Response to the Notice of Disapproval for the Investigation Report for Upper Los Alamos Canyon Aggregate Area, Los Alamos National Laboratory, EPA ID #NM0890010515, HWB-LANL-09-020, Dated December 3, 2009

INTRODUCTION

To facilitate review of this response, the New Mexico Environment Department's (NMED's) comments are included verbatim. The comments are divided into general and specific categories, as presented in the notice of disapproval. Los Alamos National Laboratory's (LANL's or the Laboratory's) responses follow each NMED comment. This response contains data on radioactive materials, including source, special nuclear, and byproduct material. 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.

GENERAL COMMENTS

NMED Comment

1. *During evaluation of the data to identify contaminants of potential concern (COPCs), the Permittees excluded some chemicals as COPCs, when the detected concentration or the detection limit was above the background reference datum, but the detected concentration was within the range of background concentrations. Further, chemicals were not retained as COPCs because the sample concentrations were less than two or three times the maximum background concentration. These are not appropriate methods for excluding a chemical as a COPC. A statistical comparison of the data sets must be conducted to determine if the site data are statistically different from the background. To compare site data to the background, the Permittees must follow procedures outlined in NMED's approval letter for Investigation Report for Middle Canada del Buey Aggregate Area, Revision 1 (April 27, 2009). The Permittees must revise the Report and use appropriate methods for identification of COPCs.*

LANL Response

1. NMED's approval letter for the Cañada del Buey investigation report, dated April 27, 2009, was received as the Upper Los Alamos Canyon Aggregate Area investigation report was being finalized for delivery to NMED on June 1, 2009. Therefore, it was not possible to revise the inorganic chemical data review to include statistical comparisons to background for all sites before the report was submitted to NMED. In addition, the statistical comparisons cannot be conducted for all sites because a minimum number of samples per medium needs to be available to perform the tests. Based on input from statisticians and with approval from NMED (personal communication between Paige Walton and Rich Mirenda, July 22, 2009), the minimum number of samples needed to conduct statistical comparisons is 10 per medium evaluated. This guidance is consistent with U.S. Environmental Protection Agency (EPA) and other guidelines for minimum sample sizes for statistical estimation and hypothesis testing (e.g., EPA 2009, 106601, p. 28). If less than 10 samples are available for a medium, the background comparisons will continue to be done as presented in the original report (i.e., comparison to maximum background concentrations [personal communication between Paige Walton and Rich Mirenda, July 22, 2009]). Similar comparisons will also be performed

if all the values in the site data set are detection limits (DLs) (i.e., no detections). The revised report includes the statistical comparisons to background, as appropriate, as part of the data review process presented in Appendix F.

NMED Comment

2. *While calcium, sodium, and potassium may be are relatively non-toxic, studies have show there to be an upper intake limit for iron. The United States Department of Agriculture Food Safety and Inspection Service and the National Academy of Science Food and Nutrition Board have developed upper intake levels (ULs), which should be applied in determining a soil screening level (SSL) that, in turn, should be used in assessing essential nutrients toxicity. If site concentrations of iron are below this SSL, then the concentrations may be eliminated from further consideration in the risk assessment. The Permittees must revise the Report accordingly.*

LANL Response

2. If iron was retained as a chemical of potential concern (COPC) for a site based on the background comparison, it was evaluated for risk using NMED's soil screening levels (SSLs) (NMED 2006, 092513) for the residential, industrial, and construction worker scenarios and the Laboratory's SSLs (LANL 2007, 094496) for the recreational scenario. Therefore, no revision to the report is necessary.

NMED Comment

3. *For the evaluation of mercury in the risk assessments, a SSL for mercury as an inorganic salt was applied for the residential and industrial scenarios, although a datum for elemental mercury was applied for the construction worker. Unless specific analytical data are available to confirm the presence of mercury as an inorganic salt, screening data for elemental mercury are typically applied. In addition it is noted that background data based on elemental mercury are applied, resulting in conflicting data and evaluation of mercury. While the application of a SSL based on elemental mercury would not significantly change the conclusions of the risk assessments, the Permittees must discuss the rationale for using SSLs for mercury as an inorganic salt for the residential and industrial scenarios and revise the screening assessments as appropriate.*

LANL Response

3. Metals, including mercury, are typically present in soil as inorganic compounds, combined primarily with sulfate but also with chloride and nitrate. Mercury is generally not present in soil in its elemental form unless an actual spill has occurred. In the case of the Upper Los Alamos Canyon Aggregate Area, mercury in its elemental form is not expected to be present based on operational history. Because the exact chemical form of mercury in the soil is not known, the EPA screening values for mercury, inorganic salts (previously for mercury and compounds in EPA Region 6 tables), were used for the residential and industrial screening levels. Because the EPA screening tables do not provide screening values for the construction worker scenario, the elemental mercury SSL for the construction worker was used Therefore, no revisions to the report are necessary.

NMED Comment

4. *For the residential, industrial, and construction worker screening evaluations where lead was retained as a noncarcinogen, a hazard quotient was calculated and summed with other noncarcinogens. The*

result is an overestimation of noncarcinogenic risk, as inclusion of lead in the hazard index is incorrect. Lead SSLs are based upon blood lead levels, unlike most noncarcinogenics which have SSLs based on more traditional toxicological data (e.g., no-observed adverse effect levels) and should be evaluated independently. The Permittees must revise the assessments accordingly for all the SWMUs/AOCs where lead was identified as a COPC. This comment was included in the TA-32 NOD.

LANL Response

4. The target tissue associated with a COPC is not considered in the initial screening to determine whether a hazard exists. Initial screening involves comparing COPC exposure concentrations with their respective SSLs for a given scenario. Lead has SSLs from NMED for residential, industrial, and construction worker exposures and from Laboratory guidance for the recreational exposure. These SSLs are based on a blood lead level of 10 µg/dL using EPA's Integrated Exposure Uptake Biokinetic model and were calculated to compare with soil concentrations and to determine if the blood lead level is greater than 10 µg/dL for a receptor. A comparison of site concentrations with these screening levels using the ratio or hazard quotient (HQ) approach as the initial step is therefore warranted and appropriate in the screening assessment and is consistent with the use of screening levels as specified in NMED and EPA guidance and the March 1, 2005, Compliance Order on Consent.

   The HQ for lead is an indication of whether the blood lead level criterion is exceeded for a given scenario and receptor. Inclusion of the lead HQ in the derivation of a hazard index (HI) is appropriate for a screening assessment as long as the lead HQ and the site HI are less than 1.0. This value indicates the blood lead level of 10 µg/dL is not exceeded, and no additional evaluation is necessary. If the HQ for lead exceeds 1.0, then the blood lead level has the potential to be greater than 10 µg/dL, and an independent assessment of lead is warranted. If the HI exceeds 1.0 and lead is a major contributor, a separate evaluation of the blood lead level also is warranted. If the HI without lead does not exceed 1.0 and the lead level is less than the SSL (blood lead level of 10 µg/dL is not exceeded), then no unacceptable risk exists for any COPC. For the sites in this report for which risk screening was performed, lead concentrations do not exceed the SSLs, the maximum HQ is 0.2, and the HIs are substantially below 1.0. Therefore, no revision to the risk assessments is necessary. Risk evaluations in future reports for aggregate area and canyons will include an independent assessment of lead if the screening results indicate this analysis is warranted.

NMED Comment

5. *There is an inconsistency in how chromium is evaluated in the screening assessments. For example, at SWMU 32-001, the industrial and residential scenarios evaluated total chromium but the construction worker scenario applied data for hexavalent chromium. It is not clear from the data that speciation of chromium is available. As such, if the speciation is unknown, or if site data are not available to justify speciation, then data for hexavalent chromium should be applied. The Permittees must revise the screening assessments as appropriate.*

LANL Response

5. The analysis of soil samples is for total chromium in accordance with the approved work plan. The data for total chromium is and has historically been compared to EPA Region 6 or EPA regional screening values for total chromium for the residential and industrial scenarios. NMED guidance does not provide total chromium SSLs for any scenario, and EPA does not have a screening value for the construction worker. Therefore, the NMED hexavalent chromium construction worker SSL was used

because it is protective, not because hexavalent chromium is present. Unless site history indicates probable releases of hexavalent chromium, the predominant form of chromium in soil is presumed to be chromium III, which has a much higher SSL than hexavalent chromium. However, additional samples to be collected at former Technical Area 32 during the planned accelerated corrective action will include analyses for hexavalent chromium to determine if it is present in significant quantities. If hexavalent chromium is present, revisions will be made to screening assessments as appropriate.

NMED Comment

6. *In reviewing the risk assessments, several sites had volatile organic compounds (VOCs) retained as COPCs. Use of the Regional Soil Screening Levels (RSLs) and the New Mexico SSLs are appropriate for the pathways defined in their derivations. However, if additional exposure pathways not addressed in the SSLs are complete, risks via exposure from these pathways must be evaluated and assessed in conjunction with the risks/hazards determined through comparison of the SSLs. The presence of VOCs indicates that inhalation of indoor air via the vapor intrusion scenario is a complete pathway and must be addressed. The Permittees must revise the assessments where VOCs were retained as COPCs to address the vapor intrusion scenario. This Comment was included in the TA-32 NOD.*

LANL Response

6. The human health risk-screening assessments have been revised to include an evaluation of the vapor-intrusion pathway using the bulk soil data and the Johnson and Ettinger model. Each site was evaluated to determine if volatile organic compounds (VOCs) were detected in the samples collected on the mesa top in the vicinity of buildings. Where this was the case, the vapor-intrusion pathway was assessed.

NMED Comment

7. *A thorough review of available ecological toxicity has not been conducted, resulting in the omission of several COPCs from being qualitatively evaluated in the ecological assessments. Only data that are currently provided in the ECORISK database were applied. NMED has repeatedly commented that exclusion of data from the ECORISK database is not sufficient justification for exclusion of the evaluation of a COPC. At a minimum, a discussion of the uncertainties associated with COPCs not quantitatively evaluated should be provided for each ecological analysis. The Permittees must revise ecological risk assessments accordingly.*

LANL Response

7. In response to previous comments from NMED, the Laboratory has implemented a process for developing interim ecological screening levels (ESLs) for analytes that do not have toxicity information in the ECORISK Database. This process was included as part of the evaluation of chemicals of potential ecological concern (COPECs) in the Upper Los Alamos Canyon Aggregate Area report (section G-5.5.8) and has been accepted by NMED in subsequent investigation reports. In an effort to address the uncertainty associated with the lack of toxicity data for some COPECs and to provide a quantitative assessment of potential ecological risk, several online toxicity databases are searched to find relevant toxicity information. Toxicity data obtained are used to calculate interim ESLs for some receptors. The ESLs are termed interim because they are not yet in the ECORISK Database. Once the development process is completed, the interim ESLs are finalized and included

in the appropriate revision to the ECORISK Database. Although relevant toxicity data could not be found in online databases for a majority of the analytes for the Upper Los Alamos Canyon Aggregate Area, a search of the literature continues in an effort to determine if any relevant toxicity information exists. For the Upper Los Alamos Canyon Aggregate Area report, interim ESLs were developed and used to evaluate potential ecological risk for carbon disulfide and styrene. No revision to the ecological risk assessments is necessary.

NMED Comment

8. *It is noted that aluminum was excluded as a COPC in all of the ecological risk assessments. It is known that aluminum is soluble and biologically available in acidic soil (pH < 5.5) and inactive in circumneutral to alkaline (PH 5.5 - 8.0) conditions. Above a pH of 8.0, the solubility of aluminum increases, although the bioavailability is uncertain. Section G-3.2.1 of the report states that the pH within the Upper Los Alamos Canyon Aggregate Area (ULACAA) varies from 4.9 to 9.1. Given that areas within the ULACAA may have soil pH in a range rendering aluminum bioavailable (between pH 4.9 and 5.5), it appears that a blanket exclusion of aluminum in the ecological risk assessments may not be appropriate. The Permittees must address soil pH and bioavailability of aluminum at each AOC and SWMU addressed in this Report.*

LANL Response

8. Aluminum was retained as a COPC and evaluated in the risk assessments if it was determined to be different from background. Aluminum was retained as a COPC for four sites for which human health and ecological risks were evaluated in Appendix G. These sites included Solid Waste Management Units (SWMUs) 01-001(c), 03-009(j), and 41-001 and Area of Concern (AOC) 01-007. Aluminum is addressed for each of these sites in sections G-5.4.3, G-5.4.15, G-5.4.16, and G-5.4-19, respectively, and the mean pH for each site is also included. None of the four sites had mean or individual pH values less than 5.5, so there is no issue regarding aluminum bioavailability, there are no potential ecological risks associated with aluminum, and aluminum is eliminated as a COPEC at each of the sites. The text in Appendix G has been revised to indicate the pH value is the mean soil pH and to include the range of soil pHs for each site.

NMED Comment

9. *The Investigation Work Plan (IWP) for ULACAA included analytical results that were considered decision level data. Additional samples were proposed based on data gaps identified in the IWP. The Permittees did not include results from the previous investigations for some of the sites when defining nature and extent or conducting risk evaluations. For example, the data from previous investigations conducted at SWMUs 01-001(o), 01-001(s), 01-001(u), 01-003(a), 01-003(d), 01-007(a), and 01-007(b) were not included. The Permittees must either include data from the previous investigation or provide an explanation for not including it in risk evaluations.*

LANL Response

9. Data from previous investigations at these sites did not meet the revalidation criteria after the Upper Los Alamos Canyon Aggregate Area investigation work plan and the historical investigation report were submitted in 2006. Section F-1.1 of Appendix F lists the sites sampled before 2008 for which decision-level data are available. Only those sites have historical decision-level data after revalidation based on the current data quality standard. Twenty-five sites had one or more samples (for a total of

158 samples) that were determined to be screening-level data after revalidation. Five of those sites were proposed for deferred sampling in the investigation work plan, and one site had been remediated and no sampling was proposed. At the remaining 19 sites, all but 22 samples were replaced by new samples collected at the same locations or at nearby locations bracketing the screening-level samples. Of the data from the 22 screening-level samples with no replacement samples collected in 2008–2009, approximately 80% to 90% of the analytical results were nondetects. Text has been added to Section F-1.1 explaining changes in data status after the investigation work plan and the historical investigation report had been submitted.

NMED Comment

10. *The Permittees included the discussion on analytical results, identification of COPCs, and nature and extent of contamination in Appendix F. The conclusions were summarized and presented in the main text of the Report. To facilitate review of the report, the Permittees must include all information on data analysis and nature and extent of contamination in the main text of the report and eliminate Appendix F (Data Review) in future submittals.*

LANL Response

10. The comment is noted, and as stated in a December 21, 2009, letter to NMED, future submittals will include data analysis and discussions of nature and extent of contamination in the main text of the report rather than in a data review appendix.

NMED Comment

11. *The Permittees provided 'Analytical Suites and Results and Analytical Reports' (Appendix D) on three DVDs. NMED uses Microsoft Office Excel 2003 but the Permittees used a newer version of Microsoft Excel. To access the data the files had to be converted to Microsoft Office Excel 2003 version and some of the data was lost in the process. The entire data file could not be opened because of 2003 version does not support data that has more than 65,536 rows and 256 columns. At this time, NMED does not anticipate an upgrade to its current software, therefore, the Permittees must provide the data in files that are compatible with Microsoft Office Excel 2003 version.*

LANL Response

11. The comment is noted, and the converted data files for this report are included on DVDs with the revised investigation report submittal. Data files will be provided in Microsoft Office Excel 2003 format in future reports.

SPECIFIC COMMENTS

NMED Comment

1. ***Section 4.4, Collection of Soil, Fill, Tuff, and Sediment Samples, Page 16:*** *The Permittees state that a stainless-steel scoop and bowl were used to homogenize samples prior to transferring them to sterile sample collection jars or bags. Section IX.B.2.b.ii of the 2005 Consent Order states "Homogenization of discrete samples collected for analyses other than for VOC and SVOC analyses shall be performed by the analytical laboratory, if necessary." The Permittees must clarify if all*

samples were homogenized prior to being shipped to the analytical laboratory and explain why homogenization was conducted in the field rather than at the laboratory.

LANL Response

1. Samples are not homogenized in the field or before they are shipped to the analytical laboratory. The text incorrectly states that samples were homogenized and has been revised to indicate that after VOC samples are collected, sample material is broken into smaller pieces if necessary to place material in sample containers.

NMED Comment

2. ***Section 12.1, Summary of Nature and Extent, Page 95:*** *In Sections 12.1.1 and 12.1.2, the Permittees' have provided information on the conclusions reached regarding nature and extent of contamination at 47 SWMUs/AOCs included in the ULACAA. NMED does not agree with these conclusions for some of the sites. NMED's comments are included under the specific comments provided in this letter for individual SWMUs/AOCs. The Permittees must review the NOD comments and revise their conclusions as appropriate.*

LANL Response

2. The comment is noted. The nature and extent of contamination has been reviewed per NMED's comments and as required by General Comment 1. Corresponding text in Appendix F and the conclusions and recommendations in sections 12 and 13, respectively, have been revised as appropriate.

NMED Comment

3. ***Section 13, Recommendations, Page 98:*** *The Permittees have requested certificates of completion for SWMUs and AOCs that have been determined to pose no potential risk to human health or to the ecological receptors under current and projected future land use. The Permittees must submit their request for Certificates of Completion under separate cover.*

   The Permittees must revise the recommendations included in this section based on the NOD comments provided for specific SWMUs/AOCs. Further, the Permittees propose to develop a Phase II investigation work plan for collecting samples at the sites where the extent has not been defined and for removal of contaminated media at sites to reduce residual concentrations of the contaminants. The Permittees should have included a schedule for further action in accordance with Section XI.C.11 of the Order.

LANL Response

3. The recommendations in section 13 have been revised based on modifications to the COPCs and nature and extent evaluations per this and other comments. The section has been revised to indicate that the Laboratory recommends sites be identified as complete either with or without controls and will request certificates of completion under separate cover. A proposed schedule for further actions has been added to the revised report as section 14.0.

NMED Comment

4. ***Appendix F, Section-F-1.2, Page F-1:*** *The Permittees have identified inorganic COPCs by comparing site data with background values (BVs) and maximum concentrations in a background data set. The site data should not be compared with maximum concentrations of the background data set. If a particular value exceeds the BV, then a statistical comparison of data sets must be conducted to determine if detected concentrations are different from background (see General Comment #1). Similar statements are made throughout the document. For example, for SWMU 0-017, a similar process is applied for not retaining chromium (soil/fill), arsenic (tuff), beryllium (tuff), iron (tuff), and vanadium (tuff) as COPCs. The Permittees must make appropriate changes and revise the Report.*

LANL Response

4. Section F-1.2 has been revised to discuss the use of statistical comparisons of site data to background. The subsequent sections in Appendix F have been revised to include the results of statistical comparisons for sites and media with a sufficient number of samples to perform statistical tests. Corresponding sections of the main text of the report, including the conclusions and recommendations, and Appendix G have been revised accordingly.

TECHNICAL AREA 00

NMED Comment

5. ***Section 5.3.3, Nature and Extent of Contamination, Page 21:*** *At SWMU 00-017, the Permittees concluded that nature of extent of contamination was defined for all inorganic, organic, and radionuclide COPCs except lead. The Permittees should also note that only a limited portion of 39,000 feet of the underground waste lines that comprise SWMU 00-017 was characterized during these investigations. The rest of the waste lines which are outside the scope of ULACAA will be addressed under other aggregate areas, and the corrective action decision will be deferred until entire SWMU has been characterized.*

LANL Response

5. The text of section 5.3.3 has been revised to clarify that the nature and extent discussion does not address the entire underground acid/industrial waste line system and that portions of that system are addressed under other aggregate areas. The added text includes references to the historical investigation report and investigation work plan where the details are discussed.

NMED Comment

6. ***Appendix F, Section-F-2.2.1, Inorganic Chemicals at AOC 00-031(a), Page F-8:*** *Selenium was identified as a COPC but was not included in Tables G-2.2-2 and G-4.2-2. Revise the Report accordingly.*

LANL Response

6. Selenium has been added to Tables G-2.2-2 and G-4.2-2. There is no change to the risk-screening result.

NMED Comment

7. ***Appendix F, Section-F-2.2.5.2, Nature and Extent of Organic COPCs, Page F-9:*** *The text indicates that six organic chemicals including 1,2,4-trimethylbenzene were detected at location 00-604729 at AOC 00-031(a). Neither the Figure 5.4-2 nor Table 5.4-3 indicate that 1,2,4-trimethylbenzene was detected at this location. Resolve the discrepancy and revise the Report accordingly.*

LANL Response

7. Figure 5.4-2 and Table 5.4-3 have been revised to include concentrations of 1,2,4-trimethylbenzene at locations 00-604727 and 00-604729 that were inadvertently omitted.

NMED Comment

8. ***Appendix G:*** *There are some discrepancies in the data provided for SWMU 00-031(a). The ProUCL files for the 0-5 foot (ft) below ground surface (bgs) and 0-10 ft bgs present the same data. However, the data presented in these files are not the same as the data provided in Figure 5.4-2 or summarized in Table 5.4-3. For example, the concentration for pentachlorophenol listed in both of the ProUCL spreadsheets for both soil intervals is 1.9 milligrams per kilogram (mg/kg); the maximum detected concentration for pentachlorophenol provided in the report is 0.49 mg/kg (J flag). As Section 2.3.1 of the report indicates that no previous sampling was conducted at SWMU 00-031(a), it is not clear from where the data provided in the ProUCL files were obtained. If the data in ProUCL represent detection limits but there were no positive detects, the data should not be included in the spreadsheets. The Permittees must resolve these discrepancies and revise the Report accordingly.*

LANL Response

8. The concentration of pentachlorophenol listed in Table 5.4-3 and shown in Figure 5.4-2 is the single detected concentration at SWMU 00-031(a) from a sample collected at a depth of 14.0–15.0 ft below ground surface (bgs). Given the depth of the sample, it is not included in either the 0–5 ft or 0–10 ft ProUCL calculations for SWMU 00-031(a). Because there was a positive detect at the site, pentachlorophenol was originally identified as a COPC, and ProUCL input files were generated, although the detected concentration was not included because of its depth. Pentachlorophenol has been deleted from the ProUCL files in Attachment G-1.

TECHNICAL AREA 01

NMED Comment

9. ***Section 6.4, Site Contamination-SWMU 01-001(b), Page 26:*** *The results of three samples collected during previous investigations conducted in 1992 (i.e., locations 01-01162, 01-01168, and 01-01174) were not included in the screening evaluations. Several inorganic and organic chemicals were detected at the site and these results were reported in the IWP. The results from previous investigations must be included in the Report or an explanation must be provided for excluding these results.*

LANL Response

9. After the investigation work plan was submitted and approved, data evaluations determined that a number of samples were no longer of decision-level quality. See response to General Comment 9.

NMED Comment

10. Section 6.5, Site Contamination-SWMU 01-001(c), Page 27: *The approved IWP proposed to collect thirteen samples from six locations (see figure 4.4-2). The text indicates that a total of eleven samples were collected from five locations at SWMU 01-001(c). The Permittees did not include an explanation for the deviation in Section B-8.0 (Appendix B, Deviations from Work Plan), as required by the Section XI.C.7 of the Consent Order. Two additional samples that were proposed to be collected from location 2 were not collected. Additionally, analytical results for three samples collected during previous investigations were not included in the Report. Revise the Report to include previous sampling results or provide an explanation for not including these results and also for not following the approved IWP.*

LANL Response

10. Refusal was met at a depth of 7.0 ft bgs at location 2, and this location is not accessible by drill rig or backhoe. The location was abandoned and no alternate location was available because of the requirement to sample beneath the former pipe location. Appendix B has been revised to include this deviation. Previous data were not included in the investigation report because the data did not meet current data-quality standards (see response to General Comment 9).

NMED Comment

11. Table 6.15-1, Samples Collected and Analyses Requested at SWMU 01-003(a), Page 352: *In response to NOD Comment #9, the Permittees indicated that at locations 00-603918 and 00-603919, samples would be collected from the surface and then every five feet (or less) until the fill/tuff interface was reached. However, at location 00-603918 both the samples were collected from fill. The Permittees must explain why fill/tuff interface was not sampled to investigate the vertical extent of contamination, in the revised Report.*

LANL Response

11. Refusal was met at 4.25 ft bgs, the end depth of sample RE00-08-16408 at location 00-603918, because the site is covered with large pieces of reinforced concrete. Furthermore, this location is not accessible by drill rig or backhoe; therefore, a tuff sample could not be collected at this location. Text has been added to Appendix B to explain this deviation.

NMED Comment

12. Appendix F, Section-F-3.1.5.4, Summary of Nature and Extent at SWMU 01-001(a), Page F-14: *As the title of the section indicates the discussion included in this section is for SWMU 01-001(a), not AOC 00-031(a). The Permittee must correct the typographical error and replace AOC 00-031(a) with SWMU 01-001(a) in the revised Report.*

LANL Response

12. The text in section F-3.1.5.4 has been revised to correct the error.

NMED Comment

13. Appendix F, Section-F-3.7.5, Summary of Nature and Extent at SWMU 01-001(g), Page F-35: *The Permittees conclude that the lateral and vertical extent of chromium is defined. The review of data indicates that lateral extent of chromium is defined but the vertical extent is not. At four of the five locations sampled detected chromium concentrations increased with depth. Similarly, the concentrations of nickel increased with depth at three of the five locations. The vertical extent of chromium and nickel is therefore not defined. The Permittees must propose additional samples to define the vertical extent of chromium and nickel contamination in the Phase II work plan.*

LANL Response

13. The text in section F-3.7.5 has been revised to indicate that vertical extent is not defined for chromium and nickel. Additional sampling to define the vertical extent of chromium and nickel is recommended in section 12.1.2 and will be proposed in the Phase II investigation work plan.

NMED Comment

14. Appendix F, Section-F-3.11.1.1, Inorganic Chemicals at SWMU 01-001(u), Page F-49: *The review of data provided in Section F-3.11 as well as Table 6.13-2 indicates that copper is a COPC and was retained as a COPC; however, copper is not included in the risk evaluations provided in Appendix G (see Tables G-2.2-12 and G-4.2-26). The Permittees must include copper in the screening evaluations and revise the Report accordingly.*

LANL Response

14. Copper was added to the screening evaluations for SWMU 01-001(u) and included in the text and in Tables G-2.2-12, G-4.2-34, G-5.4-10, G-5.4-11, and G-5.5-4 in Appendix G.

NMED Comment

15. Appendix F, Section-F-3.17.1.2, Inorganic Chemicals in Tuff, Page F-74: *Arsenic was detected above the BV in four out of ten samples collected at SWMU 01-006(a). The Permittees did not retain arsenic as a COPC because the detected concentrations were either less than or slightly above the maximum background concentration. The Permittees must conduct a statistical comparison of the detected arsenic concentrations to the background data set to determine if arsenic must be retained as a COPC (see Comment #1) in the revised Report.*

LANL Response

15. Statistical tests were performed for arsenic in tuff and showed the sampling results are statistically different than background. Arsenic is identified as a COPC in tuff. The text in section F-3.17.1.2 has been revised, and the nature and extent of arsenic are discussed in section F-3.17.5.1.

NMED Comment

16. Appendix F, Section-F-3.18.5.3, Nature and Extent of Radionuclide COPCs, Page F-82: *The Permittees state that the vertical extent for plutonium-239/240 is defined, but the lateral extent is not defined for SWMU 01-006(b). It is apparent from the review of the data that the concentrations of plutonium 239/240 decrease with depth, but the detected concentrations in deepest samples are high enough to warrant additional sampling to define the vertical extent of contamination. Plutonium-239/240 was detected at 113 mg/kg at location 00-604225 (1-2 ft) and at 40.3 mg/kg at location 00-60437 (4-5 ft). The Permittees must propose to collect additional samples at SWMU 01-006(b) to define the vertical and lateral extent of contamination in the Phase II work plan.*

LANL Response

16. The text of sections F-3.18.5.3 and F-3.18.5.4 has been revised to indicate the lateral and vertical extent of americium-241 and plutonium-239/240 are not defined. Additional sampling to define the extent of americium-241 and plutonium-239/240 is recommended in section 12.1.2 and will be proposed in the Phase II investigation work plan.

NMED Comment

17. Appendix F, Section-F-3.19.5.4, Summary of Nature and Extent at SWMU 01-006(c), Page F-85: *Two samples from one sampling location were collected at SWMU 01-006(c) during 2008-2009 investigations. There are no data available for the site from previous investigations. The Permittees state that lateral extent is defined for all inorganic and radionuclide COPCs except chromium, nickel and plutonium-239/240. The lateral extent of contamination cannot be determined from the results of one sampling location. The Permittees must revise the statement and propose to collect additional samples to define the vertical and lateral extent of contamination in the Phase II work plan.*

LANL Response

17. Because the area of SWMU 01-006(c) was excavated along the drainlines during the 1974–1976 Ahlquist survey and the two drainlines on the southeast side of the building were never found, the lateral extent was proposed to be defined by the hillside locations. Additional sampling to define the lateral and vertical extent of chromium and nickel and the vertical extent of organic COPCs and plutonium-239/240 is recommended in section 12.1.2 and will be proposed in the Phase II investigation work plan.

NMED Comment

18. Appendix F, Section-F-3.21.5.1, Nature and Extent of Inorganic COPCs, Page F-89: *Concentrations of barium, chromium, and nickel increase with depth at two of the three sampling locations at AOC 01-006(e). The Permittees state that the vertical extent is defined for these metals because concentrations are only slightly above the BV or are below two times the BV. As stated in the General Comment # 1, NMED does not consider this approach acceptable. The Permittees must propose to collect additional samples to define the vertical extent of contamination in the Phase II work plan.*

LANL Response

18. The text in section F-3.21.5.1 has been revised to indicate the vertical extent of barium, chromium, and nickel is not defined. Additional sampling to define the vertical extent of barium, chromium, and nickel is recommended in section 12.1.2 and will be proposed in the Phase II investigation work plan.

NMED Comment

19. Appendix F, Section-F-3.26.5.2, Nature and Extent of Organic COPCs, Page F-104: *The Permittees state that at SWMU 01-007(a) the concentration of Aroclor-1260 decreases with depth at all locations where it was detected. Aroclor-1260 concentration does not decrease with depth at all locations since it increases with depth at location 00-604239. The Permittees must revise the statement in the Report.*

LANL Response

19. The deepest sample (RE00-09-241) at location 00-604239 is at 13.5–15.0 ft bgs (Table 6.28-1); Aroclor-1260 was not detected in this sample; therefore, concentrations of Aroclor-1260 decrease with depth at this location and extent is defined. No revision to the report is necessary.

NMED Comment

20. Appendix F, Section-F-3.28.5.1, Nature and Extent of Inorganic COPCs, Page F-111: *The Permittees state that lateral and vertical extent for chromium and nickel is defined at SWMU 01-007(c). At all four locations sampled, the concentration of nickel and chromium increased with depth. Comparing detected concentrations to twice the maximum BV to define the extent is not acceptable. The Permittees must propose further investigations to define the extent of contamination at the site in the Phase II work plan.*

LANL Response

20. The text in section F-3.28.5.1 has been revised to indicate the extent of contamination is not defined for chromium and nickel. Additional sampling to define the lateral and vertical extent of chromium and nickel is recommended in section 12.1.2 and will be proposed in the Phase II investigation work plan.

NMED Comment

21. Appendix G, Table G-4.2-3, Recreational Carcinogenic Screening for SWMU 01-001(b), Page G-131: *2.57E+05 mg/kg is listed as a recreational SSL for chromium in Table G-4.2-3. Table 3.1-1 lists a value of 14,300 mg/kg for chromium recreational SSL. Resolve the discrepancy and revise the tables and the screening evaluation accordingly in the Report.*

LANL Response

21. The recreational SSL for total chromium listed in Table 3.1-1 is 14,300 mg/kg (LANL 2007, 094496) and is a noncarcinogenic value. The screening value presented in Table G-4.2-5 (formerly Table G-4.2-3) has been deleted, and chromium has been added to Table G-4.2-6.

NMED Comment

22. Table G-4.2-4, Recreational Noncarcinogenic Screening for SWMU 01-001(b), Page G-132: *The exposure point concentrations (EPCs) listed under the second column for the recreational scenario are incorrect. For example, EPC listed in Table G-2.2-3 for cadmium is 1.94 mg/kg, but Table G-4.2-4 lists it at 3.13 mg/kg. Bromomethane and isopropyltoluene[4-] were not retained as COPCs in Table G-2.2-3, but are included in Table G-4.2-4. Further the values listed as recreational SSLs are different than the SSLs listed in Table 3.1-1. Resolve the discrepancies and revise the screening evaluation using correct EPCs and SSLs in the Report.*

LANL Response

22. The exposure point concentrations (EPCs) and SSLs have been corrected, and bromomethane and isopropyltoluene[4-] have been removed from Table G-4.2-6 (formerly Table G-4.2-4). The HQs and HIs have been recalculated using the corrected information.

NMED Comment

23. Table G-4.2-7, Residential Noncarcinogenic Screening for SWMU 01-001(b), Page G-133: *The footnote 'b' indicates that SSL for isopropylbenzene was used as a surrogate for isopropyltoluene[4-]. According to Table 3.1-1, the SSL for isopropylbenzene is 271 mg/kg under residential scenario, not 389 mg/kg as listed in the Table G-4.2-7. The Permittees must revise the risk assessment using correct SSL value in the Report.*

LANL Response

23. The residential SSL for isopropylbenzene (271 mg/kg) has been included in Table G-4.2-9 (formerly Table G-4.2-7) and the HQ for isopropyltoluene[4-] has been recalculated.

NMED Comment

24. Table G-4.2-15, Construction Worker Carcinogenic Screening for SWMU 01-001(c), Page G-136: *Arsenic was retained as a COPC and an associated exposure point concentration was calculated (see Table G-2.2-8). The Permittees did not include arsenic in the screening evaluation. The Permittee must revise the table to include arsenic in the screening evaluation in the Report.*

LANL Response

24. The NMED construction worker SSL for arsenic is a noncarcinogenic value (NMED 2006, 092513). Therefore, arsenic is not included in Table G-4.2-19 (formerly Table G-4.2-15) for this scenario. Arsenic is included in Table G-4.2-20, Construction Worker Noncarcinogenic Screening Evaluation for SWMU 01-001(c). No revision to the tables is necessary.

NMED Comment

25. Table G-4.2-21, Residential Noncarcinogenic Screening Evaluation for SWMU 01-001(e), Page G-138: *5,000 mg/kg is listed as a screening value for toluene under a residential scenario. However, Table 3.1-1 lists 252 mg/kg as a screening value for toluene for a residential scenario. Similar discrepancies were noted in risk assessments conducted for other sites where toluene was*

identified as a COPC. The Permittees must resolve the discrepancy and revise the risk assessments for all relevant SWMUs and AOCs in the Report.

LANL Response

25. The SSLs presented for toluene and other VOCs in Table 3.1-1 are the soil saturation limits presented in NMED guidance in Appendix A, Table A-1 (NMED 2006, 092513), and are not risk-based values. The SSLs presented in Table G-4.2-26 (formerly Table G-4.2-21) and other tables in the risk appendix are the risk-based values obtained from the EPA regional screening table (recreational SSLs are from LANL guidance [LANL 2009, 094496]) and are used to calculate HQs and HIs. Notes have been added to Table 3.1-1 and the relevant screening tables in Appendix G, and text has been added to section G-4.1 to clarify.

NMED Comment

26. Table G-4.2-26, Residential Noncarcinogenic Screening Evaluation for SWMU 01-001(u), Page G-139: *The residential screening value listed for trichloroflouromethane is 800 mg/kg. However, Table 3.1-1 lists 588 mg/kg as a screening value for trichloroflouromethane under a residential scenario. The Permittees must resolve the discrepancy and revise the Report accordingly.*

LANL Response

26. The residential SSL for trichlorofluoromethane is 588 mg/kg. This value has been added to Table G-4.2-34 (formerly Table G-4.2-26) and the HQ has been recalculated.

NMED Comment

27. Table G-4.2-28, Residential Noncarcinogenic Screening Evaluation for SWMU 01-002, Page G-141: *The residential screening value listed for butylbenzene[n-], butylbenzene[sec-], styrene, toluene, and xylene (total) are different than the values listed in Table 3.1-1. The Permittees must resolve the discrepancies and revise the risk screening evaluations accordingly in the Report.*

LANL Response

27. The SSLs for butylbenzene[n-], butylbenzene[sec-], styrene, toluene, and xylene (total) presented in Table 3.1-1 are the soil saturation limits presented in NMED guidance in Appendix A, Table A-1 (NMED 2006, 092513), and are not risk-based values. The SSLs presented in Table G-4.2-38 (formerly Table G-4.2-28) are the risk-based values obtained from the EPA regional screening table and are used to calculate HQs and HIs. Notes have been added to Tables 3.1-1 and G-4.2-38, and text has been added to section G-4.1 to clarify.

NMED Comment

28. Table G-4.2-31, Industrial Noncarcinogenic Screening Evaluation for SWMU 01-003(e), Page G-143: *The industrial SSLs used for the screening evaluation for certain chemicals are different than those listed in Table 3.1-1. For example, the values used for butylebenzene[sec-] is 450 mg/kg, but Table 3.1-1 lists it at 60.6 mg/kg. Similar discrepancies were noted for propylbenzene[1-], isopropyltoluene[4-], styrene, toluene and trimethylbenzene[1,3,5-]. The Permittees must resolve these discrepancies and revise the risk screening evaluations in the Report.*

LANL Response

28. The SSLs for butanone[2-], butylbenzene[sec-], propylbenzene[1-], styrene, toluene, and trimethylbenzene[1,3,5-] presented in Table 3.1-1 are the soil saturation limits presented in NMED guidance in Appendix A, Table A-1 (NMED 2006, 092513), and are not risk-based values. The SSLs presented in Table G-4.2-43 (formerly Table G-4.2-31) are the risk-based values obtained from the EPA regional screening table and are used to calculate HQs and HIs. Notes have been added to Tables 3.1-1 and G-4.2-43, and text has been added to section G-4.1 to clarify.

NMED Comment

29. Table G-4.2-33, Recreational Carcinogenic Screening Evaluation for SWMU 01-003(e), Page G-144: *The screening values listed for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoroanthene, and chrysene for a recreational scenario are incorrect. The values do not match the values listed in Table 3.1-1. The Permittees must resolve these discrepancies and revise the Report accordingly.*

LANL Response

29. The construction worker SSLs were inadvertently inserted into the table. The values in Table G-4.2-45 (formerly Table G-4.2-33) have been replaced with the recreational SSLs, and the HQs and HIs have been recalculated.

NMED Comment

30. Table G-4.2-34, Recreational Noncarcinogenic Screening Evaluation for SWMU 01-003(e), Page G-145: *The recreational screening value listed for toluene is 54,100 mg/kg for a residential scenario, However, Table 3.1-1 lists 252 mg/kg as a screening value for toluene for a recreational scenario. Similar discrepancies were noted for butanone[2-], butylbenzene[sec-], propylbenzene[1-], styrene, and trimethylbenzene[1,3,5-]. The Permittees must resolve discrepancies such as these throughout the Report and revise the Report accordingly.*

LANL Response

30. The SSLs for butanone[2-], butylbenzene[sec-], propylbenzene[1-], styrene, toluene, and trimethylbenzene[1,3,5-] presented in Table 3.1-1 are the soil saturation limits presented in NMED guidance in Appendix A, Table A-1 (NMED 2006, 092513), and are not risk-based values. The SSLs for butylbenzene[sec-], propylbenzene[1-], styrene, toluene, and trimethylbenzene[1,3,5-] presented in Table G-4.2-46 (formerly Table G-4.2-34) are the risk-based values obtained from Laboratory guidance (LANL 2009, 094496) and are used to calculate the HQs and HIs. The SSL for butanone[2-] is the maximum or ceiling limit from NMED (2006, 092513). Notes have been added to Tables 3.1-1 and G-4.2-46, and text has been added to section G-4.1 to clarify.

NMED Comment

31. Table G-4.2-37, Residential Noncarcinogenic Screening Evaluation for SWMU 01-003(e), Page G-147: *The residential screening values listed for beryllium, butylbenzene[sec-], propylbenzene[1-], styrene, and toluene are incorrect. The Permittees must compare these values with those listed in Table 3.1-1 and make appropriate revisions to the Report.*

LANL Response

31. An incorrect value was presented for beryllium in Table G-4.2-49 (formerly Table G-4.2-37). This value has been replaced with the residential SSL (156 mg/kg) for beryllium and the HQ has been recalculated. The SSLs for butylbenzene[sec-], propylbenzene[1-], styrene, and toluene presented in Table 3.1-1 are the soil saturation limits presented in NMED guidance in Appendix A, Table A-1 (NMED 2006, 092513), and are not risk-based values. The SSLs for butylbenzene[sec-], propylbenzene[1-], styrene, toluene, and trimethylbenzene[1,3,5-] presented in Table G-4.2-49 are the risk-based values obtained from EPA and are used to calculate HQs and the HIs. Notes have been added to Tables 3.1-1 and G-4.2-49, and text has been added to section G-4.1 to clarify.

NMED Comment

32. Table G-4.2-55, Residential Noncarcinogenic Screening Evaluation for SWMU 01-007(c), Page G-153: *The residential screening values listed for butylbenzene[n-], butylbenzene[sec-], isopropyltoluene[4-], styrene, and toluene are incorrect. The Permittees must compare these values with the value listed in Table 3.1-1 and make appropriate revisions to the Report.*

LANL Response

32. Risk screening text and tables for SWMU 01-007(c) have been deleted because extent is not defined for some COPCs. Risk screening will be conducted for SWMU 01-007(c) following Phase II sampling to define the extent of contamination.

TECHNICAL AREA 03

NMED Comment

33. Appendix F, Section-F-4.2.5.1, Nature and Extent of Inorganic COPCs, Page F-124: *The data indicates that the vertical extent of inorganic chemicals is not defined at SWMUs 03-038(a) and 03-038(b). At most of the locations, the highest detected concentrations were in the deepest samples. For example, the highest detected concentrations for barium, calcium, chromium, copper, lead, and nickel were from deepest sample collected at location 00-604258. The Permittees must conduct further investigations to define the vertical extent of contamination at the site and propose additional samples in the Phase II work plan.*

LANL Response

33. The text of section F-4.2.5.1 has been revised to indicate the vertical extent of contamination is not defined for some inorganic chemicals. Additional sampling to define the vertical extent of contamination for target analyte list metals is recommended in section 12.1.2 and will be proposed in the Phase II investigation work plan.

NMED Comment

34. Appendix F, Section-F-4.3.5.1, Nature and Extent of Inorganic COPCs, Page F-127: *The review of data indicates that the vertical extent of zinc is not defined at SWMU 03-055(c). At most of the locations where samples were collected from more than one depth, the detected concentrations of zinc increased with depth. The Permittees must conduct further investigations to define the vertical extent of contamination and propose additional samples in the Phase II work plan.*

LANL Response

34. The text of section F-4.3.5.1 has been revised to indicate the vertical extent of zinc is not defined. Additional sampling to define the vertical extent of zinc is recommended in section 12.1.2 and will be proposed in the Phase II investigation work plan.

NMED Comment

35. Table G-4.2-74, Recreational Carcinogenic Screening Evaluation for SWMU 03-055(c), Page G-160: *The recreational screening values listed for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoroanthene and chrysene for a recreational scenario are incorrect. The values differ from the values listed in Table 3.1-1. The Permittees must resolve the discrepancies and make appropriate revisions to the Report.*

LANL Response

35. The risk-screening text and tables for SWMU 03-055(c) have been deleted because extent is not defined for some COPCs. Risk screening will be conducted for SWMU 03-055(c) following Phase II sampling to define the extent of contamination.

NMED Comment

36. Table G-4.2-75, Recreational Noncarcinogenic Screening Evaluation for SWMU 03-055(c), Page G-160: *The Permittees must provide a source for the screening value listed for methylnaphthalene[2-] in the Table G-4.2-75. Further, Table G-4.2-75 lists a screening value of 15.8 mg/kg for Aroclor-1260. The value for Aroclor-1260, under a recreational scenario, is listed at 10.5 mg/kg in Table 3.1-1. The Permittees must resolve the discrepancy and revise the Report accordingly.*

LANL Response

36. Risk screening text and tables for SWMU 03-055(c) have been deleted because extent is not defined for some COPCs. Risk screening will be conducted for SWMU 03-055(c) following Phase II sampling to define the extent of contamination.

NMED Comment

37. Table G-4.2-77, Residential Carcinogenic Screening Evaluation for SWMU 03-055(c), Page G-161: *The screening value reported for ethylbenzene is 57 mg/kg in Table G-4.2-77 and 128 mg/kg in Table 3.1-1. Resolve the discrepancy and revise the Report accordingly.*

LANL Response

37. Risk screening text and tables for SWMU 03-055(c) have been deleted because extent is not defined for some COPCs. Risk screening will be conducted for SWMU 03-055(c) following Phase II sampling to define the extent of contamination.

NMED Comment

38. Table G-4.2-78, Residential Noncarcinogenic Screening Evaluation for SWMU 03-055(c), Page G-162: *The screening values reported for benzoic acid, toluene, xylene[1,2-], and xylene[1,3-]+xylene[1,4-] in Table G-4.2-77 and Table 3.1-1 are different. Resolve the discrepancies and revise the Report accordingly.*

LANL Response

38. Risk screening text and tables for SWMU 03-055(c) have been deleted because extent is not defined for some COPCs. Risk screening will be conducted for SWMU 03-055(c) following Phase II sampling to define the extent of contamination.

TECHNICAL AREA 32 (These comments were included in the TA-32 NOD)

NMED Comment

39. Table 8.4-2, Inorganic Chemicals above BVs at SWMU 32-002(a), Page 419: *Table 8.4-2 indicates that magnesium was detected at a concentration of 830 mg/kg at sample location 32-06353. Review of the data indicates that it was manganese not magnesium that was detected at 830 mg/kg at location 32-06353. Revise the Report accordingly.*

LANL Response

39. Table 8.4-2 has been revised to include a column for manganese showing a concentration of 830 mg/kg at location 32-06353.

NMED Comment

40. Section F-5.1.1, Inorganic Chemicals at SWMU 32-001, Page F-128: *Lead, manganese and sodium were detected above their respective background values but were not identified as COPCs because the detected values were less than the maximum background concentrations. It is not appropriate to compare site specific concentrations with maximum background concentrations to identify COPCs. The Permittees must conduct a statistical comparison of site data to background data to evaluate COPCs. Cadmium must also be evaluated in a similar manner in the revise Report.*

LANL Response

40. Statistical comparisons cannot be conducted for all sites because a minimum number of samples per medium needs to be available to perform the tests. Based on input from statisticians and with agreement from NMED (personal communication between Paige Walton and Rich Mirenda, July 22, 2009), the minimum number of samples to conduct statistical comparisons is 10 per medium evaluated. The number of samples per medium at SWMU 32-001 is less than 10 (six soil/fill and six tuff). Therefore, statistical comparisons cannot be conducted, and comparisons to the maximum background concentrations for cadmium, lead, manganese, and sodium are appropriate. No revision to the report is necessary.

NMED Comment

41. Appendix F, Section-F-5.1.2, Organic Chemicals at SWMU 32-001, Page F-130: *Dioxin and furan congeners were detected at most of the sites within the former TA-32. However, these constituents were excluded from further assessment based on the rationale that the levels are similar to levels at other locations within the LANL boundary (specifically TA-21). However, a qualitative comparison to other areas is not sufficient justification for exclusion from further analysis. The Permittees must provide additional lines of evidence (to include quantitative evaluations, statistical analyses, and site history) to support the conclusion that the detected levels at the former TA-32 are representative of anthropogenic levels. Either provide sufficient lines of evidence to support exclusion of dioxins/furans or revise the risk evaluations contained in Appendix G to include these constituents. In addition, when presenting data for dioxin/furan/polychlorinated biphenyl congeners, a table showing the derivation of the toxicity equivalent concentration (or TEQ) should always be provided. The Permittees also must revise the Report to include a table showing the determination of the dioxin/furan TEQs.*

LANL Response

41. The risk evaluations in Appendix G have been revised to include dioxin and furan congeners. Tables showing the determination of the toxicity equivalent concentrations have been added to Appendix G.

NMED Comment

42. Appendix F, Section-5.1.2.1, Organic Chemicals in Soil and Fill, Page F-130: *Aroclor-1260, cis-1,2-dichloroethene, tetrachloroethene, and trichloroethene are identified as COPCs for soil and fill at SWMU 32-001. However, none of the risk evaluations contained in Appendix G include these constituents. The Permittees must revise the risk evaluations for SWMU 32-001 in the Report to include all identified COPCs.*

LANL Response

42. Dichloroethene[cis-1,2-] and trichloroethene have been added to Tables G-2.2-28 and 4.2-87, and 4.2-86, respectively, as industrial COPCs (0–5 ft bgs). Aroclor-1260, cis-1,2-dichloroethene, tetrachloroethene, and trichloroethene have been added to Tables G-2.2-29 and G-4.2-89, G-4.2-90, G-4.2-92, and G-4.2-93, as appropriate, as construction worker and residential COPCs (0–10 ft bgs). All four organic chemicals were also added to Table G-5.4-33 for the ecological risk analysis.

NMED Comment

43. Section F-5.2.5.1, Nature and Extent of Inorganic COPCs, Page F-136-137: *At SWMU 32-002(a), concentrations of barium increased with depth at several locations indicating that the vertical extent of barium is not defined. Concentrations of chromium and nickel increased with depth at most of the locations where samples were collected from two depths. The vertical extent of chromium and nickel also is not defined. Selenium was detected in four not two samples at the site as reported. Zinc was detected at concentrations above background in more than the one sample reported. The Permittees must revise the Report accordingly.*

LANL Response

43. The text of section F-5.2.5.1 has been revised to correct the discrepancies and to indicate vertical extent is not defined for some inorganic chemicals. Additional sampling to define the vertical extent of metals is recommended in section 12.1.2 and will be proposed in the Phase II investigation work plan.

NMED Comment

44. Section F-5.3.1, Inorganic Chemicals at SWMU 32-002(b), Page F-138: *Cadmium was detected at concentrations exceeding the background value and must be retained as a COPC. Similarly, calcium must be retained as a COPC and carried forward in the screening assessment. The Permittees must revise the Report accordingly.*

LANL Response

44. Cadmium was detected above the soil background values (BVs), but because less than 10 soil samples were collected at this site (total of 9 soil samples were collected), a statistical comparison cannot be conducted. Therefore, cadmium is eliminated as a COPC based on the comparisons to the maximum soil background concentration (see General Comment 1). Calcium was detected above the tuff BV in two samples. Because more than 10 tuff samples were collected at this site, a statistical comparison was conducted for calcium. The statistical tests indicate calcium concentrations are not significantly different than background and calcium is not identified as a COPC. Section F-5.3.1 has been revised to include this information.

NMED Comment

45. Section F-5.3.5.2, Nature and Extent of Organic COPCs, Page F-143: *A typographical error was noted on page 143. Methylene chloride was detected at locations 00-603594 and 00-603599, not 00-603948 and 00-603599 at SWMU 32-002(b). Revise the Report accordingly.*

LANL Response

45. The text of section F-5.3.5.2 has been revised to correct the error.

NMED Comment

46. Attachment G-1 ProUCL Input Files for TA-32: *Several discrepancies were noted between the input files provided in Attachment G-1 and the TA-32 data tables provided in the main text of the report. Specifically, the Permittees must address the following in the revised Report:*

- *SWMU 32-001, inorganics at 0-1 foot (ft) below ground surface (bgs): Table 8.3-2 lists positive detections for manganese above the background soil level and detection limits above the background soil levels for cadmium; however, neither cadmium nor manganese are retained as potential COPCs and thus are excluded from the exposure point calculations and subsequent risk analysis. It is noted that Appendix F-5.1.1.1 indicates that because the detections (and elevated non-detects) are below the maximum detected background concentration, cadmium does not need to be retained as a constituent of potential concern. However, comparison to a maximum background datum will not show slightly elevated levels across a site; a statistical comparison of site concentrations to the background population must be conducted. The Permittees must either provide additional discussion to justify*

excluding cadmium and manganese from additional review or include cadmium and manganese in the risk analysis. This comment also applies to the determination of the exposure point concentrations (EPCs) for SWMU 32-001 inorganics at 0-5 ft bgs and 0-10 ft bgs.

- *SWMU 32-001, organics at 0-1 ft bgs: Table 8.3-3 shows positive detections for several constituents including trichloroethene, tetrachloroethene, several dioxin and furan congeners, and Aroclor-1260. However, none of these constituents are retained for the risk analysis and determination of EPCs. Sufficient justification has not been provided to demonstrate that these constituents are not potentially site related, and as such, must be retained for risk analysis. The Permittees must revise the EPCs for SWMU 32-001 to include these constituents. In addition, the Permittees must address polychlorinated biphenyls (PCBs) detected at this site and revise the EPCs to include PCBs. This comment also applies to the determination of the EPCs for SWMU 32-001 in organics at 0-5 ft bgs and 0-10 ft bgs.*

- *SWMU 32-004, inorganics at 0-1 foot (ft) bgs: Table 8.7-2 shows positive detections for cadmium above the background soil levels; however, cadmium is not retained as potential contaminant of concern and thus is excluded from the exposure point calculations and subsequent risk analysis. While it is noted that the concentrations do not appear to be significantly elevated when compared to background, they are still elevated. The Permittees must either provide additional discussion to justify excluding cadmium from additional review or include cadmium in the risk analysis. This comment also applies to the determination of the EPCs for SWMU 32-001, inorganics at 0-5 ft bgs and at 0-10 ft bgs.*

LANL Response

46. See response to General Comment 1. Cadmium DLs and the one detected concentration of manganese are above soil BVs but below the maximum soil background concentrations. Because less than 10 soil samples were collected at SWMU 32-001 (six soil/fill samples were collected) statistical comparisons cannot be conducted for these inorganic chemicals. The same is true for all other inorganic chemicals in soil and tuff at SWMU 32-001. Therefore, the comparisons to background for cadmium and manganese are appropriate and no revisions are necessary.

    The organic chemicals listed were added to the COPCs for SWMU 32-001. The text in sections F-5.1.2.1 and F-5.1.2.2 has been revised to include those COPCs. Section F-5.1.5.2 has been revised to include the additional COPCs in the discussion of nature and extent. EPCs were calculated and risk was reevaluated to include the additional COPCs.

    See response to General Comment 1. Because less than 10 soil samples were collected at SWMU 32-004 (eight soil samples were collected), statistical comparisons cannot be conducted for cadmium. The same is true for all other inorganic chemicals in soil and tuff at AOC 32-004. Therefore, the comparison to background for inorganic chemicals in soil and tuff is appropriate and no revisions to the text are necessary.

TECHNICAL AREA 41

NMED Comment

47. Section F-6.1.1.1, Inorganic Chemicals in Tuff, Page F-150: *Aluminum was detected at concentrations above the BV in 4 of 26 tuff samples, not 2 of 26 tuff samples at SWMU 41-001. The Permittees have repeatedly used twice the maximum background concentration for comparison*

purposes to identify COPCs, which is inappropriate. See General Comment #1. The Permittees must identify COPCs based on statistical comparison of site data with the background data in the revised Report.

LANL Response

47. Number of detections has been corrected to 4 of 26 tuff samples for aluminum. Data review sections, including section F-6.1.1.1, have been revised to incorporate descriptions and results of statistical tests where the number of samples is sufficient (see response to General Comment 1). Lists of COPCs and risk evaluations have been revised as necessary.

NMED Comment

48. Table G-4.2-100, Recreational Carcinogenic Screening Evaluation for SWMU 41-001, Page G-173: *The recreational screening values listed for benzo(b)fluoranthene, benzo(k)fluoroanthene, and chrysene are different from those listed in Table 3.1-1. Resolve the discrepancies and revise the risk evaluation in the Report.*

LANL Response

48. The construction worker SSLs were inadvertently inserted into Table G-4.2-110 (formerly Table G-4.2-100). These values have been replaced by the recreational SSLs and the HQs and HIs have been recalculated.

TECHNICAL AREA 43

NMED Comment

49. Section F-7.2.5.1, Nature and Extent of Inorganic COPCs, Page F-163: *Review of the data indicates that lateral extent is not defined for copper, chromium, and zinc at AOC C-43-001. The detected concentrations were in general higher in samples collected from the two downslope locations (i.e., 00-604846 and 00-604847). The Permittees must conduct further investigations to define the lateral extent of contamination for copper, chromium, zinc, as well as lead and propose additional samples in the Phase II work plan.*

LANL Response

49. The text in section F-7.2.5.1 has been revised to indicate the lateral extent of contamination is not defined for copper, chromium, and zinc as well as lead. Additional sampling to define extent of these COPCs is recommended in section 12.1.2 and will be proposed in the Phase II investigation work plan.

NMED Comment

50. Table G-4.2-106, Recreational Carcinogenic Screening Evaluation for AOC 43-001(b2), Page G-176: *The screening values listed for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoroanthene, butylbenzylphthalate, methylene chloride, and chrysene for a recreational scenario are inconsistent. The values are different than the values listed in Table 3.1-1. The Permittees must resolve the discrepancies and revise the risk evaluation in the Report.*

LANL Response

50. The construction worker SSLs for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and chrysene were inadvertently inserted into the table. These values have been replaced by the recreational SSLs and the HQs and HIs have been recalculated. The SSL for butylbenzylphthalate in Table G-4.2-117 (formerly Table G-4.2-106) is correct. However, the value in Table 3.1-1 is not correct and has been revised to agree with Table G-4.2-117. The SSL for methylene chloride presented in Table 3.1-1 is the soil saturation limit presented in NMED guidance in Appendix A, Table A-1 (NMED 2006, 092513), and is not a risk-based value. The SSL presented in Table G-4.2-117 is the risk-based value obtained from EPA and used to calculate the excess cancer risk. Notes have been added to Tables 3.1-1 and G-4.2-117, and text has been added to section G-4.1 to clarify.

NMED Comment

51. Table G-4.2-107, Recreational Noncarcinogenic Screening Evaluation for AOC 43-001(b2), Page G-177: *The screening values listed for Aroclor-1260 and styrene for a recreational scenario are inconsistent. The values are different from the values listed in Table 3.1-1. The Permittees must resolve the discrepancies and revise the risk evaluation in the Report.*

LANL Response

51. The SSL for styrene presented in Table 3.1-1 is the soil saturation limit presented in NMED guidance in Appendix A, Table A-1 (NMED 2006, 092513), and is not a risk-based value. The SSL presented in Table G-4.2-118 (formerly Table G-4.2-107) is the risk-based value obtained from EPA and used to calculate the excess cancer risk. Notes have been added to Tables 3.1-1 and G-4.2-118, and text has been added to section G-4.1 to clarify. The SSL for Aroclor-1260 is a noncarcinogenic value from Laboratory guidance (LANL 2007, 094496). The carcinogenic SSL (10.5 mg/kg), also from Laboratory guidance, is presented and evaluated in Table G-4.2-117.

NMED Comment

52. Table G-4.2-110, Residential Noncarcinogenic Screening Evaluation for AOC 43-001(b2), Page G-179: *The screening values listed for carbon disulfide and styrene for a residential scenario are inconsistent. The values are different from the values listed in Table 3.1-1. The Permittees must resolve the discrepancies and revise the risk evaluation in the Report.*

LANL Response

52. The SSLs for carbon disulfide and styrene presented in Table 3.1-1 are the soil saturation limits presented in NMED guidance in Appendix A, Table A-1 (NMED 2006, 092513), and are not risk-based values. The SSLs presented in Table G-4.2-122 (formerly Table G-4.2-110) are the risk-based values obtained from EPA and used to calculate the excess cancer risks. Notes have been added to Tables 3.1-1 and G-4.2-122, and text has been added to section G-4.1 to clarify.

TECHNICAL AREA 61

NMED Comment

53. Section F-8.1.3.1, Nature and Extent of Organic COPCs, Page F-165: *Review of the data indicates that the vertical and lateral extent of Aroclor-1260 is not defined for SWMU 61-007. Although the detected concentration of Aroclor-1260 is highest in the sample collected from the center of the site (1200 mg/kg), the detected concentrations in samples collected from the north (560 mg/kg) and south (700 mg/kg) of the center are relatively quite high. The screening level in soil for Aroclor is 1.12 mg/kg. The Permittees must propose additional step out samples from the north and the south of the site to define the lateral extent of PCB contamination in the phase II work plan.*

LANL Response

53. The text of section F-8.1.3.1 has been revised to indicate the lateral and vertical extent of Aroclor-1260 are not defined. Soil removal and additional sampling to define lateral and vertical extent of Aroclor-1260 are recommended in section 12.1.2 and will be proposed in the Phase II investigation work plan.

REFERENCES

EPA (U.S. Environmental Protection Agency), February 2009. "ProUCL Version 4.00.04 User Guide (Draft)," EPA/600/R-07/038, Office of Research and Development, Washington, D.C. (EPA 2009, 106601)

LANL (Los Alamos National Laboratory), January 2007. "Technical Approach for Calculating Recreational Soil Screening Levels for Chemicals," Los Alamos National Laboratory document LA-UR-06-8828, Los Alamos, New Mexico. (LANL 2007, 094496)

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

Cross-Reference of NMED NOD Comments and Revisions to Upper Los Alamos Canyon Aggregate Area Investigation Report

NMED NOD Comment No.	Summary of NOD Comment Requirement	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
General Comments				
1	Revise data review and identify chemicals of potential concern (COPCs) using statistical methods.	Appendix F	Main text; Appendix F, Sections F-2.0 through F-8.0; added section F-1.2.1 (Overview of Statistical Methods); added box plots and tables summarizing statistical test results; Appendix G	Used statistical tests to compare site data to background, added text describing statistical methods; revised lists of inorganic and radionuclide COPCs based on statistical results; added nature and extent discussions for the COPCs added; revised main text and Appendix G as appropriate.
2	Eliminate concentrations from further consideration in the risk assessment if site concentrations of iron are below the soil screening level (SSL).	Appendix G	n/a*	No revisions are necessary because the approach used is consistent with New Mexico Environment Department (NMED) guidance.
3	Discuss the rationale for using SSLs for mercury as an inorganic salt for the residential and industrial scenarios and revise the screening assessments as appropriate.	Appendix G	n/a	Mercury is typically present in soil as an inorganic salt and is not expected to be present in elemental form at the sites investigated. The elemental mercury SSL is used only for the construction worker scenario, which has no SSL for inorganic salt. Therefore, no revisions to the text are necessary.
4	Revise risk screening assessments to remove lead from hazard index (HI) calculations.	Appendix G	n/a	SSLs are based on a blood lead level of 10 µg/dL using EPA's Integrated Exposure Uptake Biokinetic model and were calculated to compare with soil concentrations and to determine if the blood lead level is greater than 10 µg/dL for a receptor. A comparison of site concentrations with these screening levels using the ratio or hazard quotient (HQ) approach as the initial step is therefore warranted and appropriate in the screening assessment. Therefore, no revisions to the text are necessary.

NMED NOD Comment No.	Summary of NOD Comment Requirement	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
5	Revise the screening assessments to be consistent across scenarios in use of total chromium vs. hexavalent chromium and use hexavalent data where SSLs are available.	Appendix G	n/a	A hexavalent chromium value is used for the construction worker SSL because no total chromium value is available. This approach is protective of human health. Therefore, no revision to the text is necessary.
6	Revise screening assessments to include vapor intrusion scenario where volatile organic compounds (VOCs) were detected.	Appendix G	Appendix G	The screening assessments were revised to include the evaluation of the vapor-intrusion pathway where VOCs were detected in samples collected in the vicinity of building(s).
7	Revise screening assessments to include COPCs from evaluation of ecological toxicity because not in ECORISK Database.	Appendix G	n/a	No revisions are necessary. The report uses the process for developing interim ESLs that NMED has accepted in the past.
8	Address soil pH and bioavailability of aluminum at each area or concern (AOC) and solid waste management unit (SWMU) addressed in this report.	Appendix G	n/a	No revisions are necessary. At locations where pH was <5.5, aluminum was below background and therefore is not identified as a COPC.
9	Include data from previous investigations or explain why these data are not used in risk evaluations.	Appendixes F and G	Appendix F, Section F-1.1	Text has been added to explain the revised data evaluation standards resulted in data no longer meeting decision-level standards.
10	In future submittals, include data review and nature/extent discussions in main text of report and the eliminate data review appendix.	Appendix F	n/a	Data review information will be incorporated into the main text in future submittals.
11	Provide analytical data files in Excel 2003 format.	Appendix D	Appendix D	Data files have been converted to Excel 2003 format, included on DVDs submitted with the revised report.

NMED NOD Comment No.	Summary of NOD Comment Requirement	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
Specific Comments				
1	Clarify whether samples were homogenized before shipment.	Section 4.4	Section 4.4	The text has been revised to clarify samples are not homogenized.
2	Review conclusions on nature and extent as directed by subsequent comments.	Section 12.1	Section 12.1; sections in Appendix F	Conclusions on nature and extent have been revised where appropriate in both Appendix F and section 12.1.
3	Permittees must submit their request for certificates of completion under separate cover.	Section 13.0, p. 98	Sections 13.0 and 14.0	The text has been revised to indicate whether sites are recommended for corrective action complete with or without controls and that requests for certificates of completion will be submitted under separate cover. A schedule for further actions has been added to the revised report (section 14.0).
4	Identify COPCs using statistical methods, not maximum background concentrations.	Appendix F, Section F-1.2, p. F-1	Appendix F, Section F-1.2	Text has been added to describe the statistical methods for COPC identification and the conditions where statistics are not applicable.
5	Clarify that only a limited portion of 39,000 ft of the underground waste lines that comprise SWMU 00-017 was characterized during these investigations.	Section 5.3.3, p. 21	Section 5.3.3	Text has been added to indicate that portions of the underground acid/industrial waste line system are addressed in other aggregate areas.
6	Correct the report to include selenium as a COPC in Tables G-2.2-2 and G-4.2-2	Tables G-2.2-2 and G-4.2-2	Tables G-2.2-2 and G-4.2-2	Selenium has been added as a COPC to Tables G-2.2-2 and G-4.2-2.
7	Resolve discrepancy where 1,2,4-trimethylbenzene was not included in Figure 5.4-2 or Table 5.4-3.	Appendix F, Section F-2.2.5.2, p. F-9	Figure 5.4-2, Table 5.4-3	Figure 5.4-2 and Table 5.4-3 have been revised to include 1,2,4-trimethylbenzene concentrations at locations 00-604724 and 00-604729.

NMED NOD Comment No.	Summary of NOD Comment Requirement	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
8	Resolve discrepancies regarding concentrations of pentachlorophenol in ProUCL input files compared to Figure 5.4-2 and Table 5.4-3.	Appendix G	Appendix G, Attachment G-1	The pentachlorophenol concentration listed in Table 5.4-3 and Figure 5.4-2 is the single detected concentration at SWMU 00-031(a) collected below the depth range for calculating exposure point concentrations (EPCs) (it was detected at 14 to 15 ft below ground surface [bgs]). Pentachlorophenol has been deleted from the ProUCL files.
9	Include data from previous investigations or explain why they are not included.	Section 6.4, p. 26	Appendix F, Section F-1.1	See response to General Comment 9.
10	Explain why two samples were not collected; include data from previous investigations, or explain why the samples were not included.	Section 6.5, p. 27	Appendix B, Section B-8.0 Appendix F, Section F-1.1	An explanation of why two samples were not collected has been added; previous data were not included in the report because the data did not meet current data-quality standards (see response to General Comment 9).
11	Explain why fill/tuff interface was not sampled to investigate the vertical extent of contamination.	Table 6.15-1, p. 352	Appendix B, Section B-8.0	Text has been added to Appendix B to explain this deviation from work plan.
12	Correct the typographical error and replace AOC 00-031(a) with SWMU 01-001(a) in the revised report.	Appendix F, Section F-3.1.5.4, p. F-14	Appendix F, Section-F-3.1.5.4	The typographical error has been corrected.
13	Propose additional sampling at SWMU 01-001(g) to define the vertical extent of chromium and nickel contamination in the Phase II work plan.	Appendix F, Section F-3.7.5, p. F-35	Appendix F, Section-F-3.7.5; Section 12.1.2	The text has been revised to indicate that vertical extent is not defined for chromium and nickel. A recommendation for additional sampling is included in section 12.1.2.
14	Include copper in the screening evaluations for SWMU 01-001(u) and revise the report accordingly.	Appendix F, Section F-3.11.1.1, p. F-49	Appendix G, Sections G-4.2-6 and G-5.4-6; Tables G-2.2-12, G-4.2-34, G-5.4-10, G-5.4-11, and G-5.5-4	Copper was added to the screening evaluations for SWMU 01-001(u) and included in Appendix G text and tables.

NMED NOD Comment No.	Summary of NOD Comment Requirement	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
15	Conduct a statistical comparison of the detected arsenic concentrations to the background data set to determine if arsenic must be retained as a COPC (see Specific Comment 1).	Appendix F, Section F-3.17.1.2, p. F-74	Appendix F, Section F-3.17.1.2	Statistical tests were performed for arsenic, and it is retained as a COPC; text in section F-3.17.1.2 has been revised accordingly.
16	Propose collecting additional samples at SWMU 01-006(b) to define the vertical and lateral extent of contamination in the Phase II work plan.	Appendix F, Section F-3.18.5.3, p. F-82	Appendix F, Section F-3.18.5.3; Section 12.1.2	The text in Appendix F has been revised to indicate the extent of americium-241 and plutonium-239/240 is not defined; the text in Section 12.1.2 has been revised to recommend additional sampling to define extent.
17	Revise statement that extent is defined and propose collecting additional samples to define the vertical and lateral extent of contamination in the Phase II work plan.	Appendix F, Section F-3.19.5.4, p. F-85	Appendix F, Section F-3.19.5.4	The text has been revised to clarify that data from SWMU 01-007(b) has been used to define lateral and vertical extent at SWMU 01-006(c).
18	Propose collecting additional samples to define the vertical extent of contamination in the Phase II work plan.	Appendix F, Section F-3.21.5.1, p. F-89	Appendix F, Section F-3.21.5.1; Section 12.1.2	The text has been revised to indicate vertical extent of metals is not defined; the text in section 12.1.2 has been revised to recommend additional sampling for extent.
19	Revise the statement that Aroclor-1260 decreases with depth at all locations where it was detected, since it increases with depth at location 00-604239.	Appendix F, Section F-3.26.5.2, p. F-104	n/a	Aroclor-1260 concentrations decreased to nondetect at location 00-604239; therefore, no revision to the text is necessary.
20	Extent is not defined for chromium and nickel at SWMU 01-007(c); propose further investigations to define the extent of contamination at the site in the Phase II work plan.	Appendix F, Section F-3.28.5.1, p. F-111	Appendix F, Section F-3.28.5.1; Section 12.1.2	The text has been revised to indicate that extent of metals is not defined; the text in section 12.1.2 has been revised to recommend additional sampling for extent.
21	Resolve discrepancy between Tables 3.1-1 and G-4.2-3 regarding recreational SSL for chromium.	Appendix G, Table G-4.2-3, p. G-131	Appendix G, Tables G-4.2-5 and G-4.2-6.	The recreational SSL for total chromium listed in Table 3.1-1 is 14,300 mg/kg and is a noncarcinogenic value. The screening value presented in Table G-4.2-5 has been deleted, and chromium has been added to Table G-4.2-6.

NMED NOD Comment No.	Summary of NOD Comment Requirement	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
22	Resolve the discrepancies regarding EPCs for SWMU 01-001(b); revise the screening evaluation using correct EPCs and SSLs in the report.	Table G-4.2-4, p. G-132	Appendix G, Table G-4.2-6.	The EPCs and SSLs have been corrected in Table G-4.2-6. Bromomethane and isopropyltoluene[4-] have been deleted from Table G-4.2-6. The HQs and HIs have been recalculated.
23	Revise the risk assessment using the correct SSL value in residential noncarcinogenic screening for SWMU 01-001(b).	Table G-4.2-7, p. G-133	Appendix G, Table G-4.2-9	The correct residential SSL for isopropylbenzene (271 mg/kg) has been incorporated into Table G-4.2-9 as a surrogate for isopropyltoluene[4-]; the HQ for isopropyltoluene[4-] has been recalculated.
24	Revise Table G-4.2-15 to include arsenic in the construction worker carcinogenic screening for SWMU 01-001(c).	Table G-4.2-15, p. G-136	n/a	The NMED construction worker SSL for arsenic is a noncarcinogenic value and thus arsenic is not included in Table G 4.2-19 for this scenario. Arsenic is included in Table G-4.2-20. Therefore, no revision to the tables is necessary.
25	Resolve discrepancy in screening values for residential noncarcinogenic screening evaluation for SWMU 01-001(e), and revise the risk assessments for all relevant SWMUs and AOCs in the report.	Table G-4.2-21, p. G-138	Table 3.1-1, Table G-4.2-26, Section G-4.1	The SSLs presented in Table 3.1-1 are the soil saturation limits presented in NMED guidance and are not risk-based values. The SSLs presented in Table G-4.2-26 are the risk-based values obtained from the U.S. Environmental Protection Agency (EPA) regional screening table and are used to calculate HQs and HIs. Notes have been added to Table 3.1-1 and the relevant screening tables in Appendix G, and text has been added to section G-4.1 to clarify.
26	Resolve discrepancies in SSLs for residential noncarcinogenic screening evaluation for SWMU 01-001(u) and revise the report accordingly.	Table G-4.2-26, p. G-139	Appendix G, Table G-4.2-34	The residential SSL for trichlorofluoromethane is 588 mg/kg. This value has been added to Table G-4.2-34 and the HQ has been recalculated.

NMED NOD Comment No.	Summary of NOD Comment Requirement	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
27	Resolve discrepancies in SSLs for residential noncarcinogenic screening evaluation for SWMU 01-002 and the values presented in Table 3.1-1.	Table G-4.2-28, p. G-141	Table 3.1-1; Appendix G, Table G-4.2-38	The SSLs presented in Table 3.1-1 are the soil saturation limits presented in NMED guidance and are not risk-based values. The SSLs presented in Table G-4.2-38 are the risk-based values obtained from the EPA regional screening table and are used to calculate HQs and HIs. Notes have been added to Tables 3.1-1 and G-4.2-38, and text has been added to section G-4.1 to clarify.
28	Resolve discrepancies in SSLs for industrial noncarcinogenic screening evaluation for SWMU 01-003(e) and revise the risk screening evaluations.	Table G-4.2-31, p. G-143	Table 3.1-1; Appendix G, Table G-4.2-43	The SSLs presented in Table 3.1-1 are the soil saturation limits presented in NMED guidance and are not risk-based values. The SSLs presented in Table G-4.2-43 are the risk-based values obtained from the EPA regional screening table and are used to calculate HQs and HIs. Notes have been added to Tables 3.1-1 and G-4.2-43, and text has been added to section G-4.1 to clarify.
29	Screening values do not match the values listed in Table 3.1-1; resolve the discrepancies and revise the report accordingly.	Table G-4.2-33, p. G-144	Table G-4.2-45	The screening values have been replaced with the recreational SSLs, and the HQs and HIs have been recalculated.
30	Screening values do not match the values listed in Table 3.1-1; resolve the discrepancies and revise the report accordingly.	Table G-4.2-34, p. G-145	Table 3.1-1; Table G-4.2-46; Section G-4.1 and other sections in Appendix G as necessary	The SSLs presented in Table 3.1-1 are the soil saturation limits presented in NMED guidance and are not risk-based values. The SSLs presented in Table G-4.2-46 are the risk-based values obtained from the EPA regional screening table and are used to calculate HQs and HIs. Notes have been added to Tables 3.1-1 and G-4.2-46, and text has been added to section G-4.1 to clarify. Other sections have also been revised as necessary.

NMED NOD Comment No.	Summary of NOD Comment Requirement	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
31	Screening values do not match the values listed in Table 3.1-1; resolve the discrepancies and revise the report accordingly.	Table G-4.2-37, p. G-147	Table 3.1-1; Table G-4.2-49; Section G-4.1	The value for beryllium has been corrected in Table G-4.2-49 and the HQ recalculated. The SSLs presented in Table 3.1-1 are the soil saturation limits presented in NMED guidance and are not risk-based values. The SSLs presented in Table G-4.2-49 are the risk-based values obtained from the EPA regional screening table and are used to calculate HQs and the HIs. Notes have been added to Tables 3.1-1 and G-4.2-49, and text has been added to section G-4.1 to clarify.
32	Screening values do not match the values listed in Table 3.1-1; resolve the discrepancies and revise the report accordingly.	Table G-4.2-55, p. G-153	Appendix G text and tables for SWMU 01-007(c)	Risk screening text and tables for SWMU 01-007(c) have been deleted because extent is not defined for some COPCs.
33	Conduct further investigations to define the vertical extent of contamination at SWMUs 03-038(a) and 03-038(b) and propose additional samples in the Phase II work plan.	Appendix F, Section F-4.2.5.1, p. F-124	Appendix F, Section F-4.2.5.1; Section 12.1.2	The text has been revised to indicate extent is not defined for some inorganic chemicals; the text in section 12.1.2 has been revised to recommend additional sampling for extent.
34	Conduct further investigations to define vertical extent of contamination of zinc and propose additional samples in the Phase II work plan.	Appendix F, Section F-4.3.5.1, p. F-127	Appendix F, Section F-4.3.5.1; Section 12.1.2	Section F-4.3.5.1 has been revised to indicate the vertical extent of zinc is not defined; the text in section 12.1.2 has been revised to recommend additional sampling for extent.
35	Screening values do not match the values listed in Table 3.1-1; resolve the discrepancies and revise the report accordingly.	Table G-4.2-74, p. G-160	Appendix G text and tables for SWMU 03-055(c)	The risk-screening text and tables for SWMU 03-055(c) have been deleted because extent is not defined for some COPCs.
36	Provide a source for the screening value listed for methylnaphthalene[2-] in Table G-4.2-75. The screening value for Aroclor-1260 does not match values listed in Table 3.1-1; resolve the discrepancy and revise report accordingly.	Table G-4.2-75, p. G-160	Appendix G text and tables for SWMU 03-055(c)	The risk-screening text and tables for SWMU 03-055(c) have been deleted because extent is not defined for some COPCs.

NMED NOD Comment No.	Summary of NOD Comment Requirement	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
37	The screening value for ethylbenzene does not match the value listed in Table 3.1-1; resolve the discrepancy and revise the report accordingly.	Table G-4.2-77, p. G-161	Appendix G text and tables for SWMU 03-055(c)	The risk-screening text and tables for SWMU 03-055(c) have been deleted because extent is not defined for some COPCs.
38	Screening values do not match the values listed in Table 3.1-1; resolve the discrepancies and revise the report accordingly.	Table G-4.2-78, p. G-162	Appendix G text and tables for SWMU 03-055(c)	The risk-screening text and tables for SWMU 03-055(c) have been deleted because extent is not defined for some COPCs.
39	Correct the text to indicate manganese (not magnesium) was detected at 830 mg/kg.	Table 8.4-2, p. 419	Table 8.4-2	A column for manganese has been added to Table 8.4-2
40	Use statistical methods to identify COPCs, and revise the report accordingly.	Section F-5.1.1, p. F-128	n/a	Statistical comparisons cannot be conducted because less than 10 samples were available; comparisons to the maximum background concentrations for cadmium, lead, manganese, and sodium are appropriate. Therefore, no revision to the text is necessary.
41	Include dioxins and furans as COPCs at all sites where they were detected, revise the report accordingly, and add a table showing how dioxin/furan toxicity equivalent concentrations were determined.	Appendix F, Section F-5.1.2, p. F-130	Sections F-5.1, F-5-2, F-5.3, F-7.1, and F-7.2; Tables G-2.2-28, G-2.2-29, G-2.2-36, G-2.2-37, G-4.2-85, G-4.2-86, G-4.2-88, G-4.2-89, G-4.2-92, G-4.2-116, G-4.2-117, G-4.2-120, G-4.2-121	The risk evaluations in Appendix G have been revised to include dioxin and furan congeners. Tables showing the determination of the toxicity equivalent concentrations have been added to Appendix G.

NMED NOD Comment No.	Summary of NOD Comment Requirement	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
42	Revise the risk evaluations for SWMU 32-001 to include all identified COPCs (Aroclor-1260, cis-1,2-dichloroethene, tetrachloroethene, and trichloroethene).	Appendix F, Section F-5.1.2.1, p. F-130	Tables G-2.2-28; G-2.2-29; G-4.2-86; G-4.2-87; G-4.2-89; G-4.2-90; G-4.2-92; G-4.2-93; G-5.4-33	Dichloroethene[cis 1,2-] and trichloroethene have been added to Tables G-2.2-28, G-4.2-87, and G-4.2-86, respectively, as industrial COPCs. Aroclor-1260, cis-1,2-dichloroethene, tetrachloroethene, and trichloroethene have been added to Tables G-2.2-29, G-4.2-89, G-4.2-90, G-4.2-92, and G-4.2-93, as appropriate, as construction worker and residential COPCs. All four chemicals were also added to Table G-5.4-33 for ecological risk analysis.
43	Revise report to indicate vertical extent of metals is not defined; correct the numbers of detects of selenium and zinc.	Section F-5.2.5.1, pp. F-136-F-137	Section F-5.2; Section 12.1	The text has been revised to correct discrepancies and to indicate vertical extent is not defined for some inorganic chemicals; the text in section 12.1.2 has been revised to recommend additional sampling for extent.
44	Retain cadmium and calcium as COPCs because both are above their BVs and revise the report accordingly.	Section F-5.3.1, p. F-138	Section F-5.3.1	Statistical tests could not be conducted for cadmium because less than 10 samples were available. More than 10 tuff samples were collected so a statistical comparison was conducted for calcium. The tests indicate calcium concentrations are not significantly different than background and calcium is not identified as a COPC.
45	Correct typographical errors in locations for SWMU 32-002(b) and revise the report accordingly.	Section F-5.3.5.2, p. F-143	Section F-5.3.5.2	The errors in section F-5.3.5.2 have been corrected.

NMED NOD Comment No.	Summary of NOD Comment Requirement	Section(s)/Page(s) in Original Report	Section(s)/Page(s) in Revised Report	Nature of Revision
46	Provide additional information regarding the exclusion of cadmium and manganese as COPCs or include them as COPCs at SWMU 32-001. Include dioxins, furans, and PCBs in EPCs for SWMU 32-001. Provide additional justification to exclude cadmium at SWMU 32-004.	Attachment G-1, ProUCL Input Files for Technical Area 32	Sections F-5.1.2.1, F-5.1.2.2, F-5.1.5.2 Appendix G text and tables	Less than 10 samples were available for background comparisons for cadmium and manganese, so the comparison to maximum background concentration is appropriate. The organic chemicals listed were added as COPCs for SWMU 32-001. The text in sections F-5.1.2.1 and F-5.1.2.2 have been revised to include these COPCs. Text in section F-5.1.5.2 has been revised to include the additional COPCs in the discussion of nature and extent. The EPCs calculated and risk evaluated in Appendix G to include the additional COPCs. Less than 10 samples for cadmium were available, so a comparison to maximum soil background concentration is appropriate.
47	Revise text to indicate aluminum above BV in four samples, not in two; do not use maximum background concentration to identify COPCs.	Section F-6.1.1.1, p. F-150	Section F-6.1.1.1; other data review sections as appropriate Appendix G text and tables	The text has been revised to indicate four samples have aluminum above the background value (BV). The data review sections, including section F-6.1.1.1, have been revised to incorporate descriptions and results of statistical tests where the number of samples is sufficient (see response to General Comment 1). The lists of COPCs and the risk evaluations have been revised accordingly.
48	Resolve discrepancies in SSL values between Table G-4.2-100 and Table 3.1-1 and revise risk evaluation accordingly.	Table G-4.2-100, p. G-173	Table G-4.2-110	The construction worker SSLs have been replaced with the recreational SSLs, and the HQs and HIs have been recalculated.

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49	Revise extent conclusions (copper, chromium, lead, and zinc are not defined) and propose additional investigations to define extent.	Section F-7.2.5.1, p. F-163	Section F-7.2.5.1, Section 12.1.2	The text has been revised to indicate the lateral extent of contamination is not defined for copper, chromium, and zinc as well as lead; the text has been revised to recommend additional sampling for these COPCs.
50	Resolve discrepancies in SSL values between Tables G-4.2-106 and 3.1-1 and revise the risk evaluations accordingly.	Table G-4.2-106, p. G-176	Tables 3.1-1 and G-4.2-117, Section G-4.1	The SSLs for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoroanthene, and chrysene were replaced with recreational SSLs and risks have been recalculated. Table 3.1-1 has been revised to show the correct SSL for butylenzylphthalate. The SSLs presented in Table 3.1-1 are the soil saturation limits presented in NMED guidance and are not risk-based values. The SSLs presented in Table G-4.2-117 are the risk-based values obtained from the EPA regional screening table and are used to calculate risks. Notes have been added to Tables 3.1-1 and G-4.2-117, and text has been added to section G-4.1 to clarify.
51	Resolve discrepancies in SSL values for Aroclor-1260 and styrene between Tables G-4.2-107 and 3.1-1 and revise the risk evaluations accordingly.	Table G-4.2-107, p. G-177	Table 3.1-1 and G-4.2-118, Section G-4.1	The SSL for styrene presented in Table 3.1-1 is the soil saturation limit presented in NMED guidance and is not the risk-based value. The SSL presented in Table G-4.2-118 is the risk-based value obtained from EPA and is used to calculate the excess cancer risk. Notes have been added to Tables 3.1-1 and G-4.2-118, and text has been added to section G-4.1 to clarify. The SSL for Aroclor-1260 in Table G-4.2-118 is a noncarcinogenic value from LANL guidance. The carcinogenic SSL from LANL guidance (10.5 mg/kg) is presented and evaluated in Table G-4.2-117.

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52	Resolve discrepancies in SSL values for carbon disulfide and styrene between Table G-4.2-110 and Table 3.1-1 and revise the risk evaluations accordingly.	Table G-4.2-110, p. G 179	Table 3.1-1, Table G-4.2-122, Section G-4.1	The SSLs presented in Table 3.1-1 are soil saturation limits presented in NMED guidance and are not risk-based values. SSLs presented in Table G-4.2-122 are risk-based values obtained from EPA and used to calculate excess cancer risks. Notes have been added to Tables 3.1-1 and G-4.2-122, and text has been added to section G-4.1 to clarify.
53	Lateral extent of PCBs not defined; propose sampling to define lateral extent in Phase II work plan.	Section F-8.1.3.1, p. F-165	Section F-8.1.3.1; Section 12.1.2	Section F-8.1.3.1 has been revised to indicate the lateral and vertical extent of Aroclor-1260 are not defined. The text in section 12.1.2 has been revised to recommend additional sampling for extent.
n/a	n/a	Throughout	Throughout	Minor editorial changes were made throughout the document for the sake of correctness and clarity.

Note: The table numbers referred to in NMED's comments have changed as a result of the revisions to the investigation report. The LANL responses and the crosswalk table refer to the table numbers as presented in the revised investigation report.

*n/a = Not applicable.