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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

October 15, 2014

Radel Bunker-Farrah
Chief, Environmental Officer
National Aeronautics and Space Administration
White Sands Test Facility
P.O. Box 20
Las Cruces, NM 88004-0020

Attention of: RE-14-036

**RE: SECOND NOTICE OF DISAPPROVAL
SOIL BACKGROUND STUDY INVESTIGATION REPORT
NATIONAL AERONAUTICS SPACE ADMINISTRATION (NASA)
JOHNSON SPACE CENTER (JSC) WHITE SANDS TEST FACILITY (WSTF)
DOÑA ANA COUNTY, NEW MEXICO
EPA ID #NM08800019434
HWB-NASA-14-002**

Dear Ms. Bunker-Farrah:

The New Mexico Environment Department (NMED) has received the NASA WSTF (Permittee's) *Response to Disapproval Comments*, dated August 27, 2014 (Response) on the Soil Background Study Investigation Report. NMED has completed its review of the Response and hereby issues this second Notice of Disapproval. NMED's comments on the Response are as follows.

Comments

As noted in the original technical review comments on the document, the overall concern was that the statistics may have provided over-estimations of the background data and the software program (R software) used included several modifications to the code, rendering a review of the program difficult. While the response included a detailed discussion of how the statistical analyses were performed, there are still some concerns with the upper tolerance limits (UTLs).

The R software was used to estimate the UTLs. This software is used in some Environmental Protection Agency (EPA) programs (mostly for aquatic monitoring) so the EPA is familiar with the R software and generally accepts the results it generates in some applications. However, it is doubtful, or unclear at best, that EPA has accepted all the library modules available for R. Further, the statistical consultant for NASA has modified three (3) of the libraries to calculate background values. These modifications appear to stray from EPA's (and NMED's) preferred/recommended statistical package for environmental applications - ProUCL.

Review of the response document requires consideration of the documentation for the R software and the library modules used. This information would need to be compared to the recommendations in the ProUCL documentation to ensure they are similar or that the R software and modules represent a more conservative approach. This part of the review may be straightforward to a statistician or someone familiar with both ProUCL and R. Checking the modifications made to R library modules is more difficult and requires the reviewer to track down reliable sources for all the modifications made.

The sample size appears to be the issue compromising the effectiveness of ProUCL and R to generate appropriate statistical values. The background study was based on the data quality objective (DQO) process and included a defined number of samples to be collected. However, it is clear the DQOs have not been met due to the elevated UTLs compared to the maximum detected concentrations. While NMED strives to keep costs down when reviewing and approving sampling programs, in this case, at least based on the statistical analyses provided, it appears that additional background data would be needed to have UTLs more consistent with the actual data (instead of estimates upwards of three times the maximum). Since the background data set appears small, other values, specifically the maximum detected concentration, may provide better representation of the background levels.

If NASA would like to pursue using the proposed UTLs for background over defaulting to the maximum detected concentrations or collection of additional background samples, the most straightforward approach to resolving the statistical issues is to demonstrate that the approach taken is similar to and conservative compared to ProUCL version 5.0.00 (available since September 2013) and to provide references from the statistical literature for all modifications made to existing R library modules.

Overall, there is a major concern that the statistics provide over-estimations of the background data and as ProUCL or another commercial software program was not used, the results cannot be reviewed to see what specific evaluations and decisions were made.

The Permittee must address all comments in a response letter no later than **November 14, 2014**. Based on the response, NMED will determine whether a revised Background Study Investigation Report is necessary.

If you have any questions regarding this letter, please contact Daniel Comeau at (505) 476-6043.

Sincerely,



John E. Kieling
Chief
Hazardous Waste Bureau

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