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Schatz, Mitchell, NMENV

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Sent: Tuesday, September 24, 2019 9:16 AM
To: Schatz, Mitchell, NMENV
Cc: Dhawan, Neelam, NMENV; Murphy, Robert, NMENV; cheryl.rodriguez@em.doe.gov; Arturo Duran; Joe English - Adelante Consulting; William Alexander; Michael O. Erickson; David Nickless; Emily M. Day; Thomas McCrory
Subject: [EXT] NMED Draft Comments for "Supplemental Investigation Report for Cañon de Valle Aggregate Area Technical Area 14"
Attachments: SIR_CdV_TA-14_NMED_Comment_Resp_091819.pdf

J. 10/19/2019

Hi Mitchell,

Please find attached the responses to NMEDs draft comments on the Supplemental Investigation Report (SIR) for Cañon de Valle Aggregate Area Technical Area 14 , dated July 2, 2019. If the proposed changes to the SIR are acceptable, EM-LA/N3B will proceed with the completion and submittal of Revision 1.

Thank you,
Kent



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**Response to Draft New Mexico Environment Department Comments on the
Supplemental Investigation Report for Cañon de Valle Aggregate Area, Technical Area 14,
Dated July 2, 2019**

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 the 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, there is not a source of chromium (VI), therefore, 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. However, the DOE has used appropriate total chromium SSLs in the risk evaluations. Revise the Report to eliminate the comparison of total chromium to residential SSLs for Cr(III).*

DOE Response

1. The use of the trivalent chromium [Cr(III)] residential soil screening level (SSL) for evaluating nature and extent is consistent with the results of a 2017 chromium background study. In 2017, Los Alamos National Laboratory conducted a chromium background study to determine the prevalence of hexavalent chromium in soil, sediment, and tuff samples where there was no evidence of previous releases of chromium (LANL 2017, 602650). 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 report 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 for risk-screening comparisons, total chromium SSLs will continue to be used 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.

2. **NMED Comment:** *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 values (e.g., background values, BVs). As indicated in Section 2.7.3 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 indicating 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 exists in the area being evaluated.

DOE Response

2. Section 5.1.1 will be revised to include the bulleted criteria presented in the 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 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 soil 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 sample concentrations are below estimated quantitation limits (EQLs) or detection limits (DLs). The Permittee considers that no further sampling for extent is warranted if the applicable SSL/SAL is at least an order of magnitude greater than the maximum COPC concentration.*

While the above approach 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 that 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 risk assessment or ecological risk assessment.

DOE Response

3. The comparison of sampling results with SSLs/screening action levels in the main text of the report is applied only when determining 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 Permittee eliminates 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 included 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 have or 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 NMEDs' 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 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 included 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 way 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. The approach taken 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. In such cases, lead will be removed from the noncarcinogenic risk table and evaluated separately.

SPECIFIC COMMENTS

NMED Comment

6. **6.18.4.3 Soil, Rock, and Sediment Sampling Analytical Results, SWMU 14-007:**

DOE Statement: *Nitrate is naturally occurring, and the concentrations detected likely reflect naturally occurring levels of nitrate. Nitrate is not a COPC.*

NMED Comment: *The reasoning behind nitrate not being retained as a COPC is that it is naturally occurring. However, because the SWMU was part of a sanitary waste system, nitrate is possibly present at this site because of possible leaks from the sanitary waste lines. The maximum detected concentration of nitrate (9.3 mg/kg) is several orders below the residential SSL of 1.25E+05 mg/kg. The retention of nitrate would not result in any change to the conclusion of the risk assessment for*

nitrate. Therefore, while the basis for that nitrate is only present as a naturally occurring constituent has not been fully justified, it is agreed that nitrate does not need to be identified as a COPC for risk assessment purposes. Either provide additional lines of evidence (such as noted above) to support that nitrate does not need to be identified as a COPC or retain nitrate as a COPC and carry forward to the risk assessment.

DOE Response

6. Consistent with the response to General Comment 4, nitrate will be retained as a COPC for SWMU 14-007 based on site history.

Minor Editorials:

NMED Comment

7. **AOC 14-001(g), 6.8.4.3 Soil, Rock, and Sediment Sampling Analytical Results, page 33**

DOE Statement: Perchlorate was detected in two samples with a maximum concentration of 0.026 mg/kg.

NMED Comment: Perchlorate was detected in three samples.

DOE Response

7. Text will be revised to state perchlorate was detected in three samples.

NMED Comment

8. **6.17.4.4 Nature and Extent of Contamination, Calcium, page 64**

DOE Statement: Concentrations did not change substantially with depth (50 mg/kg) at location 14-614535 and decreased with depth at the other locations (the concentrations in the shallower samples at locations 14-614534, 14-614535, and 14-614539 were 2920 mg/kg, 2950 mg/kg, and 3040 mg/kg, respectively, and below the soil BV [Appendix D, Pivot Tables]).

The NMED residential essential nutrient screening level was approximately 232 times the maximum concentration.

NMED Comment: Appendix D, Pivot Table shows that concentrations did not change substantially with depth at location 14-614539 and not at location 14-614535. Correct the typographical error.

The NMED residential essential nutrient screening level was approximately 2320 times, rather than 232 times. Correct the typographical error.

DOE Response

8. Text will be revised to state concentrations did not change substantially with depth at location 14-613539 and decreased with depth at location 14-614535.

The text will be revised to state the NMED residential essential nutrient screening level was approximately 2320 times the maximum concentration.

REFERENCES

- 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)
- LANL (Los Alamos National Laboratory), September 2017. "Chromium Background Study Report," Los Alamos National Laboratory document LA-UR-17-28239, Los Alamos, New Mexico. (LANL 2017, 602650)
- NMED (New Mexico Environment Department), June 1, 2017. "Approval [for the] Chromium Background Study Work Plan," New Mexico Environment Department letter to D. Hintze (DOE-EM-LA) and B. Robinson (LANL) from J.E. Kielling (NMED-HWB), Santa Fe, New Mexico. (NMED 2017, 602418)