
Lead[c]	---	---	---	---
Mercury[b]	NR	NR	NR	NR
Nickel	14.0	---	---	---
Selenium	---	---	---	---
Silver	15.3	---	---	---
Thallium	---	---	---	---
Zinc	37.6	21.2	20.4	25.0
% Solids	88.2	93.4	94.4	81.9
Total (Allowed) Hold Time[a]	46(182)d	46(182)d	100(182)d	100(182)d
Total (Allowed) Hold Time[b]				
Total (Allowed) Hold Time[c]				

a. ICP.
b. CVAAS.
c. GFAAS.

Table E-7 (continued)
Subaggregate 9, MDA-Z, CEARP Inorganics Sample Data

AREA	TA-0	TA-15	TA-15	TA-15	TA-15	TA-15
LOCATION	OPEN DUMP	OPEN DUMP	OPEN DUMP	OPEN DUMP	OPEN DUMP	OPEN DUMP
TYPE OF LOCATION	MDA-M	MDA-Z	MDA-Z	MDA-Z	MDA-Z	MDA-Z
SAMPLE NUMBER	LA81107XW	LA81301XW	LA81302XW	LA81303XW	LA81304XW	LA81305XW
MEDIA	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SDG NUMBER	LA20702XW	LA20101XW	LA20101XW	LA20101XW	LA20101XW	LA20101XW
FIELD MEASUREMENTS						
Depth (ft)	0-0.5	0-0.25	0-0.25	0-0.25	0-0.25	0-0.25
ANALYTES						
Antimony	---	---	---	---	---	---
Arsenic	---	---	---	---	---	---
Barium	526	90.4	84.0	84.3	135	86.9
Beryllium	0.64 B	4.0	29.4	11.8	9.2	16.2
Cadmium	---	2.4 B	4.6	26.4	---	---
Chromium	18.7	40.2	51.7	43.8	82.9	70.7
Copper	1660	370	1160	335	197	132
Lead[c]	270	---	430	---	155	116
Mercury[b]	NR	NR	NR	NR	NR	NR
Nickel	57.5	---	130	15.5	29.5	11.6
Selenium	---	---	---	---	---	---
Silver	45.9	24.2	16.6	18.3	19.5	51.8
Thallium	---	---	---	---	---	---
Zinc	661	31.0	58.7	69.1	42.8	18.8
% Solids	90.2	96.9	97.2	95.5	97.9	95.6
Total (Allowed) Hold Time[a]	46(182)d	100(182)d	100(182)d	100(182)d	100(182)d	100(182)d
Total (Allowed) Hold Time[b]						
Total (Allowed) Hold Time[c]	7(182)d					

a. ICP.
b. CVAAS.
c. GFAAS.

Table E-8
Subaggregate 9, MDA-Z, CEARP RAD Sample Data

AREA	TA-0	TA-0	TA-0	TA-0	TA-15
LOCATION	OPEN DUMP	OPEN DUMP	OPEN DUMP	OPEN DUMP	OPEN DUMP
TYPE OF LOCATION	MDA-M	MDA-M	MDA-M	MDA-M	MDA-Z
SAMPLE NUMBER	LA81106D	LA81106W	LA81107D	LA81107W	LA81301D
MEDIA	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	pCi/kgD	pCi/kgW	pCi/kgD	pCi/kgW	pCi/kgD
Alpha Emitters					
Thorium - 230	na	na	na	na	5600 ±2100
Thorium - 232[a]	na	<10870 ±810	na	<9330 ±750	na
Uranium - 234	na	----	na	----	na
Uranium - 235	na	101 ±38.0	na	86.0 ±28.0	na
Uranium - 238[a]	na	<9420 ±800	na	<10980 ±950	na
Uranium - 238[b]	na	----	na	----	na
Uranium (all isotopes)[c]	4000 ±400	na	4000 ±400	na	95400000 ±954000
Plutonium - 238	<21.0	na	<150	na	na
Plutonium - 239,240	<28.0	na	1440 ±300	na	na
Beta Emitters					
Strontium - 90	<680	na	560 ±460	na	na
Gamma Emitters					
Aluminum - 26	na	----	na	----	na
Potassium - 40	na	14600 ±1300	na	16600 ±1700	na
Cobalt - 56	na	----	na	----	na
Cobalt - 60	na	----	na	----	na
Cesium - 134	na	----	na	----	na
Cesium - 137	na	1184 ±86.0	na	632 ±54.0	na

a. Total unbroken chain activity in equilibrium.
b. Activity in excess of U238 natural chain.
c. Units are ug (/L, /kgW, or /kgD) instead of pCi (/L, /kgW, or /kgD).

Table E-8 (continued)
Subaggregate 9, MDA-Z, CEARP RAD Sample Data

AREA	TA-15	TA-15	TA-15	TA-15	TA-15
LOCATION	OPEN DUMP	OPEN DUMP	OPEN DUMP	OPEN DUMP	OPEN DUMP
TYPE OF LOCATION	MDA-Z	MDA-Z	MDA-Z	MDA-Z	MDA-Z
SAMPLE NUMBER	LA81301W	LA81302D	LA81302W	LA81303D	LA81303W
MEDIA	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	pCi/kgW	pCi/kgD	pCi/kgW	pCi/kgD	pCi/kgW
Alpha Emitters					
Thorium - 230	na	600 ±400	na	1100 ±300	na
Thorium - 232[a]	<5100 ±1100	na	<5410 ±630	na	<7180 ±800
Uranium - 234	1070000 ±720000	na	na	na	871000 ±490000
Uranium - 235	105000 ±6600	na	32600 ±2000	na	73700 ±4500
Uranium - 238[a]	<9700 ±1600	na	<7700 ±1100	na	<8200 ±1700
Uranium - 238[b]	12700000 ±1000000	na	3690000 ±270000	na	8550000 ±620000
Uranium (all isotopes)[c]	na	20000000 ±2000000	na	37400000 ±3740000	na
Plutonium - 238	na	na	na	na	na
Plutonium - 239,240	na	na	na	na	na
Beta Emitters					
Strontium - 90	na	na	na	na	na
Gamma Emitters					
Aluminum - 26	344 ±40.0	na	98.0 ±21.0	na	196 ±35.0
Potassium - 40	13200 ±1400	na	14000 ±1100	na	16400 ±1600
Cobalt - 56	----	na	41.0 ±33.0	na	----
Cobalt - 60	----	na	----	na	----
Cesium - 134	----	na	----	na	----
Cesium - 137	----	na	----	na	----

a. Total unbroken chain activity in equilibrium.
b. Activity in excess of U238 natural chain.
c. Units are ug (/L, /kgW, or /kgD) instead of pCi (/L, /kgW, or /kgD).

Table E-8 (continued)
Subaggregate 9, MDA-Z, CEARP RAD Sample Data

AREA	TA-15	TA-15	TA-15	TA-15
LOCATION	OPEN DUMP	OPEN DUMP	OPEN DUMP	OPEN DUMP
TYPE OF LOCATION	MDA-Z	MDA-Z	MDA-Z	MDA-Z
SAMPLE NUMBER	LA81304D	LA81304W	LA81305D	LA81305W
MEDIA	SOIL	SOIL	SOIL	SOIL
UNITS	pCi/kgD	pCi/kgW	pCi/kgD	pCi/kgW
Alpha Emitters				
Thorium - 230	2000 ±600	na	13800 ±3500	na
Thorium - 232[a]	na	<6060 ±700	na	----
Uranium - 234	na	----	na	1440000 ±480000
Uranium - 235	na	48400 ±3000	na	184000 ±11000
Uranium - 238[a]	na	<8000 ±1100	na	<8000 ±3600
Uranium - 238[b]	na	5670000 ±410000	na	24100000 ±1800000
Uranium (all isotopes)[c]	31100000 ±3110000	na	147000000 ±14700000	na
Plutonium - 238	na	na	na	na
Plutonium - 239,240	na	na	na	na
Beta Emitters				
Strontium - 90	na	na	na	na
Gamma Emitters				
Aluminum - 26	na	149 ±148	na	651 ±60.0
Potassium - 40	na	13100 ±1300	na	13700 ±1100
Cobalt - 56	na	----	na	----
Cobalt - 60	na	----	na	----
Cesium - 134	na	----	na	----
Cesium - 137	na	----	na	----

a. Total unbroken chain activity in equilibrium.
b. Activity in excess of U238 natural chain.
c. Units are ug (/L, /kgW, or /kgD) instead of pCi (/L, /kgW, or /kgD).
d. This column contains the results of the radiological screening run.