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Certified Mail - Return Receipt Requested

February 6, 2024

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

Attention of: RE-23-078

RE: DISAPPROVAL
GROUNDWATER DATA REPRESENTATIVENESS PHASE 2: WATER FLUTE WELL EVALUATION ABBREVIATED INVESTIGATION REPORT
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHNSON SPACE CENTER WHITE SANDS TEST FACILITY
DOÑA ANA COUNTY, NEW MEXICO
EPA ID #NM08800019434
HWB-NASA-23-012

Dear Mr. Davis:

The New Mexico Environment Department (NMED) has received the National Aeronautics and Space Administration Johnson Space Center White Sands Test Facility (Permittee) *Groundwater Data Representativeness Phase 2: Water FLUTe Well Evaluation Abbreviated Investigation Report* (Report), dated April 27, 2023. NMED has completed review of the Report and hereby issues this Disapproval. The following comments must be addressed.

COMMENTS

1. Section 4.1.2, WW-4-423 1,4-Dioxane, Pages 5 and 6

Permittee Statement: "The pre-purge sample identified 1,4-dioxane at 95 µg/L [micrograms per liter], but is not considered indicative of formation water."

NMED Comment: Based on the Excel chemical analysis data spreadsheet provided with the Report and Table 4.1, Phase 2 Investigation Serial Sample Results, the pre-purge concentration reported for WW-4-423 is 150 µg/L. Revise the statement for accuracy.

2. **Section 4.4.3, WW-4-948 Tentatively Identified Compounds, Page 8**

Permittee Statement: "Serial samples collected identified NBBS [N-butyl-benzenesulfonamide] concentrations at 310 µg/L (0 gallons), 8.8 µg/L (4 gallons), 5.9 µg/L (8 gallons), and 5.5 µg/L (17 gallons). It was ND in the 13-gallon sample."

NMED Comment: Project Excel spreadsheet chemical analysis data indicates that the serial sample concentration reported for the 8-gallon purge for NBBS is 8.9 µg/L. Revise the statement for accuracy.

3. **Section 4.6.2, BLM-32-571 1,4-Dioxane, Page 10**

NMED Comment: The 1,4-dioxane serial sampling concentrations reported for BLM-32-571 in the section discussion are inaccurate and appear to be the concentration data reported for BLM-32-543. Revise the section discussion to accurately report all 1,4-dioxane chemical analysis serial sampling data for BLM-32-571.

4. **Section 4.7.3, JER-2-684 Tentatively Identified Compounds, Page 11**

NMED Comment: The reporting of the 2,5-dimethyl-1,4-dioxane pre-purge concentration for JER-2-684 (12 µg/L) does not appear to be accurate. Review the 2,5-dimethyl-1,4-dioxane concentration data for JER-2-684 and revise the section discussion and any other affected Report sections for accuracy.

5. **Section 4.8.1, WW-5-909 NDMA, Pages 11 and 12**

NMED Comment: The pre-purge sample concentration for N-nitrosodimethlyamine (NDMA) (1.46 µg/L) reported for WW-5-909 does not appear to be accurate and appears to be the pre-purge concentration for N-nitrodimethylamine based on project Excel spreadsheet chemical analysis data. Review the data and revise the section discussion for accuracy.

6. **Section 4.8.3, WW-5-909 Tentatively Identified Compounds, Page 12**

NMED Comment: The following issues must be addressed:

   a. The Permittee stated for WW-5-909 that "[s]erial samples collected did not identify 2,5-dimethyl-1,4-dioxane in the remaining serial samples." The Permittee's statement is not accurate, project Excel spreadsheet chemical analysis data indicates

that 2,5-dimethyl-1,4-dioxane was detected in the pre-purge (25 µg/L) and the 4-gallon (7.2 µg/L) samples. Revise the Report to accurately report 2,5-dimethyl-1,4-dioxane detections for the groundwater samples collected at WW-5-909.

b. Project Excel chemical analysis spreadsheet data indicates that detections of NBBS were detected at WW-5-909 for all serial samples but were not reported in the section discussion or Table 4.1. Revise the Report to accurately report these detections.

7. Section 7.0, Recommendations, Pages 15 and 16

NMED Comment: The following comments must be addressed:

a. Due to the apparent propensity for FLUTe system liner materials to leach residual concentrations of NDMA (WSTF primary contaminant of concern) and 1,4-dioxane (WSTF analyte of interest) as reported in the November 2021 *Abbreviated Investigation Work Plan for Groundwater Data Representativeness Phase 2: Water FLUTe Well Evaluation* (Work Plan), that could potentially affect interpretation of concentration data for these contaminants of concern, additional use of FLUTe groundwater sampling systems at additional groundwater monitoring well locations at WSTF does not appear appropriate at this time. However, as other chemical analysis data does not appear to be affected at FLUTe monitoring wells, use of the sampling system may continue at locations where the system is already approved for use for the purposes of continued WSTF groundwater monitoring program data collection and further FLUTe system evaluation as proposed in the section discussion. Additional FLUTe system evaluation data and information must be presented in quarterly periodic groundwater monitoring reports that must document the effectiveness of extended purging and sampling protocols for FLUTe system monitoring wells and a groundwater data representativeness evaluation synopsis. Revise the Report as necessary to address this comment.

b. Provide information in the revised Report on the chemical source of NDMA and 1,4-dioxane that is apparently being leached from the FLUTe system liner materials as evidenced by data and information provided in the Work Plan, as these chemicals would typically not be expected to leach from materials such as polyurethane coated nylon, polyvinylidene fluoride tubing, or other system components identified in Work Plan Table 4, NDMA Results for Sampling System Components. Revise the Report accordingly.

c. The Permittee stated that "[a]lternatives to the Water FLUTe system for permanent purgeable sampling systems in general are under consideration, though NASA does not recommend any currently available options over the Water FLUTe system for existing multi-zone monitoring wells." The Report must be revised to discuss in

detail the alternatives for the purgeable groundwater sampling systems considered for potential use in WSTF multi-zone groundwater monitoring wells. Provide all information on any issues or limitations identified with the use of the prospective alternative sampling systems. Otherwise, in lieu of a current alternative to Westbay and FLUTe sampling systems, nested groundwater monitoring wells equipped with bladder pumps appear to be the most viable long-term solution for the collection of representative groundwater sampling data at the WSTF Plume Front area. Revise the Report to address this comment.

8. Table 4.1, Phase 2 Investigation Serial Sample Results, Pages 43 and 44

NMED Comment: Inaccuracies in serial sample chemical analysis result concentration data reporting were noted for BLM-32-571, JER-2-684, and WW-5-909 for all contaminants of concern listed for these monitoring wells on the table. Review and revise Table 4.1 to report accurate and complete sample concentration data for all monitoring wells listed on the table and revise any other affected sections of the Report, as necessary.

The Permittee must submit a revised Report that addresses the comments contained in this Disapproval. In addition, the Permittee must include a response letter that cross-references where NMED's comments were addressed in the Report. The Permittee must also submit an electronic redline-strikeout version of the revised Report showing all changes made to the Report. The revised Report must be submitted to NMED no later than **July 31, 2024**.

If you have any questions regarding this letter, please contact Gabriel Acevedo at (505) 690-5760.

Sincerely,

Ricardo Maestas Digitally signed by Ricardo Maestas
Date: 2024.02.06 11:06:54 -07'00'

Ricardo Maestas
Acting Chief
Hazardous Waste Bureau

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