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Mr. David Cobrain
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Dr. E, Bldg 1
Santa Fe, NM 87505

RE: Draft Technical Review Comments on the "Investigation Report for Ancho, Chaquehui, and Indio Canyons, Los Alamos National Laboratory, February 2011"

Dear Mr. Cobrain:

Attached please find draft technical review comments on the "Investigation Report for Ancho, Chaquehui, and Indio Canyons, Los Alamos National Laboratory, February 2011". The risk assessment sections were reviewed per request of Mr. Ben Wear in an email dated March 1, 2011.

If you or any of your staff have questions, please contact me at (801) 451-2864 or via email at paigewalton@msn.com.

Thank you,

Paige Walton

Paige Walton
AQS Senior Scientist and Program Manager

Enclosure

CC: Ben Wear, NMED (electronic)
Neelam Dhawan, NEMD (electronic)
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Draft Technical Review Comments on the Investigation Report for Ancho, Chaquehui, and Indio Canyons, Los Alamos National Laboratory, February 2011

General Comments

1. Although analyses for dioxins were requested for some surface water samples collected at Ancho, Chaquehui, and Indio Canyons, it does not appear that dioxins/furans were included in the analytical suites for sediment samples, as indicated in Tables C-2.0-1 and C-6.0-1. Due to the nature of activities conducted at technical area (TA)-49 (burn site), chemical releases of dioxins/furans are expected to have occurred within Area 6 of TA-49. Although dioxin/furan releases are also expected to have occurred during the 1977 La Mesa Fire, laboratory activities have likely contributed to concentrations of dioxins/furans at Ancho, Chaquehui, and Indio Canyons. As such, one of the objectives of this investigation should be to determine if dioxins/furans related to laboratory activities have migrated into the canyons. The lack of data on concentrations of dioxins/furans at reaches sampled within Ancho, Chaquehui, and Indio Canyons constitutes a data gap for the nature and extent of contamination investigations, and the human and ecological risk assessments. Amend the investigation report at Ancho, Chaquehui, and Indio Canyons to include analytical data for dioxins/furans in canyon sediments.

2. The USEPA Regional Screening Level (RSL) for mercury (inorganic salts) was utilized for the residential scenario. Clarify whether analytical results define speciation of mercury, thus justifying the use of the RSL and toxicity data for mercury salts.

3. The tap water screening level (SL) and ecological screening level (ESL) for chromium III were applied in the risk assessments. In contrast, the soil screening level (SSL) for chromium VI was utilized in the human health risk assessment from exposure to canyon sediments. Clarify whether species specific laboratory results were obtained for chromium and determine whether screening levels for chromium III or chromium VI should be utilized in the risk assessment.

4. It is not clear what explosives were included for analyses; results are only provided for TABN. It is not clear that TABN would represent all potential explosives that could be present in sediments/surface water.

5. It appears that surface water data are tenuous for certain analytes, as analytical suites were not requested for many of the surface water samples. In particular, dioxin analyses were only requested from three samples at two locations. Clarify the rationale for requesting dioxin analyses from limited samples. Determine whether adequate analyses were conducted for surface water.

Specific Comments

1. Table 6.2-1. The residential SSL for chromium is annotated by footnote "e", indicating that the USEPA RSL was used. It appears that this footnote is incorrect as the value listed is from NMED (2009). Revise Table 6.2.1 to display the correct source for the chromium SSL.

2. Table 6.3-1. A water ESL is not listed for chromium. The ECORISK (v.2.5) database lists an ESL of 77 µg/L for chromium and an ESL of 11 µg/L for Chromium VI. Modify Table 6.3-1 to include the water ESL for chromium. It is noted that this omission is not repeated in subsequent tables and does not affect the results of the ecological risk assessment.

6. Table 6.4-1. The human health persistent stormwater comparison value for thallium (6.3 µg/L) presented on Table 6.4-1 is inconsistent with the New Mexico Administrative Code (NMAC) surface water standard (0.47 µg/L) listed in Section 20.6.4.900 (J) presented on the following website: http://www.nmcpr.state.nm.us/nmac/parts/title20/20.006.0004.htm. Clarify this inconsistency and update Table 6.4-1 to include the correct stormwater comparison value for thallium. Determine if the detected concentrations of thallium in stormwater at Ancho, Chaquehui, and Indio Canyons exceed the NMAC surface water standard of 0.47 µg/L.

7. Table 8.2-4. There is an erroneous footnote in Table 8.2-4. The first time that footnote "a" appears in the table is next to the row heading entitled "Residential SL (µg/L)" indicating that all the values in this row are maximum contaminant levels. Revise the table to display accurate footnotes.

8. Table 6.5.1. Several types of water media were evaluated at Ancho, Chaquehui, and Indio Canyons (i.e., non-storm related surface water, spring water, and stormwater) and compared with different sources of standards. The investigation report is compiled in a way that is cumbersome to follow the hierarchy of standards and the manner in which surface water COPCs were screened and identified. The groundwater screen is not shown in the investigation report, and Table 6.5-1 does not show which comparison values were applied for each type of media for each analyte. Revise Table 6.5.1 to clearly illustrate the screening values that were used for surface water screening at Ancho, Chaquehui, and Indio Canyons.

9. Table 8.2-5. Detected concentrations of arsenic in surface water were not included in the risk assessment. It is recognized that arsenic was only detected in filtered surface water samples, and Section 8.2.2.3 explains that only detections in unfiltered samples were included for evaluation in the risk assessment. Because arsenic was identified as a COPC in sediment in the human health risk assessment and was retained for further evaluation, detections of arsenic in filtered surface water samples should be included in the risk assessment. Furthermore, some of the detections of arsenic in filtered surface water (2.9 µg/L and 1.88 µg/L; Table 6.3-1) are greater than the NMED (2009) tap water screening level of 0.448 µg/L. Revise the risk assessment to include detections of arsenic in surface water that were obtained from filtered samples.

10. Section 8.1.4 and Tables 8.1-1 through 8.1-8. The rationale for utilizing a hazard quotient (HQ) of 3.0 as a criterion to determine whether COPCs should be retained for further

evaluation in the screening level ecological risk assessment is unclear and not justified. LANL's (2004) Screening Level Ecological Risk Assessment Methods Revision 2 states that an HQ of 0.3 should be used as a criterion for determining ecological COPCs. In addition, NMED's (2008) Guidance for Screening Level Ecological Risk Assessments states that an HQ of 0.3 for individual chemicals or a hazard index (HI) of one (1) should be used for determining whether ecological COPCs should be evaluated further in the ecological risk assessment. It is acknowledged that previous assessments where site-specific biota studies were conducted, such as Los Alamos and Pueblo Canyons (LANL 2004, 087390, p. 8-2); Mortandad Canyon (LANL 2006, 094161, p. 96); Pajarito Canyon (LANL 2009, 106939, p. 64); and Sandia Canyon (LANL 2009, 107453, p. 77) utilized a HQ of 3.0 for determining ecological COPCs. Since a site-specific biota study has not been conducted at Ancho, Chaquehui, and Indio Canyons, revise the ecological risk assessment for consistency with guidance. A hazard index of one (1) should be used as the threshold value for determining whether ecological COPCs should be further evaluated in the ecological risk assessment.

11. Section 8.1.7. Concentrations of ecological COPCs were compared with concentrations of COPCs from previous biota studies in other canyons at LANL where associated effects information indicated no unacceptable ecological risks. While this comparison may potentially provide relevant information for Ancho, Chaquehui, and Indio Canyons, it should not take the place of a site-specific biota study or a refined ecological risk assessment using the methods outlined in LANL (2004) and NMED (2008). Refinement of the ecological risk assessment may include the use of area use factors, population area use factors, and/or use of lowest-observed adverse effect levels (LOAELs). Comparisons with previous biota studies at other LANL sites could be included as additional evidence in a weight of evidence analysis, for example, at Ancho, Chaquehui, and Indio Canyons. Revise the ecological risk assessment accordingly.