



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

EMLA-2020-1609-02-001

September 16, 2020

Mr. Kevin Pierard
Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6313

Subject: Submittal of the Supplemental Investigation Report for Upper Cañada del Buey
Aggregate Area, Revision 1

Dear Mr. Pierard:

Enclosed please find two hard copies with electronic files of the “Supplemental Investigation Report for Upper Cañada del Buey Aggregate Area, Revision 1.” Enclosure 1 includes an electronic copy of a redline strikeout version of the report that incorporates all changes made in response to the New Mexico Environment Department’s (NMED’s) comments dated May 26, 2020. Responses to NMED’s comments were submitted on July 8, 2020, and a revised version was submitted on July 31, 2020 (Enclosure 2). NMED approved the revised responses on August 3, 2020. Submittal of this report fulfills fiscal year 2020 Milestone #13 of Appendix B of the 2016 Compliance Order on Consent.

If you have any questions, please contact Kent Rich at (505) 660-6570 (kent.rich@em-la.doe.gov) or Cheryl Rodriguez at (505) 414-0450 (cheryl.rodriguez@em.doe.gov).

Sincerely,

Arturo Duran

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Arturo Q. Duran
Compliance and Permitting Manager
Environmental Management
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Enclosures:

1. Two hard copies with electronic files (including a redline strikeout version) – Supplemental Investigation Report for Upper Cañada del Buey Aggregate Area, Revision 1 (EM2020-0267)
2. Revised Response to Draft New Mexico Environment Department Comments on the Supplemental Investigation Report for Upper Cañada del Buey Aggregate Area, Dated March 26, 2020 (EM2020-0396)

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**Revised Response to Draft New Mexico Environment Department Comments on the
Supplemental Investigation Report for Upper Cañada del Buey Canyon Aggregate Area,
Dated May 26, 2020**

INTRODUCTION

To facilitate review of this response, the New Mexico Environment Department's (NMED's) comments are included verbatim (in italics). The U.S. Department of Energy (DOE) Environmental Management Los Alamos Field Office 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 DOE policy.

GENERAL COMMENTS

NMED Comment

1. *Throughout the Report (Nature and Extent section) the DOE used comparison of total chromium, a naturally occurring ratio of trivalent chromium [Cr(III)] to hexavalent chromium [Cr(VI)], data to the Cr(III) residential soil screening level (SSL)(117,000 mg/kg) to determine whether additional sampling is warranted. Since data was analyzed for total chromium and not Cr(III), the use of Cr(III) SSL is unacceptable. Section 4.2, Screening Levels, indicated the use of total chromium screening levels were appropriate for the conditions at most sites in the Report. In the 2015 NMED Risk Assessment Guidance for Site Investigations and Remediation (SSG), it states "if site history does not indicate a known source for chromium (VI), the data (soil and/or groundwater) should be analyzed for total chromium" (section 5.1, Use of Chromium Screening Levels). NMED agrees that based on site history in the Report, if there is not a source of chromium (VI) the use of total chromium data is acceptable for risk assessment purposes. All analytical data for total chromium should be compared to the total chromium SSLs values. Revise the Report to eliminate the comparison of total chromium to residential SSLs for Cr(III).*

DOE Response

1. Soil screening levels (SSLs) are used both to evaluate risk and in the evaluation of nature and extent to determine whether additional sampling is warranted. The use of the trivalent chromium [Cr(III)] residential SSL for evaluating nature and extent of total chromium is consistent with the results of a chromium background study conducted by Los Alamos National Laboratory in 2017 to determine the prevalence of hexavalent chromium in soil, sediment, and tuff samples where there was no evidence of previous releases of chromium. The study was conducted in accordance with a work plan approved by the New Mexico Environment Department (NMED) (LANL 2017, 602400; NMED 2017, 602418). The "Chromium Background Study Report" (LANL 2017, 602650) concluded that naturally occurring chromium is predominantly in the trivalent form and that the trivalent SSL is appropriate for data comparisons used to evaluate the extent of contamination at sites with no known chromium releases. The report also concluded that total chromium SSLs, rather than Cr(III) SSLs, will continue to be used for risk-screening comparisons to evaluate total chromium data at sites where there is no previous indication that hexavalent chromium was used and released. The chromium background study was approved by NMED in October 2017 (NMED 2017, 602678).

Section 4.2, Screening Levels, will be revised to provide a reference to the chromium background study as justification for the use of Cr(III) SSLs for evaluating nature and extent of total chromium at sites with no known or suspected sources of hexavalent chromium.

NMED Comment

2. *Section 5.1.1 lists lines of evidence to be used in determining if an inorganic chemical should be eliminated as a chemical of potential concern (COPC). The comparison to the maximum background concentration is listed as a line of evidence to be used to screen out a COPC. Except in special cases, the New Mexico Environment Department (NMED) does not consider such comparisons as a valid line of evidence for eliminating detected inorganic compounds as COPCs. Note that Section 2.7.3 of the NMED 2015 Risk Assessment Guidance for Site Investigations and Remediation (SSG) does not state that comparison to maximum background is an acceptable line of evidence. The range of values in the background data set is considered in the statistical determination of appropriate background threshold (e.g., background values, BVs). As indicated in Section 2.3.7 of the SSG, if the maximum concentration of a COPC exceeds the applicable BV, statistical tests must be used to determine if the data set for the COPC is statistically different from the applicable background data set. However, as agreed in the February 14, 2017 meeting, NMED would allow the upper end of the background data set to be used for comparison in special cases:*

- *Statistically determined BV is significantly greater than the maximum background concentration.*
- *Statistical tests cannot be performed because of insufficient data or a high percentage of non-detections.*
- *Sufficient number of samples have been collected to determine nature and extent, but results are predominately non-detect (discussion of sample number versus detections).*
- *There is no history to suggest the constituent is directly related to site activities. If there is site history to suspect that the constituent is present due to site activities (such as lead at a firing site), then it is possible that the constituent could be present from historical activities at low levels (in the high range of background). In these cases, the constituent still must be carried forward as a COPC and retained in the risk assessment (it will likely not be a risk driver).*
- *Spatial analyses do not show a pattern or trend indication contamination.*
- *The maximum detected result is statistically determined to be an outlier (note, sufficient samples must be collected to show a point is an outlier and not indicative of a hotspot).*

Section 5.1.1 (and the Report in its entirety) should be revised to eliminate comparisons of COPC concentrations to the maximum value in the applicable background data set as a line of evidence for eliminating a detected inorganic chemical as a COPC unless one (or more) of the special cases in the bulleted items above exists; thus, precluding the comparison of COPC data to the statistically derived BV. In such cases, lines of evidence supporting the comparison of COPC data to the maximum background value should be provided to demonstrate that one or more of the special cases exist in the area being evaluated.

DOE Response

2. Section 5.1.1 will be revised to include the bulleted criteria presented in NMED's comment as the basis for comparing the site data with the upper end of the background data set for the purposes of identifying chemicals of potential concern (COPCs). If site data are compared with the upper end of the background data set, one or more of the criteria will be cited in the report as a basis for this

comparison (e.g., less than eight soil samples were collected, so statistical tests could not be performed). The text regarding identification of certain inorganic COPCs will be revised as appropriate to clarify or provide additional lines of evidence in support of eliminating some inorganic chemicals as COPCs.

NMED Comment

3. *Section 5.2, Extent of Contamination, states that comparisons of sample results to screening levels/screening action levels (SSLs/SALs) are used in determining whether the extent of contamination has been defined. According to the text, the comparisons are performed after determining whether extent is defined by decreasing concentrations vertically and laterally and that concentrations are below estimated quantitation limits (EQLs) or detection limits (DLs). The DOE considers that no further sampling for extent is warranted if the applicable SSL/SAL is at least on order of magnitude greater than the maximum COPC concentration. While the above is not recommended in the SSG, as agreed during the February 14, 2017 meeting, the approach may be applied as a single line of evidence to determine that no further sampling is warranted for the COPC in question if the caveats listed below are met and sufficient justification for the applied methodology (including references) is provided in the discussion:*

- *Contaminant concentrations do not increase significantly with depth or laterally and appear to be isolated cases (do not indicate a trend);*
- *There is no history of a contaminant release due to site activities and that sample results are representative of site conditions (sufficient data are available to determine extent);*
- *The SSL/SAL must be at least an order of magnitude greater than the COPC concentration;*
- *Inclusion or exclusion of the COPC would not impact overall risk (e.g., the COPC is not a significant contributor to risk due to low toxicity; and*
- *There is not a contaminant release from outfall into a drainage. Transport along drainages may be significant, both along the land surface and at depth, and require additional lines of evidence to ensure transport of contamination has been fully considered and the increasing concentrations are not the result of erosion/sediment transport. Under these circumstances, and similar, it is possible to have greater concentrations away from the initial source area due to release into drainages and outfalls.*

Further, the comparison may only be used to determine the extent of COPC contamination and may not be used to eliminate a COPC from either the human health assessment or ecological risk assessment. Review the entire Report to ensure that appropriate methodology was applied while determining nature and extent of contamination.

DOE Response

3. The comparison of sampling results with SSLs/screening action levels (SALs) in the main text of the report is applied only in the determination of whether further sampling for extent is warranted. No COPCs are eliminated from the risk-screening assessments based on this comparison and no revisions to COPC evaluations are needed. The report sections evaluating nature and extent of contamination will be reviewed and revised as appropriate based on the criteria in NMED's comment.

NMED Comment

- 4. The DOE eliminated nitrates as a COPC based on it being naturally occurring. Where the history of a site indicates that nitrates may be present due to laboratory activities, such as when the site contains a sanitary waste line and septic tank or activities that include the use of nitrate-containing explosives, nitrates must be considered as a potential COPC. This is especially important at sites where explosives such as HMX, RDX, or TATB have been identified as COPCs or activities where release of large amounts of nitrogen oxides may have occurred. The information must be based on the potential presence of nitrates in the explosives managed at the sites and the emissions released during explosives testing, burning or firing, as well as other recommendations provided in NMED's 2015 Soil Screening Guidance (SSG) for identifying COPCs. Alternatively, additional lines of evidence may be provided to fully justify the statement that the detected concentrations of nitrates likely reflect naturally occurring levels. Appropriate lines of evidence may include site history and comparison of the maximum detected concentration to the SSL.*

DOE Response

4. COPC evaluations for nitrate will be revised to indicate whether the presence of nitrate could be site-related or not. Sites included in the report that may potentially be sources of nitrate include those managing sanitary wastewater and those where explosives or nitric acid were handled. If nitrate is determined to be potentially site-related, it will be retained as a COPC and carried through the nature and extent discussions and risk-screening assessments.

NMED Comment

- 5. The risk assessment includes lead in the calculations of hazard indices (HI). However, as lead screening levels are based on blood lead levels and not derived in a similar fashion as other chemicals, lead should not be included in the HIs. Inclusion of lead leads to an overestimation of risk for noncarcinogens. Lead should be evaluated separately, through comparison of the appropriate exposure point concentration (EPC) to the lead screening levels.*

DOE Response

5. A similar comment has been provided on other supplemental investigation reports (SIRs). Following discussions with NMED, the approach agreed to for lead has been to initially include it in the overall hazard index (HI) for noncarcinogens. At most sites, the HI is less than 1, indicating no further evaluation is needed. If the noncarcinogenic HI is greater than or equivalent to 1, then the contribution of lead to these effects is evaluated separately and not included in the HI. This approach will be retained for this SIR revision. However, in future investigation reports, lead will not be included in the noncarcinogenic risk tables.

NMED Comment

- 6. Section 6.2.4.2, Soil, Rock, and Sediment Field-Screening Results, page 19, In this section, headspace monitoring was conducted prior to collection of samples. However, despite indications of volatile organic compounds (VOCs), analyses of samples did not include VOCs but only addressed potential for semi-volatile organic compounds (SVOCs). For sample location 52-610953, the highest reading was obtained (535 parts per million at a depth of 0-1 foot). However, headspace monitoring was not conducted at this same sample location for the deeper interval of 2-3 feet due to moisture issues (refer to Table 3.2-2). Silver is a common product of photo processing, however, analyses of soil did not include silver. Discuss whether there is a potential data gap with respect to VOCs and*

silver at SWMU 04-003(a). If it is determined that there is a data gap with respect to VOCs, a re-evaluation of the vapor intrusion pathway (Section I-4.3.1) may also be required.

DOE Response

6. Section 3.2.3 of the report describes moisture-related instrumentation error for headspace volatile organic compound (VOC) analysis due to high moisture content of some samples. As noted in NMED's comment, VOC readings were not performed on the deep sample at location 52-610953 because of moisture issues. The sample collection log for the deeper sample collected at location 52-610953 describes the sample as "very saturated." The elevated VOC field screening result reported for the shallow sample at location 52-610953, therefore, could reflect the effects of high moisture content rather than the presence of elevated VOCs.

Regardless of field screening results, it is highly unlikely VOCs would be present in these samples as a result of releases from Solid Waste Management Unit (SWMU) 04-003(a). Former building 04-7, which is the source of the discharges to the outfall, was dismantled in 1956. Any discharge of VOCs from SWMU 04-003(a), therefore, would have occurred more than 60 yr ago. VOCs in such discharges would likely have volatilized into the atmosphere long ago and would no longer be present in shallow drainage sediments. The drainage below SWMU 04-003(a) receives runoff from Technical Area 52 (TA-52), including parking lots, and any VOCs present in the drainage during the 2010 investigation would likely be associated with runoff from TA-52. There does not appear to be a data gap with respect to VOCs at SWMU 04-003(a). Section 6.2.4.2 will be revised to note that elevated moisture may have affected the VOC field screening result for sample RE52-10-9510.

All samples collected at SWMU 04-003(a) were analyzed for target analyte list (TAL) metals, including silver. Silver was not detected in 12 samples (detection limits ranged from 0.2 mg/kg to 0.652 mg/kg and were below the background value [BV] [1 mg/kg]) and was detected below the BV in 8 samples (0.229 mg/kg to 0.379 mg/kg). There is not a data gap with respect to silver at SWMU 04-003(a) and no revision to the report is needed.

SPECIFIC COMMENTS

NMED Comment

7. Section 6.3, AOC 04-004, Area of Potential Soil Contamination, Page 23-24

AOC 04-004 is an outfall that received photo processing waste, of which silver is a common contaminant. It is noted that silver was detected above background in the 1995 sampling. However, silver was not retained as a COPC and included in the 2010 sampling event. Thus, it is not clear that the nature and extent of silver has been established: discuss the potential data gap with respect to silver.

DOE Response

7. As described in sections 6.2.1 and 6.3.1, the outfall that received photoprocessing waste from former building 04-7 was SWMU 04-003(a); Area of Concern (AOC) 04-004 is an area of potential soil contamination associated with the footprint of former building 04-7. As noted in section 6.3.3, one sample from the 1995 Resource Conservation and Recovery Act Facility Investigation (RFI) was submitted for analysis of TAL metals, and several metals, including silver, were detected above BVs.

This sample was collected from location 04-02002 at a depth interval of 0.0–1.0 ft below ground surface (bgs) (LANL 2008, 101803, p. 93). This location and depth were resampled during the 1998 RFI and no metals, including silver, were detected above BV, nor was silver detected above BV in any of the 17 other samples collected during the 1998 RFI (LANL 2008, 101803, pp. 92–93). Silver was also not detected above BV in any of the 18 samples collected during the 2010 investigation. As noted in section 6.3.3, the 1995 RFI results are screening-level data. Based on evaluation of decision-level data from the 1998 RFI and 2010 investigation, silver is not a COPC at AOC 04-004, there is not a data gap related to silver at this site, and no revision to the report is needed. Evaluation of silver for SWMU 04-003(a) was discussed in the response to comment 6.

NMED Comment

8. Section 7.8.4.4, Nature and Extent of Contamination, Page 64

DOE Statement: Chromium was detected above the Qbt 2,3,4 BV in two samples at two locations. The maximum concentration of 14.1 mg/kg was detected at location 46-611588 from 8.0–9.0 ft bgs. Chromium concentrations increased with depth at location 46-611588 and were below the maximum Qbt 2,3,4 background concentration (13 mg/kg) at location 46-611589.

NMED Statement: Chromium increased at both locations. Revise the discussion to state that chromium concentrations increased with depth at both locations, 46-611588 and 46-611589.

DOE Response

8. Section 7.8.4.4 will be revised to indicate that chromium concentrations increased with depth at both locations.

NMED Comment

9. Section 7.10.4.3 Soil, Rock, and Sediment Sampling Analytical Results, Page 73

DOE Statement: Cesium was detected in four soil samples with a maximum concentration of 7.95 mg/kg. Cesium is naturally occurring but has no background data. Cesium is retained as a COPC.

NMED Statement: As stated in Section 7.10.1, Site Description and Operational History, the tank was used in the late 50s and early 60s to douse laboratory equipment from cesium-plasma diode experiments before equipment was reused or disposed of. For that reason, cesium is more likely site related than naturally occurring. Revise this section to remove naturally occurring or provide additional explanation why it is naturally occurring.

Because cesium was retained as a COPC, it should be included in human health and ecological risk assessments, Tables 1-4.2-57, I-4.2.60, I-4.2.63, and Table I-5.3.22. The Permittees must provide a justification for not including cesium in the risk assessments or include cesium in the human health and ecological risk assessments.

DOE Response

9. The statement in section 7.10.4.3 referenced in NMED's comment was provided as the basis for including cesium as a COPC (i.e., it is naturally occurring, but has no BV for comparison with detected concentrations), not to indicate that detected concentrations were naturally occurring. SSLs

and ecological screening levels (ESLs) for cesium have not been developed by NMED or the U.S. Environmental Protection Agency and toxicity data with which to develop SSLs/ESLs are not available. Because cesium is a COPC, it is included in the risk assessment. As there are no SSLs or ESLs, however, it is not included in the tables referenced in NMED's comments. Rather, it is included in the uncertainty analyses (Appendix I, section I-4.4.3 for human health and I-5.4.8 for ecological risk). No revision to the report is needed.

NMED Comment

10. Section 7.11.4.4 Nature and Extent of Contamination and Section 7.11.5 Summary of Human Health Risk Screening, Page 79-80

DOE Statement: *The lateral and vertical extent of these organic chemicals are defined.*

NMED Statement: *The vertical extent of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene is not defined at location 46-611123. At both depths, i.e., 0-1 ft and 1-2 ft bgs, the detected concentrations are above the residential soil screening levels (SSLs). Also, the lateral extent is not defined for these contaminants due to the concentrations being above the residential SSL at the depth of 0-1bgs.*

The Permittees must remove hotspots for PAH-contaminated soil at locations 46-611123 and 46-611124, collect confirmation soil samples that demonstrate that the vertical extent has been defined for these contaminants. Also, provide additional lines of evidence that the lateral extent for these organic chemicals has been defined or propose additional soil sampling locations to define the lateral extent of these organic chemicals.

DOE Response

10. As shown in Table 7.11-3, five polycyclic aromatic hydrocarbons (PAHs) [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene] are present at concentrations above residential SSLs. Concentrations of each of these PAHs decrease with depth from the sample collected at 0.0–1.0 ft bgs to the sample collected at 1.0–2.0 ft bgs and decrease laterally from location 46-611123 to location 46-611124. As described in section 5.2, extent of contamination is defined by decreasing concentrations laterally and vertically. Concentrations do not need to decrease to below residential SSLs in order to define extent. Comparison of detected concentrations with SSLs is done only if concentrations do not increase significantly with depth or laterally and appear to be isolated cases to determine if additional sampling is warranted. Therefore, the conclusion that lateral and vertical extent of PAHs is defined is consistent with the process described in section 5.2 and no revision to the report is needed.

Removal of hotspot contamination would be necessary only if the site posed unacceptable risk under current and future land use (i.e., industrial). Although SWMU 46-004(b2) poses an unacceptable risk under the residential scenario, removal of contamination above residential SSLs to reduce residential risk is not warranted based on current and future land use.

NMED Comment

11. Section 7.15.3.4 Site Contamination, Page 114

NMED Statement: *The report states that the nature and extent of contamination has been defined. However, at location 46-611447 several contaminants concentrations increased significantly with*

depth from 0-1 ft to 1-2 ft bgs (e.g., mercury 0.345 mg/kg to 4.04 mg/kg, copper 15 mg/kg to 163 mg/kg, and ²³⁴U 3.88 mg/kg to 49.9 mg/kg), respectively. The increased concentrations of these contaminants at this location may be due to the fact that the slope of the outfall allowed for deposition of these heavy elements. The Permittees must provide additional lines of evidence as to why the vertical extent of mercury, ²³⁴U, and other heavy elements are considered defined at this location or propose to advance a boring at this location to define the vertical extent of these heavy elements in the Phase II investigation work plan (IWP).

DOE Response

11. Section 7.15.3.4 states that concentrations/activities of copper, mercury, and uranium-234 increased with depth at location 46-611447 but does not conclude that vertical extent of contamination is defined for these constituents. Rather, consistent with the process in section 5.2 for cases where extent is not defined, comparison of the concentrations/activities in the deeper sample at location 46-611447 with residential and industrial SSLs/ SALs was used to support the conclusion that further sampling to define vertical extent of contamination of these constituents is not warranted. No revision to the report is needed.

NMED Comment

12. Section 7.20.4.4 Nature and Extent of Contamination, Page 151

DOE Statement: Samples were collected only at the shallow intervals of 0.0–0.25 ft and 0.25–0.5 ft bgs at this site. Deeper samples could not be collected because the storm drain at this location is lined with concrete. The material sampled represents material that has accumulated in the storm drain rather than environmental media through which contaminants may have migrated vertically. For these reasons, the definition of vertical extent of contamination is not relevant for these samples, and vertical extent is not evaluated for the site.

NMED Statement: The Report states that samples were collected from a concrete-lined storm drain. However, there is no discussion on the condition of the concrete liner. Concrete over time develop cracks that can allow waste to seep through to the subsurface. The samples within the storm drain indicate elevated concentrations of organics, mercury, and other contaminants, including benzo(a)pyrene (0.23 mg/kg) above residential SSLs (0.153 mg/kg). The Permittee must provide evidence that the concrete liner is intact or propose collecting additional samples adjacent and below the drain to determine the nature and extent of contamination beneath the drain. NMED recommends removal and disposal of the contaminated sediment from the drain, allowing for examination of the condition of the concrete liner.

DOE Response

12. The NMED-approved investigation work plan for Upper Cañada del Buey (LANL 2008, 105038.17; NMED 2008, 103429) specified collection of samples from two depths within the storm grate that received discharges from SWMUs 46-004(r) and 46-004(w). The storm grate is connected to the drain system that discharged from the SWMU 46-004(f) outfall, and the work plan indicated data from the drainage samples collected for SWMU 46-004(f) would also be used to evaluate SWMUs 46-004(r) and 46-004(w). Similarly, the drainage from SWMU 46-004(f) joined the drainage from SWMU 46-004(t), and the work plan indicated data from the drainage samples collected for SWMU 46-004(t) would also be used to evaluate SWMUs 46-004(f), 46-004(r), and 46-004(w). The purpose of the samples proposed for SWMU 46-004(r), therefore, was not to evaluate the potential

for vertical migration of contamination through the storm grate but to characterize material from SWMUs 46-004(r) and 46-004(w) that contributed to the discharges from SWMUs 46-004(f) and 46-004(t). As noted in section 7.20.4.4, data from SWMUs 46-004(f) and 46-004(t) were used to evaluate lateral extent for SWMU 46-004(r). Section 7.20.4.4 will be revised to better explain the purpose of the sampling at SWMU 46-004(r).

NMED Comment

13. Section 7.27.1 Site Description and Operational History, Page 184

NMED Statement: *The permittees must include a discussion on use of cooling tower chemicals; whether any chemicals used contained hexavalent chromium. Although only one sample at concentration of 20.3 mg/kg, exceeded background concentrations for chromium, this should be discussed for completeness.*

DOE Response

13. An historical evaluation of chemicals used in cooling towers indicated chromium had not been used at TA-46 cooling towers (Radzinski 1992, 252833). Section 7.27.1 will be revised to indicate chromium was not used in the building 46-31 cooling tower.

NMED Comment

14. Section 7.27.4.3 Soil, Rock, and Sediment Sampling Analytical Results, Page 184

DOE Statement: *Manganese was detected above the Qbt 2,3,4 BV (482 mg/kg) in 1 sample at a concentration of 606 mg/kg. The concentration was 124 mg/kg above the BV and was 146 mg/kg below the maximum Qbt 2,3,4 background concentration (752 mg/kg). Manganese was detected below the BV in the other 15 samples, including the other tuff concentration (detected concentrations were not markedly different in these 15 samples, ranging from 178 mg/kg to 474 mg/kg). Manganese is not a COPC.*

NMED Statement: *Although manganese was only detected in 1 sample above the Qbt 2,3,4 BV (482 mg/kg) at a concentration of 606 mg/kg, it was higher than the construction SSL value (464 mg/kg). Also, as indicated in Section 2.3.7 of the SSG, if the maximum concentration of a COPC exceeds the applicable BV, statistical tests must be used to determine if the data set for the COPC is statistically different from the applicable background data set (see comment #2). Therefore, manganese should be retained as COPC.*

DOE Response

14. Fourteen soil samples and two tuff samples were collected at SWMU 46-004(y). The only detection of manganese above BV was in one of the two tuff samples. Because fewer than eight tuff samples were collected, statistical tests could not be performed for tuff. Comment 2 identifies conditions when comparison with the upper end of the background data set may be used for identification of COPCs rather than statistical tests. Several of these conditions are applicable in this case, including insufficient data for statistical tests, high frequency of detection below BV, and absence of a spatial pattern or trend indicating contamination. Additionally, the BVs for manganese in soil, sediment, and upper tuff units are all greater than the construction worker SSL, so the detection of manganese above the construction worker SSL should not be a basis for including manganese as a COPC.

Section 7.27.4.3 will be revised to better describe the basis for eliminating manganese as a COPC in accordance with the conditions specified in section 5.1.1 (see comment 2).

NMED Comment

15. Section 7.40.4.4 Nature and Extent of Contamination and 7.40.5.5 Summary of Human Health Risk Screening, Page 256

NMED Statement: *Sampling location 46-611752 and immediate surrounding locations had concentrations of several contaminants above residential and/or construction worker SSLs, including chromium (maximum 494 mg/kg), benzo(a)pyrene (maximum 3 mg/kg), and benzo(b)fluoranthene (maximum 4.83 mg/kg). The industrial and residential excess cancer risk exceed NMED target levels. The Permittees must define the nature and extent of contamination and consider excavating the hotspots and collecting confirmatory samples for chromium and targeted PAHs in the vicinity of 46-611752 in the revised Phase II IWP.*

DOE Response

15. Vertical extent of all COPCs at location 46-611752 is defined by a decrease in concentrations from the upper sample (0–1 ft bgs) to the lower sample (2–3 ft bgs). Location 46-611752 is at the northeast corner of SWMU 46-008(g), at the head of the drainage below the SWMU 46-004(t) outfall. Lateral extent for location 46-611752 is defined by decreasing concentrations in samples collected for SWMU 46-004(t). Additional sampling to define extent of contamination is not needed.

The current and future land use for SWMU 46-004(y) is industrial, so the relevant exposure scenarios are industrial and construction worker. Chromium was the only COPC detected above the construction worker SSL (134 mg/kg). Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene were detected above residential SSLs but not above construction worker SSLs. Although chromium was present above the construction worker SSL, the site did not pose an unacceptable risk under the construction worker scenario (5×10^{-7} risk, HI = 0.07). Therefore, removal of chromium-contaminated soil at location 46-611752 is not necessary. Although the site does pose an unacceptable risk under the residential scenario, that scenario is not applicable to the current and future land use. No revision to the report is needed.

NMED Comment

16. Section I-4.3 Evaluation of Vapor Intrusion Pathway, Page I-40-I-41

NMED Statement: *As only soil data were available for the various SWMUs and AOCs, the Johnson & Ettinger- based advanced soil model (J&E Soil Model) was used to estimate risk-based soil concentrations for volatile organic compounds (VOCs) at the sites. NMED no longer supports the application of the J&E Soil Model as the primary line of evidence for elimination or dismissing the VI pathway as a potential exposure source. In fact, Section 2.5 of the SSG notes that USEPA's 2002 vapor intrusion guidance does not support the use of bulk soil data for evaluation of the VI pathway. However, for those SWMUs and AOCs potentially impacted by vapor intrusion, the J&E Soil Model results were augmented to include multiple lines of evidence as described in section 2.5.2 of the SSG. These additional lines of evidence were sufficient for dismissing the VI pathway from further consideration while the model results provided secondary information for the evaluation.*

It is noted that addition of the risk from the J&E model would impact the overall risk conclusions for SWMUs 46-004(c) (TCE and PCE) and 46-008(b) (2-methylnaphthalene and naphthalene). For these sites, additional evaluation of the vapor intrusion pathway is needed, to possibly include active soil gas samples. For future assessments, if risks are estimated for the vapor intrusion pathway, the results must be included with overall risk (added to risks via comparison to SSLs). It is recommended that the bulk soil J&E model not be used moving forward and that lines of evidence approach be applied as noted in the SSG.

DOE Response

16. Use of the bulk soil Johnson and Ettinger (J&E) model has been discontinued and the vapor intrusion pathway is now evaluated using NMED's soil screening guidance (NMED 2015, 600915). Although addition of risk from the J&E model would increase the risk for SWMUs 46-004(c) and 46-008(b), it would not affect the risk conclusions for these sites since they pose potential unacceptable risk under the construction worker and residential scenarios without the inclusion of the vapor intrusion pathway. No revision to the report is needed.

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NMED Comment

17. Section 7.11.4.3, pg. 78-79

The paragraph for Uranium-235/236 on page 78 is repeated at the top of page 79.

DOE Response

17. The report will be revised to remove the duplicate paragraph.

NMED Comment

18. Section 7.19.5, pg. 146-147:

The Report states the risk screening assessment include the data from sampling locations 46-611558, 46-611559, and 46-611460. Replace 46-611460 with the correct sampling location 46-611560.

DOE Response

18. The report will be revised to correct the sampling location number as indicated.

NMED Comment

19. Section 7.19.6, pg. 147 Summary of Ecological Risk Screening:

The Report states the risk screening assessment include the data from sampling locations 46-611558, 46-611559, and 46-611460. Replace 46-611460 with the correct sampling location 46-611560.

DOE Response

19. The report will be revised to correct the sampling location number as indicated.

NMED Comment

20. Table 7.9.3

Aroclor-1260 values are listed as 32.3 mg/kg and 1.53 mg/kg for Industrial SSL and Residential SSL, respectively. The values should be listed as 11.5 mg/kg for Industrial and 2.43 mg/kg for Residential SSL. Review the information and revise table for accuracy and consistency.

DOE Response

20. Table 7.9-3 will be revised to include correct SSLs for Aroclor-1260 for the industrial and residential scenarios. The other SSLs in the table were reviewed and are correct.

REFERENCES

- LANL (Los Alamos National Laboratory), June 2008. "Historical Investigation Report for Upper Cañada del Buey Aggregate Area," Los Alamos National Laboratory document LA-UR-08-3863, Los Alamos, New Mexico. (LANL 2008, 101803)
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- LANL (Los Alamos National Laboratory), May 22, 2017. "Chromium Background Study Work Plan," Los Alamos National Laboratory document LA-UR-17-23664, Los Alamos, New Mexico. (LANL 2017, 602400)
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