Response to the Disapproval for the Investigation Report for Technical Area 57 Aggregate Area (Fenton Hill), Los Alamos National Laboratory, EPA ID No. NM0890010515, HWB-LANL-15-007, Dated October 28, 2015

INTRODUCTION

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

GENERAL COMMENTS

NMED Comment

1. *The last sentence of Section 5.1 states that "Organic chemicals that are clearly present from sources other than releases from a site (e.g., polycyclic aromatic hydrocarbons) may be eliminated as COPCs [constituents of potential concern]." While the statement is true, the exclusion of organic COPCs may be considered only if sufficient evidence (e.g., analytical data, trend analysis) and justification is provided to demonstrate that the contamination is not related to site activities and is from an off-site source. If it is determined and approved by NMED that an organic compound may be dropped as a COPC, the potential risks must still be addressed in the uncertainty section of the risk assessment. No response to this comment is necessary.*

LANL Response

1. Comment noted.

NMED Comment

2. *Population area use factors (PAUF) were used for refining the ecological risks. As noted in Tables G-5.5-1 and G-5.5-4, home ranges are cited (EPA 1993). However, the home ranges listed in these tables are not consistent with either the home ranges listed in EPA 1993 or the NMED guidance (Volume II). For example, the home range for the deer mouse is listed in the tables as 0.077 hectares (0.19 acres). The NMED guidance lists the home range for the deer mouse as 0.3 acres. None of the mean ranges listed in EPA 1993 are equivalent to the ranges listed in the Tables G-5.5-1 and G-5.5-4. Please clarify how the home ranges were derived and revise the IR for consistency with the NMED guidance.*

LANL Response

2. The Laboratory used the home range data presented in U.S. Environmental Protection Agency (EPA) guidance (EPA 1993, 059384) for the kestrel, robin, deer mouse, shrew, cottontail, and red fox. Table 3.3-1, Measures Required for the Wildlife Exposure Model, of the Laboratory's screening level ecological risk assessment (SLERA) methods document (LANL 2012, 226715) presents how the EPA data were used to derive the home ranges for each receptor. Below are the excerpted rows from the table for each receptor.

American kestrel	Home range	106	ha	EPA 1993, 059384	Average of all HR data for woods, forests, and agricultural areas
American robin	Home range	0.42	ha	EPA 1993, 059384, p. 2-199	HR data represent average territory size in an open, semiurban environment
Deer mouse	Home range	0.077	ha	EPA 1993, 059384, p. 2-298	Average of data from representative environments
Desert cottontail	Home range	3.1	ha	EPA 1993, 059384, p. 2-357	Average of all HR data for a woodlot and for mixed habitats (used eastern cottontail as surrogate)
Montane shrew	Home range	0.39	ha	EPA 1993, 059384, p. 2-214	Reported average HR for one environment.
Red fox	Home range	1038	ha	EPA 1993, 059384, p. 2-226	Average of all HR data over a variety of unspecified environments

The SLERA methods document referenced in the investigation report has been approved by NMED (2013, 521921) and the approach used to assign home ranges is the same as in the previous approved version of the SLERA methods document (LANL 2004, 087630). As a result, the approach used to assign home ranges for this investigation report is identical to the approach used in all other investigation reports previously submitted to and approved by NMED under the Compliance Order on Consent (Consent Order). No revision to the investigation report is necessary.

NMED Comment

3. For the vapor intrusion calculations, the Johnson and Ettinger model appears to be applying an out of date inhalation reference concentration (RfC_i) for trichloroethene. The output files list an RfC_i of 4.0E-02 milligrams per cubic meter (mg/m^3), while Integrated Risk Information System (IRIS) lists the RfC_i as 2.0E-03 mg/m^3. Please revise the Johnson and Ettinger calculations accordingly.

LANL Response

3. The Johnson and Ettinger model spreadsheets for trichloroethene have been revised to include the current reference concentration (RfC_i) of 0.002 mg/m^3 (Attachment G-2 on CD). The revised vapor-intrusion screening values have been included in Table G-4.3-1 for Area of Concern (AOC) 57-006 and Tables G-4.3-2 and G-4.3-3 for AOC 57-007. The text in sections G-4.3.1 and G-4.3-2 has also been revised accordingly.

SPECIFIC COMMENTS

NMED Comment

4. Section 1.1, General Site Information, page 1:

Permittees Statement: *"The 5 AOCs [Areas of Concern] used to manage geothermal exploration wastes were not subject to regulation under the Resource Conservation and Recovery Act (RCRA). These sites were closed under a discharge plan issued by the New Mexico Oil Conservation Division (NMOCD). Following termination of the discharge plan by NMOCD, no additional corrective actions are required for NMOCD-regulated sites and activities."*

NMED Comment: *NMED acknowledges that solid waste associated with the exploration or production of geothermal energy is not considered hazardous because of the exemption provided at 40 CFR 261.4.b.5. However, release of the hazardous constituents to the environment is not exempt from RCRA requirements. NMOCD terminated the discharge plan GW-031 on August 29, 2003. These 5 AOCs located at TA-57 (i.e., AOC 57-001(b), AOC 57-001(c), AOC 57-002, AOC 57-004(a), and AOC 57-004(b)) were added on Table K-1, Appendix K of the Permittees' RCRA Permit in 2010 when the permit was renewed. The justification for adding these sites to the Permit was provided in the Factsheet issued with the public notice. The Permittees did not provide comments related to these sites during the public comment period indicating concurrence with listing of these sites in the Permit.*

The Discharge Plan GW-031 was associated with 1-MG service pond (AOC 57-004(a)) and removal of the EE-2A well head. The February 14, 2003 letter from OCD to the Permittees states that "[N]MOCD approval does not relieve Los Alamos National Laboratory of responsibility for compliance with other federal, state, or local laws and/or regulations".

A RCRA Facility Investigation (RFI) Report for four of these sites was submitted to NMED in April, 1996. NMED could not locate any document that indicates these sites were approved for corrective action complete by either NMED or the U.S. Environmental Protection Agency (EPA). Based on the results of the investigations, the RFI Report proposed Phase II investigations for AOC 57-001(b) and a Voluntary Corrective Action (VCA) for AOC 57-002. No documents regarding these additional activities are included in NMED's Administrative Record. In addition, the ecological risk assessments were deferred at TA-57 until the sites could be assessed through the new Ecological Exposure Unit (Ecozone) approach. Please clarify whether the Phase II RFI, the VCA, and ecological risk assessments have been conducted for these sites. Pending evaluation of the information in the above-referenced documents, these sites will remain on the Permit until justification is provided that corrective action is complete at these sites and the sites do not pose unacceptable risk to the human health and the environment.

On a site visit on September 9, 2015, NMED staff noticed that the Milagro Pond (AOC 57-004(b)), the fifth AOC, still contains water and has not been closed. The site needs to be investigated, remediated as necessary, and confirmatory samples must be collected to demonstrate that corrective action is complete and the site does not pose unacceptable risk to the human health and the environment.

LANL Response

4. No investigation or remediation activities were conducted at the Fenton Hill site between submittal of the 1996 Resource Conservation and Recovery Act facility investigation (RFI) report and execution of the 2014 investigation. Therefore, the Phase II RFI, voluntary corrective action, and ecological risk assessment referenced in NMED's comment were not conducted. As discussed at the meeting following the September 9, 2015, site visit, the U.S. Department of Energy (DOE)/National Nuclear Security Administration are currently coordinating decommissioning of the Milagro Pond, including the collection of confirmation samples, with the U.S. Forest Service. Confirmation sampling results will be used to determine whether further actions are needed following decommissioning of the pond. Finally, DOE and Los Alamos National Security, LLC, request an opportunity to meet with NMED to fully discuss these five AOCs before additional actions are implemented under the current regulatory framework.

NMED Comment

5. Section 6.3.3, Summary of Previous Investigations, page 21:

It is not clear from the text whether the drainline from the trailer to the leach field that was located in 1994 was removed or left in place. The investigation work plan proposed to collect samples beneath the drainline from three depth intervals. Deviations from the work plan (Appendix B, Section B-9.0, page B-5) indicate that the drainline could not be located and samples were collected from 0.0-1.0 feet below ground surface (ft bgs) instead of 0.0-1.0 feet beneath the drainline, as proposed in the work plan. Please provide information on the depth at which the drainline was located to ensure that the samples collected from three depth intervals targeted the potential contamination beneath the drainline.

LANL Response

5. The 1994 RFI (LANL 1996, 053801) found and exposed the drainline leading from the trailer to the leach field at AOC 57-007. According to the RFI report, during the removal of the trailer, the end of the drainline leading to the leach field was exposed. A bobcat with a front-end loader as well as hand excavation was used to expose the line in an effort to locate the leach field. The leach field was found to be only 1.0−2.0 ft below the ground surface (bgs) and the RFI sample was collected at "the 0- to 1-ft depth from the area beneath the end of the drainline" (i.e., 0.0–1.0 ft below the end of the drainline). Because the bottom of the drainline would be located at the top of the leach field, the bottom of the drainline appears to have been at a depth of 1.0 ft bgs.

   In 2014, potholing was undertaken to locate the drainline before sampling was performed at locations 57-4011, 57-4012, and 57-4013 (the investigation work plan proposed field locations 7-1, 7-2, and 7-3, respectively), which were along the expected alignment of the drainline as determined during the 1994 RFI. The drainline could not be located in 2014, indicating it had been removed at some point, and bedrock was encountered at about 2 ft bgs at all three locations. Location 57-4012 was moved from the original proposed location by approximately 5 ft downslope/downgradient of the marked existing utility lines. It was necessary to move this sampling location to provide clearance from the utility lines, as required by the excavation permit. At locations 57-4011 and 57-4013, fill material was encountered from 0.0–1.0 ft bgs, but no fill was encountered at any depth at the new location 57-4012, where native soil was encountered from the surface to the top of bedrock. Based on the presence of fill at 0.0–1.0 ft bgs at two locations (used as a bed to lay the drainline), the native soil found at 0.0–1.0 ft bgs at new location 57-4012 (i.e., indirect evidence that locations 57-4011 and 57-4013 were

within the footprint of the former drainline), and the information from the RFI report, it was concluded that the former drainline depth was no more than 1 ft bgs.

Samples were collected in 2014 at location 57-4011 from 0.0–1.0 ft, 1.0–2.0 ft, and 3.0–4.0 ft bgs; at location 57-4012 from 0.0–1.0 ft, 1.25–2.25 ft, and 4.25–5.25 ft bgs; and at location 57-4013 from 0.0–1.0 ft, 1.0–2.0 ft, and 4.0–5.0 ft bgs. The investigation work plan specified collection of samples at intervals of 0–1 ft below the drainline, 1 ft above tuff, and 2–3 ft into tuff. Based on a drainline depth of 1 ft bgs and the depth to tuff of 2 ft bgs, the sampling interval of 1.0–2.0 ft bgs encompasses both the intervals 0–1 ft below the drainline and 1 ft above tuff. Rather than collect samples from only two intervals, the uppermost sample interval was revised to be from 0.0–1.0 ft bgs to encompass the interval of the drainline. In addition, the sampling intervals represent a near-continuous profile from the surface to approximately 1 ft above the tuff (contact at approximately 2 ft bgs) and 2.0–3.0 ft into tuff, fulfilling the sampling proposed in the investigation work plan to define vertical extent at locations 57-4011, 57-4012, and 57-4013. Although location 57-4012 was moved from the proposed location for health and safety reasons, it is still close enough to the location of the former drainline to characterize potential releases.

The explanation of sample depths in section 6.3.4.1 and in Appendix B, section B-9.0, Deviations from the Work Plan, have been revised for clarity.

NMED Comment

6. Appendix G, Section G-2.3, Determination of COPCs, page G-2:

An exposure interval of 0-5 ft bgs was applied for the ecological risk screenings. In accordance with Section 3.3 of Volume II of the 2015 NMED Risk Assessment Guidance for Investigations and Remediation, the maximum detected concentration from the 0-10 feet bgs should be used as the exposure interval for the initial Tier 1 ecological screening assessment. As a result of using the smaller exposure interval, risks were not estimated for the following:

- *AOC 57-006: barium, chromium, copper, selenium, and bis(2-ethylhexyl)phthalate, and*
- *AOC 57-007: perchlorate.*

In addition, as a less conservative exposure interval was applied in the screening assessments, the initial hazards were underestimated for the following constituents:

- *AOC 57-006: zinc (NMED notes that antimony and trichloroethene were only minimally underestimated and the difference would not change the results of the risk screen), and*
- *AOC 57-007: arsenic.*

The Permittees must revise the screening level assessment to assess the correct exposure interval in accordance with the current NMED guidance.

LANL Response

6. No revision is necessary. As noted in the response to General Comment 2, the Laboratory uses NMED-approved SLERA methods to conduct ecological risk screening assessments. The Laboratory's methods use the depth interval of 0.0–5.0 ft bgs as the exposure interval for ecological receptors. The 0.0–5.0 ft bgs exposure interval used in this investigation report is the same as the exposure interval used to conduct ecological risk screening assessments in all other investigation reports previously submitted to and approved by NMED under the Consent.

REFERENCES

EPA (U.S. Environmental Protection Agency), December 1993. "Wildlife Exposure Factors Handbook," Vol. I of II, EPA/600/R-93/187a, Office of Research and Development, Washington, D.C. (EPA 1993, 059384)

LANL (Los Alamos National Laboratory), April 1996. "RFI Report for Potential Release Sites at TA-57, 57-001(b), 57-001(c), 57-002, 57-004(a), 57-006, 57-007 (located in former Operable Unit 1154)," Los Alamos National Laboratory document LA-UR-96-1062, Los Alamos, New Mexico. (LANL 1996, 053801)

LANL (Los Alamos National Laboratory), December 2004. "Screening-Level Ecological Risk Assessment Methods, Revision 2," Los Alamos National Laboratory document LA-UR-04-8246, Los Alamos, New Mexico. (LANL 2004, 087630)

LANL (Los Alamos National Laboratory), November 2012. "Screening-Level Ecological Risk Assessment Methods, Revision 3," Los Alamos National Laboratory document LA-UR-12-24152, Los Alamos, New Mexico. (LANL 2012, 226715)

NMED (New Mexico Environment Department), January 28, 2013. "Approval, Screening-Level Ecological Risk Assessment Methods, Revision 3," New Mexico Environment Department letter to P. Maggiore (DOE-LASO) and J.D. Mousseau (LANL) from J.E. Kieling (NMED-HWB), Santa Fe, New Mexico. (NMED 2013, 521921)