Subject: Three Mile SIR NMED comments
Attachments: TMCAA Response to NMED Draft Comments.pdf

From: Rich, Kent
Sent: Wednesday, February 28, 2018 8:52 AM
To: Murphy, Robert, NMENV <Robert.Murphy@state.nm.us>
Cc: Rodriguez, Cheryl L <cheryl.rodriguez@em.doe.gov>; Dhawan, Neelam, NMENV <neelam.dhawan@state.nm.us>; Arturo Duran <arturo.duran@em.doe.gov>; Ellers, Kate <kellers@lanl.gov>; English, Joe <cenglish@lanl.gov>
Subject: RE: Three Mile SIR NMED comments

Hi Robert,

Please find attached the response to NMEDs draft comments on the Supplemental Investigation Report (SIR) for Threemile Canyon Aggregate Area, dated January 30, 2018. The response also includes information discussed at the technical meeting between NMED and DOE-EM/LANL on February 7, 2018. If the proposed changes to the SIR are acceptable, DOE-EM/LANL will proceed with the preparation and submittal of Revision 1.

Thank you,
Kent

Kent C. Rich
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From: Murphy, Robert, NMENV [mailto:Robert.Murphy@state.nm.us]
Sent: Wednesday, January 31, 2018 9:57 AM
To: Rich, Kent <krich@lanl.gov>
Cc: Rodriguez, Cheryl L <cheryl.rodriguez@em.doe.gov>; Dhawan, Neelam, NMENV <neelam.dhawan@state.nm.us>; Robinson, Bruce Alan <robinson@lanl.gov>
Subject: RE: Three Mile SIR NMED comments

Hi Kent,

Attached is a revised copy of NMED's draft comments dated 01-30-2018. NMED has deleted all but one of the ecological risk screening comments (see specific comment 13 regarding Chemicals without ESLs). Neelam left a voice message for you earlier this morning to discuss how to deal with the remaining comments. Please give her a call back after you have reviewed the attached document.

Thank you,
Robert

From: Rich, Kent [mailto:krich@lanl.gov]
Sent: Monday, January 22, 2018 10:32 AM
To: Murphy, Robert, NMENV <Robert.Murphy@state.nm.us>
Cc: Rodriguez, Cheryl L <cheryl.rodriguez@em.doe.gov>; Dhawan, Neelam, NMENV <neelam.dhawan@state.nm.us>; Robinson, Bruce Alan <robinson@lanl.gov>
Subject: RE: Three Mile SIR NMED comments

Hi Robert,

Thank you for the clarification on the Threemile SIR comments. I also went back and confirmed the ecorisk comments were included in the previous draft comment submittal. I had a look at LANLs original response to the ecorisk comments as well as the minutes from the technical meeting on February 14, 2017. Here is LANLs response on 1/31/17 to NMEDs draft comments.

Ecological Risk-Screening Assessment Methods
NMED provided comments on the screening level ecological risk assessment (SLERA) approach used in the TCAA SIR. These comments include requiring incorporation of refinements to the process (e.g., biouptake and bioaccumulation modeling), not eliminating chemicals of potential ecological concern (COPECs) with low hazard quotients (i.e., less than 0.3) from additional tiers of the screening analysis (e.g., lowest observed adverse effect level ecological screening level [ESL] comparisons), and comparisons of screening levels to background concentrations. The SLERA approach used by LANL in the SIRs is identical to the approach used in previous Compliance Order of Consent (Consent Order) investigations, including those previously approved by NMED. The requirements contained in NMED's comments would require additional effort but are not expected to change the conclusions regarding potential site risk. That is, the SLERA process is conservative, and additional refinements to reduce uncertainty are not warranted given this conservatism. LANL has had an approved SLERA methodology since 1999, and this methodology has been the basis for ESLs and the screening approach. As a result, LANL does not use or reference NMED's 2015 SLERA guidance. It is unclear why a methodology previously approved by NMED should be revised. Further, LANL's SLERA process incorporates biouptake and bioaccumulation modeling in ESL calculations, which is equivalent to NMED's Tier 2 approach.

Recommendation: *LANL recommends that ecological risk screening assessments continue to be implemented using LANL's NMED-approved SLERA methodology. LANL notes that use of the SLERA methodology is consistent with the June 2016 Consent Order.*

And here are NMEDs February 14, 2017 meeting notes on this topic.

Ecological Risk-Screening Assessment Methods: Permittees use a two-fold screening approach that NMED does not agree with, specifically, Permittees do not provide justification for the use of a value of 0.3 for the LOAEL assessment. NMED agreed that the process Permittees use for first tier screening is acceptable but for second tier a more conservative value of 0.1 must be applied. The less conservative approach of using 0.3 would not be appropriate if more than three COPCs are present at a site. Permittees agree to use 0.1 in future reports. For the reports already submitted to NMED the issue will be addressed by NMED in comments. The Permittees also agreed to revise the Ecological Risk Assessment Guidance to include the LOAEL screening of COPECs.

I thought the eco comments had been resolved which is why I was surprised they were in the recent draft comments. LANL maintains its recommendation that ecological risk screening assessments continue to be implemented using LANL's NMED-approved SLERA methodology. Since this issue has not been resolved, I recommend we set up another technical meeting to discuss further. Let me know which days and times you are available next week.

Thank you,
Kent

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From: Murphy, Robert, NMENV [mailto:Robert.Murphy@state.nm.us]
Sent: Thursday, January 11, 2018 3:12 PM
To: Rich, Kent <krich@lanl.gov>
Cc: Rodriguez, Cheryl L <cheryl.rodriguez@em.doe.gov>; Dhawan, Neelam, NMENV <neelam.dhawan@state.nm.us>
Subject: Three Mile SIR NMED comments

Hi Kent,

I was a little concerned when you said earlier today that you thought there were some changes to the NMED ecorisk comments for Three Mile Canyon AA SIR. Attached are NMED's original draft comments dated 10/14/2016 and the latest revision dated 12/13/2017. It appears to me that the ecorisk comments are consistent between the two versions with the exception of few deletions in the latest revision.

Please let me know if I can help clear up any discrepancies.

Thanks,
Robert

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Response to Draft New Mexico Environment Department Comments on the Supplemental Investigation Report for Threemile Canyon Aggregate Area, Dated January 30, 2018

INTRODUCTION

To facilitate the review of this response, New Mexico Environment Department's (NMED's) comments are included verbatim. The comments are divided into general and specific categories, as well as minor editorial comments, as presented by NMED. Los Alamos National Laboratory's (LANL's) responses follow each NMED comment.

GENERAL COMMENTS

NMED Comment

1. *The Permittees combine several individual solid waste management units (SWMUs) into consolidated units for the human health and ecological risk screening assessments. NMED does not support the use of consolidated units for human health and ecological risk screening assessments. The SWMUs are listed individually in Appendix K of the Permit and must be evaluated individually. The Permittees must conduct risk assessments for each individual SWMU and area of concern (AOC) included in the Report. The affected SWMUs are SWMU 36-008, and SWMU C-36-003. In limited instances, such as with SWMU 12-001(a) and SWMU 12-001(b), it may be appropriate to combine data from sites that overlap one another and where it is not possible to distinguish potential contamination from one site from that of the other.*

LANL Response

1. Because SWMU C-36-003 is a discrete site within the boundary of SWMU 36-008, and the nature of the releases from the two sites is different, they will be addressed separately. The report will be revised to evaluate SWMU 36-008 using the combined data for both sites (i.e., all samples collected within the boundary of SWMU 36-008) and to evaluate SWMU C-36-003 using only the data for that site (i.e., the samples collected in the drainage below the site outfall). This approach is consistent with NMED's specific comment 10. Because the areas affected by potential releases from SWMU 12-001(a) and 12-001(b) overlap and the two sites share a common drainage, it is appropriate to combine the data from these sites. No revisions to the report are required for these sites.

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 constituent 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, 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[1] (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*

[1] NMED comments refer to the 2015 SSG because the Supplemental Investigation Report for Three Mile Canyon Aggregate Area was submitted prior to the release of the 2017 SSG.

determine if the data set for the COPC is statistically different from the applicable background data set. However, 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.

LANL 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 to the upper end of the background data set for the purposes of identifying COPCs. A reason to compare the data with the upper end of the background data set (e.g., less than 8 soil samples were collected so statistical tests could not be performed) will be provided in the text for each site, where applicable. 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 Permittees consider 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, 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.

LANL Response

3. The comparison of sampling results to SSLs/SALs 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 Permittees eliminate nitrate as a COPC based on it being naturally occurring. Where the history of a site indicates that nitrate may be present due to lab activities, such as when the site contains a sanitary waste line and septic tank, nitrate must be considered as a potential COPC. For example, SWMU 15-009(b) is a former septic system where nitrate was detected but not retained as a COPC. Alternatively, additional lines of evidence may be provided to fully justify the statement that the detected concentrations of nitrate likely reflect naturally occurring levels. Appropriate lines of evidence may include site history and comparison of the maximum detected concentration to the SSL.

LANL Response

4. COPC evaluations for nitrate will be revised to indicate whether 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. *Section H-3.1 states that the potential for construction workers to be exposed to subsurface soil is complete. Review of the information provided in the main text and Appendix H indicates that exposure during construction activities at these sites is feasible, however, the risk assessment does not include estimations of risk to construction workers. Further, many of the sites may include COPCs that result in more conservative screening levels for the construction worker than the residential receptor. The Permittees must revise the risk assessment to address the potential for construction workers to be exposed to site contamination at the SWMUs and AOCs. For those sites where COPCs that drive the construction worker risks are not present as COPCs, a statement that the residential scenario is protective of the construction worker, along with other lines of evidence supporting the exclusion of a construction worker exposure scenario in the human health risk assessment must be provided. If COPCs are present resulting in the residential screening not being protective of the construction worker, the construction worker scenario must be evaluated and added to the assessment.*

LANL Response

5. The discussion of land use in section 4.1 of the report indicates that all sites will be evaluated for industrial and residential land use scenarios, and that several sites where trail users might risk exposure will also be evaluated for the recreational scenario. The construction worker scenario was not identified as an exposure scenario for Threemile Canyon Aggregate Area based on current and reasonably foreseeable future land use. Section H-3.1 will be revised to remove text related to the construction worker scenario for consistency with section 4.1.

   Based on discussions with NMED, LANL understands that sites to be recommended for corrective action complete without controls must not pose an unacceptable risk under the construction worker scenario, as well as the industrial and residential scenarios. For those sites, the discussions of human health risk will be revised to demonstrate that the residential exposure scenario is also protective of construction workers (e.g., constituents for which the construction worker SSL is lower than the residential SSL are not COPCs at that site). In such cases, a separate evaluation of construction worker risk is not necessary and will not be provided.

NMED Comment

6. *The sites at Threemile Canyon Aggregate Area impacted by volatile organic compounds (VOCs) were evaluated based on data collected in 2009-2010 during implementation of the October 2008 Investigation Work Plan (IWP). In the September 30, 2011 Notice of Disapproval of the Phase II Investigation Work Plan, Three Mile Canyon Aggregate Area (NOD Phase II IWP), NMED required the Permittees to describe in detail the methods that would be used to collect bulk soil samples for VOCs. NMED made this requirement in order to ensure that proposed collection methods would minimize the loss of VOCs during sample collection. In the October 2011 response to the NOD Phase II IWP, the Permittees stated that standard operating procedures (SOPs) were being revised to address potential loss of VOCs during sampling. Further, the Permittees proposed to submit a work plan addendum to NMED for review and approval before the Phase II investigation was implemented. Due to the methods used to collect the samples during the Threemile Canyon Aggregate Area investigation, VOC concentrations in soil samples may be under detected and risk underestimated. In the Supplemental Investigation Report the Permittees recommend additional sampling at some of the*

sites where VOCs are present. However, all sites where VOCs were detected should be re-evaluated, including: AOC C-14-006, AOC 15-005(c), SWMU 15-009(b), SWMU 15-009(c), SWMU 15-009(h), SWMU 15-010(b), AOC 15-014(h), SWMU 36-002, and SWMU 36-003(a). The Permittees must provide justification that the soil samples collected during the 2009-2010 investigation are representative of site conditions, or collect additional samples that are appropriate for evaluating the vapor intrusion pathway.

LANL Response

6. Because of the volatile nature of VOCs, all sampling procedures potentially result in loss of VOCs during sampling, thus biasing results low. As noted in NMED's comment, LANL has developed a new SOP for sample collection. The new SOP (ER-SOP-20069 – Soil, Tuff, and Sediment Sampling, http://permalink.lanl.gov/object/tr?what=info:lanl-repo/eprr/ADEP-ER-SOP-20069) consolidates previous equipment-specific SOPs into a single SOP addressing all sampling equipment and media. The previous SOPs addressed sampling using spades and scoops (SOP-06.09 – Spade and Scoop Method for Collection of Soil Samples, http://permalink.lanl.gov/object/tr?what=info:lanl-repo/eprr/ERID-205502), hand augers and thin wall tubes (SOP-06.10 – Hand Auger and Thin-Wall Tube Sampler, http://permalink.lanl.gov/object/tr?what=info:lanl-repo/eprr/ERID-205503), and core barrels (SOP-06.26 – Core Barrel Sampling for Subsurface Earth Materials, http://permalink.lanl.gov/object/tr?what=info:lanl-repo/eprr/ERID-205480). In addition, the new SOP provides specific, detailed guidance concerning collection of samples for VOCs. It should be noted that the sampling procedures used during the 2009–2010 sampling at Threemile Canyon Aggregate Area are consistent with the new SOP.

   As requested in NMED's comments, LANL re-evaluated the sites where samples were collected for VOC analysis to determine whether the results are representative of site conditions, or whether collection of additional samples for evaluating the vapor intrusion pathway is warranted.

   Samples for VOC analysis were collected at the following 11 SWMUs/AOCs within the Threemile Canyon Aggregate Area:

   - AOC 14-006 – potential soil contamination associated with a former high explosives (HE) storage magazine
   - AOC 15-005(c) – former container storage area
   - SWMU 15-009(b) – former septic system for firing site control building
   - SWMU 15-009(c) – former septic system for firing site control building
   - SWMU 15-009(h) – former septic system for firing site control building
   - SWMU 15-010(b) – former HE settling tank for HE machining operation
   - AOC 15-014(h) – outfalls for former discharges of photo-processing wastewater, noncontact cooling water, and storm water
   - SWMU 36-002 – sump from former explosive preparation and uranium polishing operations
   - SWMU 36-003(a) – former septic system for office and laboratory building
   - SWMU 36-008 – surface disposal area
   - SWMU C-36-003 – outfall for former discharges of photo-processing wastewater and laboratory sink and floor drainage

A total of 306 samples were collected for VOC analysis. VOCs were detected at 10 of these sites, with a total of 19 VOCs being detected. The frequency of detection ranged from 1 sample of 306 to 93 samples of 306. The most frequently detected VOCs were toluene (93 detections); 4-isopropyltoluene (74 detections); 1,3-xylene+1,4-xylene (46 detections); and acetone (45 detections). The detected concentrations were low, with the maximum detected concentration being acetone at 0.689 mg/kg. The maximum detected concentrations of the other 18 detected VOCs ranged from 0.000365 mg/kg to 0.083 mg/kg, with most of the detected concentrations being less than estimated quantitation limits (EQLs).

Based on the history of these sites, the low frequencies of detection and low detected concentrations appear to be representative of site conditions. Only one of the sites, SWMU 15-005(c), is known to have managed VOCs, and only in limited quantities. SWMU 15-005(c) was a former container storage area and wastes stored at the site included chem-wipes contaminated with acetone and ethanol (LANL 2016, 601216-10, p. 80). These wastes were stored in containers and there is no history of release. None of the other 10 SWMUs/AOCs is known to have managed VOCs.

The low potential for VOC contamination at these sites was noted in the NMED-approved investigation work plan for Threemile Canyon Aggregate Area (LANL 2008, 105673; NMED 2008, 104256). Sampling for VOCs was only proposed for 11 of the 25 sites included in the supplemental investigation report (SIR). The work plan noted that VOC contamination is not suspected or expected based on the site history and historical documentation (LANL 2008, 105673, p. 46). Because of the low potential for VOC contamination, field screening of samples for VOCs was not required by the approved work plan (LANL 2008, 105673; NMED 2008, 104256). Field screening for VOCs using a photoionization detector was, however, performed by the field team for health and safety purposes, and most results showed no readings above ambient concentrations. VOC readings greater than 1.0 part per million (ppm) above ambient were detected for only 11 samples collected at 5 sites. The maximum reading was 53 ppm above ambient, for sample RE15-10-8411, collected in the drainage below SWMU 15-010(b). This sample also had the highest detected concentration of toluene (0.0185 mg/kg).

Based on site history and VOC field screening, the soil sampling results for VOCs appear to be representative of site conditions. The evaluation of the vapor intrusion pathway in the SIR indicated no unacceptable risk due to vapor intrusion, and these results appear to be valid. Based on site history, low frequency and magnitude of detection, and decreasing concentrations with depth, vapor intrusion for most VOCs was evaluated qualitatively. In some cases, such as maximum concentrations above EQLs, quantitative screening was performed using the Johnson-Ettinger (J-E) model (LANL notes that use of the J-E model with bulk soil data is not consistent with current NMED guidance [NMED 2017, 602273] and is no longer performed). The screening levels calculated using the J-E model were 60 to 1,200,000 times the maximum VOC concentrations. Even if sample results were biased low because of losses from sampling, it would appear extremely unlikely the unbiased soil concentrations could be high enough to present an unacceptable risk. Therefore, additional sampling to evaluate the vapor intrusion pathway is unwarranted.

No revisions to the report are necessary.

NMED Comment

7. Based on NMED's comments, the Permittees' must revise their conclusions and recommendations for each SWMU or AOC as necessary.

LANL Response

7. Conclusions and recommendations will be revised as necessary.

SPECIFIC COMMENTS

NMED Comment

8. Section 8.6.4.4, Nature and Extent of Contamination, AOC 15-008(g), page 113:

Permittees Statement: Lead was detected above the soil BV in two samples with a maximum concentration of 370 mg/kg. Concentrations decreased with depth at both locations and decreased downgradient but increased laterally at location 15-610568. The residential SSL was approximately 1.1 times the maximum concentration and the industrial SSL was approximately 2.2 times the maximum concentration at location 15-610568. The vertical extent of lead is defined, and lateral extent at location 15-610568 is not defined.

***NMED Comment:** The nature and extent of lead contamination has not been defined to the west-southwest towards SWMU 15-006(d) or to the east at AOC 15-008(g). For example, sample 15-610722 has elevated concentrations of lead (644 mg/kg), increasing away from the site and at levels above the residential SSL. The Permittees must define the extent of contamination by collecting additional samples in the east and west-southwest directions. SWMU 15-006(d), currently an active site, is located less than 50 feet west of AOC 15-008(g). It is not clear where the boundary lies between these two sites or if contamination is commingled. The Permittees must define the boundary between these two sites. NMED notes that SWMU 15-006(d) is active, and that further investigation and/or risk analysis will be performed at that site in the future.*

LANL Response

8. AOC 15-008(g) is the location of a former pile of broken sandbags adjacent to the R-45 firing site [SWMU 15-006(d)]. The site map (Figure 8.6-1) shows the location of the former sandbags and the location of the R-45 firing pad to the west of AOC 15-008(g). Potential contamination associated with AOC 15-008(g) is expected to be found where the sandbags were located and where contaminated soil could have been transported by runoff. Contamination from SWMU 15-006(d) would potentially have been dispersed around the firing site when explosive tests were conducted. Thus, soil potentially impacted by AOC 15-008(c) would be within the area potentially impacted by SWMU 15-006(d), and there is no discrete boundary between the media affected by the sites. The maximum lead concentration at AOC 15-008(g) was detected at a step-out location (15-610568) to the west of the site, and the report notes that lateral extent is not defined. Lead concentrations decrease to the east of location 15-610568. No revision to the report is required. LANL notes that because AOC 15-008(g) is within the area potentially impacted by SWMU 15-006(d), it would be appropriate for further extent sampling at AOC 15-008(g) to be deferred and performed in conjunction with the investigation of SWMU 15-006(d).

   LANL notes that sample location 15-610722, discussed in NMED's comment, was collected at SWMU15-008(b), which is associated with the R-44 firing site [SWMU 15-006(c)], and data from this location are evaluated in section 8.5.4.4.

NMED Comment

9. Section 8.10.4.1 Soil, Rock, and Sediment Sampling, SWMU 15-010(b), page 134:

Permittees' Statement: Seventeen samples were collected in 2009–2010 from nine locations in the drainage below the site.

NMED Comment: A review of the NMED approved 2008 Threemile Canyon Aggregate Area Investigation Work Plan (WP) indicates that the Permittees proposed to remove a high explosives (HE) settling tank and its contents and to collect eight subsurface samples from four locations beneath the inlet pipe, tank inlet, tank, and tank outlet. As stated in Section 3.4, Deviations, of the Report, the settling tank was not removed and planned samples were not collected. While samples from nine locations were collected in the drainage below the settling tank, these samples are not sufficient to characterize the potential contamination from the settling tank. The Permittees must collect samples from beneath the inlet pipe, tank inlet, tank, and tank outlet in order to identify COPCs, determine nature and extent of contamination, and calculate potential risk to human and environmental receptors. The Permittees must also revise Section 10.0, Conclusions and Section 11.0, Recommendations, to indicate that at SWMU 15-010(b), the nature and extent of contamination has not been defined, that additional sampling is required, and that corrective actions complete without control status is not appropriate for the site at this time.

LANL Response

9. The report will be revised to indicate that samples were not collected at the settling tank and that potential subsurface releases from the tank have not been characterized. The report will be revised to recommend additional sampling for this site.

NMED Comment

10. Section 9.4.4.3 Soil, Rock, and Sediment Sampling Analytical Results, Inorganic Chemicals, SWMUs 36-008 and C-36-003, pages 165:

Permittees' Statement: Because SWMU C-36-003 is located within the footprint of SWMU 36-008, the combined data sets for SWMUs 36-008 and C-36-003 are evaluated below for COPC identification and nature and extent.

NMED Comment: The Permittees state that the combined data sets for SWMUs 36-008 and C-36-003 are evaluated for COPC identification and nature and extent, however, it is not evident that all the inorganic and organic chemicals were evaluated using the combined data sets. For instance, on page 173, Aroclor-1254 is reported as being detected in 18 samples. A review of Appendix E All Analysis spreadsheet of the Report indicates that Aroclor-1254 was detected in 19 samples at SWMU 36-008 and 8 samples at SWMU C-36-003. The Permittees must revise the Report to ensure that the correct data is evaluated for each potential COPC. Furthermore, the Permittees must revise the Report to conduct risk assessments for each individual site (see Comment 1). A review of Plates 26, 27, and 28 indicates that elevated concentrations of multiple COPCs appear to be concentrated in the drainage below the former outfall associated with SWMU C-36-003. The risk assessment for SWMU C-36-003 must include the 8 sampling locations in the drainage below the former outfall (36-610821 through 36-610828) as well as the sampling locations from SWMU 36-008 (36-610621, 36-610598, 36-610622) nearest to the most downgradient sampling location associated with SWMU C-36-003 (36-610823). The risk assessment for SWMU 36-008 may use the combined data sets.

LANL Response

10. The report currently evaluates SWMUs 36-008 and C-36-003 jointly, using a combined data set. The report will be revised so that the combined data set is used only to evaluate SWMU 36-008. The report will also be revised to provide a new evaluation of SWMU C-36-003 using data from the 8 sampling locations in the drainage below the former outfall (locations 36-610821 through 36-610828), as well as the sampling locations from SWMU 36-008 (locations 36-610621, 36-610598, and 36-610622), nearest to the most downgradient sampling location associated with SWMU C-36-003 (location 36-610823). See response to General Comment 1.

NMED Comment

11. Section 11.1, Recommendations, SWMU 15-008(b), pages 181-182:

NMED Comment: In Section 11.1, Additional Field Characterization and Remediation Activities, the Permittees recommend removal of contaminated soil at SWMU 15-008(b). As elevated uranium concentrations above residential SSLs are somewhat collocated with elevated lead concentration, this "hotspot" removal action must take into account the spatial distribution of both metals.

LANL Response

11. The hazard quotient (HQ) for uranium for the residential scenario at SWMU 15-008(b) is 0.4, which is below the NMED target of 1. Therefore, cleanup of uranium would not be required at this site to reduce unacceptable risk. The industrial HQ for lead at SWMU 15-008(b) is 11, and cleanup for lead is required to reduce unacceptable risk. LANL notes that elevated concentrations of uranium and lead are frequently collocated and that cleanup of lead will also result in removal of elevated concentrations of uranium. The recommendation for cleanup at this site is based on concentrations of lead, and no revision to the report to recommend cleanup of uranium is necessary.

NMED Comment

12. Section B-8.0, SWMU 15-007(c), Deviations from Work Plan, page B-5:

Permittees' Statement: SWMU 15-007(c): Two sampling locations were inadvertently not sampled.

NMED Comment: The Permittees must provide a description of the two sampling locations not sampled at SWMU 15-007(c) and justify that the missing samples do not constitute a data gap. If justification cannot be provided, the Permittees must collect the samples and incorporate the analytical results into a future investigation report.

LANL Response

12. The report will be revised to describe the two locations that were not sampled and to evaluate whether this constitutes a data gap. If so, the report will be revised to recommend additional sampling. LANL notes that the report already recommends soil removal and additional sampling for this site.

NMED Comment

13. Section H-5.4.8, Chemicals without ESLs, page H-60:

NMED Comment: Iron and perchlorate are listed as chemicals for which no toxicity data are available. Some ecological toxicity information (e.g.,) is available for iron and perchlorate. For example:

- *EPA CLU-IN information on the ecological impacts of perchlorates available at: https://clu-in.org/contaminantfocus/default.focus/sec/perchlorate/cat/Toxicology/.*

- *OSWER Directive 9285.7-69 on ecological screening levels for iron available at: https://rais.ornl.gov/documents/eco-ssl_iron.pdf.*

The Permittees must revise the discussion in the second paragraph of Section H-5.4.8 to indicate that qualitative information on the ecological toxicity of some chemicals without ecological screening levels (ESLs) is available. In addition, the revised discussion must state that eliminating chemicals known to produce negative impacts on the environmental media in the Threemile Canyon Aggregate Area (e.g., soil) from the quantitative ecological risk assessment (because no ESLs are available) results in a risk estimate that underestimates actual risk.

LANL Response

13. During 2017, LANL developed ESLs for perchlorate, and these are included in Release 4.1 of the ECORISK Database (LANL 2017, 602538). The discussion of chemicals without ESLs will be revised to reference the perchlorate ESLs in Release 4.1 of the ECORISK Database. The discussion of chemicals without ESLs will also be revised to reference OSWER Directive 9285.7-69 for iron.

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NMED Comment

14. Section 6.2.4.4 Nature and Extent of Contamination, Inorganic Chemicals, page 28:

NMED Comment: Magnesium concentrations increase rather than decrease with depth at location 12-610701 from 1980 mg/kg to 2040 mg/kg.

LANL Response

14. The report will be revised to indicate concentrations of magnesium increase with depth at location 12-601701.

NMED Comment

15. Section 8.3.4.3 Soil, Rock, and Sediment Sampling Analytical Results, SWMU 15-007(c), page 88:

NMED Comment: Aluminum was detected in six rather than five Qbt 3 samples.

LANL Response

15. The report will be revised to indicate aluminum was detected above the Qbt 2,3,4 BV in 6 samples.

NMED Comment

16. Section 8.4.4.1 Soil, Rock, and Sediment Sampling, SWMU 15-007(d), page 95:

NMED Comment: The first bulleted item erroneously refers to SWMUs 15-004(d) and 15-004(c) rather than SWMUs 15-007(d) and 15-007(c).

LANL Response

16. The report will be revised to replace 15-004(c) and 15-004(d) with 15-007(c) and 15-007(d).

NMED Comment

17. Section 8.4.3.3, SWMU 15-007(d), Soil, Rock, and Sediment Sampling Analytical Results, page 96:

NMED Comments:

a. The Permittees refer to the Gehan statistical test result for beryllium rather than for chromium.

b. Antimony was detected in one rather than two sediment samples and twelve rather than thirteen tuff samples. Magnesium was detected at a maximum concentration of 2870 mg/kg rather than 22,300 mg/kg. Barium, chromium, and copper concentrations increased rather than decreased with depth at locations 15-610760, 15-610728, and 15-610730, respectively.

LANL Response

17. a. The report will be revised to replace “beryllium” with “chromium” in the discussion of statistical test results for chromium.

b. LANL notes that this part of the comment appears to address sections 8.5.4.3 and 8.5.4.4 rather than section 8.4.3.3. Section 8.5.4.3 will be revised to indicate that antimony was detected above BV in 12 tuff samples and 1 sediment sample and that the maximum concentration of magnesium was 2870 mg/kg. Section 8.5.4.4 will be revised to indicate that concentrations of barium increased with depth at location 15-610760, concentrations of chromium increased with depth at location 15-610528, and concentrations of copper increased with depth at location 15-610530.

NMED Comment

18. Section 8.5.4.3 Soil, Rock, and Sediment Sampling Analytical Results, SWMU 15-008(b), pages 105-106:

NMED Comment: The maximum lead concentration is 138,000 mg/kg (16-610745) rather than 2870 mg/kg. However, NMED notes that tables H-2.3-28 and H-2.3-29 indicate the maximum lead concentration of 138,000 mg/kg was used in calculating the EPCs for the industrial and residential scenarios for SWMU 15-008(b), thus, no change to the EPC calculation is required.

LANL Response

18. The report will be revised to indicate the maximum concentration of lead was 138,000 mg/kg.

NMED Comment

19. Section 8.8.4.4 Nature and Extent of Contamination, Inorganic Chemicals, SWMU 15-009(c) page 125:

NMED Comment: Chromium was detected above the sediment and Qbt 2,3,4 BVs in 5 sediment samples and 9 tuff samples rather than 4 sediment samples and 10 tuff samples.

LANL Response

19. The report will be revised to indicate that chromium was detected above BV in 5 sediment samples and 9 tuff samples.

NMED Comment

20. Section 8.8.4.4 Nature and Extent of Contamination, Radionuclides, SWMU 15-009(c) page 127:

NMED Comment: Tritium was detected at a maximum concentration of 0.0173 pCi/g rather than 0.173 pCi/g. The residential SSL was approximately 15,843 times rather than 9900 times the maximum activity.

LANL Response

20. Table 8.8-4 shows the maximum tritium result is 0.173 pCi/g at location 15-610840. No revision to the report is necessary.

NMED Comment

21. Section 8.10.4.4 Nature and Extent of Contamination, Organic Chemical, SWMU 15-010(b) page 139:

NMED Comments:

a. Selenium was detected above the sediment and Qbt 2,3,4 BVs in one sediment sample and one tuff sample at location 15-610871. The Permittees must revise the statement for accuracy. Tables H-2.3-40 and H-2.3-41 indicate that the industrial and residential EPCs were determined using the maximum detected concentrations of selenium for sediment and tuff, thus no revision to the human health and risk screening evaluations are necessary.

b. Di-n-butylphthalate was detected in five rather than three samples.

LANL Response

21. a. The report will be revised to indicate selenium was detected above BV in one sediment sample and one tuff sample and had DLs above BV in 14 sediment samples and one tuff sample.

b. The report will be revised to indicate di-n-butylphthalate was detected in 5 samples.

NMED Comment

22. Section 8.11.4.4 Nature and Extent of Contamination, Radionuclides, AOC 15-014(h) page 152:

NMED Comment: Uranium was detected in one soil sample in addition to the four sediment samples reported.

LANL Response

22. LANL notes that this comment appears to relate to uranium-234 rather than uranium. The report will be revised to indicate that uranium-234 was detected above BV in 1 sample and 3 sediment samples rather than 4 sediment samples.

NMED Comment

23. Section 9.4.4.3 Soil, Rock, and Sediment Sampling Analytical Results, Inorganic Chemicals, SWMUs 36-008 and C-36-003, pages 167:

NMED Comments:

a. Copper was detected above the BV in fourteen rather than five soil samples (10 ALLH and 4 FILL). The Permittees must revise the statement for accuracy.

b. Lead was detected in three rather than 2 tuff samples.

LANL Response

23. a. The report will be revised to indicate copper was detected above BV in 14 soil samples.

b. Table 9.4-2 shows that lead was detected above BV in 2 tuff samples. LANL notes that the data spreadsheet in Appendix E shows 3 lead results in tuff above BV for SWMUs 36-008 and C-36-003, but that the result for sample RE36-10-8282 is presented twice, once for SWMU 36-008 and once for SWMU C-36-003. Thus, only 2 tuff samples had lead concentrations above BV and no revision to the report is necessary.

REFERENCES

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