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AQS, Inc.
2112 Deer Run Drive
South Platte, Colorado 80405
ENTERED
(801) 476-1365
www.aqsnet.com



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Mr. David Cobrain
New Mexico Environment Department (NMED)
Hazardous Waste Bureau
2905 Rodeo Park Dr. East
Building One
Santa Fe, NM 87505

RE: Draft Technical Review Comments on Los Alamos National Laboratory's Upper Sandia Canyon Aggregate Area Investigation Report, dated May 2010

Dear Mr. Cobrain:

Attached please find draft technical review comments on Los Alamos National Laboratory's (LANL) "Upper Sandia Canyon Aggregate Area Investigation Report", dated May 2010.

Background concentrations for soil and tuff (Qbt 2,3,4) at LANL have been established and are documented in LANL's "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory" (September 1998). However, much of the soil and tuff associated with the areas included in the investigation of the Upper Sandia Canyon Aggregate Area are comprised of soil/tuff associated with Qbt 4. From a review of LANL's background data set, only three samples from Qbt 4 were used to develop the background reference values for Qbt 2,3,4. According to LANL ("Investigation Report for Sites at Technical Area 49 Inside the Nuclear Environmental Site Boundary", dated May 2010), Qbt 4 appears to have naturally higher levels of several inorganics as compared to Qbt 2 and Qbt 3. LANL discussed a concern in the Technical Area 49 investigation that the previously developed background data set may not be appropriate for use at TA-49 and may result in retaining constituents as being potentially site related when in fact the concentrations may be reflective of background. It is believed that LANL intends to collect additional background data representative of Qbt 4 to augment the existing background database. Some consideration to the development and application of a Qbt 4 background data may be warranted for the Upper Sandia Aggregate Area for use in evaluating and identifying constituents of potential concern at sites where additional investigation is proposed. At Areas of Concern (AOC) 03-038(c) and 03-016 as well as Solid Waste Management Unit (SWMU) 03-056(1), the risks to the construction worker were driven by manganese and to a lesser extent cobalt. Based upon the descriptions of the site histories, it is not clear whether manganese could be present due to site activities. However, it may be possible that the manganese detected in these areas is actually reflective of naturally higher levels present in Qbt 4. A comment addressing this background has not been provided but can be drafted if NMED wishes.



Several of the constituents included in the risk assessments did not have an associated NMED soil screening level (SSL) for the construction worker scenario. LANL calculated SSLs using toxicity data from the Regional Screening tables and the methodology in the NMED Soil Screening Guidance. Verification of the calculated values was conducted and data could be replicated.

For AOC 03-014(v), initial soil excavation was conducted to a depth of about seven (7) feet and soil samples were collected. However, as part of construction, an additional eight (8) feet of soil was removed; soil samples were not collected at this depth. The total depth of soil removed was approximately 15 feet. As no confirmation samples were collected at the final depth, the risk assessment was conducted using the samples collected from approximately 7 feet. Total petroleum hydrocarbons (TPH) were detected but at levels below acceptable risk limits. While it is not clear whether the vertical extent of contamination has been delineated, it appears that since risks were within acceptable levels at the sampled depth, upon removal of an additional 8 feet of soil would most likely result in even lower risk. However, NMED may wish to review the data to ensure that nature and extent has been fully characterized at this site.

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
AQS Senior Scientist and Project Lead

cc: Neelam Dhawan, NMED (electronic)
Joel Workman, AQS (electronic)

Draft Technical Review Comments on Los Alamos National Laboratory's (LANL) Upper Sandia Canyon Aggregate Area Investigation Report, dated May 2010

General Comments

1. For evaluation of noncarcinogenic hazards, hazard indices (HI) were calculated separately for inorganics/organics and total petroleum hydrocarbons (TPH). It is not clear why these were evaluated separately and hazards associated with TPH were not combined with other hazards. It is noted that combining the HIs from TPH with the HIs from other noncarcinogens would not affect the conclusions of the assessments. For most sites, TPH did not drive risk or contribute significantly toward risk. At Area of Concern (AOC) 60-004(b,d), combining the HIs for the construction worker would result in an overall HI slightly above the target level of 1.0. For AOC C-03-016, TPH drove risk for the construction worker and resident, thus combining HIs would still result in excess risk.
2. In reviewing the data for AOC C-03-016, it appears that there are increasing concentrations of several inorganics with depth. Many of the inorganics detected at 16 feet are not only greater than background but also greater than samples collected in surface soil. While the oil cleanout bin and associated soil were removed, it may be possible that sufficient soil was not removed to depth. Provide additional discussion demonstrating that the extent of vertical contamination has been adequately defined for this site and previous corrective actions (soil removals) were sufficient. It is noted that the residential and construction worker scenario had HIs that exceeded the target level due to the presence of total petroleum hydrocarbon – diesel range organics (TPH-DRO) and the construction worker also had an elevated HI due to manganese. The elevated HIs may also reflect residual contamination and indicate that additional investigation and/or removal of soil may be warranted.

Specific Comments

1. AOC 03-038(c) and SWMU 03-56(l) had an elevated hazard quotient for the construction worker. The primary hazard drivers were manganese (85.7%) and cobalt (11.4%). Cobalt also was the primary driver for an elevated residential hazard quotient (50%). A discussion is provided indicating that the risks are overestimated for the site and to illustrate this point, the exposure point concentration is divided by the maximum background concentration resulting in a HI of 2 (for the construction worker). It is not clear why the EPC was divided by background, but nonetheless, the resulting HI is still above the target hazard level. Additional lines of evidence are required to justify the elevated risks due primarily from manganese and cobalt. In lieu, site controls to ensure protection against inhalation hazards should be in place for any future development of the site.
2. AOC C-03-016 has an elevated construction worker hazard quotient with 100% of the hazard being contributed by manganese. In addition, the hazard quotient for the construction worker (HQ = 6) and the residential (HQ = 14) scenarios for the total petroleum hydrocarbon – diesel range organics (TPH-DRO) exceeded the target hazard levels. The discussion of the risk results (Section I-4.3.2) discusses manganese but does not address risks due to TPH-DRO. Both the construction worker and resident has significantly elevated HIs due to TPH-

DRO. Sufficient justification has not been provided demonstrating that additional investigation or remediation is needed at AOC C-03-016.

3. As part of the discussion of the ecological risks (Sections I-5.6 and I-5.6), a comparison to concentrations detected in other areas within LANL (Los Alamos, Pueblo, Mortandad, Pajarito, and/or Sandia Canyons) that are being investigated as part of the biota study was addressed. A blanket statement was used indicating that concentrations were similar to these areas. However, no qualitative evidence was provided to demonstrate this assumption. While the ecological assessment and refined ecological assessment indicated no elevated risk to receptor species, the lack of this qualitative evidence does not impact the conclusions. However, for future assessments, if other areas being addressed under the biota studies are to be used as a line of evidence to justify elevated risk, then a more rigorous comparison (to include statistical comparison of datasets) will be required.
4. Table I-2.2-13. The exposure point concentration for antimony is listed as the maximum detection limit (1.12 milligrams per kilogram, mg/kg). It should be noted that Table 6.25-2 lists a detection limit for antimony for sample number RE03-09-13913 of 1.16 mg/kg, representing the actual maximum detection limit for antimony. However, the difference in these two data is insignificant and would not result in any change in the risk analyses. No response to this comment is required.
5. Tables I-2.2-16 and I-2.2-17. In reviewing the summary of the sample data contained in Table 6.43-2, it appears that thallium and selenium should have been retained as constituents of potential concern (COPCs) for the industrial, construction, and residential scenarios for Solid Waste Management Unit (SWMU) 03-056(l). Table 6.43-2 lists a value for thallium of 2.82 mg/kg for the 0 – 0.4 feet interval and a value for selenium of 2.92 mg/kg (depth of 0 – 0.4 feet). These values are above the maximum backgrounds for thallium (1.0 mg/kg) and selenium (1.7 mg/kg) as provided in Table 3.1-3 of LANL's "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory" (September 1998). Following LANL's Standing Operating Procedures (SOP) for background (SOP-5245, Background Value Comparisons—Inorganic Chemicals), if sufficient data are not available to conduct a statistical test, and the maximum site concentration is greater than the maximum background concentration, the constituent will be retained as a COPC. Revise Tables I-2.2-16 and I-2.2-17 and all subsequent risks analyses for the SWMU 03-056(l) accordingly.
6. Table I-2.2-22. It is noted that risk assessments for the construction and residential scenarios for AOC 03-036(b) were conducted even though the data tables indicated that all samples were collected below the maximum exposure depth (10 feet) for these receptors.