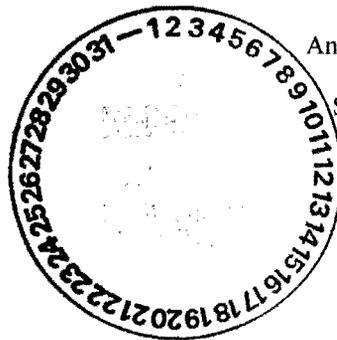




TROO



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May 29, 2008

DCN: NMED-2008-7

Mr. David Cobrain
Hazardous Waste Bureau
2905 Rodeo Park Dr. E/Bldg 1
Santa Fe, NM 87505

RE: Los Alamos National Laboratory, Technical Review of the Risk Assessment for the
Pueblo Canyon Aggregate Area Investigation Report, dated March 2008.

Dear Mr. Cobrain:

As requested in an email dated April 25, 2008 from Kathryn Roberts, I reviewed the above-referenced document, focusing on the human health and ecological risk assessments contained within Appendix H. The attached contains the draft technical comments noted during this review.

Based on previous comments and subsequent response to comments by Los Alamos concerning fate and transport of contaminants to groundwater, the included discussion and rationale that site contaminations do not have potential to impact groundwater is acceptable. However, the justification on depth to groundwater, chemical and physical properties of the soil/tuff and contaminants, has in the past been related to sites where a source for soil saturation has not been present. In the case of the Pueblo Canyon Aggregate areas, water treatment plants, underground storage tanks, etc., were present, representing a potential for a continuing source of water to enhance downward migration of contaminants. Some additional review of the vertical extent of contamination and possibly the records from removal of the underground storage tanks may be warranted to provide an additional line of evidence that vertical migration of contaminants over the years when the facilities were operational did not occur.

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

Sincerely,

Paige Walton
Senior Scientist, AQS

Enclosure

32576



cc: Joel Workman, AQS (electronic)
Kathryn Roberts, NMED (electronic)

DRAFT
Technical Review Comments Los Alamos National Laboratory
Pueblo Canyon Aggregate Area Investigation Report
Dated March 2008

Comments

1. Risk scenarios for each of the sites included in this investigation are evaluated for residential, industrial, recreational, and/or ecological risk. However, the rationale used to determine where industrial risk was evaluated is unclear from review of the information provided in the site histories (Section 2.0) or Appendix H. The industrial scenario is an evaluation of an office worker, with limited exposure to site contaminants, as only soil up to a depth of one foot was included in the evaluation. However, given the mixed use of the areas, it is plausible to assume that re-development of most of the areas could occur. Thus, it is not clear why a construction scenario, with exposure to soil up to ten feet below ground surface (bgs), was not evaluated over the office worker. The construction scenario should be evaluated at all sites as this is a realistic scenario. Revise the report to include the decision criteria used to determine where an industrial (office) worker was evaluated. In addition, revise the risk assessment to address risk associated with a construction (intrusive) scenario.
2. Section H-3.1, Receptors and Exposure Pathways, page H-5. Ecological risk was evaluated for exposure to residual contamination at each site unless the site was covered in pavement. While the asphalt surface acts as an engineering control to limit or prevent ecological exposure to potential contamination underlying the paved surface, it is uncertain whether the pavement will remain in place in the future. Either address ecological risk to underlying soil or provide controls to ensure that the sites will remain paved or other measures will be taken to protect ecological receptors from underlying soil.
3. Section H-4.1, Soil Screening Levels, page H-11. Please note that the second sentence should indicate that soil screening levels were adjusted from a risk level of 10^{-6} not 10^{-5} . No response is required.
4. Section H-4.2.2, AOC 00-018(b), page H12. Please note that the second sentence should refer to the industrial scenario and not the recreational scenario. No response is required.
5. Section H-4.3.2, Exposure Assessment, AOC 00-030(d), page H-18. The total excess cancer risk for the residential scenario was exceeded due to the use of the maximum detected concentration for four polycyclic aromatic hydrocarbons (PAHs). When average concentrations were applied for these PAHs, the total cancer risk dropped to within acceptable limits. However, the use of the mean concentration is not typical practice and is inconsistent with EPA guidance (OSWER 9285.6-10); rather an estimate of the mean (upper confidence level of the mean) is preferred. It is noted that in reviewing the data for these PAHs provided in Table B-4.3-1, insufficient data were available to calculate an upper confidence level of the mean (UCL) and further, when data were input into the ProUCL software, the maximum detected values were indicated to be outliers. In looking at these data, the maximum detected concentrations were all from approximately 7-7.5 feet bgs in the former septic tank area. As deeper samples

within the septic tank were not collected, there is uncertainty whether the vertical extent of contamination in this area has been delineated. This conclusion also appears to contradict the conclusion presented in Section B-17.4.3 (page B-41) of the report, that the vertical extent of contamination has been determined across the site. Address whether deeper samples are necessary to determine the vertical extent of contamination in the septic tank area. In addition, based upon the consistency of detections above residential risk-based levels with depth in the septic tank, it does not appear that the site meets the criteria for residential release with no restrictions.

6. Section H-4.3.2, Exposure Assessment, AOC 00-030(h), page H-19. The total excess cancer risk is above the target risk level when calculated using the maximum detected concentrations as exposure point concentrations (EPCs). However, when average concentrations were applied, the target level was still exceeded. Even using average concentrations (see above comment concerning use of average over an UCL) sufficient justification has not been provided to demonstrate that residual contamination in this area is acceptable for free/residential release. It is suggested that in lieu of collecting additional data and/or removal actions, an industrial risk assessment should be conducted (industrial and construction scenario) and if risks limits allow based on these analyses, restrictions limiting use to industrial use only be placed on this site.
7. Section H-5.4.4, Comparison with Background Concentrations, page H-34. For each of the areas addressed under this investigation, justification was provided for exclusion of constituents of potential ecological concern (COPEC) from additional evaluation in the ecological risk assessments based upon a relative comparison of the EPCs to background concentrations for both soil and tuff. The concern with this approach is that background metals concentrations between soil and tuff may vary greatly. By not distinguishing whether the potentially elevated concentration is associated with a sample collected from soil or tuff, one of the media could potentially be elevated with respect to background and require additional analysis. As an example, for SWMU 00-018(a), the EPC for barium was determined to be not significantly different from background (soil and tuff) and thus eliminated as a COPEC. However, in reviewing the site data presented in Table B-2.1-2, the background datum for soil is 295 mg/kg while the background datum for tuff (Qbt 2,3,4) is 46 mg/kg. The table also lists detections for barium of 394 mg/kg (sample no. 0100-96-0513, unknown medium), 75 mg/kg (sample no. RE00-06-67423, Qbt 2,3,4), and 82.7 mg/kg (sample no. RE00-0667425, Qbt 2,3,4). At SWMU 00-018(a), barium is elevated when compared to medium-specific background (46 mg/kg). For SWMU 00-018(a), barium should be retained as a COPEC and additional analysis of whether there is unacceptable risk be evaluated. Revise Section H-5.4.4 to include a medium-specific background evaluation of COPECs detected in soil and tuff at each site.
8. Table H-5.3-1, Ecological Screening Levels for Terrestrial Receptors, pages H-213 – H-217. It is noted that the Los Alamos Ecorisk database (release 2.2) was the only source used for obtaining ecological screening levels (ESLs) used in the ecological screening assessment. However, several chemicals are excluded from evaluation, for which toxicity data and screening levels are available in literature and on the Environmental Protection Agency's (EPA) Integration Risk Information System (IRIS) database. As a limited example, toxicological data are available for 4,4'-DDD, nitrate, ethylbenzene, isopropylbenzene, styrene, aldrin, and endosulfan sulfate. Exclusion of these chemicals

in Ecorisk may be a function of the database being over three years old. Revise the ESLs to include a more complete assessment of toxicological data, derivation of ESLs, and associated risks.

9. Tables H-5.4-1 through H-5.4-12, pages H-252 - H-257. These tables provide a comparison of the 95% UCLs to the background reference values. Background concentrations are represented by the upper tolerance level (UTL) (refer to EM/ER 98-372). As described in the EPA supplemental guidance to their Risk Assessment Guidance for Superfund (Calculating the Concentration Term, Vol. 1, No. 1) exposure to site contaminants over a long period of time using the arithmetic average concentration is most representative. As individuals are assumed to move randomly across an exposure area over time, the spatially averaged soil concentration should be used to estimate the true average contaminant concentration contacted over time. Therefore, the 95% UCL is used for comparison to a screening level that is protective of soil ingestion/inhalation. However, the 95% UTL represents a value that 95% of the population will fall below with 95% confidence. Only individual data points from the site should be compared to the background UTL; developing a statistically-derived, averaged value (i.e., 95% UCL) from site data for comparison to the background UTL is not acceptable. Thus, comparing the EPCs, which are 95% UCLs, to background UTLs is not acceptable risk assessment practice. Revise the risk assessment for each site where individual concentrations exceed the background UTL, and provide additional lines of evidence to justify exclusion of the inorganic as a COPC. For these sites, additional site attribution analyses using non-parametric statistics may be warranted.