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

RE: Draft Technical Evaluation of the Response to Comments, Playa Lake (SWMU 103)  
Corrective Measures Study Work Plan, Cannon Air Force Base, New Mexico,  
December 2009

Dear Mr. Cobrain:

This letter addresses the technical review of the response to comments on Cannon Air Force Base's (CAFB) "Playa Lake (SWMU 103) Corrective Measures Study Work Plan" dated December 2009. Under direction of Ms. Patricia Stewart (NMED), a more detailed evaluation of the response to Comment No. 3 and the risk assessment contained in Appendix F of the "Final Playa Lake (SWMU 103) Corrective Measures Study Work Plan" dated July 2009 was requested. The overall conclusions of both the human health and ecological risk assessments cannot be assessed at this time, as additional characterization is needed. However, comments on the methodology and assumptions were provided.

Unless specifically addressed below, the response to the NMED comment was deemed adequate as presented.

**Comment No. 3**

This was a multi-part comment. Each issue is discussed below.

- A request was made that additional sediment and surface water samples be analyzed for "diesel-range organics (DRO) extended for comparison to unknown oil and also volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and all target analyte list (TAL) metals." The response suggested that past sampling results used in the risk assessments indicated that only total petroleum hydrocarbons (TPH) and a few select metals were chemicals of potential concern (COPC) that warranted additional sampling. The facility further stated that since waste effluent was from the former sewage lagoons, TPH compared to waste oil was more appropriate than unknown oil.

The response to this part of the comment is not adequate. As stated in the *New Mexico Environment Department TPH Screening Guidelines* dated October 2006, "Compositional assumption for waste oil developed by NMED is based on review of chromatographs of several types of waste oil. Sites with waste oil must be tested for VOCs, SVOCs, metals, and PCBs to determine if other potentially toxic constituents are present. The TPH guidelines in Table 2 are not designed to be protective of exposure to these constituents therefore they must be tested for, and compared to, their individual NMED soil screening guidelines." Table 1 of Appendix E indicates that the maximum detected concentration of total recoverable petroleum hydrocarbons (TRPH) exceeds the screening level for waste oil. As such, additional sampling to define the nature and extent of TPH is required. In following the NMED TPH guidance, "Sites with waste oil must be tested for VOCs, SVOCs, metals, and PCBs to determine if other potentially toxic constituents are present." Revise the Work Plan to indicate that all additional samples analyzed for TPH will also include analysis for VOCs, SVOCs, and PCBs (in addition to the TAL metals).

- The comment requested that chromium analyses include speciation between trivalent and hexavalent chromium. The NMED Soil Screening Guidance does not include a screening level for total chromium; however, the Regional Screening Level (RSLs) tables do include total chromium. The screening level for total chromium assumes a one to six (1:6) ratio of hexavalent chrome to trivalent chrome. In comparing the maximum detected site concentration to the RSL for total chromium, the site maximum is below the RSL for total chromium. The response also states that site history indicates that hexavalent chromium has not been used at CAFB.

The comment further discusses the comparison of sediment concentrations at CAFB to background sediment concentrations established for Los Alamos National Laboratory (LANL). This comparison is not an appropriate line of evidence. In order to draw any analogies between background sediment levels at CAFB versus LANL, a geochemical analysis of the soils between the two sites as well as a discussion of the overall geology must be conducted to justify this comparison. However, excluding the background comparison to LANL sediment, sufficient evidence is available to justify excluding speciation of chromium and to conduct analysis for total chromium. The response to this issue is adequate.

- A request was made that surface water and sediment be analyzed for dioxin/furan congeners. This request was based on the past burning practices and nearby landfills. The response indicates that no chlorine source is suspected at the landfills. However, chlorinated pesticides have been detected, which represents a sufficient source of chlorine upon incomplete combustion to form dioxin/furans. Burning of paper products and/or plastics as well as other industrial wastes could result in the formulation of dioxin/furan. Therefore, sufficient rationale that a chlorine source was not present at CAFB has not been presented and the response to this issue is not adequate. The response also indicated that there was little potential for lateral flow of potentially contaminated soil/sediment/water from the landfills. However, the description of the playa lake

indicates a history of overflow. Thus, sufficient justification that lateral transport could not have occurred has not been provided. Revise the WP to include analysis of dioxin/furan congeners and PCBs in the proposed sampling.

### **Comment No. 6**

The response indicated that applicable tables would be updated with the 2009 NMED screening levels. It does not appear that these changes were carried forward through the report. Additional comments concerning this issue are provided below for Appendix E.

### **Appendix E**

- The current risk screening provided in Table 1 appears to be based on the 2006 NMED screening levels. However, the response to Comment No. 6 indicated that the assessment would be updated to reflect the 2009 NMED screening levels. Revise Table 1 to include the most current NMED screening levels.
- A screening level for butylbenzylphthalate was not included. Per NMED Soil Screening Guidance, if a screening level is not available for a constituent, the RSL tables should be used. The RSLs do include a residential soil level for butylbenzylphthalate, which should be included in the revised table.
- The discussion of the current human health risk screening provided in Section 1.4 only includes a comparison of concentrations of individual chemicals to screening levels. However, as clearly stated in the NMED Soil Screening Guidance, cumulative risk and hazard must be evaluated. When looking at the data provided in Table 1, a hazard index (HI) of above the target hazard level of 1.0 would result. Also, the associated total cancer risk would be above the target level of 1E-05. Note that both an elevated HI and total cancer risk are estimated if using the December 2009 NMED screening levels. Therefore, the conclusion that there are no excess human health risks is not substantiated. In addition, the screening levels do not include all complete exposure pathways as identified in the risk assessment. Therefore, it is assumed that when the additional pathways (ingestion of contaminated crops, surface water, etc.) are added in, the overall risks/hazards will be higher. The above risk analysis must be updated accordingly with additional sample data.

### **Appendix F**

- Overall, the ecological assessment was based upon the results of six samples. Six samples do not provide sufficient data to assess whether there are potential ecological impacts across the 13 acre site. Upon collection of the proposed soil samples, the ecological risk assessment, including identification of COPCs, should be updated accordingly.

Note that the initial screening should be conducted using the maximum detected concentration. In the event that a more refined analysis is needed, a statistical estimation of the upper confidence level of the mean (UCL) should be determined using distributional based statistics (e.g., the Environmental Protection Agency's (EPA) ProUCL software).

- Section 1.2.5 indicates that subsurface samples (two to five feet below ground surface, ft bgs) were not considered ecologically relevant and as such were excluded from evaluation. While this assumption appears reasonable for location within the pond itself, many of the samples were collected from outside the saturated area (outside the berm). The discussion of potential mammals at the site did not include whether there are burrowing animals, such as a kit fox, prairie dog, etc. In the event that burrowing animals may be present, the appropriate soil exposure interval is to a depth of 10 ft bgs. In addition, assessment of plants, to include deep rooted plants, should also include subsurface soil to a depth of 10 ft bgs. Unless data are available indicating there is no contamination at depths below two (2) ft, the ecological assessment must address a "mixed" soil interval of zero to 10 ft bgs for burrowing animals and plants. Revise accordingly.
- Section 1.2.7.2 provides a discussion of why chlorinated pesticides (DDE and DDT) were eliminated from the assessment. While it is possible that DDE and DDT are remnants from base-wide spraying, sufficient justification has not been provided demonstrating this assumption. Unless specific background data are available to compare to the site data, these COPCs should be retained in the initial screening assessment. Revise the assessment accordingly.
- Section 1.2.7.2 indicates that while benzene was detected in sediment it was not carried forward as TPH does not have an ecological screening value (ESL). This rationale is not clear. Additional justification is needed for exclusion of benzene from the assessment.
- Section 1.6.2 indicates that no additional sampling is needed. As noted in the previous NMED comments and facility responses, additional sampling is required. The ecological assessment must be revised to include the results from these additional samples.

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

Thank you,



Paige Walton  
AQS Senior Scientist and Project Lead

cc: Patricia Stewart, NMED (electronic)  
Joel Workman, AQS (electronic)