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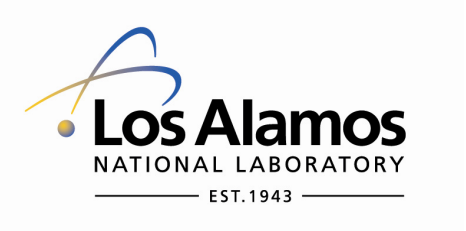
Progress Report for Cleanup Activities at Material Disposal Area B, Solid Waste Management Unit 21-015, at Technical Area 21, First Quarter of Fiscal Year 2011



Prepared by the Environmental Programs Directorate

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Progress Report for Cleanup Activities at Material Disposal Area B, Solid Waste Management Unit 21-015, at Technical Area 21, First Quarter of Fiscal Year 2011

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EXECUTIVE SUMMARY

Material Disposal Area (MDA) B is an inactive disposal area located at Technical Area 21 (TA-21) on Delta Prime (DP) Mesa that received chemical and radioactive waste from operations between 1944 and 1948. MDA B is designated as Solid Waste Management Unit 21-015. The objective of excavation activities at the MDA B site is to remediate the site to residential cleanup levels. Excavation activities commenced at the site on June 30, 2010. This quarterly report presents the progress of excavation, waste removal, and confirmation sampling activities at MDA B from June 30 through November 8, 2010.

Previous remediation activities at MDA B included excavation of Areas 9 and 10 to confirm historical records that indicated waste was not buried in those areas, removal of an asphalt cover that was present over 75% of MDA B, and removal of soil overburden from the east end of MDA B. Remedial action progress through the first quarter of fiscal year 2011 included excavation of 39 grid cells in enclosure 1, 46 grid cells in enclosure 2, 52 grid cells in enclosure 3, 44 grid cells in enclosure 7, and 20 grid cells in enclosure 12. More than half of the low-level waste (LLW) removed from MDA B has been shipped to the Energy Solutions Clive LLW disposal facility (Clive). Additional LLW remains in storage at MDA B, with a percentage of that intended for disposal at the Nevada Test Site LLW facility. Two containers of mixed low-level waste (MLLW) have been shipped to Clive, and one 55-gal. container of MLLW intended for disposal at Clive is currently staged at TA-54. The remaining contaminated soil and waste debris that has been excavated from within the five enclosures await characterization pending receipt of analytical results.

Seventeen confirmation samples collected from four of these enclosures had no detections of organic chemicals that exceeded residential soil screening levels (SSLs). Two of the seven confirmation samples from enclosure 3 had arsenic results exceeding residential SSLs, but all other inorganic and organic chemical results from those samples were below SSLs, and all the radionuclide results from those samples were below residential screening action levels (SALs). One out of three confirmation samples from enclosure 1 had plutonium-239/240 results that exceeded residential SALs; thus additional excavation was conducted and four additional confirmation samples were collected at various depths within that grid cell. None of the subsequent results exceeded SSLs or SALs. The SAL for plutonium-239/240 was also exceeded in the one confirmation sample collected from the bottom of the trench in enclosure 2. No additional tuff removal is planned because excavation in that trench has reached a depth at which continued excavation is impractical. Three confirmation samples were collected from the trench in enclosure 7. The SAL for plutonium-239/240 was exceeded in the sample collected from the bottom of the enclosure 7 trench; excavation will continue to deeper levels. No other confirmation sample results exceeded SSLs or SALs. No confirmation samples have been collected from the trench in enclosure 12 to date.

Air sampling along the northern boundary of MDA B during the reporting period indicated a maximum dose of 0.018 mrem to the public during the reporting period with a year-to-date maximum total of 0.265 mrem. These measurements are significantly lower than the U.S. Environmental Protection Agency air pathway limit of 10 mrem per year.

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1.0 INTRODUCTION

Material Disposal Area (MDA) B received contaminated materials that contained both chemical and radioactive waste from 1944 to 1948. Investigation of MDA B is required by the March 1, 2005, Compliance Order on Consent (hereafter, the Consent Order). In January 2007, the New Mexico Environment Department (NMED) approved the Laboratory's investigation/remediation work plan for MDA B (LANL 2006, 095499; NMED 2007, 095475), which states the disposal trenches at MDA B will be completely remediated to residential cleanup levels. This quarterly report focuses on the progress of excavation, waste removal, and confirmation sampling at MDA B through the fourth quarter of fiscal year 2010 (FY2010) and the first quarter of FY2011, from June 30 through November 8, 2010. Information on radioactive materials and radionuclides, including the results of sampling and analysis of radioactive constituents, is voluntarily provided to NMED in accordance with U.S. Department of Energy policy.

1.1 Organization of Document

Section 1.2 presents background on the MDA B site. Section 2 presents the scope and objectives of MDA B excavation activities. Section 3 discusses waste excavation to date. Section 4 presents data analysis statistics and results. Section 5 summarizes excavation activities to date and presents the current project status. Section 6 includes references and map data sources. Appendix A presents acronyms and abbreviations, a metric conversion table, and data qualifier definitions. Appendix B describes the quality assurance and quality control program for MDA B activities. Appendix C (on DVD included with this document) includes analytical data.

1.2 Site Background for MDA B

MDA B is an inactive subsurface disposal site at Los Alamos National Laboratory (LANL or the Laboratory), designated Solid Waste Management Unit 21-015, which contains both chemical and radioactive waste. The site is located on Delta Prime (DP) Mesa in Technical Area 21 (TA-21). Figure 1.1-1 shows the location of MDA B with respect to Laboratory technical areas and surrounding landholdings. MDA B occupies approximately 6 acres and consists of multiple disposal trenches. From 1944 until it closed in 1948, MDA B likely received process wastes from various Los Alamos operational sites. Wastes disposed at MDA B were highly heterogeneous, consisting primarily of radioactively contaminated laboratory wastes, radioactive debris, and limited liquid-chemical waste; however, a formal waste inventory was not maintained during disposal operations (LANL 1991, 007529).

Radioactive contaminants that may be present consist of the types of radioactive materials used during the time MDA B was active: plutonium, polonium, uranium, americium, curium, radioactive lanthanum, and actinium. Additionally, there could be waste products that may be contaminated with either uranium-235 or cesium-137 from the water boiler reactor active during that time frame. Short-lived radionuclides, such as radioactive lanthanum that may have been disposed at MDA B, are no longer present because of radioactive decay. Most radioactively contaminated waste probably consisted of paper, rags, rubber gloves, glassware, and small metal apparatus placed in cardboard boxes by the waste originator and sealed with masking tape. Additional waste may have consisted of metal debris such as air ducts and large metal apparatus. The latter type of material was reportedly placed in wooden boxes or wrapped with paper (Meyer 1952, 028154; LANL 1991, 007529; Ferguson et al. 1998, 058212).

2.0 SCOPE AND OBJECTIVES OF ACTIVITIES

The objective of MDA B excavation activities is to remediate the site to residential levels. Activities at MDA B consist of excavation of overburden material, excavation of contaminated soil and buried waste, contaminated soil and debris sampling, confirmation sampling, trench backfill, and site restoration.

2.1 Deviations from Project Plans

Sampling of overburden, waste soil and debris, and excavated trench bottom and side walls was intended to be conducted in accordance with the MDA B Sampling and Analysis Plan (SAP), Revision 0 (LANL 2010, 110411). The SAP was approved by MDA B project personnel before excavation. As excavation progressed, it became apparent that the sampling procedures in the SAP were not compatible with actual excavation procedures and site conditions. The SAP was reviewed and modifications were made to the sampling procedures to reflect actual conditions within the excavation environment. The revised SAP was approved by MDA B project personnel on August 10, 2010 (LANL 2010, 110398). Before August 10, 2010, sampling occurred under Revision 0 of the approved SAP, although needed operational deviations were incorporated. Revision 1 of the approved SAP included these operational deviations.

As the investigation progressed and items were excavated that needed specialized sampling, additional refinements to the SAP were required. These refinements included provisions for sampling asbestos-containing material (ACM). Revision 2 of the SAP was approved by MDA B project personnel on November 3, 2010 (LANL 2010, 111195). All samples collected during the last two quarters were in compliance with approved Laboratory sampling and documentation procedures. Methodologies employed were incorporated into the SAP revisions.

Protection of site workers, the public, and the environment requires limits on the amount of radioactive material at risk (MAR) that can be present aboveground at MDA B at any one time. The MAR is the quantity of radioactivity in material removed during excavation activities and is staged aboveground in either the excavation enclosures or the waste container storage areas (WCSAs). The MAR is expressed in units of plutonium-239-equivalent curies (PE-Ci). The purpose of MAR screening is to ensure that the amount of radioactively contaminated material removed and staged at MDA B during the project is below the Department of Energy STD-1027 threshold quantity for a Hazard Category 3 nuclear facility (DOE 1997, 076008). The original MAR limit for the excavation enclosures, definitive identification facility, and WCSAs was 0.52 PE-Ci (LANL 2010, 110397). It was recognized that this limit was operationally restrictive and a request to raise the allowable MAR limit was submitted to DOE. The MAR limit was raised to 5.0 PE-Ci on October 21, 2010, to provide operational flexibility while ensuring adequate site protection. The MAR limit modification was approved by MDA B project personnel and took effect on October 21, 2010. This MAR limit modification was incorporated into Revision 1 of the MDA-B Above Ground Inventory Management Plan and into Immediate Procedure Change 2 of the MDA-B Waste Container Handling Operations, Revision 0 (LANL 2010, 111193; LANL 2010, 111194).

2.2 Field Monitoring

During excavation activities, industrial hygiene (IH) instrumentation was used inside the enclosures to monitor immediate-danger-to-life-and-health conditions, toxic gases, and dust that could present a hazard to personnel entering the enclosure. Field screening for radioactivity levels on surfaces and in the work environment was also conducted within the enclosure during excavation and personnel entry and egress. All work within the enclosure is conducted in respirator protection, as deemed necessary by IH monitoring.

To ensure safety, MAR screening was conducted during the excavation process for each waste container before it was removed from the enclosure. Initially, MAR levels were determined for each bin of contaminated soil and debris by taking a representative bin sample that was analyzed for isotope levels using gamma spectroscopy with a high-purity germanium detector. To facilitate real-time MAR screening, an additional instrument, a field instrument for detection of low-energy radiation (FIDLER), was installed on every excavator bucket. After the initial MAR determination using the FIDLER, a sample was taken from each bucket and sent for gamma spectroscopy analysis. These MAR screening results were used to determine approximate radioactivity levels, which provided preliminary characterization data and MAR tracking until analytical laboratory results were received (LANL 2010, 110397). In the event that the FIDLER measured activity levels near 30,000 counts per minute, a bucket load of soil was placed on the waste exposed in the trench until radiological control technicians defined the necessary containerization and material handling controls.

Continuous air monitoring (CAM) was used to measure alpha-emitting transuranic airborne particles. When CAM alarms were triggered, project activities were suspended until it was determined that the enclosure was in a safe configuration to allow personnel to reenter the enclosure and to resume operations. The operational alarm level for airborne alpha particulates is 8 derived air counts or 2.5 mrem.

Dust-suppression water was applied during all active excavation. A dust track meter was used to measure the amount of particulate dust in the air. Operational conditions require a dust level below 3 mg/m^3. When dust levels exceeded that level, operations were suspended as dust suppressant was applied to the excavation area. Work was cleared to proceed after the dust levels dropped below 3 mg/m^3.

A high-vacuum monitoring system was used to test for the presence of airborne asbestos. Potential ACM was found during excavation activities inside enclosures 3 and 12. Although solid samples confirmed that the material was asbestos, the air samples collected from the high-vacuum monitoring system confirmed that friable airborne asbestos concentrations were below the 8-h time-weighted average permissible exposure limit of 0.1 fiber/cm^3, per 29 Code of Federal Regulations (CFR) 1910.1001(c).

2.3 Excavation Operations Overview

MDA B was split into a grid of cells, each measuring 10 ft long by 10 ft wide, as shown in Figure 2.3-1. Excavation progress was tracked using cell identification (ID) codes composed of letters along an approximate north-south axis and numbers along an approximate east-west axis. Grid cells were excavated within five discrete enclosures to protect equipment and excavation operations from weather. Excavation activities at MDA B began in enclosure 1 on June 30, 2010. Enclosure 2 became operational in July 2010, enclosures 3 and 7 became operational in the middle of September 2010, and enclosure 12 became operational in mid-October 2010. Exploratory trenches excavated in February 2010 verified that waste was not present in the westernmost portion of MDA B, previously designated as Areas 9 and 10. A separate investigation report for MDA B Areas 9 and 10 was submitted to NMED in May 2010 (LANL 2010, 109526).

Excavation operations generally consisted of overburden removal, contaminated soil and waste removal, and confirmation sampling. Waste containers were located inside the enclosure during excavation activities. Overburden was first removed from the enclosed trench area and placed into containers. The filled containers were then staged in a dedicated material staging area to await analytical results. Once overburden was determined to be below residential screening levels, it was stockpiled in the west lay-down area for later use as backfill at MDA B. Following the removal of overburden material, excavation into the waste material proceeded on a cell-by-cell basis. As waste was removed from each grid cell, it

was placed into an appropriate waste container based upon visual observation, chemical screening, and radiological instrument screening. Each waste container was marked with a unique bar code ID used for waste-management tracking. Once the contaminated soil and buried waste were removed from an area, confirmation samples were collected from the bottom and side walls of the open excavation trench. Confirmation sampling is used to determine that the native tuff remaining in the trenches is below residential soil screening levels (SSLs) for inorganic and organic chemicals and below residential screening action levels (SALs) for radionuclides, allowing the trench sections to be backfilled with clean overburden (LANL 2005, 088493; NMED 2009, 108070). (Also see www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm).

2.3.1 Overburden Removal

Overburden material consisted of the soil and tuff capping the trenches that contained buried waste. Overburden also included various other clean materials. Some overburden was base-course material added during site-preparation activities that had not been in contact with contaminated soil or waste. Other overburden was clean soil excavated from areas beyond the trench boundaries where enclosure footings were constructed.

Before enclosures were installed, several lifts of overburden material were removed from the east end of MDA B and staged in a stockpile. This first stockpile was created during activities in February 2010. During September 2010, additional material was added to a second stockpile as foundation footers were excavated for the fixed enclosures constructed in the western portion of MDA B. The stockpiles will remain in place at the west lay-down area of MDA B until analytical results can be reviewed to determine if the material can be reused as backfill within MDA B.

Overburden material within the enclosures was removed from groups of grid cells before waste excavation began. Figure 2.3-2 indicates the grid cells that were excavated from June 30 through November 8, 2010. Overburden material was removed from each grid cell and placed into containers labeled with a unique Laboratory material-tracking bar code ID. This containerized overburden was sampled and will be staged on-site until it is needed as backfill for the trenches.

2.3.2 Overburden Sample Collection

As noted in section 2.3-1, two stockpiles of overburden material are staged at MDA B. The first stockpile, created during February 2010, was sampled during April and May 2010 after the pile was created. Every 2-ft lift in this 8-ft-deep stockpile was divided into grid cells that were sampled. During September 2010, the second stockpile was created. This stockpile was sampled at a frequency of 1 sample per 50 yd^3 of overburden as material was deposited onto the pile. Table 2.3-1 presents the overburden samples collected from the stockpiles in the west lay-down area. See section 4.1 for a discussion of the statistical analysis of the analytical results of each of the two overburden stockpiles.

After the enclosures were installed, piles of removed overburden were accumulated. Approximately one composite sample was collected for each 50 yd^3 of overburden. This sampling process ensured that each filled container was associated with a representative composite sample. At the beginning of fourth quarter FY2010 excavation activities, there were instances when acceptable knowledge (AK) of overburden material was used to associate containers with analytical samples. Following approval of Revision 1 of the SAP, AK was no longer used to link overburden samples with their associated containers. Excavated overburden material is kept in labeled containers awaiting analytical results that will determine if the material can be used as backfill at MDA B. Overburden material with analytical results below residential SSLs and SALs will be reused at MDA B after all the contaminated soil and debris has been removed and

confirmation sampling has been completed. As of November 8, 2010, 62 containers were filled with overburden from within the 5 active enclosures.

Several bins containing overburden were moved from enclosure 12 to enclosure 1, and contaminated soil was mixed with overburden. These containers were then classified as contaminated soil. Overburden analytical results for those bins are no longer valid.

2.3.3 Overburden Reuse

Clean, excavated overburden material will be reused as backfill once the contaminated soil and buried waste debris have been removed from the excavation and sampling has confirmed that contamination has been removed. As of November 8, 2010, the only grid cells to have been backfilled were associated with enclosure 2. On September 9, 2010, approximately 270 yd^3 of overburden from the stockpile, previously deemed to be below residential SSLs and SALs, was used to backfill a section of the previously excavated trench outside and east of moveable enclosure 2. This section of trench was backfilled so that construction activities for enclosure 9 could continue. Backfilling operations occurred from September 9 through September 14, 2010.

2.4 Waste Excavation

Once the overburden material was removed from the grid cells (Figure 2.3-2), contaminated soil and waste debris were removed and placed in waste containers. Waste streams were identified and samples were collected in accordance with the Laboratory-approved waste characterization strategy form (WCSF) (LANL 2010, 109754; LANL 2010, 109769).

Excavated debris items included scrap metal, rebar, pipe, wire, cable, empty drums, glass bottles, rubber hoses, cement, and ceramic pieces. The contaminated soil and small percentages of debris were not segregated into separate containers. Table 2.4-1 presents estimated volumes of waste and overburden removed from MDA B from June 30 through November 8, 2010. More than half of the low-level waste (LLW) removed from MDA B and characterized to date has been shipped to the Energy Solutions Clive LLW disposal facility (Clive). Some LLW will require disposal at the Nevada Test Site (NTS) LLW disposal facility, but that waste had not been shipped as of November 8, 2010. Two containers of mixed low-level waste (MLLW) filled with contaminated soil and lead acid batteries have been shipped to Clive. One 55-gal. container of MLLW holding a lead-soldered pipe is staged at TA-54. The remainder of the waste has not been fully characterized. Once characterization is complete for each waste container, the waste will be sent to the appropriate treatment, storage, and disposal facility (TSDF). Waste shipment began in October 2010.

2.4.1 Waste Sample Collection

Composite samples of contaminated soil and waste debris were collected and submitted for off-site laboratory analysis. Analytical suites for each sample depended on the waste stream. As contaminated soil was excavated from the grid cells, composite sample piles were accumulated. Composite samples were collected on average of one sample per 100 yd^3. Contaminated soil containing a small percentage of debris has been removed from MDA B during the period of June 30 through November 8, 2010. When anomalous items were excavated, they were segregated so waste verifiers could make a preliminary determination regarding characterization. The segregated waste was packaged separately, in accordance with revision 1 of the approved SAP and the approved WCSF (LANL 2010, 110398; LANL 2010, 109754; LANL 2010, 109769).

2.5 Confirmation Sampling

Confirmation samples were collected within the excavation every 50 ft along the bottom and side walls after buried waste and contaminated soil were removed from the excavation trench. Confirmation samples were collected with a dedicated, clean excavator. A randomly selected starting location was chosen using a random number generator. Sample locations were then selected in both directions at 50-ft intervals from this randomly selected starting point. Biased samples will be collected if the sample is deemed necessary because of visual indicators of potential contamination, such as fractures or staining. Samples were collected at a depth of 0 to 2 ft into the excavated surface. A Trimble VX Spatial Station measured the precise location where each confirmation sample was collected. Field screening for radioactive contaminants was used to field verify impacted soil removal. If field-screening results indicated detectable activity, additional excavation of the trench was preformed. Once field-screening results no longer indicated detectable concentrations of contamination, the confirmation samples were collected.

As of November 8, 2010, 17 confirmation samples and 4 NMED split samples were collected as described. Figure 2.3-2 shows the confirmation sample locations. Table 2.5-1 presents location and sample ID information for the confirmation and split samples collected from MDA B from June 30 through November 8, 2010. Section 4.3 discusses the confirmation sample results. All analytical results are presented in Appendix C (on DVD included with this document).

2.6 Air Sampling

Eight air-monitoring network (AIRNET) stations are located along the northern boundary of MDA B. The location of these monitoring stations is shown in Figure 2.3-1. Each AIRNET station collects airborne radionuclides, such as plutonium, americium, and uranium, on a particulate filter and a water vapor sample (for measuring tritium) in a silica gel cartridge. The particulate filters and silica gel cartridges are changed every 2 wk, and the sample media are sent to a commercial laboratory for analysis using Environmental Protection Agency- (EPA) approved methods. After sufficient time to allow natural radon and progeny to decay, the particulate filters are measured for gross alpha and beta radioactivity using a gas-flow proportional counter. Each calendar quarter, six or seven of the biweekly filters from a given station are assembled into a single composite sample and prepared for isotopic analysis by dissolution and radiochemical separation techniques. These separated samples are analyzed with alpha spectroscopy and inductively coupled plasma emission spectroscopy, according to EPA requirements in 40 CFR 61, National Emission Standards for Hazardous Air Pollutants, Appendix B, Test Methods. Distillate from the silica gel cartridges is analyzed for tritium using liquid scintillation counting. Annual emissions reporting and compliance evaluations for a station are based on the sum of the four quarterly composite samples (for particulate matter) and the sum of biweekly tritium analyses.

On a biweekly basis, the compliance status of the eight AIRNET stations along DP Road is determined using similar isotopic analyses but focusing solely on plutonium. A single air sample that represents 2 wk of sampling is sent to an off-site analytical laboratory. At this point, the filter is cut in half, making an A and B sample for that station and that sample period. The A sample is processed by the techniques described above. The B sample is dissolved, and radiochemical separation is used to isolate the plutonium in the sample. Again, alpha spectroscopy is used to determine plutonium concentrations in the air sample. Air concentrations are converted to an estimated radioactive dose for that 2-wk sample period. Year-to-date sums and trends based on these 2-wk dose measurements are generated to evaluate compliance status in comparison with EPA's limit of 10 mrem per yr dose from the air pathway to a member of the public. None of the actual doses measured at the eight MDA B AIRNET stations during the project period exceeded 0.018 mrem (June 21, 2010 to October 25, 2010). The maximum year-to-date total for these eight stations is 0.265 mrem (January 1, 2010 to October 25, 2010).

3.0 WASTE EXCAVATION TO DATE

Waste has been excavated from MDA B within five enclosures during the period June 30 through November 8, 2010. Enclosures 1 and 2 are moveable. Enclosures 3 and 4 were combined using a synthetic material along the roofline into a single fixed enclosure. Because these enclosures are connected, they will hereafter be known as enclosure 3. Enclosures 7 and 8 were also combined into a single fixed enclosure and will hereafter be known as enclosure 7. Enclosures 12 and 13 were combined into a single fixed enclosure, which will hereafter be known as enclosure 12.

MAR screening was conducted for each overburden or waste container before the container was removed from the enclosure. Section 2.2 describes MAR screening in greater detail. All waste containers were screened and sampled according to the procedures described in sections 2.2, 2.3, and 2.4. Pressurized cylinders that have been excavated in any of the enclosures have been returned to the inactive dig face within that enclosure and covered with dirt for safety, awaiting later characterization and disposition.

Excavation activities were on standby from August 24 through September 20, 2010, and from October 14 through October 24, 2010, because of exceeding the site MAR level. On October 21, 2010, the site MAR level was raised from 0.52 PE-Ci to 5.0 PE-Ci, as noted in section 2.1.

3.1 Enclosure 1

Enclosure 1 began operation on June 30, 2010, and is located on the western portion of MDA B near the center of the site. Enclosure 1 is a movable structure with an approximate footprint 60 ft long by 60 ft wide. Based on the area of the enclosure, a maximum of six grid cells can be excavated before the enclosure is moved. The trench bottom depth of the confirmation sample collected in enclosure 1 is estimated at 8 ft below ground surface (bgs). Since collection of the confirmation samples, and as excavation has proceeded westward, excavation depths have increased to approximately 12 to 15 ft bgs.

3.1.1 Activities Completed to Date

As of November 8, 2010, grid cells AH 250 through AJ 262 were excavated. Overburden material, contaminated soil, and waste debris have been removed. Confirmation samples were collected in three of these grid cells. Sample results have been reviewed, and the SSLs and SALs have been met. These cells have not been backfilled. Once excavation is complete, additional confirmation samples have been collected, results have been reviewed, and the SSLs and SALs have been met, the excavated area will be backfilled. Figure 2.3-2 shows the location of the excavated grid cells and the confirmation sampling locations.

3.1.2 Waste Streams and Volumes

Waste and overburden volumes excavated from enclosure 1 are summarized in Table 2.4-1. Three containers of overburden material have been removed from enclosure 1, with 24 yd^3 of soil that was determined to be below residential SSLs and SALs. This soil is being stockpiled in the west lay-down area for use as backfill. Forty-three containers of contaminated soil have been characterized. Thirty-two of these containers have been characterized as LLW and have been shipped to Clive. Four LLW containers filled with 84 yd^3 of contaminated soil are awaiting shipment to the NTS LLW disposal facility. The remaining seven LLW containers filled with 135 yd^3 of contaminated soil were staged at MDA B as of November 8, 2010. Two containers of MLLW filled with 36 yd^3 of contaminated soil and lead acid batteries have been shipped to Clive. The only other MLLW removed from MDA B was a lead-soldered pipe

packaged in soil in a 55-gal. drum. This container is intended for disposal at Clive and is currently staged at TA-54. Six containers filled with 59.6 yd^3 of contaminated soil are being stored in Resource Conservation and Recovery Act (RCRA) less-than-90-d storage areas until a hazardous waste determination can be made. The remaining 52 containers filled with 326 yd^3 of contaminated soil removed from the trench in enclosure 1 have been sampled and are pending analysis and characterization.

Enclosure 1 waste containers are typically filled from 90% to 99% with contaminated soil, with the remainder debris items. Debris that has been excavated from enclosure 1 includes scrap metal, rebar, pipe, cables, wires, crushed trash cans, and cloth. Suspect waste items removed from the excavated soil and characterized and packaged separately included bottles containing liquid, a bottle with apparent crystallization, an oval metal container, a circuit-board-like item, and lead acid batteries.

3.2 Enclosure 2

Enclosure 2 began operation on July 19, 2010, and is located on the eastern portion of MDA B. Enclosure 2 is a movable structure with an approximate footprint 60 ft long by 60 ft wide. Based on the area of the enclosure, a maximum of six grid cells can be excavated before the enclosure is moved. Base of the excavation in enclosure 2 is estimated at 8 ft bgs as defined by the depth of the confirmation sample.

3.2.1 Activities Completed to Date

As of November 8, 2010, grid cells NE 55, NE 56, and NF 46 through NI 56 have been excavated. Overburden material, contaminated soil, and waste debris have been removed. A confirmation sample was collected in one of these grid cells. No backfilling has been conducted inside the enclosure. Once excavation is complete, confirmation sample results have been reviewed, and the SSLs and SALs have been met, the excavated area will be backfilled. Figure 2.3-2 shows the location of the excavated grid cells and confirmation sample location within enclosure 2.

3.2.2 Waste Streams and Volumes

Waste and overburden volumes excavated from enclosure 2 are summarized in Table 2.4-1. Two containers of overburden material have been removed from enclosure 2, with 35 yd^3 of soil that was determined to be below residential SSLs and SALs. This soil is being stockpiled in the west lay-down area for use as backfill. Forty-one containers have been characterized. Twenty-three of these containers have been shipped to Clive. The remaining 18 LLW containers filled with 364 yd^3 of contaminated soil were staged at MDA B as of November 8, 2010. Twenty-five containers filled with 468.5 yd^3 of contaminated soil are being stored in RCRA less-than-90-d storage areas until a hazardous waste determination can be made. The remaining 30 containers filled with 552.5 yd^3 of contaminated soil have been sampled and await characterization. Pending analytical results, the filled containers will be shipped to the appropriate TSDF.

Enclosure 2 waste containers are typically filled from 70% to 99% with contaminated soil, with the remainder debris items. Debris excavated from enclosure 2 includes scrap metal, cement, wire, cable, conduit, glass bottles, rubber items, and barbed wire.

3.3 Enclosure 3

Enclosure 3 began operation on September 20, 2010, and is located on the western portion of MDA B at the far western end of the site. Enclosure 3 is a permanent structure with a footprint 220 ft long by

75 ft wide. Excavation in enclosure 3 is estimated at 14 ft bgs using trench bottom depth of the confirmation samples.

3.3.1 Activities Completed to Date

As of November 8, 2010, grid cells AH 154 through AK 166 were excavated. Overburden material, contaminated soil, and waste debris have been removed. Confirmation samples were collected in six of these grid cells. These cells have not been backfilled. Once excavation is complete, confirmation sample results have been reviewed, and the SSLs and SALs have been met, the excavated area will be backfilled. Figure 2.3-2 shows the location of the excavated grid cells and the confirmation sampling locations in enclosure 3.

3.3.2 Waste Streams and Volumes

Waste and overburden volumes excavated from enclosure 3 are summarized in Table 2.4-1. One container of overburden material has been removed from enclosure 3, with 18 yd^3 of soil that was determined to be below residential SSLs and SALs. This soil is being stockpiled in the west lay-down area for use as backfill. Twenty-nine containers filled with 529 yd^3 of contaminated soil are being stored in RCRA less-than-90-d storage areas until a hazardous waste determination can be made. The remaining 53 containers filled with 990.5 yd^3 of contaminated soil have been sampled and await characterization.

Enclosure 3 waste containers are typically filled from 90% to 99% with contaminated soil, with the remainder debris items. Debris that has been excavated from enclosure 3 includes scrap metal, rebar, pipe, wiring, rubber hoses, broken glass, ceramic pieces, asphalt, used filters, and latex gloves. Suspect waste items removed from the excavated soil and characterized and packaged separately include sealed or plugged bottles, a possible battery, a brown cylinder, a suspect asbestos container, pipe pieces covered with unknown substances, white powder, bluish powder, pipe suspected to be lead, an electrical box, and a circuit-board-like item.

3.4 Enclosure 7

Enclosure 7 began operation on September 22, 2010, and is located on the western portion of MDA B. Enclosure 7 is a permanent structure with a footprint 140 ft long by 75 ft wide. Excavation in enclosure 7 is estimated at 12 ft bgs using trench bottom depth of the confirmation sample.

3.4.1 Activities Completed to Date

As of November 8, 2010, grid cells AH 194 through AK 204 were excavated. Overburden material, contaminated soil, and waste debris have been removed. Confirmation samples were collected in three of these grid cells. These cells have not been backfilled. Once excavation is complete, confirmation sample results have been reviewed, and the SSLs and SALs have been met, the excavated area will be backfilled. Figure 2.3-2 shows the location of the excavated grid cells and the confirmation sampling locations.

3.4.2 Waste Stream and Volumes

Waste and overburden volumes excavated from enclosure 7 are summarized in Table 2.4-1. Three containers of overburden material have been removed from the enclosure, with 57 yd^3 of soil that was determined to be below residential SSLs and SALs. This soil is being stockpiled in the west lay-down

area for use as backfill. Twenty-nine containers filled with 578 yd^3 of contaminated soil are being stored in RCRA less-than-90-d storage areas until a hazardous waste determination can be made. The remaining 47 containers filled with 909 yd^3 of contaminated soil have been sampled and await characterization.

Enclosure 7 waste containers are typically filled from 80% to 99% with contaminated soil, with the remainder debris items. Debris that has been excavated from enclosure 7 includes scrap metal, paper, concrete, glass bottles, wire, metal pipe, conduit, and 55-gal. drums.

3.5 Enclosure 12

Enclosure 12 began operation on October 10, 2010, and is located on the eastern portion of MDA B. Enclosure 12 is a permanent structure with a footprint 220 ft long by 75 ft wide. As of November 8, excavation in enclosure 12 is at approximately 15 ft bgs. No native tuff has been encountered to date.

3.5.1 Activities Completed to Date

As of November 8, 2010, grid cells NE 86 through NI 89 were excavated. Overburden material, contaminated soil, and waste debris have been removed. No confirmation samples have been collected from enclosure 12 to date. No backfilling activities have taken place. Once excavation is complete, confirmation sample results have been reviewed, and the SSLs and SALs have been met, the excavated area will be backfilled. Figure 2-3.2 shows the locations of the excavated grid cells in enclosure 12.

On October 27, 2010, two drums were uncovered along with some white cake-like material. Soon after the drums had been excavated, one of the drums was noticed to be leaking, and high volatile organic compounds were present in the enclosure. The drums were size reduced, placed in a container, and covered with soil. Excavation was on standby in enclosure 12 until November 9, 2010, when the material could be characterized and the enclosure was determined to be safe for further excavation.

3.5.2 Waste Streams and Volumes

Waste and overburden volumes excavated from enclosure 12 are summarized in Table 2.4-1. Thirteen containers of overburden material have been removed from enclosure 12, filled with 254 yd^3 of soil that was determined to be below residential SSLs and SALs. This soil is being stockpiled in the west lay-down area for use as backfill. Four LLW containers filled with 82 yd^3 of contaminated soil are being stored at MDA B as of November 8, 2010. Thirty-one containers filled with 612 yd^3 of contaminated soil are being stored in RCRA less-than-90-d storage areas until a hazardous waste determination can be made. The remaining 24 containers filled with 467 yd^3 of contaminated soil have been sampled and await characterization. No waste from enclosure 12 has been shipped to a TSDF.

Enclosure 12 waste containers are typically filled with contaminated soil ranging from 50% to 99%, with the remainder debris items. Debris that has been excavated from enclosure 12 includes scrap metal, wire, conduit, empty glass bottles, metal pipe, and ACM.

4.0 DATA ANALYSIS

Three data sets are discussed in this section: the overburden sample data, the contaminated soil sample data, and the confirmation sample data. Statistics were calculated for the overburden and contaminated soil data sets received through November 8, 2010. Confirmation sample data that is presented in this report was compared with the residential SSLs and SALs.

4.1 Overburden Sample Statistics

Sixty-four overburden samples were collected from MDA B through November 8, 2010. Forty-three of those samples, collected from the stockpiles in the west lay-down area, are listed in Table 2.3-1. Samples were analyzed for organic, inorganic, and radioactive contamination to determine if the soil could be used as backfill for the excavated trenches once clean tuff was reached. The statistical analysis of overburden samples was conducted on the 43 samples collected from the stockpiles that are intended for reuse as backfill.

As discussed in section 2.3, there were two separate events when overburden was removed from the site, stockpiled, and sampled. Overburden from each event was stockpiled separately. Separate statistical analyses were performed for each stockpile. The first sampling event occurred during April and May 2010, of 6292 yd^3 of overburden soil that was removed and stockpiled before the installation of enclosures 1 and 2. The second event, consisting of the removal and stockpiling of 1970 yd^3 of overburden, occurred when the foundations for the fixed enclosures 3, 7, and 12 were excavated. Overburden determined to be below residential SSLs and SALs is intended for reuse as backfill in the excavated trenches. Section 2.3.2 discusses the sample collection methods used to ensure that each sample was representative of the overburden stockpile.

Basic descriptive statistics were calculated for all of the overburden soil sample results, including the number of samples, the detection rate, and the mean, standard deviation, minimum, median, and maximum. A two-step statistical process was used to characterize the overburden soils. The first step assessed whether the maximum measured concentration for a given analyte exceeded the residential screening level for that analyte. Four sets of screening levels were employed in this step, where appropriate: the NMED SSLs, the EPA regional SSLs, the Laboratory radionuclide SALs, and the toxicity characteristic leaching procedure (TCLP). If the maximum measured value for an analyte exceeded one of these screening levels, the second step of the statistical analysis for that analyte was performed. If the maximum measured value for an analyte did not exceed the relevant screening level, the soil was considered clean for that analyte and no further statistical analysis was performed. The order of precedence for performing the comparisons for inorganic and organic chemicals was NMED SSLs, then EPA SSLs, and then TCLP limits, if available. The statistical results for the first overburden sampling event are presented in Table 4.1-1 for inorganic chemicals, Table 4.1-2 for organic chemicals, and Table 4.1-3 for radionuclides. A total of 282 analytes were evaluated in the first step of the May 2010 data set statistical analysis.

For those analytes that were detected at a value exceeding a screening level, the second statistical step was to calculate the 95% upper confidence limit (UCL) of the results to determine if the soil would be classified as clean or as waste. The EPA program ProUCL (EPA 2007, 102895) was used to calculate the 95% UCLs. In addition, the ProUCL software was used to examine the data distribution and to evaluate whether there were statistical outliers. The ProUCL software was allowed to select the Rosner and Dixon tests, as appropriate. Five analytes exceeded one of the screening levels: arsenic, thallium, benzo(a)pyrene, radium-226, and plutonium-239/240. The 95% UCLs calculated for these five analytes are presented in Table 4.1-4. None of the 95% UCLs exceeded the SSLs or SALs. Based on this analysis, the stockpiled overburden from April to May 2010 is suitable for use as backfill.

The statistical results for the second overburden sampling event (overburden removed from enclosures 3, 7, and 12 in September 2010) are presented in Table 4.1-5 for inorganic chemicals, Table 4.1-6 for organic chemicals, and Table 4.1-7 for radionuclides. A total of 280 analytes were evaluated in the first step of the May 2010 data set statistical analysis. Only one arsenic result exceeded SSLs. The 95% UCL calculated for arsenic in the second step of the statistical analysis is presented in Table 4.1-8. The

arsenic 95% UCL did not exceed the relevant screening levels. Based on this analysis, the stockpiled overburden from September 2010 is suitable for use as backfill.

4.2 Contaminated Soil Statistics

As described in section 2.4.1, composite sample piles of contaminated soil were accumulated as waste was removed from the trench. Composite samples were collected at an average rate of 1 sample per 100 yd^3. Basic descriptive statistics were calculated for all of the contaminated soil sample results, including the number of samples, the detection rate, and the mean, standard deviation, minimum, median, and maximum. Results of the statistical analyses are presented in Table 4.2-1 for inorganic chemicals, Table 4.2-2 for organic chemicals, and Table 4.2-3 for radionuclides.

4.3 Confirmation Sample Results

As discussed in section 2.5, confirmation samples were collected within the excavation every 50 ft along the bottom and side walls after buried waste and contaminated soil had been removed from the excavation trench. Maximum contaminant concentrations detected in the confirmation samples are presented in Table 4.3-1 for inorganic chemicals, Table 4.3-2 for organic chemicals, and Table 4.3-3 for radionuclides.

Of the 17 confirmation samples presented in Table 2.5-1, 7 were collected from enclosure 1, 1 was collected from enclosure 2, 6 were collected from enclosure 3, and 3 were collected from enclosure 7. The first three confirmation samples (sample IDs CSMDAB-10-24585, CSMDAB-10-24586, and CSMDAB-10-24587) were random samples collected from the north-side wall, the south-side wall, and the bottom of the excavation trench in enclosure 1. The inorganic chemical results presented in Table 4.3-4 and the organic chemical results presented in Table 4.3-5 did not exceed the SSLs. However, one plutonium-239/240 result presented in Table 4.3-6, for sample ID CSMDAB-10-24586, did exceed the Laboratory SAL of 33 pCi/g. Because of this result, additional material was removed, and three additional biased confirmation samples (sample IDs CSMDAB-10-24589, CSMDAB-10-24590, and CSMDAB-10-24591) were collected in the north-side wall at three locations surrounding sample CSMDAB-10-24587. Results for these three additional samples, which were analyzed for americium-241, plutonium-238, and plutonium-239/240, were all less than the Laboratory SALs, indicating that the lateral extent of contamination in that portion of the trench had been defined. Following the removal of additional soil from the vicinity of sample CSMDAB-10-24587, another sample was collected from the north-side wall of grid cell AH 260 (sample ID CSMDAB-10-24592) and analyzed for all radionuclides to confirm that radionuclides were below SALs. None of the Laboratory SALs were exceeded in the resample following the removal of additional soil.

Analytical results for the confirmation sample collected from the excavation trench floor in enclosure 2 (sample ID CSMDAB-10-25077) did not exceed the inorganic or organic chemical SSLs, but the plutonium-239/240 result exceeded the Laboratory SAL of 33 pCi/g. Excavation in that trench has reached a depth at which continued excavation is impractical. No additional tuff removal is planned, and the plutonium-239/240 value of 34 pCi/g will be used with the other site data to calculate a sitewide 95% UCL for plutonium-239/240.

Confirmation samples collected from the excavation trench in enclosure 3 were collected from two different north-south transects: three from the grid cells in row 160 (sample IDs CSMDAB-10-26776, CSMDAB-10-26777, and CSMDAB-10-26778) and three from the grid cells in row 155 (sample IDs CSMDAB-10-26779, CSMDAB-10-26780, and CSMDAB-10-26781). The arsenic SSL was exceeded in

the samples from the north-side wall in grid cell AH 160 and the trench bottom in grid cell AI 160. None of the other confirmation samples collected from enclosure 3 exceeded the residential SSLs or SALs.

Three confirmation samples were collected from the excavation trench in enclosure 7 (sample IDs CSMDAB-10-26802, CSMDAB-10-26803, and CSMDAB-10-26804). The analytical results for these samples did not exceed the inorganic or organic chemical SSLs, but the sample collected from the trench bottom in grid cell AI 196 exceeded the Laboratory SAL of 33 pCi/g. Excavation in that trench will proceed to deeper levels followed by the collection of additional confirmation samples.

5.0 SUMMARY AND PROJECT STATUS

Excavation activities to remediate MDA B to residential cleanup levels continued in the first quarter of FY2011.

As of November 8, 2010, the following activities have been accomplished.

- Thirty-nine grid cells within enclosure 1 have been excavated. Estimated volumes of waste and overburden removed from enclosure 1 are approximately 1264.9 yd^3 and 24 yd^3, respectively. Waste and overburden samples have been sent for characterization analysis. Seven confirmation samples were collected from grid cells in row 260 and sent for analysis to an off-site analytical laboratory. NMED split samples were collected simultaneously with the first three confirmation samples.
- Forty-six grid cells within enclosure 2 have been excavated. Estimated volumes of waste and overburden removed from enclosure 2 are approximately 1833.4yd^3 and 35 yd^3, respectively. Waste and overburden samples have been sent for characterization analyses. One confirmation sample has been collected from the base of row 51.
- Fifty-two grid cells within enclosure 3 have been excavated. Estimated volumes of waste and overburden removed from enclosure 3 are approximately 1519.5 yd^3 and 18 yd^3, respectively. Waste and overburden samples have been sent for characterization analyses. Three confirmation samples have been collected from row 155, and three have been collected from row 160.
- Forty-four grid cells within enclosure 7 have been excavated. Estimated volumes of waste and overburden removed from enclosure 7 are approximately 1487 yd^3 and 57 yd^3, respectively. Waste and overburden samples have been sent for characterization analyses. Three confirmation samples have been collected from row 196.
- Twenty grid cells within enclosure 12 have been excavated. Estimated volumes of waste and overburden removed from enclosure 2 are approximately 1161 yd^3 and 254 yd^3, respectively. Waste and overburden samples have been sent for characterization analyses. No confirmation samples have been collected from enclosure 12.

Air sampling along the northern boundary of MDA-B during the project period indicated a maximum dose of 0.018 mrem to the public during the project period, with a year-to-date maximum total of 0.265 mrem. These measurements are significantly lower than EPA's limit of 10 mrem per year from the air pathway.

6.0 REFERENCES AND MAP DATA SOURCES

6.1 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. This information is also included in text citations. ER IDs are assigned by the Environmental Programs Directorate's Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.

Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.

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NMED (New Mexico Environment Department), December 2009. "Technical Background Document for Development of Soil Screening Levels, Revision 5.0," with revised Table A-1, New Mexico Environment Department, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program, Santa Fe, New Mexico. (NMED 2009, 108070)

6.2 Map Data Sources

Legend Item	Data Source
10-ft by 10-ft Project reference grid	10 ft by 10 ft Project Reference Grid, Material Disposal Area B, Unpublished Data; Portage, Inc., January 1, 2009
Air sampling location	AIRNET radiological ambient air sampling network. Los Alamos National Laboratory, Waste and Environmental Services Division; as published August 8, 2010
Confirmation sample	MDA B Confirmation Samples, TA-21 Material Disposal Area B, Unpublished Data; Portage, Inc., August 11, 2010
Fence	Security and Industrial Fences and Gates; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; January 6, 2004; as published October 15, 2008
Laboratory boundary	LANL Areas Used and Occupied; Los Alamos National Laboratory, Site Planning & Project Initiation Group, Infrastructure Planning Office; September 19, 2007; as published December 4, 2008
Material disposal area	Materials Disposal Areas; Los Alamos National Laboratory, ENV Environmental Remediation and Surveillance Program; ER 2004-0221, 1:2,500 Scale Data, April 23, 2004
MDA B direct-push sampling	MDA B DPT All Phases; Los Alamos National Laboratory, ENV Environmental Remediation and Surveillance Program, December 14, 2009
Paved road	Paved Road Arcs; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; January 6, 2004; as published October 15, 2008
Primary paved road/secondary paved road	Road Centerlines for the County of Los Alamos; County of Los Alamos, Information Services; as published December 3, 2007
Structure	Los Alamos County Structures; County of Los Alamos; Original data from Los Alamos National Laboratory, Environmental Restoration (ER) Project. After 2003 flyover, 1400 new structure polygons added by Bohannan Houston, Inc.; as published August 2003
Technical area boundary	LANL Technical Areas of Department of Energy Property in and around the Los Alamos National Laboratory Area. Los Alamos National Laboratory, Site and Project Planning (PM-1); as published September 2007
Trench area	Trench Boundaries per Direct Push Technology, Material Disposal Area B, Unpublished Data; Portage, Inc., January 12, 2010
Unpaved road	Dirt Road Arcs; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; January 6, 2004; as published October 15, 2008

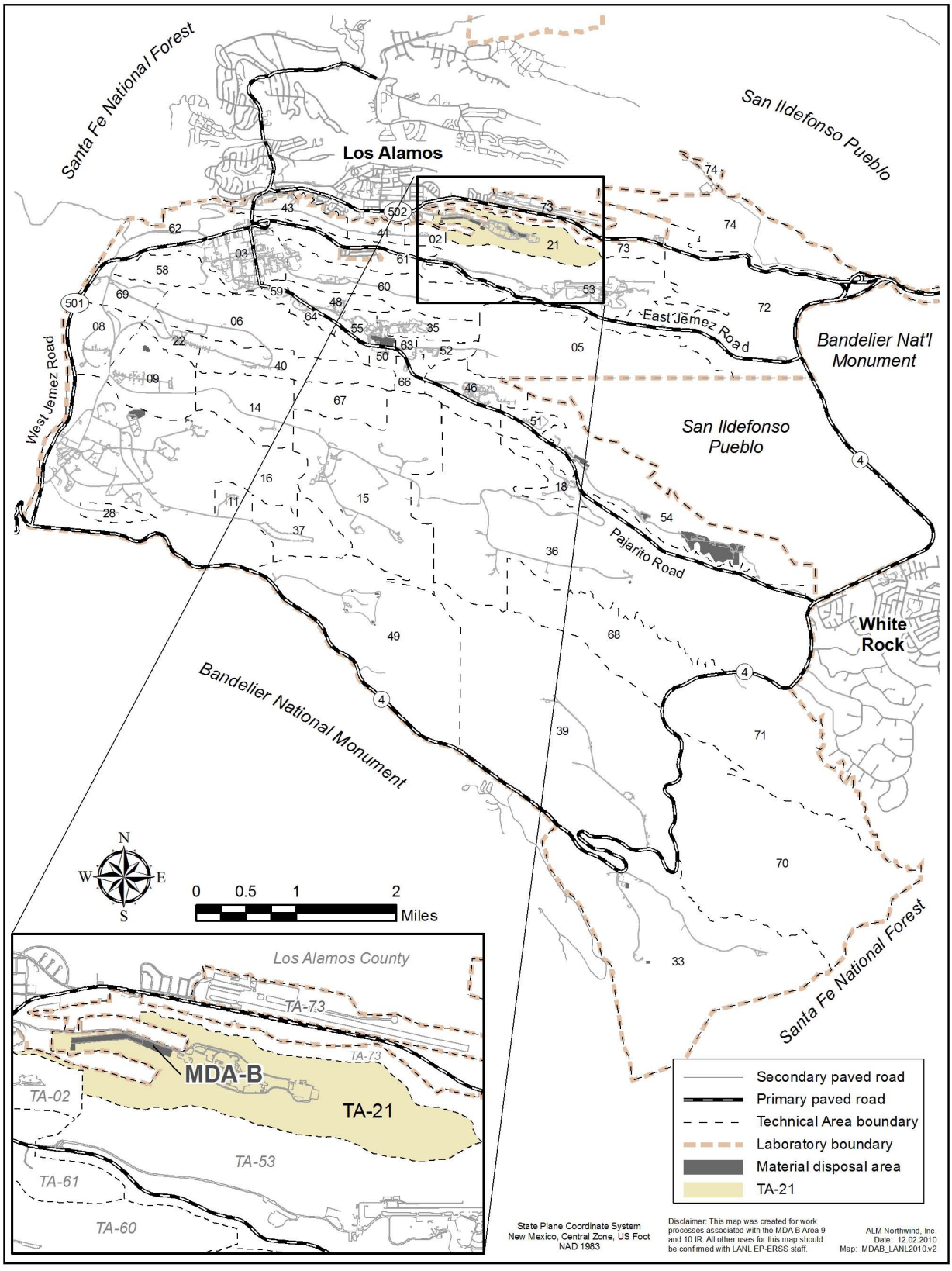

Figure 1.1-1 MDA B in TA-21 with respect to Laboratory technical areas and surrounding landholdings

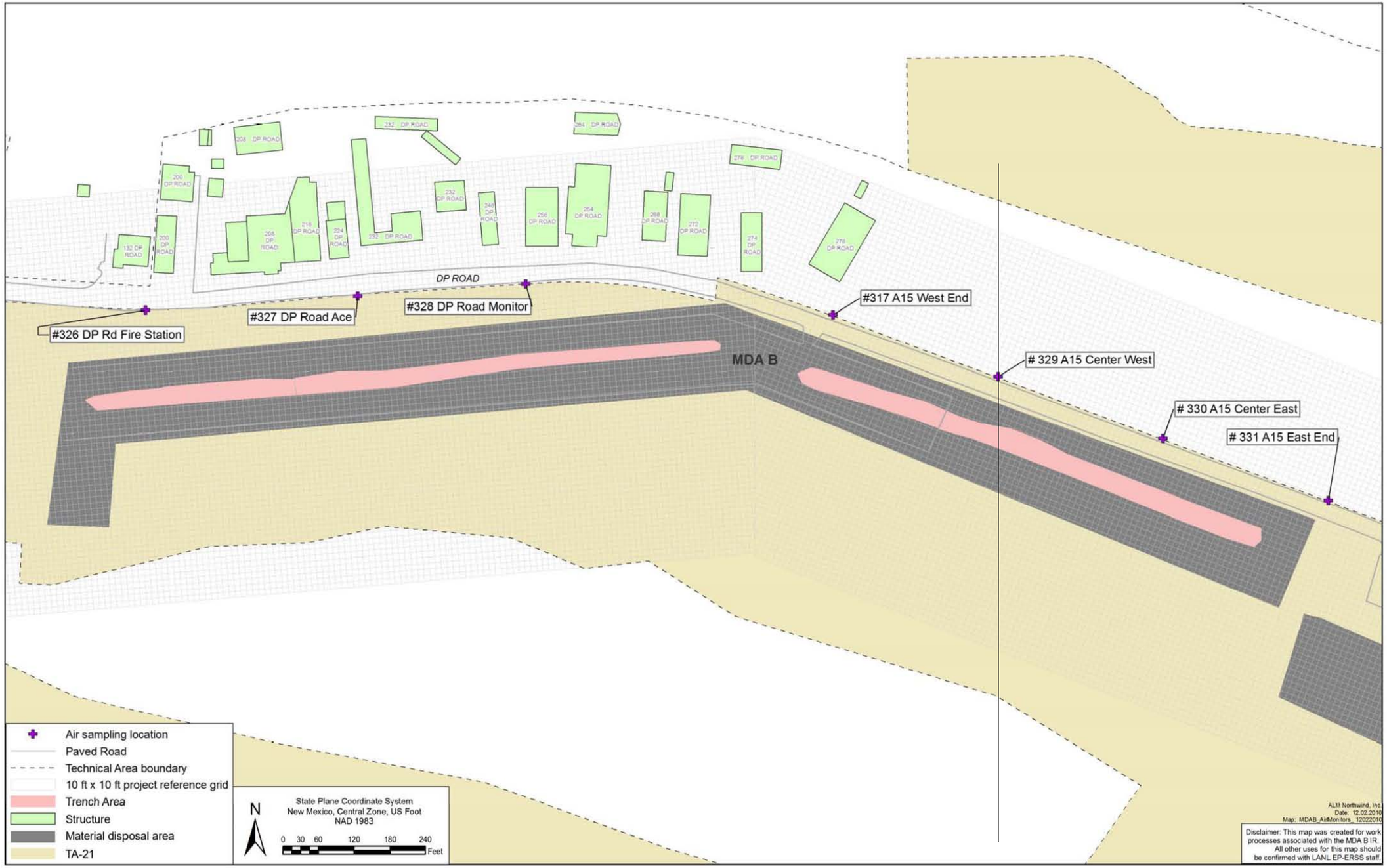

Figure 2.3-1 Grid-cell locations within MDA B and AIRNET monitoring stations near MDA B excavation

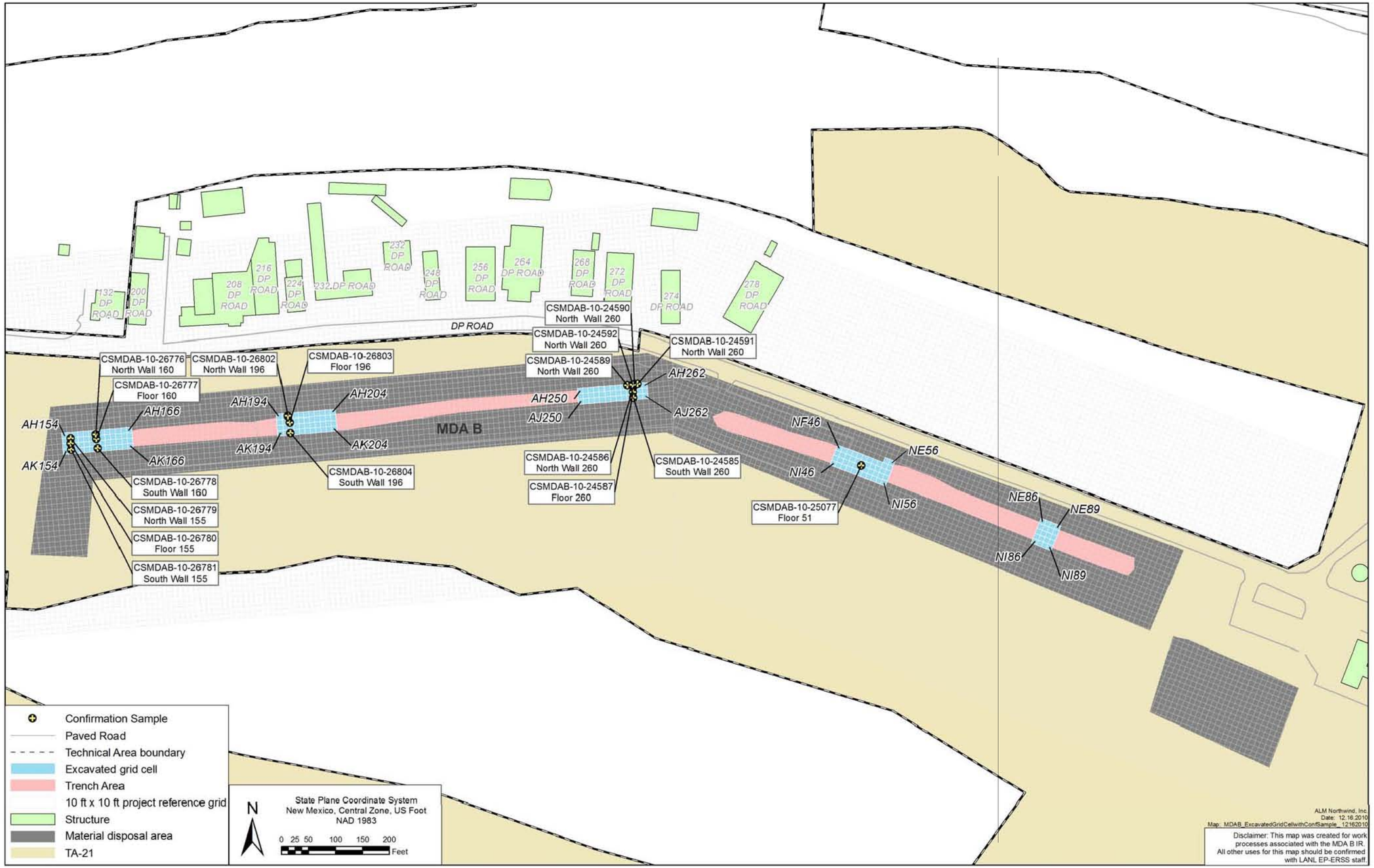

Figure 2.3-2 Excavated grid cells and confirmation sample locations as of November 8, 2010

Table 2.3-1
Overburden Samples Collected through November 8, 2010

Sample ID	Soil Type	Sample ID	Soil Type
MDABEWS1-10-21228	below SSLs and SALs[a]	MDABEWS1-10-21253	below SSLs and SALs
MDABEWS1-10-21229	below SSLs and SALs	MDABEWS1-10-21254	below SSLs and SALs
MDABEWS1-10-21230	below SSLs and SALs	MDABEWS1-10-21255	below SSLs and SALs
MDABEWS1-10-21231	below SSLs and SALs	MDABEWS1-10-21256	below SSLs and SALs
MDABEWS1-10-21232	below SSLs and SALs	MDABEWS1-10-21257	below SSLs and SALs
MDABEWS1-10-21233	below SSLs and SALs	MDABEWS1-10-21258	below SSLs and SALs
MDABEWS1-10-21234	below SSLs and SALs	MDABEWS1-10-21260	below SSLs and SALs
MDABEWS1-10-21235	below SSLs and SALs	MDABEWS1-10-21261	below SSLs and SALs
MDABEWS1-10-21236	below SSLs and SALs	MDABEWS1-10-21262	below SSLs and SALs
MDABEWS1-10-21237	below SSLs and SALs	MDABEWS1-10-21263	below SSLs and SALs
MDABEWS1-10-21238	below SSLs and SALs	MDABEWS1-10-21264	below SSLs and SALs
MDABEWS1-10-21239	below SSLs and SALs	MDABEWS1-10-21265	below SSLs and SALs
MDABEWS1-10-21240	below SSLs and SALs	MDABEWS1-10-21266	below SSLs and SALs
MDABEWS1-10-21242	below SSLs and SALs	MDABEWS1-10-21267	below SSLs and SALs
MDABEWS1-10-21244	below SSLs and SALs	MDABEWS1-10-21268	below SSLs and SALs
MDABEWS1-10-21245	below SSLs and SALs	MDABEWS1-10-21269	below SSLs and SALs
MDABEWS1-10-21246	below SSLs and SALs	MDABEWS1-10-21270	below SSLs and SALs
MDABEWS1-10-21247	below SSLs and SALs	MDABEWS1-10-21271	below SSLs and SALs
MDABEWS1-10-21249	below SSLs and SALs	MDABEWS1-10-21272	below SSLs and SALs
MDABEWS1-10-21250	below SSLs and SALs	MDABEWS1-10-21273	below SSLs and SALs
MDABEWS1-10-21251	below SSLs and SALs	MDABEWS1-10-21274	below SSLs and SALs
MDABEWS1-10-21252	below SSLs and SALs	na[b]	na

[a] Source: SSLs from (NMED 2009, 108070) or www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm and SALs from (LANL 2005, 088493).

[b] na = Not available.

Table 2.4-1
Waste and Overburden Volumes Removed through November 8, 2010

Enclosure	Awaiting Characterization (waste type TBD[b]) (yd^3)	Clean Soil Backfill below (SSLs and SALs[c]) (yd^3)	Staged LLW (yd^3)	LLW to Clive (yd^3)	LLW to NTS[a] (yd^3)	MLLW to Clive (yd^3)	Awaiting Characterization in <90 day storage (waste type TBD) (yd^3)
Enclosure 1	196.9	24	135	624	84	36.27[d]	188.7
Enclosure 2	552.5	35	364	448.4	0	0	468.5
Enclosure 3	990.5	18	0	0	0	0	529
Enclosure 7	909	57	0	0	0	0	578
Enclosure 12	467	254	82	0	0	0	612
TOTAL	3115.9	388	581	1072.4	84	36.27	2376.2

[a] No LLW destined for disposal at NTS had been shipped as of November 8, 2010.

[b] TBD = To be determined.

[c] SSLs from (NMED 2009, 108070) or www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm and SALs from (LANL 2005, 088493).

[d] One 0.27-yd^3 (55-gal.) drum had not been shipped as of November 8, 2010.

Table 2.5-1
Confirmation Samples Collected through November 8, 2010

MDA B Enclosure	LANL Sample ID	Location ID	Grid Cell	NMED Split-Sample ID	Trench Location	Date Collected	Elevation (ft asl[a])
1	CSMDAB-10-24585	MDAB-612790	AJ260	MDA-B-260—south wall	South-side wall	08/11/10	7182.3
1	CSMDAB-10-24586	MDAB-612791	AH260	MDA-B-260—north wall	North-side wall	08/11/10	7182.7
1	CSMDAB-10-24587	MDAB-612792	AI260	MDA-B-260—floor	Excavation floor	08/11/10	7179.6
1	CSMDAB-10-24589	MDAB-612794	AH260	NS[b]	North-side wall	09/16/10	7185.0
1	CSMDAB-10-24590	MDAB-612795	AH260	NS	North-side wall	09/16/10	7184.2
1	CSMDAB-10-24591	MDAB-612796	AH260	NS	North-side wall	09/16/10	7184.6
1	CSMDAB-10-24592	MDAB-612797	AH260	NS	North-side wall	10/13/10	7182.9
2	CSMDAB-10-25077	MDAB-612898	NH51	CSMDAB-10-25078	Excavation floor	10/11/10	7162.1
3	CSMDAB-10-26776	MDAB-613126	AH160	NS	North-side wall	10/18/10	7201.0
3	CSMDAB-10-26777	MDAB-613127	AI160	NS	Excavation floor	10/18/10	7193.4
3	CSMDAB-10-26778	MDAB-613128	AK160	NS	South-side wall	10/18/10	7205.2
3	CSMDAB-10-26779	MDAB-613129	AI155	NS	North-side wall	10/18/10	7206.3
3	CSMDAB-10-26780	MDAB-613130	AJ155	NS	Excavation floor	10/18/10	7200.6
3	CSMDAB-10-26781	MDAB-613131	AK155	NS	South-side wall	10/18/10	7204.6
7	CSMDAB-10-26802	MDAB-613141	AH196	NS	North-side wall	10/19/10	7188.6
7	CSMDAB-10-26803	MDAB-613142	AI196	NS	Excavation floor	10/19/10	7181.1
7	CSMDAB-10-26804	MDAB-613143	AK196	NS	South-side wall	10/19/10	7187.4

[a] asl = Above sea level.

[b] NS = Not sampled.

Table 4.1-1
Inorganic Chemicals Detected in May 2010 Overburden Sample Set

Total Inorganic Results											
Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Aluminum	172	172	100%	6868.837	1674.192	2810	7210	10,400	78,100	77,000	N[c]
Antimony	172	52	30%	0.815	0.947	0.081	0.32	5.26	31.3	31	N
Arsenic	172	158	92%	2.433	0.665	0.994	2.5	7.3	3.9	0.39	Y[d]
Barium	172	172	100%	99.142	25.844	35.7	102	235	15,600	15,000	N
Beryllium	172	172	100%	0.678	0.122	0.3	0.7	0.93	156	160	N
Cadmium	172	143	83%	0.184	0.176	0.038	0.1	0.73	77.9	70	N
Calcium	172	172	100%	2292.424	1566.806	759	2065	18,400	na[e]	na	n/a[f]
Chromium	172	172	100%	6.038	1.514	2.4	6.2	13	113,000	100,000	N
Cobalt	172	172	100%	3.840	1.098	1.59	3.8	8.6	na	23	N
Copper	172	128	74%	7.480	5.253	2.3	6.4	56.5	3130	3100	N
Iron	172	172	100%	9169.360	1697.015	4540	9000	14,000	54,800	55,000	N
Lead	172	172	100%	14.357	4.184	5.5	14.15	33.9	400	400	N
Magnesium	172	172	100%	1292.384	303.683	534	1330	2100	na	na	n/a
Manganese	172	158	92%	273.779	79.480	124	260	860	10,700	1800	N
Mercury	172	145	84%	0.032	0.014	0.0091	0.0291	0.108	7.71	5.6	N
Nickel	172	162	94%	5.513	1.120	2.5	5.625	8.64	1560	1500	N
Potassium	172	172	100%	1013.791	246.823	390	1060	1500	na	na	n/a
Selenium	172	115	67%	0.961	0.336	0.31	1	2.4	391	390	N
Silver	172	120	70%	0.364	0.456	0.028	0.0985	1.2	391	390	N
Sodium	172	47	27%	124.852	52.419	28	119	240	na	na	n/a
Thallium	172	64	37%	0.486	0.626	0.0858	0.22	6.8	5.16	na	Y
Uranium	172	172	100%	0.843	0.243	0.42	0.835	2.12	235[g]	na	n/a

Table 4.1-1 (continued)

Total Inorganic Results											
Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Vanadium	172	172	100%	14.963	3.277	6.9	15.2	22	391	5.5	N
Zinc	172	163	95%	37.664	13.593	15.7	34.75	158	23,500	23,000	N
TCLP											
Analyte	Number of Analyses	Detects	Detection Rate	Mean (µg/L)	Standard Deviation (µg/L)	Minimum (µg/L)	Median (µg/L)	Maximum (µg/L)	TCLP Level[h] (µg/L)		Maximum Concentration above Residential Standards
Arsenic	172	0	0%	n/a	n/a	n/a	n/a	n/a	5000		n/a
Barium	172	172	100%	694.738	123.710	380	677.5	1100	100,000		N
Cadmium	172	15	9%	19.903	18.072	1.11	10	50	1000		N
Chromium	172	5	3%	45.919	37.483	13	20	100	5000		n/a
Lead	172	24	14%	18.171	13.629	2.5	13.75	44.1	5000		N
Mercury	172	26	15%	1.283	0.539	0.2	1	2	200		N
Selenium	172	23	13%	24.562	15.147	6.3	19.2	52	1000		N
Silver	172	0	0%	n/a	n/a	n/a	n/a	n/a	5000		n/a

[a] Source: NMED (2009, 108070).

[b] Source: www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm.

[c] N = No, does not exceed SSL.

[d] Y = Yes, does exceed SSL.

[e] na = Not available.

[f] n/a = Not applicable. Statistics were not performed on analytes that were all below detection limits.

[g] SSL for uranium soluble salts.

[h] Source: 40 CFR 261.24.

Table 4.1-2
Organic Chemicals Detected in May 2010 Overburden Sample Set

Total Organic Results											
Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Acenaphthene	172	4	2%	0.341	0.100	0.0349	0.36	0.94	3440	3400	N[c]
Acenaphthylene	172	0	0%	n/a[d]	n/a	n/a	n/a	n/a	na[e]	na	n/a
Acetone	172	4	2%	0.020	0.005	0.0052	0.022	0.047	67,500	61,000	N
Aldrin	172	0	0%	n/a	n/a	n/a	n/a	n/a	0.284	0.029	n/a
Aniline	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	85	n/a
Anthracene	172	2	1%	0.341	0.083	0.0349	0.36	0.39	17,200	17,000	N
Azobenzene	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	5.1	n/a
Benzene	172	0	0%	n/a	n/a	n/a	n/a	n/a	15.5	1.1	n/a
Benzo(a)anthracene	172	2	1%	0.346	0.091	0.0349	0.36	0.81	6.21	0.15	N
Benzo(a)pyrene	172	2	1%	0.345	0.086	0.0349	0.36	0.67	0.621	0.015	Y[f]
Benzo(b)fluoranthene	172	5	3%	0.347	0.100	0.0124	0.36	1	6.21	0.15	N
Benzo(g,h,i)perylene	172	3	2%	0.339	0.086	0.0349	0.36	0.39	na	na	n/a
Benzo(k)fluoranthene	172	2	1%	0.343	0.083	0.0349	0.36	0.49	62.1	1.5	N
Benzoic Acid	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	200,000	n/a
Benzyl Alcohol	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	6100	n/a
Benzene Hexachloride (BHC)[alpha-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	0.772	0.077	n/a
BHC[beta-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	2.7	0.27	n/a
BHC[delta-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
BHC[gamma-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	5.17	0.52	n/a
Bis(2-chloroethoxy)methane	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	180	n/a

Table 4.1-2 (continued)

Total Organic Results											
Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Bis(2-chloroethyl)ether	172	0	0%	n/a	n/a	n/a	n/a	n/a	2.56	0.21	n/a
Bis(2-ethylhexyl) phthalate	172	21	12%	0.396	0.311	0.056	0.366	3.57	347	35	N
Bromobenzene	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	300	n/a
Bromochloromethane	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Bromodichloro-methane	172	0	0%	n/a	n/a	n/a	n/a	n/a	5.25	0.27	n/a
Bromoform	172	0	0%	n/a	n/a	n/a	n/a	n/a	616	61	n/a
Bromomethane	172	0	0%	n/a	n/a	n/a	n/a	n/a	22.3	7.3	n/a
Bromophenyl-phenylether[4-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Butanone[2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	39,600	28,000	n/a
Butylbenzene[n-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Butylbenzene[sec-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Butylbenzene[tert-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Butylbenzylphthalate	172	1	1%	0.413	0.301	0.042	0.37	3.57	na	260	N
Carbazole	46	2	4%	0.364	0.039	0.18	0.37	0.39	na	na	n/a
Carbon Disulfide	172	0	0%	n/a	n/a	n/a	n/a	n/a	1940	820	n/a
Carbon Tetrachloride	172	0	0%	n/a	n/a	n/a	n/a	n/a	4.38	0.61	n/a
Chlordane[alpha-]	172	5	3%	0.006	0.006	0.0017	0.0038	0.038	na	na	n/a
Chlordane[gamma-]	172	13	8%	0.006	0.006	0.0003	0.0038	0.038	na	na	n/a
Chloro-3-methylphenol[4-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	6100	n/a
Chloroaniline[4-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	2.4	n/a
Chlorobenzene	172	0	0%	n/a	n/a	n/a	n/a	n/a	508	290	n/a
Chlorodibromo-methane	172	0	0%	n/a	n/a	n/a	n/a	n/a	11.9	0.68	n/a
Chloroethane	172	0	0%	n/a	n/a	n/a	n/a	n/a	43,600	15,000	n/a
Chloroform	172	0	0%	n/a	n/a	n/a	n/a	n/a	5.72	0.29	n/a

Table 4.1-2 (continued)

Total Organic Results											
Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Chloromethane	172	0	0%	n/a	n/a	n/a	n/a	n/a	35.6	120	n/a
Chloronaphthalene[2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	6260	6300	n/a
Chlorophenol[2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	391	390	n/a
Chlorophenyl-phenyl[4-] Ether	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Chlorotoluene[2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	1560	1600	n/a
Chlorotoluene[4-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	5500	n/a
Chrysene	172	3	2%	0.345	0.086	0.0269	0.36	0.64	621	15	N
Dichlorophenoxyacetic Acid (D)[2,4-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	690	n/a
Dalapon	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	1800	n/a
Dichlorophenoxy Butyric Acid (DB)[2,4-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	490	n/a
Dichlorodiphenyldichloroethane (DDD)[4,4'-]	172	4	2%	0.006	0.006	0.0002	0.0038	0.038	20.3	2	N
Dichlorophenyltrichloroethylene (DDE)[4,4'-]	172	22	13%	0.006	0.006	0.0006	0.0037	0.038	14.3	1.4	N
Dichlorodiphenyltrichloroethane (DDT)[4,4'-]	172	27	16%	0.006	0.006	0.001	0.0038	0.038	17.2	1.7	N
Dibenz(a,h)anthracene	172	1	1%	0.341	0.084	0.0349	0.36	0.39	0.621	0.015	N
Dibenzofuran	172	1	1%	0.414	0.300	0.11	0.37	3.57	na	78	N
Dibromo-3-Chloropropane[1,2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	0.194	0.005	n/a
Dibromoethane[1,2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	0.574	0.034	n/a
Dibromomethane	172	0	0%	n/a	n/a	n/a	n/a	n/a	782	25	n/a
Dicamba	172	3	2%	0.032	0.020	0.0052	0.043	0.12	na	1800	N
Dichlorobenzene[1,2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	3010	1900	n/a

Table 4.1-2 (continued)

Total Organic Results											
Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Dichlorobenzene[1,3-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Dichlorobenzene[1,4-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	32.2	2.4	n/a
Dichlorobenzidine [3,3'-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	10.8	1.1	n/a
Dichlorodifluoro-methane	172	0	0%	n/a	n/a	n/a	n/a	n/a	481	180	n/a
Dichloroethane[1,1-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	62.9	3.3	n/a
Dichloroethane[1,2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	7.74	0.43	n/a
Dichloroethene[1,1-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	618	240	n/a
Dichloroethene [cis/trans-1,2-]	112	0	0%	n/a	n/a	n/a	n/a	n/a	na	700	n/a
Dichloroethene[cis-1,2-]	60	0	0%	n/a	n/a	n/a	n/a	n/a	782	780	n/a
Dichloroethene[trans-1,2-]	60	0	0%	n/a	n/a	n/a	n/a	n/a	273	150	n/a
Dichlorophenol[2,4-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	183	180	n/a
Dichloropropane[1,2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	14.7	0.89	n/a
Dichloropropane[1,3-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	1600	n/a
Dichloropropane[2,2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Dichloropropene[1,1-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Dichloropropene[cis-1,3-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Dichloropropene [trans-1,3-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Dichlorprop	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Dieldrin	172	4	2%	0.006	0.006	0.0004	0.0038	0.038	0.304	0.03	N
Diethylphthalate	172	5	3%	0.415	0.308	0.065	0.37	3.57	48900	49000	N
Dimethyl Phthalate	172	0	0%	n/a	n/a	n/a	n/a	n/a	611000	na	n/a
Dimethylphenol[2,4-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	1220	1200	n/a
Di-n-butylphthalate	172	3	2%	0.416	0.304	0.053	0.37	3.57	6110	6100	N
Dinitro-2-methylphenol[4,6-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	6.11	4.9	n/a

Table 4.1-2 (continued)

Total Organic Results											
Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Dinitrophenol[2,4-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	122	120	n/a
Dinitrotoluene[2,4-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	15.7	1.6	n/a
Dinitrotoluene[2,6-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	61.2	61	n/a
Di-n-octylphthalate	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Dinoseb	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	61	n/a
Diphenylamine	15	0	0%	n/a	n/a	n/a	n/a	n/a	na	1500	n/a
Endosulfan I	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Endosulfan II	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Endosulfan Sulfate	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Endrin	172	0	0%	n/a	n/a	n/a	n/a	n/a	18.3	18	n/a
Endrin Aldehyde	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Endrin Ketone	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Ethylbenzene	172	0	0%	n/a	n/a	n/a	n/a	n/a	69.7	5.4	n/a
Fluoranthene	172	13	8%	0.339	0.152	0.0138	0.36	1.6	2290	2300	N
Fluorene	172	1	1%	0.341	0.084	0.0349	0.36	0.39	2290	2300	N
Heptachlor	172	0	0%	n/a	n/a	n/a	n/a	n/a	1.08	0.11	n/a
Heptachlor Epoxide	172	1	1%	0.006	0.006	0.0016	0.0038	0.038	na	0.053	N
Hexachlorobenzene	172	0	0%	n/a	n/a	n/a	n/a	n/a	3.04	0.3	n/a
Hexachlorobutadiene	172	0	0%	n/a	n/a	n/a	n/a	n/a	61.1	6.2	n/a
Hexachlorobutadiene	45	0	0%	n/a	n/a	n/a	n/a	n/a	61.1	6.2	n/a
Hexachlorocyclopentadiene	172	0	0%	n/a	n/a	n/a	n/a	n/a	367	370	n/a
Hexachloroethane	172	0	0%	n/a	n/a	n/a	n/a	n/a	61.1	35	n/a
Hexanone[2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	210	n/a
Indeno(1,2,3-cd)pyrene	172	2	1%	0.341	0.083	0.0349	0.36	0.39	6.21	0.15	N

Table 4.1-2 (continued)

Total Organic Results											
Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Iodomethane	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Isophorone	172	0	0%	n/a	n/a	n/a	n/a	n/a	5120	510	n/a
Isopropylbenzene	172	0	0%	n/a	n/a	n/a	n/a	n/a	3210	2100	n/a
Isopropyltoluene[4-]	172	2	1%	0.005	0.001	0.0005	0.0055	0.006	na	na	n/a
Methyl Chlorophenoxy Acetic Acid (MCPA)	172	6	3%	6.727	2.967	0.65	8.7	9.4	na	31	N
2- (2-methyl-4-chlorophenoxy) Propionic Acid (MCPP)	172	6	3%	6.767	2.917	0.394	8.7	9.4	na	61	N
Methoxychlor[4,4'-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	310	n/a
Methyl tert-Butyl Ether	157	0	0%	n/a	n/a	n/a	n/a	n/a	862	43	n/a
Methyl-2-pentanone [4-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	5950	5300	n/a
Methylene Chloride	172	42	24%	0.011	0.013	0.0017	0.0056	0.056	199	11	N
Methylnaphthalene[1-]	45	0	0%	n/a	n/a	n/a	n/a	n/a	na	22	n/a
Methylnaphthalene[2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	310	n/a
Methylphenol[2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	Na	3100	n/a
Methylphenol[3-]	45	0	0%	n/a	n/a	n/a	n/a	n/a	Na	3100	n/a
Methylphenol[4-]	127	0	0%	n/a	n/a	n/a	n/a	n/a	Na	310	n/a
Naphthalene	172	1	1%	0.341	0.084	0.0349	0.36	0.39	45	3.6	N
Naphthalene	45	0	0%	n/a	n/a	n/a	n/a	n/a	45	3.6	n/a
Nitroaniline[2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	Na	610	n/a
Nitroaniline[3-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	Na	na	n/a
Nitroaniline[4-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	24	n/a
Nitrobenzene	172	0	0%	n/a	n/a	n/a	n/a	n/a	49.4	4.8	n/a
Nitrophenol[2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a

Table 4.1-2 (continued)

Total Organic Results											
Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Nitrophenol[4-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Nitrosodimethylamine [N-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	0.0954	0.002	n/a
Nitroso-di-n-propylamine[N-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	0.069	n/a
Nitrosodiphenylamine [N-]	157	0	0%	n/a	n/a	n/a	n/a	n/a	993	99	n/a
Oxybis(1-chloropropane)[2,2'-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	4.6	n/a
Pentachlorophenol	172	0	0%	n/a	n/a	n/a	n/a	n/a	29.8	3	n/a
Phenanthrene	172	8	5%	0.341	0.117	0.0151	0.36	1.2	1830	na	N
Phenol	172	0	0%	n/a	n/a	n/a	n/a	n/a	18300	18000	n/a
Propylbenzene [1-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	3400	n/a
Pyrene	172	13	8%	0.344	0.161	0.0108	0.36	1.9	1720	1700	N
Pyridine	80	0	0%	n/a	n/a	n/a	n/a	n/a	na	78	n/a
Styrene	172	0	0%	n/a	n/a	n/a	n/a	n/a	8970	6300	n/a
Trichlorophenoxyacetic Acid (T)[2,4,5-]	172	2	1%	0.016	0.009	0.0035	0.022	0.033	na	610	N
Tetrachloroethane [1,1,1,2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	29.2	1.9	n/a
Tetrachloroethane [1,1,2,2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	7.98	0.56	n/a
Tetrachloroethene	172	0	0%	n/a	n/a	n/a	n/a	n/a	6.99	0.55	n/a
Tetrachlorophenol [2,3,4,6-]	45	0	0%	n/a	n/a	n/a	n/a	n/a	na	1800	n/a
Toluene	172	1	1%	0.005	0.001	0.0009	0.0055	0.006	5570	5000	N
Toxaphene	172	0	0%	n/a	n/a	n/a	n/a	n/a	4.42	0.44	n/a
Trichlorophenoxy Propionic Acid TP[2,4,5-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	490	n/a
Trichloro-1,2,2-trifluoroethane[1,1,2-]	127	0	0%	n/a	n/a	n/a	n/a	n/a	104000	43000	n/a
Trichlorobenzene [1,2,3-]	45	0	0%	n/a	n/a	n/a	n/a	n/a	na	49	n/a

Table 4.1-2 (continued)

Total Organic Results											
Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Trichlorobenzene [1,2,4-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	143	22	n/a
Trichlorobenzene [1,2,4-]	45	0	0%	n/a	n/a	n/a	n/a	n/a	143	22	n/a
Trichloroethane[1,1,1-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	21,800	8700	n/a
Trichloroethane[1,1,2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	17.2	1.1	n/a
Trichloroethene	172	0	0%	n/a	n/a	n/a	n/a	n/a	45.7	2.8	n/a
Trichlorofluoromethane	172	2	1%	0.009	0.003	0.0003	0.011	0.012	2010	790	N
Trichlorophenol[2,4,5-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	6110	6100	n/a
Trichlorophenol[2,4,6-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	61.1	44	n/a
Trichloropropane [1,2,3-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	0.915	0.005	n/a
Trichlorotrifluoroethane	45	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Trimethylbenzene [1,2,4-]	172	7	4%	0.003	0.002	0.0004	0.0012	0.006	na	62	N
Trimethylbenzene [1,3,5-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	780	n/a
Vinyl acetate	45	0	0%	n/a	n/a	n/a	n/a	n/a	3650	970	n/a
Vinyl Chloride	172	0	0%	n/a	n/a	n/a	n/a	n/a	0.865	0.06	n/a
Xylene (Total)	112	0	0%	n/a	n/a	n/a	n/a	n/a	1090	630	n/a
Xylene[1,2-]	60	0	0%	n/a	n/a	n/a	n/a	n/a	9550	3800	n/a
Xylene[1,3-] +Xylene[1,4-]	60	0	0%	n/a	n/a	n/a	n/a	n/a	1090	630	n/a

Table 4.1-2 (continued)

TCLP										
Analyte	Number of Analyses	Detects	Detection Rate	Mean (µg/L)	Standard Deviation (µg/L)	Minimum (µg/L)	Median (µg/L)	Maximum (µg/L)	TCLP Level[g] (µg/L)	Maximum Concentration above Residential Standards
Benzene	172	0	0%	n/a	n/a	n/a	n/a	n/a	500	n/a
BHC[gamma-]	172	1	1%	0.473	0.088	0.067	0.5	0.5	400	N
Butanone[2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	200,000	n/a
Carbon Tetrachloride	172	0	0%	n/a	n/a	n/a	n/a	n/a	500	n/a
Chlordane	45	0	0%	n/a	n/a	n/a	n/a	n/a	30	n/a
Chlordane [alpha/gamma]	127	0	0%	n/a	n/a	n/a	n/a	n/a	30	n/a
Chlordane[alpha-]	45	0	0%	n/a	n/a	n/a	n/a	n/a	30	n/a
Chlordane[gamma-]	45	0	0%	n/a	n/a	n/a	n/a	n/a	30	n/a
Chlorobenzene	172	0	0%	n/a	n/a	n/a	n/a	n/a	100,000	n/a
Chloroform	172	0	0%	n/a	n/a	n/a	n/a	n/a	6000	n/a
D[2,4-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	10,000	n/a
Dichlorobenzene[1,4-]	172	1	1%	63	22.115	36	50	100	7500	N
Dichlorobenzene[1,4-]	15	0	0%	n/a	n/a	n/a	n/a	n/a	7500	n/a
Dichloroethane[1,2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	500	n/a
Dichloroethene[1,1-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	700	n/a
Dinitrotoluene[2,4-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	130	n/a
Endrin	172	0	0%	n/a	n/a	n/a	n/a	n/a	20	n/a
Heptachlor	172	0	0%	n/a	n/a	n/a	n/a	n/a	8	n/a
Heptachlor Epoxide	172	0	0%	n/a	n/a	n/a	n/a	n/a	8	n/a
Hexachlorobenzene	172	0	0%	n/a	n/a	n/a	n/a	n/a	130	n/a
Hexachlorobutadiene	172	0	0%	n/a	n/a	n/a	n/a	n/a	500	n/a
Hexachloroethane	172	0	0%	n/a	n/a	n/a	n/a	n/a	3000	n/a
Methoxychlor[4,4'-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	10,000	n/a
Methylphenol[2-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	200,000	n/a

Table 4.1-2 (continued)

TCLP										
Analyte	Number of Analyses	Detects	Detection Rate	Mean (µg/L)	Standard Deviation (µg/L)	Minimum (µg/L)	Median (µg/L)	Maximum (µg/L)	TCLP Level[g] (µg/L)	Maximum Concentration above Residential Standards
Methylphenol[3-]	45	0	0%	n/a	n/a	n/a	n/a	n/a	200,000	n/a
Methylphenol[4-]	127	0	0%	n/a	n/a	n/a	n/a	n/a	200,000	n/a
Nitrobenzene	172	0	0%	n/a	n/a	n/a	n/a	n/a	2000	n/a
Pentachlorophenol	172	0	0%	n/a	n/a	n/a	n/a	n/a	100,000	n/a
Pyridine	172	0	0%	n/a	n/a	n/a	n/a	n/a	5000	n/a
Tetrachloroethene	172	0	0%	n/a	n/a	n/a	n/a	n/a	700	n/a
Toxaphene	172	0	0%	n/a	n/a	n/a	n/a	n/a	500	n/a
TP[2,4,5-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	1000	n/a
Trichloroethene	172	6	3%	124.983	191.118	0.95	50	500	500	N
Trichlorophenol[2,4,5-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	400,000	n/a
Trichlorophenol[2,4,6-]	172	0	0%	n/a	n/a	n/a	n/a	n/a	2000	n/a
Vinyl Chloride	172	0	0%	n/a	n/a	n/a	n/a	n/a	200	n/a

[a] Source: NMED (2009, 108070).

[b] Source: www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm.

[c] N = No, does not exceed SSL.

[d] n/a = Not applicable. Statistics were not performed on analytes that were all below detection limits.

[e] na = Not available.

[f] Y= Yes, does exceed SSL.

[g] Source: 40 CFR 261.24.

Table 4.1-3
Radionuclides Detected in May 2010 Overburden Sample Set

Analyte	Analytical Suite	Number of Analyses	Detects	Detection Rate	Mean (pCi/g)	Standard Deviation (pCi/g)	Minimum (pCi/g)	Median (pCi/g)	Maximum (pCi/g)	LANL SAL[a] (pCi/g)	Maximum Concentration above Residential Standards
Americium-241	Am-241[b]	172	97	56%	0.072	0.073	0.0005	0.05	0.575	30	N[c]
Americium-241	Gamma[d]	172	6	3%	0.079	0.254	−1.31	0.085	1	30	N
Bismuth-211	Gamma	127	4	3%	0.346	1.409	−1.48	0	4.78	na[e]	n/a[f]
Bismuth-212	Gamma	42	38	90%	3.053	0.630	1.63	3.03	4.24	na	n/a
Bismuth-214	Gamma	172	90	52%	1.518	0.769	0.523	1.27	4.72	na	n/a
Cadmium-109	Gamma	172	32	19%	1.507	1.693	−4.41	1.9	6.95	na	n/a
Cerium-139	Gamma	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	n/a
Cesium-134	Gamma	172	0	0%	n/a	n/a	n/a	n/a	n/a	2.4	n/a
Cesium-137	Gamma	172	3	2%	0.023	0.042	−0.091	0.022	0.19	5.6	N
Cobalt-60	Gamma	172	0	0%	n/a	n/a	n/a	n/a	n/a	1.3	n/a
Europium-152	Gamma	172	0	0%	n/a	n/a	n/a	n/a	n/a	2.9	n/a
Lanthanum-140	Gamma	15	0	0%	n/a	n/a	n/a	n/a	n/a	na	n/a
Lead-212	Gamma	172	172	100%	1.525	0.168	0.895	1.52	2.03	na	n/a
Lead-214	Gamma	172	77	45%	0.842	0.877	0	1.09	5.4	na	n/a
Mercury-203	Gamma	172	1	1%	0.009	0.035	−0.135	0.0009	0.119	na	n/a
Plutonium-238	Isotopic[g]	172	36	21%	0.030	0.023	−0.004	0.028	0.143	37	N
Plutonium-239/240	Isotopic	172	172	100%	1.994	3.316	0.038	1.32	33.7	33	Y[h]
Potassium-40	Gamma	172	172	100%	26.474	2.981	19.3	26.25	33.7	na	n/a
Radium-223	Gamma	172	4	2%	−0.052	0.450	−1.48	0	1.26	na	n/a
Radium-224	Gamma	172	4	2%	−0.788	3.889	−11.6	−1.9	17.1	na	n/a
Radium-226	Gamma	127	31	24%	1.636	0.889	0.955	1.35	6.39	5	Y
Radium-228	Gamma	172	160	93%	1.617	0.294	0.82	1.62	2.49	5	N

Table 4.1-3 (continued)

Analyte	Analytical Suite	Number of Analyses	Detects	Detection Rate	Mean (pCi/g)	Standard Deviation (pCi/g)	Minimum (pCi/g)	Median (pCi/g)	Maximum (pCi/g)	LANL SAL[a] (pCi/g)	Maximum Concentration above Residential Standards
Ruthenium-106	Gamma	172	0	0%	n/a	n/a	n/a	n/a	n/a	20	n/a
Sodium-22	Gamma	172	0	0%	n/a	n/a	n/a	n/a	n/a	1.6	n/a
Strontium-85	Gamma	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	n/a
Strontium-90	Sr-90[i]	172	1	1%	0.026	0.130	−0.41	0.03	0.45	5.7	N
Thallium-208	Gamma	172	172	100%	0.541	0.094	0.296	0.5395	0.821	na	n/a
Thorium-227	Gamma	172	4	2%	−0.250	0.830	−4.8	−0.0424	4.1	na	n/a
Thorium-231	Gamma	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	n/a
Thorium-234	Gamma	172	55	32%	1.726	1.002	−0.6	1.675	5.24	na	n/a
Tin-113	Gamma	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	n/a
Tritium	H3[j]	172	136	79%	7.997	13.504	−0.23	1.71	69.7	750	N
Uranium-234	Isotopic	172	172	100%	0.768	0.437	0.231	0.6825	3.4	170	N
Uranium-235	Gamma	172	0	0%	n/a	n/a	n/a	n/a	n/a	17	n/a
Uranium-235	Isotopic	80	7	9%	0.029	0.017	−0.008	0.0275	0.071	17	N
Uranium-235/236	Isotopic	92	15	16%	0.043	0.027	0	0.037	0.177	17	N
Uranium-238	Isotopic	172	172	100%	0.714	0.300	0.272	0.6585	2.8	87	N
Yttrium-88	Gamma	172	0	0%	n/a	n/a	n/a	n/a	n/a	na	n/a

[a] Source: LANL (2005,088493).

[b] Am-241 = Americium-241 analysis.

[c] N = No, does not exceed SAL.

[d] Gamma = Gamma spectroscopy.

[e] na = Not available.

[f] n/a = Not applicable. Statistics were not performed on analytes that were all below detection limits.

[g] Isotopic = Isotopic analysis.

[h] Y = Yes, does exceed SAL.

[I] Sr-90 = Strontium-90 analysis.

[j] H^3 = Tritium analysis.

Table 4.1-4
Upper Confidence Limits for Analytes Exceeding SSLs and SALs in May 2010 Overburden Sample Set

Analyte	Number of Analyses	Detection Rate	95% Upper Confidence Limit	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	LANL SAL[c] (pCi/g)	UCL above Residential Standards
Arsenic	172	92%	2.519	3.9	0.39	n/a[d]	N[e]
Benzo(a)pyrene[f]	172	1%	0.374	0.621	0.015	n/a	N
Plutonium-239/240	172	100%	3.573	n/a	n/a	33	N
Radium-226	127	24%	1.77	n/a	n/a	5	N
Thallium	172	37%	0.694	5.16	na[g]	n/a	N

[a] Source: NMED (2009, 108070).

[b] Source: www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm.

[c] Source: LANL (2005, 088493).

[d] n/a = Not applicable.

[e] N = No, does not exceed residential SSLs and SALs.

[f] Nondetection reporting level exceeds EPA SSL.

[g] na = Not available.

Table 4.1-5
Inorganic Chemicals Detected in September 2010 Overburden Sample Set

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Aluminum	42	42	100%	5933.571	1608.053	3090	5970	9740	78,100	77,000	N[c]
Antimony	42	3	7%	1.091	0.627	0.354	1.045	4.91	31.3	31	N
Arsenic	42	42	100%	1.672	0.830	1.06	1.625	6.58	3.9	0.39	Y[d]
Barium	42	42	100%	110.743	77.523	52.6	93.35	558	15,600	15,000	N
Beryllium	42	42	100%	0.562	0.116	0.292	0.5865	0.842	156	160	N
Cadmium	42	28	67%	0.468	0.621	0.133	0.359	4.27	77.9	70	N
Calcium	42	42	100%	3798.095	964.560	1840	3725	6110	na[e]	na	n/a[f]
Chromium	42	38	90%	6.985	1.143	3.63	6.98	10.3	113,000	120,000	N
Cobalt	42	42	100%	3.262	0.830	1.61	3.06	5.49	na	23	N
Copper	42	39	93%	47.660	138.087	5.49	10	855	3130	3100	N
Total Cyanide	38	6	16%	0.317	0.521	0.087	0.2525	3.43	1560	1600	N
Iron	42	42	100%	10,650.476	884.164	9140	10,600	12,700	54,800	55,000	N
Lead	42	34	81%	15.177	11.462	4.99	9.6	50.4	400	400	N
Magnesium	42	42	100%	1605.714	263.246	1140	1565	2480	na	na	n/a
Manganese	42	42	100%	265.881	43.360	172	263	395	10,700	1800	N
Mercury	42	42	100%	0.027	0.016	0.00733	0.02695	0.0776	7.71	5.6	N
Nickel	42	38	90%	6.004	0.925	4	6.055	9.11	1560	1500	N
Nitrate	42	29	69%	2.605	1.648	0.88	2.31	7.33	125,000	130,000	N
Nitrite	42	0	0%	n/a	n/a	n/a	n/a	n/a	7820	7800	n/a
Perchlorate	38	31	82%	0.008	0.017	0.000515	0.00218	0.0806	54.8	55	N
Potassium	42	42	100%	962.571	270.144	494	921	1490	na	na	n/a
Selenium	42	0	0%	n/a	n/a	n/a	n/a	n/a	391	390	n/a

Table 4.1-5 (continued)

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Silver	42	27	64%	0.927	0.904	0.119	0.5115	3.58	391	390	N
Sodium	42	13	31%	204.476	93.882	74.6	195.5	479	na	na	n/a
Thallium	42	34	81%	0.158	0.051	0.0844	0.1565	0.293	5.16	na	N
Uranium	42	42	100%	0.857	0.350	0.433	0.7565	1.94	235[g]	na	n/a
Vanadium	42	42	100%	18.221	3.057	8.97	18.15	23.9	391	5.5	N
Zinc	42	32	76%	88.693	120.320	24.7	31.3	516	23,500	23,000	N

[a] Source: NMED (2009, 108070).

[b] Source: www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm.

[c] N = No, does not exceed SSL.

[d] Y = Yes, does exceed SSL.

[e] na = Not available.

[f] n/a = Not applicable. Statistics were not performed on analytes that were all below detection limits.

[g] SSL for uranium soluble salts.

Table 4.1-6
Organic Chemicals Detected in September 2010 Overburden Sample Set

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Acenaphthene	42	1	2%	0.04737	0.03233	0.0177	0.0361	0.143	3440	3400	N[c]
Acenaphthylene	42	0	0%	n/a[d]	n/a	n/a	n/a	n/a	na[e]	na	n/a
Acetone	42	0	0%	n/a	n/a	n/a	n/a	n/a	67,500	61,000	n/a
Aldrin	42	0	0%	n/a	n/a	n/a	n/a	n/a	0.284	0.029	n/a
Amino-2,6-dinitrotoluene[4-]	38	0	0%	n/a	n/a	n/a	n/a	n/a	na	150	n/a
Amino-4,6-dinitrotoluene[2-]	38	0	0%	n/a	n/a	n/a	n/a	n/a	na	150	n/a
Aniline	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	85	n/a
Anthracene	42	0	0%	n/a	n/a	n/a	n/a	n/a	17,200	17,000	n/a
Aroclor 1016	38	0	0%	n/a	n/a	n/a	n/a	n/a	3.93	3.9	n/a
Aroclor 1221	38	0	0%	n/a	n/a	n/a	n/a	n/a	1.76	0.14	n/a
Aroclor 1232	38	1	3%	0.01086	0.00836	0.0034	0.00377	0.0367	1.76	0.14	N
Aroclor 1242	38	0	0%	n/a	n/a	n/a	n/a	n/a	2.22	0.22	n/a
Aroclor 1248	38	0	0%	n/a	n/a	n/a	n/a	n/a	2.22	0.22	n/a
Aroclor 1254	38	5	13%	0.01113	0.00829	0.0022	0.0069	0.0367	1.12	0.22	N
Aroclor 1260	38	7	18%	0.01155	0.00811	0.0023	0.01165	0.0367	2.22	0.22	N
Azobenzene	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	5.1	n/a
Benzene	42	0	0%	n/a	n/a	n/a	n/a	n/a	15.5	1.1	n/a
Benzo(a)anthracene	42	3	7%	0.04673	0.03273	0.0113	0.0359	0.143	6.21	0.15	N
Benzo(a)pyrene	42	2	5%	0.04704	0.03253	0.0185	0.0361	0.143	0.621	0.015	N
Benzo(b)fluoranthene	42	3	7%	0.04685	0.03268	0.016	0.036	0.143	6.21	0.15	N
Benzo(g,h,i)perylene	42	1	2%	0.04736	0.03236	0.016	0.03615	0.143	na	na	n/a
Benzo(k)fluoranthene	42	1	2%	0.04731	0.03241	0.0139	0.03615	0.143	62.1	1.5	N

Table 4.1-6 (continued)

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Benzoic Acid	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	240,000	n/a
Benzyl Alcohol	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	6100	n/a
BHC[alpha-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	0.772	0.077	n/a
BHC[beta-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	2.7	0.27	n/a
BHC[delta-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
BHC[gamma-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	5.17	0.52	n/a
Bis(2-chloroethoxy)methane	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	180	n/a
Bis(2-chloroethyl)ether	42	0	0%	n/a	n/a	n/a	n/a	n/a	2.56	0.21	n/a
Bis(2-ethylhexyl)phthalate	42	0	0%	n/a	n/a	n/a	n/a	n/a	347	35	n/a
Bromobenzene	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	300	n/a
Bromochloromethane	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Bromodichloromethane	42	0	0%	n/a	n/a	n/a	n/a	n/a	5.25	0.27	n/a
Bromoform	42	0	0%	n/a	n/a	n/a	n/a	n/a	616	61	n/a
Bromomethane	42	0	0%	n/a	n/a	n/a	n/a	n/a	22.3	7.3	n/a
Bromophenyl-phenylether [4-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Butanone[2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	39,600	28,000	n/a
Butylbenzene[n-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Butylbenzene[sec-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Butylbenzene[tert-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Butylbenzylphthalate	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	260	n/a
Carbon Disulfide	42	0	0%	n/a	n/a	n/a	n/a	n/a	1940	820	n/a
Carbon Tetrachloride	42	0	0%	n/a	n/a	n/a	n/a	n/a	4.38	0.61	n/a
Chlordane[alpha-]	42	6	14%	0.000811	0.000354	0.000446	0.000716	0.00223	na	na	n/a

Table 4.1-6 (continued)

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Chlordane[gamma-]	42	5	12%	0.000850	0.000484	0.000573	0.000716	0.00301	na	na	n/a
Chloro-3-methylphenol[4-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	6100	n/a
Chloroaniline[4-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	2.4	n/a
Chlorobenzene	42	0	0%	n/a	n/a	n/a	n/a	n/a	508	290	n/a
Chlorodibromomethane	42	0	0%	n/a	n/a	n/a	n/a	n/a	11.9	0.68	n/a
Chloroethane	42	0	0%	n/a	n/a	n/a	n/a	n/a	43,600	15,000	n/a
Chloroform	42	0	0%	n/a	n/a	n/a	n/a	n/a	5.72	0.29	n/a
Chloromethane	42	0	0%	n/a	n/a	n/a	n/a	n/a	35.6	120	n/a
Chloronaphthalene[2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	6260	6300	n/a
Chlorophenol[2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	391	390	n/a
Chlorophenyl-phenyl[4-] Ether	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Chlorotoluene[2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	1560	1600	n/a
Chlorotoluene[4-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	5500	n/a
Chrysene	42	5	12%	0.04583	0.03326	0.0126	0.0357	0.143	621	15	N
D[2,4-]	42	1	2%	0.00536	0.00025	0.00402	0.005375	0.00578	na	690	N
Dalapon	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	1800	n/a
DB[2,4-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	490	n/a
DDD[4,4'-]	42	5	12%	0.00136	0.00024	0.00041	0.00143	0.00154	20.3	2	N
DDE[4,4'-]	42	10	24%	0.00141	0.00041	0.00047	0.00143	0.0026	14.3	1.4	N
DDT[4,4'-]	42	15	36%	0.00234	0.00291	0.00044	0.00143	0.0124	17.2	1.7	N
2,4-Diamino-6-nitrotoluene	38	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
2,6-Diamino-4-nitrotoluene	38	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Dibenz(a,h)anthracene	42	0	0%	n/a	n/a	n/a	n/a	n/a	0.621	0.015	n/a
Dibenzofuran	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	78	n/a

Table 4.1-6 (continued)

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Dibromo-3-Chloropropane[1,2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	0.194	0.0054	n/a
Dibromoethane[1,2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	0.574	0.034	n/a
Dibromomethane	42	0	0%	n/a	n/a	n/a	n/a	n/a	782	25	n/a
Dicamba	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	1800	n/a
Dichlorobenzene[1,2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	3010	1900	n/a
Dichlorobenzene[1,3-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Dichlorobenzene[1,4-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	32.2	2.4	n/a
Dichlorobenzidine[3,3'-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	10.8	1.1	n/a
Dichlorodifluoromethane	42	0	0%	n/a	n/a	n/a	n/a	n/a	481	180	n/a
Dichloroethane[1,1-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	62.9	3.3	n/a
Dichloroethane[1,2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	7.74	0.43	n/a
Dichloroethene[1,1-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	618	240	n/a
Dichloroethene[cis-1,2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	782	780	n/a
Dichloroethene[trans-1,2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	273	150	n/a
Dichlorophenol[2,4-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	183	180	n/a
Dichloropropane[1,2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	14.7	0.89	n/a
Dichloropropane[1,3-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	1600	n/a
Dichloropropane[2,2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Dichloropropene[1,1-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Dichloropropene[cis-1,3-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Dichloropropene[trans-1,3-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Dichlorprop	42	4	10%	0.005311	0.000471	0.00291	0.005355	0.00628	na	na	n/a
Dieldrin	42	4	10%	0.001352	0.000267	0.000368	0.00143	0.00154	0.304	0.03	N
Diethylphthalate	42	0	0%	n/a	n/a	n/a	n/a	n/a	48,900	49,000	n/a

Table 4.1-6 (continued)

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Dimethyl Phthalate	42	0	0%	n/a	n/a	n/a	n/a	n/a	611,000	na	n/a
Dimethylphenol[2,4-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	1220	1200	n/a
Di-n-butylphthalate	42	0	0%	n/a	n/a	n/a	n/a	n/a	6110	6100	n/a
3,5-Dinitroaniline	38	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Dinitro-2-methylphenol[4,6-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	6.11	4.9	n/a
Dinitrobenzene[1,3-]	38	0	0%	n/a	n/a	n/a	n/a	n/a	na	6.1	n/a
Dinitrophenol[2,4-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	122	120	n/a
Dinitrotoluene[2,4-]	38	0	0%	n/a	n/a	n/a	n/a	n/a	15.7	1.6	n/a
Dinitrotoluene[2,4-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	15.7	1.6	n/a
Dinitrotoluene[2,6-]	38	0	0%	n/a	n/a	n/a	n/a	n/a	61.2	61	n/a
Dinitrotoluene[2,6-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	61.2	61	n/a
Di-n-octylphthalate	42	1	2%	0.473	0.324	0.155	0.361	1.43	na	na	n/a
Dinoseb	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	61	n/a
Diphenylamine	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	1500	n/a
Endosulfan I	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Endosulfan II	42	1	2%	0.001413	0.000162	0.000408	0.00143	0.00154	na	na	n/a
Endosulfan Sulfate	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Endrin	42	0	0%	n/a	n/a	n/a	n/a	n/a	18.3	18	n/a
Endrin Aldehyde	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Endrin Ketone	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Ethylbenzene	42	0	0%	n/a	n/a	n/a	n/a	n/a	69.7	5.4	n/a
Fluoranthene	42	5	12%	0.0461	0.0330	0.0126	0.0357	0.143	2290	2300	N
Fluorene	42	0	0%	n/a	n/a	n/a	n/a	n/a	2290	2300	n/a
Heptachlor	42	0	0%	n/a	n/a	n/a	n/a	n/a	1.08	0.11	n/a

Table 4.1-6 (continued)

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Heptachlor Epoxide	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	0.053	n/a
Heptachlorodibenzodioxin [1,2,3,4,6,7,8-]	42	27	64%	7.810E-06	1.109E-05	3.18E-07	1.65E-06	0.0000429	na	na	n/a
Heptachlorodibenzodioxins (Total)	42	29	69%	1.825E-05	2.685E-05	3.18E-07	3.595E-06	0.000105	na	na	n/a
Heptachlorodibenzofuran [1,2,3,4,6,7,8-]	42	26	62%	4.694E-06	6.806E-06	2.26E-07	9.105E-07	0.000022	na	na	n/a
Heptachlorodibenzofuran [1,2,3,4,7,8,9-]	42	5	12%	5.665E-07	3.499E-07	2.79E-07	4.635E-07	2.37E-06	na	na	n/a
Heptachlorodibenzofurans (Total)	42	29	69%	1.030E-05	1.570E-05	2.26E-07	1.725E-06	0.0000531	na	na	n/a
Hexachlorobenzene	42	0	0%	n/a	n/a	n/a	n/a	n/a	3.04	0.3	n/a
Hexachlorobutadiene	42	0	0%	n/a	n/a	n/a	n/a	n/a	61.1	6.2	n/a
Hexachlorocyclopentadiene	42	0	0%	n/a	n/a	n/a	n/a	n/a	367	370	n/a
Hexachlorodibenzodioxin [1,2,3,4,7,8-]	42	5	12%	5.808E-07	3.874E-07	2.57E-07	4.635E-07	2.56E-06	na	na	n/a
Hexachlorodibenzodioxin [1,2,3,6,7,8-]	42	12	29%	1.101E-06	1.523E-06	2.59E-07	4.685E-07	8.39E-06	na	na	n/a
Hexachlorodibenzodioxin [1,2,3,7,8,9-]	42	9	21%	7.165E-07	6.418E-07	2.63E-07	4.685E-07	3.71E-06	na	na	n/a
Hexachlorodibenzodioxins (Total)	42	17	40%	6.141E-06	1.145E-05	2.57E-07	4.79E-07	0.0000562	na	na	n/a
Hexachlorodibenzofuran [1,2,3,4,7,8-]	42	10	24%	9.943E-07	1.319E-06	1.58E-07	4.685E-07	7.27E-06	na	na	n/a
Hexachlorodibenzofuran [1,2,3,6,7,8-]	42	11	26%	1.075E-06	1.493E-06	1.48E-07	4.685E-07	7.49E-06	na	na	n/a
Hexachlorodibenzofuran [1,2,3,7,8,9-]	42	8	19%	8.494E-07	1.123E-06	1.76E-07	4.665E-07	6.63E-06	na	na	n/a
Hexachlorodibenzofuran [2,3,4,6,7,8-]	42	11	26%	1.571E-06	2.512E-06	1.57E-07	4.685E-07	0.0000114	na	na	n/a

Table 4.1-6 (continued)

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Hexachlorodibenzofurans (Total)	42	20	48%	1.956E-05	3.761E-05	1.48E-07	5.12E-07	0.000163	na	na	n/a
Hexachloroethane	42	0	0%	n/a	n/a	n/a	n/a	n/a	61.1	35	n/a
Hexanone[2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	210	n/a
HMX (1,3,5,7-tetranitro-1,3,5,7-tetrazocine)	38	0	0%	n/a	n/a	n/a	n/a	n/a	3060	3800	n/a
Indeno(1,2,3-cd)pyrene	42	1	2%	0.0474	0.0323	0.019	0.0361	0.143	6.21	0.15	N
Iodomethane	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Isophorone	42	0	0%	n/a	n/a	n/a	n/a	n/a	5120	510	n/a
Isopropylbenzene	42	0	0%	n/a	n/a	n/a	n/a	n/a	3210	2100	n/a
Isopropyltoluene[4-]	42	2	5%	0.00109	0.00008	0.00102	0.00108	0.00158	na	na	n/a
MCPA	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	31	n/a
MCPP	42	1	2%	1.074	0.047	0.831	1.08	1.16	na	61	N
Methoxychlor[4,4'-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	310	n/a
Methyl-2-pentanone[4-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	5950	5300	n/a
Methylene Chloride	42	0	0%	n/a	n/a	n/a	n/a	n/a	199	11	n/a
Methylnaphthalene[2-]	42	12	29%	0.05099	0.04006	0.00723	0.0357	0.148	na	310	N
Methylphenol[2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	3100	n/a
Methylphenol[4-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	310	n/a
Naphthalene	42	6	14%	0.0493	0.0325	0.0177	0.036	0.143	45	3.6	N
Nitroaniline[2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	610	n/a
Nitroaniline[3-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Nitroaniline[4-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	24	n/a
Nitrobenzene	38	0	0%	n/a	n/a	n/a	n/a	n/a	49.4	4.8	n/a
Nitrobenzene	42	0	0%	n/a	n/a	n/a	n/a	n/a	49.4	4.8	n/a

Table 4.1-6 (continued)

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Nitrophenol[2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Nitrophenol[4-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Nitrosodimethylamine[N-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	0.0954	0.0023	n/a
Nitroso-di-n-propylamine [N-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	0.069	n/a
Nitrotoluene[2-]	38	0	0%	n/a	n/a	n/a	n/a	n/a	29.1	2.9	n/a
Nitrotoluene[3-]	38	0	0%	n/a	n/a	n/a	n/a	n/a	1560	6.1	n/a
Nitrotoluene[4-]	38	3	8%	0.479	0.079	0.105	0.5	0.5	244	30	N
Octachlorodibenzodioxin [1,2,3,4,6,7,8,9-]	42	31	74%	5.593E-05	8.135E-05	1.83E-06	1.215E-05	0.000311	na	na	n/a
Octachlorodibenzofuran [1,2,3,4,6,7,8,9-]	42	20	48%	5.065E-06	6.804E-06	6.55E-07	1.31E-06	0.000024	na	na	n/a
Oxybis(1-chloropropane)[2,2'-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	4.6	n/a
Pentachlorodibenzodioxin [1,2,3,7,8-]	42	8	19%	7.2002E-07	7.632E-07	2.04E-07	4.655E-07	0.0000046	na	na	n/a
Pentachlorodibenzodioxins (Total)	42	11	26%	2.557E-06	5.597E-06	2.04E-07	4.685E-07	0.0000297	na	na	n/a
Pentachlorodibenzofuran [1,2,3,7,8-]	42	6	14%	5.0895E-07	1.831E-07	1.52E-07	4.62E-07	1.34E-06	na	na	n/a
Pentachlorodibenzofuran [2,3,4,7,8-]	42	14	33%	2.4066E-06	4.25E-06	1.52E-07	4.705E-07	0.0000187	na	na	n/a
Pentachlorodibenzofurans (Total)	42	28	67%	3.1138E-05	6.21E-05	1.38E-07	7.65E-07	0.000262	na	na	n/a
Pentachlorophenol	42	0	0%	n/a	n/a	n/a	n/a	n/a	29.8	3	n/a
Pentaerythritol Tetranitrate (PETN)	38	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Phenanthrene	42	6	14%	0.0475	0.0326	0.0144	0.0359	0.143	1830	na	N
Phenol	42	0	0%	n/a	n/a	n/a	n/a	n/a	18,300	18,000	n/a
Propylbenzene[1-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	3400	n/a
Pyrene	42	6	14%	0.0464	0.0329	0.0129	0.0358	0.143	1720	1700	N

Table 4.1-6 (continued)

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Pyridine	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	78	n/a
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	38	0	0%	n/a	n/a	n/a	n/a	n/a	44.2	5.5	n/a
Styrene	42	0	0%	n/a	n/a	n/a	n/a	n/a	8970	6300	n/a
T[2,4,5-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	610	n/a
Triaminotrinitrobenzene (TATB)	38	5	13%	1	0	1	1	1	na	na	n/a
Tetrachlorodibenzodioxin [2,3,7,8-]	42	1	2%	1.350E-07	7.229E-08	8.07E-08	9.505E-08	3.68E-07	4.5E-05	4.5E-06	N
Tetrachlorodibenzodioxins (Total)	42	7	17%	3.333E-07	6.966E-07	8.07E-08	9.505E-08	4.11E-06	na	na	n/a
Tetrachlorodibenzofuran [2,3,7,8-]	42	12	29%	5.209E-07	3.611E-07	2.02E-07	3.96E-07	1.66E-06	0.00037	na	N
Tetrachlorodibenzofurans (Total)	42	21	50%	1.258E-05	2.397E-05	9.39E-08	9.31E-07	0.0000994	na	na	n/a
Tetrachloroethane[1,1,1,2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	29.2	1.9	n/a
Tetrachloroethane[1,1,2,2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	7.98	0.56	n/a
Tetrachloroethene	42	0	0%	n/a	n/a	n/a	n/a	n/a	6.99	0.55	n/a
Tetryl	38	0	0%	n/a	n/a	n/a	n/a	n/a	244	240	n/a
Toluene	42	5	12%	0.001019	0.000162	0.000411	0.00107	0.00112	5570	5000	N
Total Petroleum Hydrocarbons-Diesel Range Organics (TPH-DRO)	1	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Total Petroleum Hydrocarbons-Gasoline Range Organics (TPH-GRO)	1	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Toxaphene	42	0	0%	n/a	n/a	n/a	n/a	n/a	4.42	0.44	n/a
TP[2,4,5-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	490	n/a
Trichloro-1,2,2-trifluoroethane[1,1,2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	104,000	43,000	n/a
Trichlorobenzene[1,2,4-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	143	22	n/a

Table 4.1-6 (continued)

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	Maximum Concentration above Residential Standards
Trichloroethane[1,1,1-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	21,800	8700	n/a
Trichloroethane[1,1,2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	17.2	1.1	n/a
Trichloroethene	42	0	0%	n/a	n/a	n/a	n/a	n/a	45.7	2.8	n/a
Trichlorofluoromethane	42	0	0%	n/a	n/a	n/a	n/a	n/a	2010	790	n/a
Trichlorophenol[2,4,5-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	6110	6100	n/a
Trichlorophenol[2,4,6-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	61.1	44	n/a
Trichloropropane[1,2,3-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	0.915	0.005	n/a
Trimethylbenzene[1,2,4-]	42	2	5%	0.001048	0.000146	0.000363	0.00107	0.00116	na	62	N
Trimethylbenzene[1,3,5-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	780	n/a
Trinitrobenzene[1,3,5-]	38	0	0%	n/a	n/a	n/a	n/a	n/a	na	2200	n/a
Trinitrotoluene[2,4,6-]	38	0	0%	n/a	n/a	n/a	n/a	n/a	35.9	19	n/a
Tris (o-cresyl) phosphate	38	0	0%	n/a	n/a	n/a	n/a	n/a	na	na	n/a
Vinyl Chloride	42	0	0%	n/a	n/a	n/a	n/a	n/a	0.865	0.06	n/a
Xylene[1,2-]	42	0	0%	n/a	n/a	n/a	n/a	n/a	9550	3800	n/a
Xylene[1,3-]+Xylene[1,4-]	42	8	19%	0.001931	0.000503	0.000424	0.002135	0.00221	1090	630	N

[a] Source: NMED (2009, 108070).

[b] Source: www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm.

[c] N = No, does not exceed SSL.

[d] n/a = Not applicable. Statistics were not performed on analytes that were all below detection limits.

[e] na = Not available.

Table 4.1-7
Radionuclides Detected in September 2010 Overburden Sample Set

Analyte	Analytical Suite	Number of Analyses	Detects	Detection Rate	Mean (pCi/g)	Standard Deviation (pCi/g)	Minimum (pCi/g)	Median (pCi/g)	Maximum (pCi/g)	LANL SAL[a] (pCi/g)	Maximum Concentration above Residential Standards
Americium-241	Am-241[b]	42	6	14%	0.0494	0.0708	−0.0092	0.0248	0.339	30	N[c]
Americium-241	Gamma[d]	42	2	5%	0.0051	0.1662	−0.514	0.027	0.341	30	N
Bismuth-211	Gamma	42	0	0%	n/a[e]	n/a	n/a	n/a	n/a	na[f]	n/a
Bismuth-214	Gamma	42	42	100%	1.097	0.169	0.749	1.1	1.39	na	n/a
Cadmium-109	Gamma	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	n/a
Cerium-139	Gamma	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	n/a
Cesium-134	Gamma	42	0	0%	n/a	n/a	n/a	n/a	n/a	2.4	n/a
Cesium-137	Gamma	42	5	12%	0.02333	0.05811	−0.0481	0.007325	0.193	5.6	N
Cobalt-60	Gamma	42	0	0%	n/a	n/a	n/a	n/a	n/a	1.3	n/a
Europium-152	Gamma	42	0	0%	n/a	n/a	n/a	n/a	n/a	2.9	n/a
Lanthanum-140	Gamma	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	n/a
Lead-212	Gamma	42	42	100%	1.538	0.200	1.07	1.53	1.93	na	n/a
Lead-214	Gamma	42	42	100%	1.296	0.151	0.924	1.3	1.57	na	n/a
Mercury-203	Gamma	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	n/a
Plutonium-238	Isotopic[g]	42	0	0%	n/a	n/a	n/a	n/a	n/a	37	n/a
Plutonium-239/240	Isotopic	42	31	74%	0.52278	0.68562	−0.00422	0.2555	2.82	33	N
Potassium-40	Gamma	42	42	100%	26.02	2.45	21.6	26.4	31.8	na	n/a
Radium-223	Gamma	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	n/a
Radium-224	Gamma	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	n/a
Radium-226	Gamma	42	42	100%	1.097	0.169	0.749	1.1	1.39	5	N
Radium-228	Gamma	42	42	100%	1.662	0.227	0.976	1.655	2.07	5	N

Table 4.1-7 (continued)

Analyte	Analytical Suite	Number of Analyses	Detects	Detection Rate	Mean (pCi/g)	Standard Deviation (pCi/g)	Minimum (pCi/g)	Median (pCi/g)	Maximum (pCi/g)	LANL SAL[a] (pCi/g)	Maximum Concentration above Residential Standards
Ruthenium-106	Gamma	42	0	0%	n/a	n/a	n/a	n/a	n/a	20	n/a
Sodium-22	Gamma	42	0	0%	n/a	n/a	n/a	n/a	n/a	1.6	n/a
Strontium-85	Gamma	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	n/a
Strontium-90	Sr-90[h]	42	0	0%	n/a	n/a	n/a	n/a	n/a	5.7	n/a
Thallium-208	Gamma	42	42	100%	0.463	0.071	0.324	0.4605	0.598	na	n/a
Thorium-227	Gamma	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	n/a
Thorium-231	Gamma	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	n/a
Thorium-234	Gamma	42	7	17%	1.290	1.006	−1.32	1.215	3.97	na	n/a
Tin-113	Gamma	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	n/a
Tritium	H^{3}[i]	42	36	86%	24.965714	81.875129	−0.001551	0.101501	373.205	750	N
Uranium-234	Isotopic	42	42	100%	1.09695	0.50565	0.626	0.9935	3.58	170	N
Uranium-235	Gamma	42	0	0%	n/a	n/a	n/a	n/a	n/a	17	n/a
Uranium-235/236	Isotopic	42	34	81%	0.06974	0.02926	−0.00769	0.0668	0.173	17	N
Uranium-238	Isotopic	42	42	100%	1.03117	0.30900	0.615	0.9815	2.54	87	N
Yttrium-88	Gamma	42	0	0%	n/a	n/a	n/a	n/a	n/a	na	n/a

[a] Source: LANL (2005, 088493).

[b] Am-241 = Americium-241 analysis.

[c] N = No, does not exceed SAL.

[d] Gamma = Gamma spectroscopy.

[e] n/a = Not applicable. Statistics were not performed on analytes that were all below detection limits.

[f] na = Not available.

[g] Isotopic = Isotopic analysis.

[h] Sr-90 = Strontium-90 analysis.

[I] H^{3} = Tritium analysis.

Table 4.1-8
Upper Confidence Limits for Analyte
Exceeding SSLs and SALs in September 2010 Overburden Sample Set

Analyte	Number of Analyses	Detection Rate	95% Upper Confidence Limit	NMED SSL[a] (mg/kg)	EPA SSL[b] (mg/kg)	UCL above Residential Standards
Arsenic[c]	42	100%	1.904	3.9	0.39	N[d]

[a] Source: NMED (2009, 108070).

[b] Source: www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm.

[c] Nondetection reporting level exceeds EPA SSL.

[d] N = No, does not exceed residential SSLs and SALs.

Table 4.2-1
Inorganic Chemicals Detected in Contaminated Soil through November 8, 2010

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)
Aluminum	40	40	100%	4100.8	809.2	2950	3975	7590
Antimony	40	17	42%	1.157	1.184	0.39	1.06	7.94
Arsenic	40	40	100%	1.244	0.389	0.659	1.195	2.39
Barium	40	40	100%	70.7	21.6	40.2	67.2	159
Beryllium	40	40	100%	0.4291	0.1000	0.264	0.4235	0.835
Cadmium	40	33	82%	0.5350	1.3389	0.108	0.2555	8.68
Calcium	40	40	100%	3901.0	1419.9	1890	3625	7950
Chromium	40	38	95%	6.60	2.01	2.26	6.425	11.5
Cobalt	40	40	100%	2.71	0.84	1.08	2.56	4.82
Copper	40	39	98%	16.74	13.64	3.15	13.05	63
Iron	40	40	100%	10202.5	1742.1	6140	9965	13,600
Lead	40	38	95%	30.11	90.44	5.52	11.85	578
Magnesium	40	40	100%	1466.8	444.7	686	1500	2620
Manganese	40	40	100%	266.2	38.4	188	264.5	383
Mercury	40	40	100%	2.3031	10.5774	0.0909	0.3475	67.4
Nickel	40	39	98%	5.5	1.4	3.25	5.47	8.64
Potassium	40	39	98%	638.0	131.1	483	603.5	1090
Selenium	40	0	0%	n/a*	n/a	n/a	n/a	n/a
Silver	40	17	42%	0.442	0.159	0.147	0.525	0.722
Sodium	40	38	95%	189.7	59.2	81.1	187.5	347
Thallium	40	31	78%	0.2108	0.2941	0.0594	0.1085	1.08
Uranium	39	39	100%	8.879	26.952	0.508	1.56	160
Vanadium	40	40	100%	15.52	4.78	6.05	16.2	25.8
Zinc	40	38	95%	81.78	95.94	25.8	56.05	484

* n/a = Not applicable. Statistics were not performed on analytes that were all below detection limits.

Table 4.2-2
Organic Chemicals Detected in Contaminated Soil through November 8, 2010

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)
Acenaphthene	40	0	0%	n/a*	n/a	n/a	n/a	n/a
Acenaphthylene	40	1	2%	0.0821	0.1036	0.0116	0.0365	0.374
Acetone	40	1	2%	0.04632	0.26007	0.00182	0.00547	1.65
Aldrin	40	0	0%	n/a	n/a	n/a	n/a	n/a
Amino-2,6-dinitrotoluene[4-]	15	0	0%	n/a	n/a	n/a	n/a	n/a
Amino-4,6-dinitrotoluene[2-]	15	0	0%	n/a	n/a	n/a	n/a	n/a
Aniline	40	0	0%	n/a	n/a	n/a	n/a	n/a
Anthracene	40	2	5%	0.08333	0.10394	0.00794	0.0365	0.374
Aroclor 1016	11	0	0%	n/a	n/a	n/a	n/a	n/a
Aroclor 1221	11	0	0%	n/a	n/a	n/a	n/a	n/a
Aroclor 1232	11	0	0%	n/a	n/a	n/a	n/a	n/a
Aroclor 1242	11	0	0%	n/a	n/a	n/a	n/a	n/a
Aroclor 1248	11	0	0%	n/a	n/a	n/a	n/a	n/a
Aroclor 1254	11	8	73%	0.11732	0.23612	0.00359	0.0108	0.778
Aroclor 1260	11	4	36%	0.02216	0.02621	0.0018	0.0108	0.0799
Azobenzene	40	0	0%	n/a	n/a	n/a	n/a	n/a
Benzene	40	0	0%	n/a	n/a	n/a	n/a	n/a
Benzo(a)anthracene	40	5	12%	0.07953	0.09436	0.018	0.0365	0.374
Benzo(a)pyrene	40	8	20%	0.07674	0.09404	0.0133	0.03645	0.374
Benzo(b)fluoranthene	40	7	18%	0.07902	0.09662	0.0151	0.03645	0.374
Benzo(g,h,i)perylene	40	7	18%	0.08060	0.10462	0.0134	0.0364	0.374
Benzo(k)fluoranthene	40	2	5%	0.08185	0.10372	0.018	0.03645	0.374
Benzoic Acid	40	1	2%	1.644	2.070	0.53	0.729	7.48
Benzyl Alcohol	40	0	0%	n/a	n/a	n/a	n/a	n/a

Table 4.2-2 (continued)

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)
BHC[alpha-]	40	1	2%	0.0020689	0.0025799	0.000387	0.0007295	0.00753
BHC[beta-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
BHC[delta-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
BHC[gamma-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Bis(2-chloroethoxy)methane	40	0	0%	n/a	n/a	n/a	n/a	n/a
Bis(2-chloroethyl)ether	40	0	0%	n/a	n/a	n/a	n/a	n/a
Bis(2-ethylhexyl)phthalate	40	2	5%	0.815	1.039	0.107	0.365	3.74
Bromobenzene	40	0	0%	n/a	n/a	n/a	n/a	n/a
Bromochloromethane	40	0	0%	n/a	n/a	n/a	n/a	n/a
Bromodichloromethane	40	0	0%	n/a	n/a	n/a	n/a	n/a
Bromoform	40	0	0%	n/a	n/a	n/a	n/a	n/a
Bromomethane	40	0	0%	n/a	n/a	n/a	n/a	n/a
Bromophenyl-phenylether[4-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Butanone[2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Butylbenzene[n-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Butylbenzene[sec-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Butylbenzene[tert-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Butylbenzylphthalate	40	0	0%	n/a	n/a	n/a	n/a	n/a
Carbon Disulfide	40	0	0%	n/a	n/a	n/a	n/a	n/a
Carbon Tetrachloride	40	0	0%	n/a	n/a	n/a	n/a	n/a
Chlordane[alpha-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Chlordane[gamma-]	40	1	2%	0.002072	0.002578	0.000492	0.00073	0.00753
Chloro-3-methylphenol[4-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Chloroaniline[4-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Chlorobenzene	40	0	0%	n/a	n/a	n/a	n/a	n/a
Chlorodibromomethane	40	0	0%	n/a	n/a	n/a	n/a	n/a

Table 4.2-2 (continued)

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)
Chloroethane	40	0	0%	n/a	n/a	n/a	n/a	n/a
Chloroform	40	0	0%	n/a	n/a	n/a	n/a	n/a
Chloromethane	40	0	0%	n/a	n/a	n/a	n/a	n/a
Chloronaphthalene[2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Chlorophenol[2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Chlorophenyl-phenyl[4-] Ether	40	0	0%	n/a	n/a	n/a	n/a	n/a
Chlorotoluene[2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Chlorotoluene[4-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Chrysene	40	7	18%	0.07953	0.09744	0.014	0.03645	0.374
D[2,4-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dalapon	40	0	0%	n/a	n/a	n/a	n/a	n/a
DB[2,4-]	40	1	2%	0.00830	0.00936	0.00523	0.005465	0.0563
DDD[4,4'-]	40	2	5%	0.00416	0.00515	0.00116	0.00146	0.0151
DDE[4,4'-]	40	4	10%	0.004240	0.005154	0.000499	0.00146	0.0151
DDT[4,4'-]	40	12	30%	0.004083	0.004971	0.000424	0.00146	0.015
2,4-Diamino-6-nitrotoluene	15	0	0%	n/a	n/a	n/a	n/a	n/a
2,6-Diamino-4-nitrotoluene	15	0	0%	n/a	n/a	n/a	n/a	n/a
Dibenz(a,h)anthracene	40	1	2%	0.0824	0.1034	0.024	0.0365	0.374
Dibenzofuran	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dibromo-3-Chloropropane[1,2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dibromoethane[1,2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dibromomethane	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dicamba	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dichlorobenzene[1,2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dichlorobenzene[1,3-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dichlorobenzene[1,4-]	40	0	0%	n/a	n/a	n/a	n/a	n/a

Table 4.2-2 (continued)

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)
Dichlorobenzidine[3,3'-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dichlorodifluoromethane	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dichloroethane[1,1-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dichloroethane[1,2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dichloroethene[1,1-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dichloroethene[cis-1,2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dichloroethene[trans-1,2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dichlorophenol[2,4-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dichloropropane[1,2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dichloropropane[1,3-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dichloropropane[2,2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dichloropropene[1,1-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dichloropropene[cis-1,3-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dichloropropene[trans-1,3-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dichlorprop	40	1	2%	0.00851	0.00929	0.00523	0.00547	0.0563
Dieldrin	40	0	0%	n/a	n/a	n/a	n/a	n/a
Diethylphthalate	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dimethyl Phthalate	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dimethylphenol[2,4-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Di-n-butylphthalate	40	16	40%	0.8218	1.0492	0.0739	0.3635	3.74
3,5-Dinitroaniline	15	0	0%	n/a	n/a	n/a	n/a	n/a
Dinitro-2-methylphenol[4,6-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dinitrobenzene[1,3-]	15	0	0%	n/a	n/a	n/a	n/a	n/a
Dinitrophenol[2,4-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dinitrotoluene[2,4-]	15	0	0%	n/a	n/a	n/a	n/a	n/a
Dinitrotoluene[2,4-]	40	0	0%	n/a	n/a	n/a	n/a	n/a

Table 4.2-2 (continued)

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)
Dinitrotoluene[2,6-]	15	0	0%	n/a	n/a	n/a	n/a	n/a
Dinitrotoluene[2,6-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Di-n-octylphthalate	40	0	0%	n/a	n/a	n/a	n/a	n/a
Dinoseb	40	0	0%	n/a	n/a	n/a	n/a	n/a
Diphenylamine	40	0	0%	n/a	n/a	n/a	n/a	n/a
Endosulfan I	40	0	0%	n/a	n/a	n/a	n/a	n/a
Endosulfan II	40	0	0%	n/a	n/a	n/a	n/a	n/a
Endosulfan Sulfate	40	0	0%	n/a	n/a	n/a	n/a	n/a
Endrin	40	0	0%	n/a	n/a	n/a	n/a	n/a
Endrin Aldehyde	40	0	0%	n/a	n/a	n/a	n/a	n/a
Endrin Ketone	40	0	0%	n/a	n/a	n/a	n/a	n/a
Ethylbenzene	40	0	0%	n/a	n/a	n/a	n/a	n/a
Fluoranthene	40	7	18%	0.0916	0.1302	0.0213	0.0365	0.653
Fluorene	40	0	0%	n/a	n/a	n/a	n/a	n/a
Heptachlor	40	0	0%	n/a	n/a	n/a	n/a	n/a
Heptachlor Epoxide	40	0	0%	n/a	n/a	n/a	n/a	n/a
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	8	5	62%	2.207E-05	2.595E-05	8.530E-07	0.00001415	0.0000772
Heptachlorodibenzodioxins (Total)	8	8	100%	4.034E-05	4.631E-05	1.050E-06	0.0000251	0.000136
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	8	7	88%	6.390E-05	9.830E-05	5.070E-07	1.5185E-05	0.000285
Heptachlorodibenzofuran[1,2,3,4,7,8,9-]	8	3	38%	7.493E-07	5.625E-07	3.840E-07	5.085E-07	0.00000209
Heptachlorodibenzofurans (Total)	8	8	100%	0.0001218	0.00018793	0.00000118	3.1275E-05	0.000548
Hexachlorobenzene	40	0	0%	n/a	n/a	n/a	n/a	n/a
Hexachlorobutadiene	40	0	0%	n/a	n/a	n/a	n/a	n/a
Hexachlorocyclopentadiene	40	0	0%	n/a	n/a	n/a	n/a	n/a
Hexachlorodibenzodioxin[1,2,3,4,7,8-]	8	0	0%	n/a	n/a	n/a	n/a	n/a
Hexachlorodibenzodioxin[1,2,3,6,7,8-]	8	4	50%	1.690E-06	2.171E-06	3.84E-07	7.705E-07	0.00000682

Table 4.2-2 (continued)

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)
Hexachlorodibenzodioxin[1,2,3,7,8,9-]	8	1	12%	5.089E-07	1.403E-07	3.84E-07	4.73E-07	8.43E-07
Hexachlorodibenzodioxins (Total)	8	5	62%	6.490E-06	8.676E-06	3.84E-07	0.00000256	0.000025
Hexachlorodibenzofuran[1,2,3,4,7,8-]	8	4	50%	1.174E-06	1.182E-06	3.84E-07	8.005E-07	0.00000394
Hexachlorodibenzofuran[1,2,3,6,7,8-]	8	3	38%	6.733E-07	4.599E-07	3.84E-07	4.97E-07	0.00000179
Hexachlorodibenzofuran[1,2,3,7,8,9-]	8	1	12%	6.395E-07	4.905E-07	3.84E-07	4.82E-07	0.00000185
Hexachlorodibenzofuran[2,3,4,6,7,8-]	8	3	38%	6.985E-07	4.355E-07	3.84E-07	5.13E-07	0.0000017
Hexachlorodibenzofurans (Total)	8	7	88%	3.991E-05	5.860E-05	4.91E-07	1.2015E-05	0.000168
Hexachloroethane	40	0	0%	n/a	n/a	n/a	n/a	n/a
Hexanone[2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
HMX	15	0	0%	n/a	n/a	n/a	n/a	n/a
Indeno(1,2,3-cd)pyrene	40	4	10%	0.08240	0.10398	0.012	0.03645	0.374
Iodomethane	40	0	0%	n/a	n/a	n/a	n/a	n/a
Isophorone	40	0	0%	n/a	n/a	n/a	n/a	n/a
Isopropylbenzene	40	0	0%	n/a	n/a	n/a	n/a	n/a
Isopropyltoluene[4-]	40	1	2%	0.00119	0.00068	0.000548	0.00109	0.00536
MCPA	40	0	0%	n/a	n/a	n/a	n/a	n/a
MCPP	40	0	0%	n/a	n/a	n/a	n/a	n/a
Methoxychlor[4,4'-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Methyl-2-pentanone[4-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Methylene Chloride	40	5	12%	0.005716	0.003507	0.00273	0.005465	0.0268
Methylnaphthalene[2-]	40	6	15%	0.079256	0.105153	0.00942	0.0364	0.374
Methylphenol[2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Methylphenol[4-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Naphthalene	40	1	2%	0.0821	0.1036	0.0126	0.0365	0.374
Nitroaniline[2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Nitroaniline[3-]	40	0	0%	n/a	n/a	n/a	n/a	n/a

Table 4.2-2 (continued)

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)
Nitroaniline[4-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Nitrobenzene	15	0	0%	n/a	n/a	n/a	n/a	n/a
Nitrobenzene	40	0	0%	n/a	n/a	n/a	n/a	n/a
Nitrophenol[2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Nitrophenol[4-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Nitrosodimethylamine[N-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Nitroso-di-n-propylamine[N-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Nitrotoluene[2-]	15	0	0%	n/a	n/a	n/a	n/a	n/a
Nitrotoluene[3-]	15	0	0%	n/a	n/a	n/a	n/a	n/a
Nitrotoluene[4-]	15	4	27%	4.95	15.21	0.49	0.5	59.7
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	8	8	100%	0.00019831	0.00024342	0.0000101	0.00009775	0.000667
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	8	5	62%	3.1217E-05	4.3422E-05	9.82E-07	1.3435E-05	0.000129
Oxybis(1-chloropropane)[2,2'-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Pentachlorodibenzodioxin[1,2,3,7,8-]	8	0	0%	n/a	n/a	n/a	n/a	n/a
Pentachlorodibenzodioxins (Total)	8	1	12%	6.1563E-07	4.3156E-07	3.84E-07	4.73E-07	0.00000168
Pentachlorodibenzofuran[1,2,3,7,8-]	8	0	0%	n/a	n/a	n/a	n/a	n/a
Pentachlorodibenzofuran[2,3,4,7,8-]	8	2	25%	5.6488E-07	2.2933E-07	3.84E-07	4.825E-07	0.00000111
Pentachlorodibenzofurans (Total)	8	6	75%	2.5639E-06	2.6274E-06	3.84E-07	0.00000165	0.00000745
Pentachlorophenol	40	0	0%	n/a	n/a	n/a	n/a	n/a
PETN	15	0	0%	n/a	n/a	n/a	n/a	n/a
Phenanthrene	40	4	10%	0.08950	0.11456	0.0116	0.03645	0.388
Phenol	40	0	0%	n/a	n/a	n/a	n/a	n/a
Propylbenzene[1-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Pyrene	40	8	20%	0.0956	0.1235	0.0132	0.0366	0.525
Pyridine	40	0	0%	n/a	n/a	n/a	n/a	n/a
RDX	15	0	0%	n/a	n/a	n/a	n/a	n/a

Table 4.2-2 (continued)

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)
Styrene	40	0	0%	n/a	n/a	n/a	n/a	n/a
T[2,4,5-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
TATB	15	0	0%	n/a	n/a	n/a	n/a	n/a
Tetrachlorodibenzodioxin[2,3,7,8-]	8	0	0%	n/a	n/a	n/a	n/a	n/a
Tetrachlorodibenzodioxins (Total)	8	0	0%	n/a	n/a	n/a	n/a	n/a
Tetrachlorodibenzofuran[2,3,7,8-]	8	0	0%	n/a	n/a	n/a	n/a	n/a
Tetrachlorodibenzofurans (Total)	8	2	25%	1.07E-06	1.02E-06	2.69E-07	5.16E-07	0.00000286
Tetrachloroethane[1,1,1,2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Tetrachloroethane[1,1,2,2-]	40	1	2%	0.001200	0.000675	0.00105	0.00109	0.00536
Tetrachloroethene	40	1	2%	0.001186	0.000684	0.000496	0.00109	0.00536
Tetryl	15	0	0%	n/a	n/a	n/a	n/a	n/a
Toluene	40	1	2%	0.001184	0.000687	0.000366	0.00109	0.00536
TPH-DRO	2	1	50%	57.55	23.97	40.6	57.55	74.5
TPH-GRO	2	0	0%	n/a	n/a	n/a	n/a	n/a
Toxaphene	40	0	0%	n/a	n/a	n/a	n/a	n/a
TP[2,4,5-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Trichloro-1,2,2-trifluoroethane[1,1,2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Trichlorobenzene[1,2,4-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Trichloroethane[1,1,1-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Trichloroethane[1,1,2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Trichloroethene	40	4	10%	0.001323	0.001129	0.000457	0.00109	0.00683
Trichlorofluoromethane	40	0	0%	n/a	n/a	n/a	n/a	n/a
Trichlorophenol[2,4,5-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Trichlorophenol[2,4,6-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Trichloropropane[1,2,3-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Trimethylbenzene[1,2,4-]	40	0	0%	n/a	n/a	n/a	n/a	n/a

Table 4.2-2 (continued)

Analyte	Number of Analyses	Detects	Detection Rate	Mean (mg/kg)	Standard Deviation (mg/kg)	Minimum (mg/kg)	Median (mg/kg)	Maximum (mg/kg)
Trimethylbenzene[1,3,5-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Trinitrobenzene[1,3,5-]	15	0	0%	n/a	n/a	n/a	n/a	n/a
Trinitrotoluene[2,4,6-]	15	0	0%	n/a	n/a	n/a	n/a	n/a
Tris (o-cresyl) phosphate	15	0	0%	n/a	n/a	n/a	n/a	n/a
Vinyl Chloride	40	0	0%	n/a	n/a	n/a	n/a	n/a
Xylene[1,2-]	40	0	0%	n/a	n/a	n/a	n/a	n/a
Xylene[1,3-]+Xylene[1,4-]	40	0	0%	n/a	n/a	n/a	n/a	n/a

* n/a = Not applicable. Statistics were not performed on analytes that were all below detection limits.

Table 4.2-3
Radionuclides Detected in Contaminated Soil through November 8, 2010

Analyte	Analytical Suite	Number of Analyses	Detects	Detection Rate	Mean (pCi/g)	Standard Deviation (pCi/g)	Minimum (pCi/g)	Median (pCi/g)	Maximum (pCi/g)
Americium-241	Am-241[a]	40	38	95%	24.697	77.852	0.333	3.465	480
Americium-241	Gamma[b]	40	39	98%	27.520	85.398	0.137	4.25	492
Bismuth-211	Gamma	40	0	0%	n/a[c]	n/a	n/a	n/a	n/a
Bismuth-214	Gamma	40	40	100%	1.099	0.180	0.566	1.11	1.42
Cadmium-109	Gamma	40	0	0%	n/a	n/a	n/a	n/a	n/a
Cerium-139	Gamma	40	0	0%	n/a	n/a	n/a	n/a	n/a
Cesium-134	Gamma	40	0	0%	n/a	n/a	n/a	n/a	n/a
Cesium-137	Gamma	40	1	2%	0.0148298	0.0838350	−0.0344	−0.0011395	0.509
Cobalt-60	Gamma	40	0	0%	n/a	n/a	n/a	n/a	n/a
Europium-152	Gamma	40	0	0%	n/a	n/a	n/a	n/a	n/a
Lanthanum-140	Gamma	40	0	0%	n/a	n/a	n/a	n/a	n/a
Lead-212	Gamma	40	40	100%	1.537	0.310	0.851	1.545	2.15
Lead-214	Gamma	40	40	100%	1.261	0.211	0.707	1.25	1.57
Mercury-203	Gamma	40	0	0%	n/a	n/a	n/a	n/a	n/a
Plutonium-238	Isotopic[d]	40	36	90%	11.7137	41.4967	0.0477	1.085	235
Plutonium-239/240	Isotopic	40	40	100%	1720.3	5479.7	5.34	117.5	30,300
Potassium-40	Gamma	40	40	100%	27.0	3.2	19.1	26.9	33.6
Radium-223	Gamma	40	0	0%	n/a	n/a	n/a	n/a	n/a
Radium-224	Gamma	40	0	0%	n/a	n/a	n/a	n/a	n/a
Radium-226	Gamma	40	21	52%	1.099	0.180	0.566	1.11	1.42
Radium-228	Gamma	40	40	100%	1.577	0.307	0.918	1.585	2.26
Ruthenium-106	Gamma	40	0	0%	n/a	n/a	n/a	n/a	n/a
Sodium-22	Gamma	40	0	0%	n/a	n/a	n/a	n/a	n/a
Strontium-85	Gamma	40	0	0%	n/a	n/a	n/a	n/a	n/a
Strontium-90	Sr-90[e]	40	1	2%	0.10733	0.20094	−0.212	0.06985	0.962

Table 4.2-3 (continued)

Analyte	Analytical Suite	Number of Analyses	Detects	Detection Rate	Mean (pCi/g)	Standard Deviation (pCi/g)	Minimum (pCi/g)	Median (pCi/g)	Maximum (pCi/g)
Thallium-208	Gamma	40	40	100%	0.463	0.087	0.268	0.472	0.613
Thorium-227	Gamma	40	0	0%	n/a	n/a	n/a	n/a	n/a
Thorium-231	Gamma	40	0	0%	n/a	n/a	n/a	n/a	n/a
Thorium-234	Gamma	40	16	40%	8.204	24.954	−0.806	2.25	150
Tin-113	Gamma	40	0	0%	n/a	n/a	n/a	n/a	n/a
Tritium	H^{3}[f]	40	24	60%	0.9162940	2.9115686	0.00259914	0.0328158	17.7978
Uranium-234	Isotopic	40	40	100%	8.617	25.873	0.623	2.065	152
Uranium-235	Gamma	40	7	18%	0.5882	1.4718	−0.0914	0.169	8.24
Uranium-235/236	Isotopic	40	34	85%	0.6390	2.2327	0.0271	0.1605	13.8
Uranium-238	Isotopic	40	40	100%	8.028	26.711	0.627	1.475	159
Yttrium-88	Gamma	40	0	0%	n/a	n/a	n/a	n/a	n/a

[a] Am-241 = Americium-241 analysis.

[b] Gamma = Gamma spectroscopy.

[c] n/a = Not applicable. Statistics were not performed on analytes that were all below detection limits.

[d] Isotopic = Isotopic analysis.

[e] Sr-90 = Strontium-90 analysis.

[f] H^{3} = Tritium analysis.

Table 4.3-1
Maximum Inorganic Results in
Confirmation Samples Compared with Residential SSLs

Analyte	Maximum Concentration Detected (mg/kg)	Residential SSL[a] (mg/kg)	Maximum Concentration Above Residential Standards
Aluminum	6760	78,100	N[b]
Antimony	1.07	31.3	N
Arsenic	5.71	3.9	Y[c]
Barium	178	15,600	N
Beryllium	0.79	156	N
Cadmium	0.276	77.9	N
Calcium	5210	na[d]	n/a[e]
Chromium	5.42	113,000	N
Cobalt	3.48	23[f]	N
Copper	4.88	3130	N
Total Cyanide	0.0915	1560	N
Iron	10,600	54,800	N
Lead	22.4	400	N
Magnesium	1610	na	n/a
Manganese	314	10,700	N
Mercury	0.348	7.71	N
Nickel	7	1560	N
Nitrate	1.1	125,000	N
Perchlorate	0.00344	54.8	N
Potassium	1280	na	n/a
Silver	0.208	391	N
Sodium	173	na	n/a
Thallium	0.189	5.16	N
Uranium	1.29	235[g]	N
Vanadium	13.3	391	N
Zinc	50.8	23,500	N

[a] SSLs are from NMED (2009, 108070), unless indicated otherwise.

[b] N = No, does not exceed SSL.

[c] Y = Yes, does exceed SSL.

[d] na = Not available.

[e] n/a = Not applicable.

[f] SSL for cobalt is from www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm.

[g] SSL for uranium soluble salts.

Table 4.3-2
Maximum Organic Results in
Confirmation Samples Compared with Residential SSLs

Analyte	Maximum Concentration Detected (mg/kg)	Residential SSL[a] (mg/kg)	Maximum Concentration Above Residential Standards
DDT[4,4'-]	0.000577	17.2	N[b]
Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	0.00000718	na[c]	n/a[d]
Total Heptachlorodibenzodioxins	0.0000161	na	n/a
Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	0.00000357	na	n/a
Total Heptachlorodibenzofurans	0.00000661	na	n/a
Total Hexachlorodibenzodioxins	0.00000317	na	n/a
Total Hexachlorodibenzofurans	0.00000247	na	n/a
Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	0.0000428	na	n/a
Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	0.00000888	na	n/a
Total Pentachlorodibenzofurans	0.00000131	na	n/a
Total Tetrachlorodibenzofurans	0.0000022	na	n/a

[a] SSLs are from NMED (2009, 108070), unless indicated otherwise.

[b] N = No, does not exceed SSL.

[c] na = Not available.

[d] n/a = Not applicable.

Table 4.3-3
Maximum Radionuclide Results in Confirmation Samples Compared with Residential Screening Action Levels

Analyte	Maximum Concentration Detected (pCi/g)	Residential SAL[a] (pCi/g)	Maximum Concentration Above Residential Standards
Americium-241	2.25	30	N[b]
Bismuth-214	1.47	na[c]	n/a[d]
Lead-212	2.32	na	n/a
Lead-214	1.72	na	n/a
Plutonium-238	0.426	37	N
Plutonium-239/240[e]	61	33	Y[f]
Potassium-40	36.5	na	n/a
Radium-226[g]	1.43	5	N
Radium-228[g]	2.18	5	N
Thallium-208	0.712	na	n/a
Thorium-234	3.42	na	n/a
Tritium	0.0896629	750	N
Uranium-234	1.58	170	N
Uranium-235/236	0.12	17	N
Uranium-238	1.54	86	N

[a] SALs are from LANL (2005, 088493), unless indicated otherwise.

[b] N = No, does not exceed SAL.

[c] na = Not available.

[d] n/a = Not applicable.

[e] Plutonium-239 and plutonium-240 are typically unresolved in laboratory analysis. SALs for the two isotopes are identical.

[f] Y = Yes, does exceed SAL.

[g] The SAL is the generic soil guideline for release of property published in Chapter 4 (Residual Radioactive Material) of DOE Order 5400.5. For the concentration averaged over the first 15 cm of soil below the surface, 5 pCi/g applies; for subsequent 15-cm-thick layers, the generic soil guideline is 15 pCi/g. If both thorium-230 and radium-226 or both thorium-232 and radium-228 are present and not in secular equilibrium, or if other mixtures of radon-generating radionuclides occur, refer to DOE Order 5400.5 for guidance in establishing soil criteria.

Table 4.3-4
Inorganic Chemicals Detected during Confirmation Sampling

Sample ID	Location ID	Elevation (ft asl)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium
Inorganic SSL[a]				**78,100**	**31.3**	**3.9**	**15,600**	**156**	**77.9**	**na**[b]	**113,000**
CSMDAB-10-24585	MDAB-612790	7182.3	ALLH[c]	1640 (J+)	ND[d]	0.681 (J)	33.6	0.245	ND	4790	2.94
CSMDAB-10-24586	MDAB-612791	7182.7	ALLH	727 (J+)	ND	0.41 (J)	14.8	0.253	ND	2670	0.972
CSMDAB-10-24587	MDAB-612792	7179.6	ALLH	546 (J+)	1.07	0.23 (J)	11.4	0.316	ND	880	0.739
CSMDAB-10-25077	MDAB-612898	7162.1	ALLH	1110 (J+)	0.66 (J)	0.566 (J)	18.1	0.383	0.115 (J)	486	1.17
CSMDAB-10-26776	MDAB-613126	7201.0	ALLH	1410 (J+)	ND	4.02	11.3	0.433	ND	531	1.92
CSMDAB-10-26777	MDAB-613127	7193.4	ALLH	1740 (J+)	ND	5.71	17.8	0.377	ND	612	1.9
CSMDAB-10-26778	MDAB-613128	7205.2	ALLH	4900 (J+)	ND	2.71	75.8	0.638	ND	1730	4.42
CSMDAB-10-26779	MDAB-613129	7206.3	ALLH	2160 (J+)	ND	2.4	23.2	0.408	ND	1980	2.07
CSMDAB-10-26780	MDAB-613130	7200.6	ALLH	1830 (J+)	ND	2.23	23.1	0.443	0.276 (J)	1170	2.07
CSMDAB-10-26781	MDAB-613131	7204.6	ALLH	6760 (J+)	ND	2.22	178	0.79	ND	5210	5.42
CSMDAB-10-26802	MDAB-613141	7188.6	ALLH	2770 (J+)	ND	0.881 (J)	52.7	0.391	ND	2730	2.69
CSMDAB-10-26803	MDAB-613142	7181.1	ALLH	1460 (J+)	ND	0.595 (J)	24.7	0.343	ND	871	2.55
CSMDAB-10-26804	MDAB-613143	7187.4	ALLH	2080 (J+)	ND	1.14	31.1	0.422	ND	699	1.76

Table 4.3-4 (continued)

Sample ID	Location ID	Elevation (ft asl)	Media	Cobalt	Copper	Total Cyanide	Iron	Lead	Magnesium	Manganese	Mercury
Inorganic SSLs[a]				**23**[e]	**3130**	**1560**	**54,800**	**400**	**na**	**10,700**	**7.7**
CSMDAB-10-24585	MDAB-612790	7182.3	ALLH	1.01	4.27	ND	8100	3.35	807	265	0.00664 (J)
CSMDAB-10-24586	MDAB-612791	7182.7	ALLH	0.264 (J)	1.96	ND	7300	0.459 (J)	339	247	0.0454
CSMDAB-10-24587	MDAB-612792	7179.6	ALLH	0.156 (J)	1.42	ND	5880	0.552 (J)	184	196	ND
CSMDAB-10-25077	MDAB-612898	7162.1	ALLH	0.464 (J)	4.71	ND	6760	5.67	232	265	0.0496
CSMDAB-10-26776	MDAB-613126	7201.0	ALLH	0.578	ND	ND	4710	5.48	345 (J+)	212	0.0249
CSMDAB-10-26777	MDAB-613127	7193.4	ALLH	0.647	2	ND	6090	8.67	333 (J+)	236	0.348
CSMDAB-10-26778	MDAB-613128	7205.2	ALLH	2.34	4.68	ND	9450	16.6	888 (J+)	281	0.0249
CSMDAB-10-26779	MDAB-613129	7206.3	ALLH	1.34	2.71	ND	6670	5.52	699 (J+)	290	0.0107 (J)
CSMDAB-10-26780	MDAB-613130	7200.6	ALLH	0.847	2.54	0.0915 (J)	5950	7.14	406 (J+)	277	0.119
CSMDAB-10-26781	MDAB-613131	7204.6	ALLH	3.48	4.88	ND	10600	9.06	1610 (J+)	314	0.0144
CSMDAB-10-26802	MDAB-613141	7188.6	ALLH	1.14	3.02	ND	8030	8.27	712 (J+)	253	0.0214
CSMDAB-10-26803	MDAB-613142	7181.1	ALLH	0.87	3.03	ND	7500	14.2	432 (J+)	297	0.0192
CSMDAB-10-26804	MDAB-613143	7187.4	ALLH	0.973	2.91	ND	8380	22.4	403 (J+)	293	0.00816 (J)

Table 4.3-4 (continued)

Sample ID	Location ID	Elevation (ft asl)	Media	Nickel	Nitrate	Perchlorate	Potassium	Silver	Sodium	Thallium	Uranium
Inorganic SSLs[a]				**1560**	**12,500**	**54.8**	**na**	**391**	**na**	**5.16**	**235[f]**
CSMDAB-10-24585	MDAB-612790	7182.3	ALLH	2.53	ND	ND	291	ND	173	ND	0.369
CSMDAB-10-24586	MDAB-612791	7182.7	ALLH	1.18	1.1	ND	171	ND	138	ND	0.53
CSMDAB-10-24587	MDAB-612792	7179.6	ALLH	0.962	ND	ND	142	ND	127	ND	0.378
CSMDAB-10-25077	MDAB-612898	7162.1	ALLH	0.831	ND	0.00176 (J)	222	ND	119	ND	1.26 (J)
CSMDAB-10-26776	MDAB-613126	7201.0	ALLH	2.59	ND	ND	291	ND	ND	0.134 (J)	0.781
CSMDAB-10-26777	MDAB-613127	7193.4	ALLH	2.88	ND	0.00145 (J)	384	ND	ND	0.179 (J)	1.24
CSMDAB-10-26778	MDAB-613128	7205.2	ALLH	4.92	ND	ND	753	0.208 (J)	ND	0.178 (J)	0.79
CSMDAB-10-26779	MDAB-613129	7206.3	ALLH	2.57	ND	ND	390	0.122 (J)	ND	0.113 (J)	1.26
CSMDAB-10-26780	MDAB-613130	7200.6	ALLH	2.85	ND	0.00344	344	0.133 (J)	ND	0.0847 (J)	1.02
CSMDAB-10-26781	MDAB-613131	7204.6	ALLH	7	ND	ND	1280	0.156 (J)	ND	0.189 (J)	0.961
CSMDAB-10-26802	MDAB-613141	7188.6	ALLH	2.39	ND	ND	316	0.122 (J)	65.5	0.0912 (J)	0.7
CSMDAB-10-26803	MDAB-613142	7181.1	ALLH	1.56	ND	ND	276	0.115 (J)	86.6	ND	1.29
CSMDAB-10-26804	MDAB-613143	7187.4	ALLH	2.44	ND	ND	287	0.136 (J)	47.6	0.0873 (J)	0.693

Table 4.3-4 (continued)

Sample ID	Location ID	Elevation (ft asl)	Media	Vanadium	Zinc
Inorganic SSLs[a]				**391**	**23,500**
CSMDAB-10-24585	MDAB-612790	7182.3	ALLH	7.67	35.6
CSMDAB-10-24586	MDAB-612791	7182.7	ALLH	2.56	42.1
CSMDAB-10-24587	MDAB-612792	7179.6	ALLH	1.85	35
CSMDAB-10-25077	MDAB-612898	7162.1	ALLH	3.15	39
CSMDAB-10-26776	MDAB-613126	7201.0	ALLH	3.51	17.8
CSMDAB-10-26777	MDAB-613127	7193.4	ALLH	4.31	23.5
CSMDAB-10-26778	MDAB-613128	7205.2	ALLH	11.8	36.5
CSMDAB-10-26779	MDAB-613129	7206.3	ALLH	4.96	21.9
CSMDAB-10-26780	MDAB-613130	7200.6	ALLH	3.27	35.3
CSMDAB-10-26781	MDAB-613131	7204.6	ALLH	13.3	33.4
CSMDAB-10-26802	MDAB-613141	7188.6	ALLH	6.88	37.4
CSMDAB-10-26803	MDAB-613142	7181.1	ALLH	4.44	50.8
CSMDAB-10-26804	MDAB-613143	7187.4	ALLH	4.96	46.2

Note: Units in mg/kg.

[a] SSLs are from NMED (2009, 108070), unless indicated otherwise.

[b] na = Not available.

[c] ALLH = All horizons (soil).

[d] ND = Not detected.

[e] SSL for cobalt is from www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm.

[f] SSL for uranium soluble salts.

Table 4.3-5
Organic Chemicals Detected during Confirmation Sampling

Sample ID	Location ID	Elevation (ft asl)	Media	DDT[4,4'-]	Heptachlorodibenzo-dioxin[1,2,3,4,6,7,8-]	Total Heptachloro-dibenzodioxins	Heptachlorodibenzo-furan[1,2,3,4,6,7,8-]	Total Heptachloro-dibenzofurans	Total Hexachloro-dibenzodioxins
Inorganic SSLs[a]				**17.2**	**na**[b]	**na**	**na**	**na**	**na**
CSMDAB-10-24585	MDAB-612790	7182.3	ALLH[c]	ND[d]	0.00000168 (J)	0.00000288 (J)	0.00000195 (J)	0.00000559	ND
CSMDAB-10-26778	MDAB-613128	7205.2	ALLH	0.000577 (J)	0.00000718 (J+)	0.0000161	0.00000357 (J)	0.00000661	0.00000317 (J)
CSMDAB-10-26804	MDAB-613143	7187.4	ALLH	ND	0.00000137 (J)	0.00000341 (J)	0.000000576 (J)	0.000000576 (J)	0.000000479 (J)

Table 4.3-5 (continued)

Sample ID	Location ID	Elevation (ft asl)	Media	Total Hexachloro-dibenzofurans	Octachlorodibenzo-dioxin[1,2,3,4,6,7,8,9-]	Octachlorodibenzo-furan[1,2,3,4,6,7,8,9-]	Total Pentachloro-dibenzofurans	Total Tetrachloro-dibenzofurans
Inorganic SSLs[a]				**na**	**na**	**na**	**na**	**na**
CSMDAB-10-24585	MDAB-612790	7182.3	ALLH	0.000000603 (J)	0.0000133	0.00000888 (J)	ND	ND
CSMDAB-10-26778	MDAB-613128	7205.2	ALLH	0.00000247 (J)	0.0000428 (J+)	0.00000234 (J)	0.00000131 (J)	0.0000022 (J)
CSMDAB-10-26804	MDAB-613143	7187.4	ALLH	ND	0.00000996	ND	ND	ND

Note: Units in mg/kg.

[a] SSLs are from NMED (2009, 108070), unless indicated otherwise.

[b] na = Not available.

[c] ALLH = All horizons (soil).

[d] ND = Not detected.

Table 4.3-6
Radionuclides Detected during Confirmation Sampling

Sample ID	Location ID	Elevation (ft asl)	Media	Americium-241	Bismuth-214	Lead-212	Lead-214	Plutonium-238	Plutonium-239/240	Potassium-40	Radium-226
Inorganic SALs[a]				**30**	**na**[b]	**na**	**na**	**37**	**33**	**na**	**5**
CSMDAB-10-24585	MDAB-612790	7182.3	ALLH[c]	0.112 (J)	1.2	1.72	1.52	0.0968	2.33[d]	33.6	1.2
CSMDAB-10-24586	MDAB-612791	7182.7	ALLH	0.963[d]	1.43	1.92	1.49	0.328	55.1 (J-)[d]	35.5	1.43
CSMDAB-10-24587	MDAB-612792	7179.6	ALLH	ND[e]	1.18	1.9	1.59	ND	0.93[d]	35.4	1.18
CSMDAB-10-24589	MDAB-612794	7185.0	ALLH	0.247	ND	ND	ND	0.123	20.7	ND	ND
CSMDAB-10-24590	MDAB-612795	7184.2	ALLH	ND	ND	ND	ND	ND	1.5	ND	ND
CSMDAB-10-24591	MDAB-612796	7184.6	ALLH	ND	ND	ND	ND	0.0654	3.74	ND	ND
CSMDAB-10-24592	MDAB-612797	7182.9	ALLH	ND	1.25	2.09	1.62	0.203 (J)	0.867 (J)	35.5	ND
CSMDAB-10-25077	MDAB-612898	7162.1	ALLH	0.658	1.39	1.92	1.56	0.387 (J)	34.2	34.6	1.39
CSMDAB-10-26776	MDAB-613126	7201.0	ALLH	ND	1.23	2.25	1.64	ND	ND	35.6	ND
CSMDAB-10-26777	MDAB-613127	7193.4	ALLH	1.69	1.31	2.32	1.59	0.426	21.3	35.7	ND
CSMDAB-10-26778	MDAB-613128	7205.2	ALLH	ND	1.35	2.14	1.62	ND	1.18	30.5	ND
CSMDAB-10-26779	MDAB-613129	7206.3	ALLH	ND	1.35	1.92	1.51	ND	0.844	33.9	ND
CSMDAB-10-26780	MDAB-613130	7200.6	ALLH	ND	1.4	2.27	1.72	ND	4.99	35.3	ND
CSMDAB-10-26781	MDAB-613131	7204.6	ALLH	ND	1.27	2	1.64	ND	ND	30.1	ND
CSMDAB-10-26802	MDAB-613141	7188.6	ALLH	ND	1.34	2.06	1.63	ND	0.653	34.1	ND
CSMDAB-10-26803	MDAB-613142	7181.1	ALLH	2.25	1.47	2.3	1.53	0.414	61	34.5	ND
CSMDAB-10-26804	MDAB-613143	7187.4	ALLH	ND	1.32	2.16	1.64	ND	2.74	36.5	ND

Table 4.3-6 (continued)

Sample ID	Location ID	Elevation (ft asl)	Media	Radium-228	Thallium-208	Thorium-2334	Tritium	Uranium-234	Uranium-235/236	Uranium-238
Inorganic SALs[a]				**5**	**na**	**na**	**750**	**170**	**17**	**86**
CSMDAB-10-24585	MDAB-612790	7182.3	ALLH	2.08	0.471	ND	ND	0.789[d]	ND	0.799[d]
CSMDAB-10-24586	MDAB-612791	7182.7	ALLH	1.91	0.636	ND	ND	0.931[d]	0.0681[d]	1.08[d]
CSMDAB-10-24587	MDAB-612792	7179.6	ALLH	2.18	0.532	ND	ND	0.857[d]	0.0734 (J)	0.859[d]
CSMDAB-10-24589	MDAB-612794	7185.0	ALLH	ND	ND	ND	ND	ND	ND	ND
CSMDAB-10-24590	MDAB-612795	7184.2	ALLH	ND	ND	ND	ND	ND	ND	ND
CSMDAB-10-24591	MDAB-612796	7184.6	ALLH	ND	ND	ND	ND	ND	ND	ND
CSMDAB-10-24592	MDAB-612797	7182.9	ALLH	2.03	0.566	3.42	ND	0.843	0.12	0.759
CSMDAB-10-25077	MDAB-612898	7162.1	ALLH	1.94	0.544	2.59	0.0896629	1.58	0.112	1.54
CSMDAB-10-26776	MDAB-613126	7201.0	ALLH	1.84	0.57	ND	ND	0.813	0.0598	0.778
CSMDAB-10-26777	MDAB-613127	7193.4	ALLH	2.18	0.634	ND	ND	1.08	ND	0.945
CSMDAB-10-26778	MDAB-613128	7205.2	ALLH	2.15	0.712	ND	ND	0.8	ND	0.859
CSMDAB-10-26779	MDAB-613129	7206.3	ALLH	1.74	0.587	ND	ND	1.01	ND	0.976
CSMDAB-10-26780	MDAB-613130	7200.6	ALLH	2.14	0.64	ND	ND	1.12	0.0888	1.12
CSMDAB-10-26781	MDAB-613131	7204.6	ALLH	1.87	0.563	ND	ND	0.817	ND	0.928
CSMDAB-10-26802	MDAB-613141	7188.6	ALLH	1.83	0.573	ND	ND	0.858	ND	0.792
CSMDAB-10-26803	MDAB-613142	7181.1	ALLH	1.99	0.695	ND	0.0384161	1.15	0.0661	1.06
CSMDAB-10-26804	MDAB-613143	7187.4	ALLH	2.14	0.564	ND	0.0480166	0.837	ND	0.838

Note: Units in mg/kg.

[a] SSLs are from LANL (2005, 088493), unless indicated otherwise.

[b] na = Not available.

[c] ALLH = All horizons (soil).

[d] Reanalysis.

[e] ND = Not detected.

Appendix A

Acronyms and Abbreviations,
Metric Conversion Table, and Data Qualifier Definitions

A-1.0 ACRONYMS AND ABBREVIATIONS

ACM	asbestos-containing material
AIRNET	air-monitoring network
AK	acceptable knowledge
ALLH	all horizons (soil)
asl	above sea level
bgs	below ground surface
BHC	benzene hexachloride
CAM	continuous air monitoring
CFR	Code of Federal Regulations
Clive	Energy Solutions Clive low-level waste disposal facility
Consent Order	Compliance Order on Consent
D	dichlorophenoxyacetic acid
DB	dichlorophenoxy butyric acid
DDD	dichlorodiphenyldichloroethane
DDE	dichlorophenyltrichloroethylene
DDT	dichlorodiphenyltrichloroethane
DP	Delta Prime
DRO	diesel range organics
EPA	Environmental Protection Agency (U.S.)
FIDLER	field instrument for detection of low energy radiation
FY	fiscal year
GRO	gasoline range organics
HMX	1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ID	identification
IH	industrial hygiene
LANL	Los Alamos National Laboratory
LLW	low-level waste
MAR	material at risk
MCPA	methyl chlorophenoxy acetic acid
MCPP	2- (2-methyl-4-chlorophenoxy) propionic acid
MDA	material disposal area
MLLW	mixed low-level waste
NMED	New Mexico Environment Department

NTS	Nevada Test Site
PCB	polychlorinated biphenyl
PE-Ci	plutonium-239-equivalent curie
PETN	pentaerythritol tetranitrate
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
RDX	hexahydro-1,3,5-trinitro-1,3,5-triazine
RPD	relative percent difference
SAL	screening action level
SAP	sampling and analysis plan
SSL	soil screening level
SOP	standard operating procedure
SOW	statement of work
SVOC	semivolatile organic compound
T	trichlorophenoxyacetic acid
TA	technical area
TATB	triaminotrinitrobenzene
TCLP	toxicity characteristic leaching procedure
TP	trichlorophenoxy propionic acid
TPH	total petroleum hydrocarbons
TSDF	treatment, storage, and disposal facility
UCL	upper confidence limit
UOM	unit of measure
VOC	volatile organic compound
WCSA	waste container storage area
WCSF	waste characterization strategy form

A-2.0 METRIC CONVERSION TABLE

Multiply SI (Metric) Unit	By	To Obtain U.S. Customary Unit
kilometers (km)	0.622	miles (mi)
kilometers (km)	3281	feet (ft)
meters (m)	3.281	feet (ft)
meters (m)	39.37	inches (in.)
centimeters (cm)	0.03281	feet (ft)
centimeters (cm)	0.394	inches (in.)
milliimeters (mm)	0.0394	inches (in.)
micrometers or microns (µm)	0.0000394	inches (in.)
square kilometers (km^2)	0.3861	square miles (mi^2)
hectares (ha)	2.5	acres
square meters (m^2)	10.764	square feet (ft^2)
cubic meters (m^3)	35.31	cubic feet (ft^3)
kilograms (kg)	2.2046	pounds (lb)
grams (g)	0.0353	ounces (oz)
grams per cubic centimeter (g/cm^3)	62.422	pounds per cubic foot (lb/ft^3)
milligrams per kilogram (mg/kg)	1	parts per million (ppm)
micrograms per gram (µg/g)	1	parts per million (ppm)
liters (L)	0.26	gallons (gal.)
milligrams per liter (mg/L)	1	parts per million (ppm)
degrees Celsius (°C)	9/5 + 32	degrees Fahrenheit (°F)

A-3.0 DATA QUALIFIER DEFINITIONS

Data Qualifier	Definition
U	The analyte was analyzed for but not detected.
J	The analyte was positively identified, and the associated numerical value is estimated to be more uncertain than would normally be expected for that analysis.
J+	The analyte was positively identified, and the result is likely to be biased high.
J-	The analyte was positively identified, and the result is likely to be biased low.
UJ	The analyte was not positively identified in the sample, and the associated value is an estimate of the sample-specific detection or quantitation limit.
R	The data are rejected as a result of major problems with quality assurance/quality control (QA/QC) parameters.

Appendix B

Quality Assurance and Quality Control Program

B-1.0 INTRODUCTION

Overburden and layback soil samples were collected from MDA B to determine if that material could be reused as backfill in the trenches being excavated during the site investigation. Sixty-four overburden/layback soil and fill samples were collected from MDA B between June 29 and September 30, 2010. Confirmation samples were collected to determine if uncontaminated tuff has been reached within those trenches. Confirmation samples were collected from August 11 through October 19, 2010, from rows 51, 155, 160, 196 and 260 of the grid overlaying MDA B. This appendix presents the analytical methods used and data quality review of those samples.

Quality assurance (QA), quality control (QC), and data validation procedures were implemented in accordance with EP-DIR QAP-0001, R4 IPC-1, the LANL Quality Assurance Project Plan Requirements for the Environmental Programs Directorate and the MDA B Sampling and Analysis Plan (LANL 2010, 110411; LANL 2010, 110398; LANL 2010, 111195). The results of the QA/QC activities were used to estimate the accuracy, bias, and precision of the analytical measurements. QC samples, including method blanks, blank spikes, matrix spikes, laboratory control samples, internal standards, initial and continuing calibrations, and surrogates, were used to assess laboratory accuracy and bias.

The type and frequency of QC analyses are described in the MDA B Sampling and Analysis Plan (LANL 2010, 110411; LANL 2010, 110398; LANL 2010, 111195). Other QC factors, such as sample preservation and holding times, were also assessed. The requirements for sample preservation and holding times are presented in Standard Operating Procedure (SOP) 5056, Sample Containers and Preservation. Evaluating these QC indicators allows estimates to be made of the accuracy, bias, and precision of the analytical suites. A focused data validation was also performed for all the data packages (identified by request number) that included a more detailed review of the raw data. The SOPs used for data validation are presented in Table B-1.0-1. Analytical data is provided in Appendix C (on DVD included with this document).

Analytical data were reviewed and evaluated based on U.S. Environmental Protection Agency (EPA) National Functional Guidelines for organic chemical data review, where applicable (EPA 1994, 048639) (EPA 1994, 048639; EPA 1999, 066649). Data have also been assessed using guidelines established in SW-846 (EPA 1997, 057589). As a result of the data validation and assessment efforts, qualifiers have been assigned to the appropriate analytical records.

B-2.0 LABORATORY ANALYSIS SUMMARY

Overburden and confirmation samples collected from MDA B are shown in Tables 2.3-1 and 2.5-1. Sixty-four overburden samples were collected from June 29 through September 30, 2010. Forty-three of those overburden samples were collected from the stockpile in the west lay-down yard, and 21 overburden samples were collected from containerized overburden. Twenty-six overburden field trip blanks were collected along with eight field duplicates and eight field rinsate samples. Seventeen confirmation samples were collected, along with four field trip blanks, one field duplicate, and one field rinsate, from August 11, 2010, through October 19, 2010.

Samples were submitted to certified analytical laboratories for analyses, including volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), high explosives, herbicides, pesticides, diesel range organics (DRO), gasoline range organics (GRO), dioxins and furans, perchlorate, nitrite/nitrate, total cyanide, polychlorinated biphenyls (PCBs), metals, americium-241, gamma spectroscopy, isotopic plutonium, isotopic uranium, tritium, and strontium-90. Table B-2.0-1 shows the analytical methods used for the sample analysis. Excavation grid location and confirmatory sampling

locations are presented in Figure 2.3-2. Tables 2.3-1 and 2.5-1 present the sample identification numbers. Validated analytical results are presented in Appendix C (on DVD included with this document).

The inorganic, organic, and radionuclide analyses for the confirmation samples and the overburden samples are summarized in the following sections. The required minimum detectable activity or estimated quantitation limit is prescribed in the analytical services statement of work (SOW) (LANL 2000, 071233).

B-3.0 ORGANIC CHEMICAL ANALYSES

Five overburden organic results were rejected because the affected analytes were analyzed with a relative response factor of less than 0.05 in the initial calibration verification and/or the continuing calibration verification.

B-3.1 Maintenance of Chain of Custody

Chain of custody was properly maintained for all confirmation and overburden samples.

B-3.2 Sample Documentation

All samples were properly documented in the field.

B-3.3 Sample Preservation

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

B-3.4 Holding Time

Holding times were met for all confirmation and overburden samples.

B-3.5 Initial and Continuing Calibration Verification

Initial and continuing calibration verifications were within acceptable range for all organic analyses of confirmation samples.

Eighty-seven overburden organic analyte results were qualified as estimated not detected (UJ) because the affected analytes were analyzed with an initial calibration verification and/or continuing calibration verification that was recovered outside method-specific limits.

Five overburden organic results were rejected (R) and 20 were qualified as estimated not detected (UJ) because the affected analytes were analyzed with a relative response factor of less than 0.05 in the initial and/or continuing calibration verification.

B-3.6 Analyte Quantitation

One organic result for overburden sampling was qualified as not detected (U) because it was detected at a concentration of less than or equal to 5 times the related analyte in the field trip blank or field rinsate.

One hundred sixteen overburden organic results were qualified as not detected (U) because the results were less than or equal to 5 times the concentration of the same analyte in the method blank.

B-3.7 Method Blank

Nine organic results from confirmation samples were qualified as not detected (U) because the concentrations of the analyte detected in the samples were less than or equal to 5 times the concentration of the same analyte detected in the method blank.

One confirmation sampling organic result was qualified as estimated (J) because the analyte was identified in the method blank, although the concentration was greater than 5 times the concentration detected in the method blank.

Twenty-eight overburden organic results were qualified as estimated (J) because the related analyte was detected in the method blank, but was detected <5 times the concentration of that in the field sample.

B-3.8 Matrix Spikes

Two confirmation sampling organics results were qualified as estimated and biased high (J+) because the matrix and/or matrix spike duplicate percent recovery was greater than 130%.

B-3.9 Surrogate Recoveries

Surrogate recoveries were within acceptable limits for all confirmation sample analyses.

B-3.10 Matrix Spike and Matrix Spike Duplicates

Four overburden organic results were qualified as estimated not detected (UJ) because the matrix spike/matrix spike duplicate percent recovery was greater than 30%.

Five overburden organic results were qualified as estimated biased high (J+) because the matrix spike/matrix spike duplicate percent recovery was greater than 130%.

Two overburden organic results were qualified as estimated not detected (UJ) because the matrix spike/matrix spike duplicate percent recovery was greater than 10% but less than 70%.

B-3.11 Internal Standard Responses

All internal standard responses were within acceptable limits.

B-3.12 Laboratory Control Spike Recoveries

Thirteen overburden organic results were qualified as estimated not detected (UJ) because the laboratory control spike was less than the lower acceptance limit but greater than 10% recovery.

Five overburden organic results were qualified as estimated biased high (J+) because the laboratory control spike percent recovery was greater that the upper acceptance limit.

B-3.13 Laboratory Duplicates

Laboratory duplicates indicated acceptable precision.

B-3.14 Instrument and Continuing Calibration Blanks

Instrument and continuing calibration blanks were within acceptable ranges for all analyses.

B-3.15 Field Trip Blanks

Field trip blanks were analyzed only for VOCs. One field trip blank associated with confirmation sampling in enclosure 1 had a detectable level of toluene. The detection was above the method detection limit but below the practical quantitation limit. Toluene was not detected in the associated field samples, and no data were qualified based on the field trip blank detection.

B-4.0 INORGANIC ANALYSES

Inorganic analyses included analyses for anions, metals, perchlorate, and total cyanide.

No metals results were rejected.

B-4.1 Maintenance of Chain of Custody

Chain of custody was properly maintained for all inorganic confirmation and overburden samples.

B-4.2 Sample Documentation

All samples were properly documented in the field.

B-4.3 Sample Preservation

Sample preservation requirements were met for all inorganic samples.

B-4.4 Holding Time

Holding times were met for all samples.

B-4.5 Initial and Continuing Calibration Verification

Initial and/or continuing calibration verification was within acceptable limits for all analyses.

B-4.6 Analyte Identification (Including Internal Standards and Spectra Review)

Internal standards and spectral review were within acceptable limits for all analyses.

B-4.7 Analyte Quantitation

One hundred twenty-two overburden inorganic results were qualified as estimated because the samples were analyzed outside the method-specific tune-time criteria.

Thirty-four overburden inorganic results were qualified as estimated not detected, and 45 were qualified as estimated biased low (J-) because the mass calibration was not within 0.1 atomic mass units or the percent relative standard deviation was greater than 5% for any isotope.

B-4.8 Method Blank, Instrument Blank, and Continuing Calibration Blank

Twelve overburden inorganic results were qualified as estimated (J) because the analyte was detected in the method blank. Fifteen results were qualified as not detected (U) because the result was less than 5 times the concentration of the same analyte in the method blank. One result was qualified as not detected (U) because the result was less than 5 times the concentration of the same analyte in the instrument blank and continuing calibration blank.

B-4.9 Surrogate Recoveries

Surrogate recoveries met method-specific limits for inorganic samples.

B-4.10 Internal Standard Responses

Internal standard responses met method-specific limits for inorganic samples.

B-4.11 Laboratory Control Spike Recoveries

Matrix spike information was missing from the data package for 22 analytes. The analytes were qualified as estimated biased high (J+) based on the laboratory control spike percent-recovery results.

B-4.12 Matrix Spikes and Matrix Spike Duplicates

Two overburden inorganic results were qualified as estimated and biased high because the matrix spike and matrix spike duplicate percent recovery were greater than 125%.

B-4.13 Laboratory Duplicates

One inorganic result from a confirmatory sample was qualified as estimated (J) because the sample and the associated duplicate were greater than or equal to 5 times the reporting limit and the duplicate relative percent difference was greater than 35%.

Eleven overburden inorganic results were qualified as estimated (J) because the sample and the laboratory duplicate were greater than or equal to 5 times the reporting limit and the relative percent difference was greater than 35%.

B-5.0 RADIOCHEMICAL ANALYSES

Confirmation samples were analyzed for radionuclides using gamma spectroscopy, and for americium-241, tritium, isotopic plutonium, isotopic uranium, isotopic thorium, and strontium-90.

Seventy-two confirmation sample gamma spectroscopy results were qualified as rejected (R) because spectral interferences prevented the positive identification of the analyte. Two additional sample results were qualified as rejected (R) because the activity level was below the minimum detectable activity level and the sample had a duplicate error ratio or replicate error ratio greater than the analytical laboratory's acceptance limits.

Two hundred seventy-five overburden gamma spectroscopy results were qualified as rejected (R) because spectral interferences prevented positive identification of the analyte. One additional

radiochemical result was rejected (R) because the duplicate error ratio or the replicate error ratio was outside method acceptance limits.

B-5.1 Maintenance of Chain of Custody

Chain of custody was properly maintained for all radionuclide confirmation and overburden samples.

B-5.2 Sample Documentation

Samples were properly documented in the field.

B-5.3 Sample Preservation

No sample preservation is required for radionuclides.

B-5.4 Holding Times

Holding times were met for all radionuclide analyses.

B-5.5 Analyte Quantitation (Including Spectral Interferences)

Seventy-two confirmation sample gamma spectroscopy results were qualified as rejected (R) because spectral interferences prevented the positive identification of the analyte.

Two hundred seventy-five overburden gamma spectroscopy results were qualified as rejected (R) because spectral interferences prevented positive identification of the analyte.

One thousand forty-four overburden radionuclide results were qualified as not detected (U) because the detected concentration was less than the minimum detectable activity. An additional three results were qualified as estimated not detected (UJ) because the detected concentration was less than 3 times the 1 sigma total propagated uncertainty.

B-5.6 Method Blanks

Two radionuclide results from confirmatory sampling were qualified as not detected (U) because the sample result was less than or equal to 5 times the concentration of the related analyte detected in the method blank.

Four overburden radionuclide results were qualified as estimated biased high (J+) because the related analyte was detected in the method blank.

B-5.7 Laboratory Control Spike Recoveries

Laboratory control spike percent recoveries were within acceptable limits for all radionuclide analyses for both confirmation and overburden samples.

B-5.8 Tracer Recoveries

One radionuclide result from confirmatory sampling was qualified as estimated biased low (J-) because the tracer was recovered below the lower acceptance limit but above 10% recovery.

B-5.9 Laboratory and Duplicates

Fourteen radionuclide results from confirmation sampling were qualified as estimated (J) and two radionuclide results were qualified as rejected (R) because lab duplicates had a duplicate error ratio or replicate error ratio greater than the analytical laboratory's acceptance limits.

Three overburden radionuclide results were qualified as estimated (J) and one was rejected (R) because the laboratory duplicate error ratio or the replicate error ratio was greater than the analytical laboratory's acceptance limits.

B-6.0 FIELD QUALITY CONTROL SUMMARY

B-6.1 Field Trip Blanks

Eight field trip blanks were collected in association with overburden sampling. One field trip blank associated with overburden samples had a detectable concentration of methylene chloride, three had detectable concentrations of acetone, and one had detectable concentrations of xylene[1,3]+xylene[1,4]. All detections were above the method detection limit but below the practical quantitation limit, and associated field results were less than 5 times the concentrations in the field blanks.

Four field trip blanks were collected in association with confirmation sampling. One field trip blank associated with confirmation samples from enclosure 3 had a detectable level of toluene. The result was above the method detection limit but below the practical quantitation limit; therefore, no field sample data were qualified based on the toluene detection in the field trip blank.

B-6.2 Field Duplicates

SOP-5059, Field Quality Control Samples, recommends a relative percent difference (RPD) between a field duplicate and its associated field sample of no greater than 20%. Fifteen analytes detected in the confirmation field duplicates and associated field samples had RPDs greater than 20%. Four of these analytes were not detected (U) in either the field sample or the associated duplicate but were detected above the practical quantitation limit in the related sample.

Twenty-nine percent of the analytes detected in the overburden samples had RPDs greater than 20% between the field samples and associated duplicates. Four of these analytes were not detected (U) in either the field sample or the associated duplicate but were detected above the practical quantitation limit in the related sample.

B-6.3 Field Rinsates

Eight field rinsates were collected in association with overburden sampling. All eight field rinsates collected in association with overburden sampling had detectable, usually quantifiable, concentrations of aluminum, calcium, chromium, copper, iron, lead, manganese, nickel, potassium, sodium, vanadium, and zinc. Seven field rinsates had detectable concentrations of barium and magnesium; six had detectable concentrations of elemental uranium; five had detectable concentrations of nitrate; two had detectable concentrations of beryllium; one had a detectable concentration of cadmium; one had a detectable concentration of antimony; and one had a detectable concentration of perchlorate.

One field rinsate was collected in association with confirmation sampling. One field rinsate associated with confirmation samples had detectable concentrations of 11 inorganic metals and nitrate. No sample data were qualified because of these detections.

B-7.0 REFERENCES

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

Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.

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EPA (U.S. Environmental Protection Agency), 1997. "Test Methods for Evaluating Solid Waste, Laboratory Manual, Physical/Chemical Methods," SW-846, 3rd ed., Update III, Office of Solid Waste and Emergency Response, Washington, D.C. (EPA 1997, 057589)

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LANL (Los Alamos National Laboratory), June 15, 2010. "MDA-B Sampling and Analysis Plan," TA-21 Document No. TA21-MDAB-PLAN-00017, Rev. 0, Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2010, 110411)

LANL (Los Alamos National Laboratory), August 10, 2010. "MDA-B Sampling and Analysis Plan," TA-21 Document No. TA21-MDAB-PLAN-00017, Rev. 1, Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2010, 110398)

LANL (Los Alamos National Laboratory), November 3, 2010. "MDA-B Sampling and Analysis Plan," TA-21 Document No. TA21-MDAB-PLAN-00017, Rev. 2, Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2010, 111195)

Table B-1.0-1
Data Validation Procedures

Procedure	Title	Effective Date
SOP-5161, Rev. 0	Routine Validation of Volatile Organic Data	6/10/2008
SOP-5162, Rev. 0	Routine Validation of Semivolatile Organic Compound (SVOC) Analytical Data	6/30/2008
SOP-5163, Rev. 0	Routine Validation of Organochlorine Pesticide and PCB Analytical Data	6/17/2008
SOP-5165, Rev. 0	Routine Validation of Metals Analytical Data	6/17/2008
SOP-5169, Rev. 0	Routine Validation of Dioxin/Furan Analytical Data (EPA Method 1618 and SW-846 EPA Method 8290)	6/3/2008
SOP-5166, Rev. 0	Routine Validation of Gamma Spectroscopy, Chemical Separation Alpha Spectrometry, Gas Proportional Counting, and Liquid Scintillation Analytical Data	6/30/2008
SOP-5167, Rev. 0	Routine Validation of General Chemistry Analytical Data	6/30/2008
SOP-5168, Rev. 0	Routine Validation of LC/MS/MS High Explosive Analytical Data	7/1/2008
SOP-5191, Rev. 0	Routine Validation of LC/MS/MS Perchlorate Analytical Data (SW-846 EPA Method 6850)	6/30/2008
SOP-5171, Rev. 0	Routine Validation of Total Petroleum Hydrocarbons Gasoline Range Organics/Diesel Range Organics Analytical Data (Method 80151B)S	6/30/2008

Table B-2.0-1
Analytical Methods Used for Sample Analyses

Analytical Method	Analytical Suite	Target Analyte(s)
SW-846:8260B	VOCs	(LANL 2000, 071233, Attachment 3, Table VII(a))
SW-846:8270C	SVOCs	(LANL 2000, 071233, Attachment 3, Table IX(a))
SW-846:8015M	Total petroleum hydrocarbons, including DRO and GRO	(LANL 2000, 071233, Attachment 3, Table I)
SW-846:9012A	Wet chemistry	Total cyanide, nitrate-nitrite as nitrogen
SW-846:8081A	Pesticides	(LANL 2000, 071233, Attachment 3, Table V(a)
SW-846:8151A	Herbicides	Chlorinated herbicides
SW-846:8082	PCBs	(LANL 2000, 071233, Attachment 3, Table VI(a))
SW-846:6020	Metals	Ag, Al, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Ni, K, Sb, Se, Tl, U, V, Zn
SW-846:8280A	Dioxans and furans	(LANL 2000, 071233, Attachment 3, Table XI)
SW-846:7471A and SW-846:7470A	Mercury	Elemental
SW-846:6850	Perchlorate	ClO_4
SW-846:8321A	High explosives	(LANL 2000, 071233, Attachment 3, Table XII)
EPA:901.1	Gamma spectroscopy	Cs-134, Cs-137, Co-60, Eu-152, Ru-106, Na-22, Th-228
HASL-300:AM-241	Americium-241	n/a*
EPA:906.0	Tritium	n/a

Table B-2.0-1 (continued)

Analytical Method	Analytical Suite	Target Analyte(s)
EPA:300.0	Anion	Nitrite and nitrate
EPA:905.0	Strontium-90	n/a
HASL-300:ISOTH	Thorium	Th-228, Th-230, Th-232
HASL-300:ISOPU	Plutonium	Pu-238, Pu-239/240
HASL-300:ISOU	Uranium	U-234, U-235/236, U-238

* n/a = Not applicable.

Appendix C

Analytical Data
(on DVD included with this document)