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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: Evaluation of the responses to comments and subsequent revisions in the *Phase III RCRA Facility Investigation at Playa Lake (SWMU-103)*, Cannon Air Force Base, New Mexico, October 2011.

Dear Mr. Cobrain:

This letter serves as a deliverable and includes an evaluation of the responses to comments and subsequent revisions presented in the *Phase III RCRA Facility Investigation at Playa Lake (SWMU-103)*, Cannon Air Force Base, New Mexico, October 2011.

All of the responses and subsequent revisions to the report were adequate as provided, unless addressed below.

As a general note, older human health screening levels [both soil screening levels (2009) and Total Petroleum Hydrocarbon (TPH) guidelines (2006)] were applied in the assessment. It is not clear why more updated data were applied, but it is assumed that these may have been current at the time of the initial drafting of the report back in 2010/2011. However, the use of current screening levels/TPH guidelines would not result in changes to the conclusions of the risk assessment. In addition, in Table 7 of Appendix D, the no observed adverse effect level (NOAEL) based toxicity reference value (TRV) of 1E-4 mg/kg/day dry weight was selected for tetrachlorodibenzodioxin (TCDD), and a lowest observed adverse effect level (LOAEL) based TRV of 1E-3 mg/kg/day dry weight was selected for TCDD. These TRVs appear to be relatively high compared to TRVs obtained from other literature sources. For example, in *Toxicological Benchmarks for Wildlife: 1996 Revision* by Sample et. al., a 2,3,7,8-TCDD NOAEL-based TRV of 1.4E-5 mg/kg/day is listed for a ring-necked pheasant, and a LOAEL of 1.4E-4 mg/kg/day is listed, which are over an order of magnitude lower than those presented in this report. This may have resulted in hazard quotients for avian receptors to have been underestimated, although it would not likely affect the results at Solid Waste Management Unit (SWMU) 103.

While the response to Comment Number 5 was adequate, it was not clear the rationale behind the analysis. A comparison of total recoverable petroleum hydrocarbons (TRPH) was made to

the limit of 100 milligrams per kilogram (mg/kg) that denotes special waste handling criteria (20 NMAC 9.2.7.S.13.i) for petroleum contaminated soils. This limit is more related to land disposal restrictions, handling and transportation requirements. The text further states that toxicity data were not available to calculate a risk associated with the TRPH. It is not clear why waste criteria was applied in lieu of the NMED TPH guidance levels that were developed based on assumed carbon fractions and toxicity (note: Section 4.2.1 of the report included a reference to the NMED TPH guidelines for unknown oil and was included in Table 7-3b). As a note, the 2012 TPH guideline for unknown waste oil in soil (residential and potable groundwater scenario, Table 6-2) is 1,000 mg/kg. Given that the maximum detected TRPH concentration at SWMU 103 (734 mg/kg) is less than the NMED TPH screening level, it is agreed that TRPH would not likely contribute significantly to risk.

Comment No. 7: Cumulative human health risks and hazard indices from exposure to surface water and sediment were added to Tables 7-2 and 7-4. There are several comments concerning these tables:

- While media-specific risk estimates and hazard indices were calculated for surface water on Table 7-2, and sediment on Table 7-4, cumulative risks/hazards across the media pathways were not determined; the total risk/hazards for the residential receptor consist of combined exposure to surface water and sediment. All pathways from exposure to all environmental media should be summed in consideration of additive effects. Adding the risk estimates from exposure to surface water and sediment results in a cumulative risk estimate slightly greater than the NMED target risk level of 1E-5.

- It appears that the main contributor to the elevated cumulative risk estimate for sediment (Table 7-4) is due to arsenic. It is noted that for comparison purposes, background soil data were used as surrogate data for lack of background sediment data. Given this assumption, the maximum detected concentration 3.9 mg/kg is less than the soil background concentrations (4.3 mg/kg) and thus should have been eliminated as a potential constituent of concern (COPC) as the datum indicates that the arsenic is reflective of ambient concentrations. If arsenic is removed, the resulting total risk for sediment would be 1.9E-06, which is less than the NMED target level of 1.0E-05.

- However, it is not clear why the Phase I sediment data were not included in the human health risk assessment data set used for assessment of risk in Table 7-4. The Phase I sediment data were included in the ecological risk assessment data set. As shown on Table 4 in Appendix D, the 95% upper confidence limit including both the Phase I and Phase III data sets for arsenic is 5.93 mg/kg, which is above the background reference value and would result in residential risk above the target level of 1E-05. The representativeness of applying soil screening levels to all appropriate and available lake sediments should have been taken into consideration. As such, further investigation utilizing all available data and more appropriate exposure assumptions may be warranted.

- In Tables 7-2, 7-4, and subsequent tables presented in Appendix D, it is not clear whether the constituent listed as "1,2,3,4,6,7,8,9-Heptachlorodibenzo-p-dioxin (OCDD)" is HpCDD or OCDD. The toxicity equivalencies differ for both congeners; the less

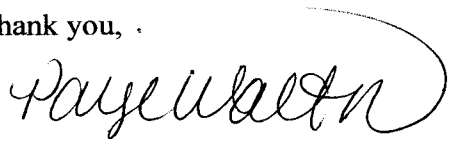
conservative values for mammal and avian toxicity equivalency factors for OCDD were applied. If the constituent is really HpCDD, the toxicity equivalency has been slightly underestimated, although would not significantly affect the results of the human and ecological risk assessments.

Comment Nos. 10, 13, and 14. The proposed methodology for converting concentrations of polychlorinated-biphenyls (PCBs), polychlorinated-dibenzodioxins (PCDDs), and polychlorinated-dibenzofurans (PCDFs) to a single 2,3,7,8-TCDD toxic equivalent is acceptable. However, in Tables 7-2 and 7-4, it does not appear that this was done. The toxicity equivalents (TEQs) presented are mammal TEQs, and it appears that the mammal TEQs only include the PCDDs and PCDFs, leaving out the PCB congeners. Further, the mammal TEQs are also being compared with avian ecological screening values. Two TEQs should be presented on Tables 7-2 and 7-4: one for mammals and one for avian receptors, and the avian TEQs should include PCBs, as proposed in the response to this comment. It is noted that in Appendix D, which presents the ecological risk assessment, avian TEQs were calculated correctly, and the error is only in the display of Tables 7-2 and 7-4.

New Comment No. 1: Figures 7-4, Human Health Site Conceptual Exposure Model, and 7-5, Ecological Site Conceptual Exposure Model, were not included in the electronic version of this document, although it is referenced several times in the report. It is requested that these figures be provided.

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,



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