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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: Evaluation of the *Final Interim Measures Work Plan, Parcel 21 -Solid Waste Management Unit 1 – TNT Leaching Beds,* Fort Wingate Depot Activity, McKinley County, New Mexico, July 14, 2016.

Dear Mr. Cobrain:

Attached please find draft technical comments of the *Final Interim Measures Work Plan, Parcel 21 -Solid Waste Management Unit 1 – TNT Leaching Beds,* Fort Wingate Depot Activity (FWDA), McKinley County, New Mexico, dated July 14, 2016.

In comments on the previous draft of the Interim Measure Work Plan (IMWP) dated February 2015, it was unclear whether an evaluation of the soil-to-groundwater migration pathway was to be considered during interim measure activities. The 2015 IMWP stated that the maximum depth at which soil will be excavated is 10 feet below ground surface (ft bgs) from the 2,4,6-trinitrotoluene (TNT) Leaching Beds, as this is the depth to which residential exposure would be expected to occur. However, we expressed concern that if subsurface soil greater than 10 ft bgs included concentrations of explosives that potentially could pose a threat to groundwater, the proposed interim measure may require modification to address this potential threat. The 2016 IMWP includes an evaluation of the soil-to-groundwater migration pathway evaluation and includes removal of source material that could pose a threat to groundwater. Appendix A of the 2016 IMWP contains a description of the modeling used to estimate the amount of soil needed for removals to ensure protection of the groundwater.

While the IWMP does include removal of soil that may present a threat to groundwater, the plan sets a limit of excavation to 35 ft bgs. Even the modeling provided in Appendix A used to predict soil concentrations and a site-specific dilution attenuation factor (DAF) allows that all points below 35 ft bgs were deleted. It is not clear why excavations were limited; it is possible this is an artifact of contracting by FWDA. Regardless, a comment has been drafted to address this issue.

While a comment response package was not provided for comments on the 2015 IMWP, the 2016 IMWP was reviewed to ensure previous issues are resolved. Unless addressed in the

attached comments, the risk assessment concerns contained in the AQS June 8, 2015 deliverable are resolved.

If you have any 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

cc:

Ben Wear, NMED (electronic)
Neelam Dhawan, NMED (electronic)
Joel Workman, AQS (electronic)

Enclosure

Draft Technical Comments on the Final Interim Measures Work Plan (IMWP), Parcel 21 -Solid Waste Management Unit 1 – TNT Leaching Beds
Fort Wingate Depot Activity (FWDA), McKinley County, New Mexico
July 14, 2016

1. The IMWP has been revised to include an evaluation of the soil-to-groundwater migration pathway and removal of soils that could potentially pose a threat to groundwater. However, it is noted that excavation is capped to a maximum of 35 feet below ground surface (ft bgs). Clarify why excavation of soil is restricted to 35 ft bgs. If excavation is stopped at 35 ft bgs, but confirmation samples show residual contamination above the project action levels, will additional removals be conducted?

2. Section 3.2. The second bullet indicates that if arsenic is greater than the site-specific background level and above the range for background, then the arsenic will be assessed using the NMED residential human health soil screening level (SSL). As noted in the technical review comments on the 2015 IWMP, this does not make sense. If site levels of arsenic are above the site-specific level (5.6 milligrams per kilogram, mg/kg) and above the range for background (11.2 mg/kg is the maximum of the range for background), then clearly, the site will fail risk (SSL is 4.2 mg/kg). Assuming a site concentration at the upper range of background (11.2 mg/kg) results in a cancer risk level of 2.64E-05, which is above the NMED target risk level of 1E-05 without considering risk from any other constituents. It is suggested that an additional data quality objective be added to include removal of soils to below background levels to ensure the site can meet closure requirements. Otherwise, arsenic will drive risk and it will be difficult to show the site meets risk and that there is not residual arsenic due to past site activities.

3. Section 3.2.2. Section 3.2.2 indicates that ecological risks are being "addressed under a separate facility-wide ecological risk evaluation". NMED does not agree with the facility-wide approach proposed by FWDA, especially for the small receptors [note that NMED will be submitting comments to FWDA on the Site-specific Approach for Screening Level Ecological Risk Assessment (SLERA)]. Consistent with the forth coming comments on the SLERA, ecological risks must be evaluated on a site-specific basis, at a minimum for the smaller receptors. For the TNT beds and associated areas, several lines of evidence can be presented with regards to ecological risk to demonstrate that while potentially complete exposure pathways may be present, only a qualitative assessment is likely required.

    - The area of impact includes the leaching beds and several miscellaneous areas. Given the small acreage of the SWMU (under 10 acres combined), the only receptors required for assessment are the deer mouse, horned lark and plants.

    - The estimated depth for the leaching beds is up to 35 ft bgs. Thus, there would be no complete exposure pathways for the deer mouse, horned lark and plants. No ecological assessment will be required for the leaching beds.

    - The deer mouse, while considered a burrowing animal, typically does not have deep borrows. The range of burrows depth (based on kangaroo rats and pocket mice) is

0.15 to just over five ft bgs ("Habitat Requirements and Burrowing Depths of Rodents in Relation to Shallow Waste in Burial Sites", http://pbadupws.nrc.gov/docs/ML1036/ML103620641.pdf); the horned lark does not borrow. Thus for the deer mouse and horned lark, a case can be made that the applicable exposure interval is the top five feet of soil. The exposure interval for plants is 0-10 ft bgs.

- For the Building 503 footprint, the settling tank area, and the small area soil excavation, depth of excavation is estimated to be less than 10 feet. If excavations are at least five ft bgs, the exposure pathway for the deer mouse and horned lark will be incomplete. For plants, given the very small size of these areas, a case can also be made that the area of impact is relatively small, rendering the exposure pathway incomplete.

- In the event that shallow excavations occur and an assessment is needed, excavations are planned to ensure protection of groundwater. Thus, soil will be excavated to meet the soil screening levels (SSLs) for protection of groundwater. The three constituents of concern (COC) that are driving removals are RDX, HMX, and TNT. In the event that excavations are less than five ft bgs, comparing the Tier 1 SSLs for protection of groundwater to the ecological screening levels (ESL) for the deer mouse, horned lark, and plants, the removal criteria are generally protective of the receptors. If the Tier 1 assessment showed excess risk, it is likely that any risk would be reduced to acceptable levels through refinement of an initial screening assessment using the Tier 2 screening criteria and area use factor; a simple refinement using the Tier 2 ESLs along with just the area use factor would likely be sufficient to show acceptable risk.

4. Sections 4.6 and 5.1. As noted in the review comments on the 2015 IMWP, a description of the strategy employed in developing the sampling approach proposed for confirmatory sampling was needed. Sections 4.6 and 5.1 of the 2016 IMWP does contain some additional clarification on how the subsamples will be collected from the side walls. However, it is still unclear how the number of discrete soil samples was determined (one sample per 50 ft grid). A discussion of the methodology used in developing the confirmatory sampling approach described in Sections 4.6 and 5.1 is needed to include identification of the techniques (e.g., Visual Sapling Plan, VSP) used and how it was determined that the number of samples and sampling locations proposed in the IMWP are sufficient for the intended use of the confirmatory sampling results (e.g., will sufficient numbers of samples be available to support a risk assessment and determination of an exposure point concentration). Also clarify why composite samples are proposed for confirmatory sampling of the excavation walls while discrete sampling will be used in sampling the floors. It seems composite sampling of the excavation floor would provide a better representation of residual contamination.

5. Section 4.6.1. The first bullet allows that excavation sidewalls may be marked using survey paint. It is suggested that paint not be used, to prevent any cross-contamination with the soil samples. No response required.

6. Appendix A. The modeling allows that if soil concentrations were higher than the predicted (new) SSL, the concentrations were set to the new SSL. Based on the assumption used in the modeling of Appendix A, capping contaminant concentrations to the new SSL limit could result in an underestimation of soil required for removal. Discuss what impact restricting concentration has on the results of the modeling.

7. Appendix A. The input parameters used for the modeling could not be evaluated as they were not included. However, it was noted that the hydraulic conductivity used in the modeling was based on a regional value. In the previous paper submitted by FWDA developing site-specific dilution attenuation factors ("For Wingate Depot Activity TNT Leaching Bed Soil Boring Test Results and Development of Site-specific Dilution Attenuation Factors") site-specific data from bore logs were used to estimate the hydraulic conductivity. Thus, there are clearly some differences in hydrologic assumptions used in the modeling versus previous evaluations. Provide an input table of all pertinent parameters and source of the parameters; further, provide a discussion of the bases of selections for the input parameters, especially when regional data were used over local data.