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Certified Mail - Return Receipt Requested

November 1, 2023

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-22-026

**RE: APPROVAL WITH MODIFICATIONS
200 AREA HAZARDOUS WASTE TRANSMISSION LINES (SWMU 10)
INVESTIGATION AND RISK ASSESSMENT REPORT
AND RISK ASSESSMENT REPORT
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHNSON SPACE CENTER WHITE SANDS TEST FACILITY
DOÑA ANA COUNTY, NEW MEXICO
EPA ID #NM08800019434
HWB-NASA-17-015**

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) *200 Area Hazardous Waste Transmission Lines (SWMU 10) Investigation and Risk Assessment Report* (Report), dated March 4, 2022. NMED has completed the review of the Report and hereby issues this Approval with the following modifications.

MODIFICATIONS

1. Investigation Report: Section 3.2.1, Revised Site Conceptual Exposure Model, Page 7

Permittee Statement: "Based on results of the investigation and evaluation of risk and hazard the SCEM [Site Conceptual Exposure Model] is revised as shown on Figure 3.1 evaluating four potential exposure pathways: 1) incidental ingestion of soil; 2) dermal

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contact with soil; 3) ingestion of groundwater; and 4) inhalation of volatile contaminants (vapors)."

NMED Comment: The figure link provided in the Permittee's statement directs the reader to Investigation Report Figure 3.1, SWMU 10 HWTLs [Hazardous Waste Transmission Lines] Sampling Locations and does not match the context of the information provided in the Permittee statement. Revise the statement to clarify that the SCEM is included as Figure 3.1 of the SWMU 10 Risk Assessment Report (RAR) and provide a replacement page.

2. Investigation Report: Section 4.5.8, Soil Vapor Sampling, Page 23

Permittee Statement: "Twelve temporary soil vapor implants were installed in the 200 Industrial Area as shown on Figure 3.1."

NMED Comment: Figure 3.3, SWMU 10 HWTL Soil Vapor Sampling Locations, depicts the locations of the twelve temporary soil vapor implants. Revise the Permittee statement and figure page link for accuracy and provide a replacement page.

3. Investigation Report: Section 6.1.1.1, 1,1,2,-Trichloro-1,2,2-Trifluoroethane [Freon 113], Page 25

Permittee Statement: "Freon 113 was detected in four samples ranging from the minimum of 1.9E-04 mg/kg [milligrams per kilogram] at 200-HWTL-05-5 to the maximum of 2.8E-03 mg/kg at 200-HWTL-04-3.5, with two detections in the 200 Industrial Area (Figure 6.4) and two detections in the 200 Area (Figure 6.5)."

NMED Comment: The statement does not appear to be accurate. Table 6.1, Summary of Soil Sample Detection Frequencies, and the analytical data provided in the Microsoft Excel spreadsheet attached to the Report indicates that Freon 113 was detected in fifteen project soil samples. Revise the statement to accurately report the number of Freon 113 detections in soil samples at SWMU 10. Additionally, revise Figure 6.4, SWMU 10 HWTLs 200 Industrial Area VOC Detections, to include detections for Freon 113 at sample locations 200-HWTL-11-2.5 and 200-HWTL-12-3.5. Provide a respective replacement page and figure.

4. Investigation Report: Section 6.1.1.2, 2-Butanone, Page 25

Permittee Statement: "2-butanone was detected in one sample in the 200 Industrial Area (Figure 6.4). The single detected concentration was 2.50E-03 mg/kg at 200-HWTL-06 at 13 ft [feet] bgs [below ground surface]."

NMED Comment: The statement does not appear to be accurate. Table 6.1, Figure 6.4, and analytical data provided in the Excel spreadsheet indicate that 2-butanone was detected in

four project soil samples. Revise the Permittee statement for accuracy and provide a replacement page.

5. Investigation Report: Section 6.1.1.7, Cyclohexane, Page 25

Permittee Statement: "Cyclohexane was detected in four samples in all three areas of the HWTL. The minimum detected concentration of 6.6E-04 mg/kg at 200-HWTL-21 at 2.5 ft bgs, and the maximum concentration of 3.1E-03 mg/kg was at 200-HWTL-01.2 at 2.5 ft bgs."

NMED Comment: Table 6.1 and the analytical data Excel spreadsheet indicate that cyclohexane was detected in twenty-one project soil samples. Revise the Permittee statement to accurately report the number of cyclohexane detections in project soil samples. Additionally, ensure that Figures 6.4, 6.5, and 6.6 accurately report all cyclohexane detections. Provide a respective revised replacement page and figures, as necessary.

6. Investigation Report: Section 6.1.1.8, Tetrachloroethene [PCE], Page 26

Permittee Statement: "Tetrachloroethene was detected in two samples in the 200 Industrial Area (Figure 6.4). The minimum concentration of 8.00E-04 mg/kg was detected in location 200-HWTL-04.1 at 3.5 ft bgs. The maximum concentration of 3.80E-03 mg/kg was detected in 200-HWTL-04 at a depth of 3.5 ft bgs."

NMED Comment: Figure 6.4 and the analytical data Excel spreadsheet indicate that PCE was detected in four project soil samples at the 200 Industrial Area. Revise the Permittee statement and Table 6.1 to accurately report the number of PCE detections in project soil samples and provide a revised replacement page and table, as necessary.

7. Investigation Report: Section 6.1.1.10, Trichloroethene [TCE], Page 26

Permittee Statement: "Trichloroethene was detected in two samples in the 200 Industrial Area (Figure 6.4). The minimum concentration of 3.50E-04 mg/kg was detected in soil boring 200-HWTL-04.1 at 3.5 ft bgs. The maximum concentration of 8.20E-03 mg/kg was detected in 200-HWTL-04 at a depth of 3.5 ft bgs."

NMED Comment: Figure 6.4, Table 6.1, and the analytical data Excel spreadsheet indicate that TCE was detected in four project soil samples. Revise the statement for accuracy and provide a revised replacement page.

8. Investigation Report: Section 6.1.2, SVOCs, Page 27

Permittee Statement: "Total PAH [polynuclear aromatic hydrocarbons] concentrations in samples from the 200 Area combined with the 600 Area (borings 200-HWTL-05 through

600-HWTL-10) are generally less than 0.01 mg/kg at all locations, with only sample 600-HWTL-01 (1-2 ft bHWTLs [below hazardous waste transmission lines]) having a detection greater than 0.10 mg/kg.”

NMED Comment: The Permittee statement is not accurate, Table 6.3, Semi-volatile Organic Compound Detection Summary, lists more than one sample as having Total PAH concentrations greater 0.01 mg/kg. Review respective data included in the Report, revise the statement for accuracy, and provide a respective replacement page.

9. Investigation Report: Section 6.1.3.2.5, Sodium, Page 35

Permittee Statement: “Sodium was detected in was detected in in [sic] all 96 samples at all 48 soil borings (Figure 6.16 through Figure 6.18). The minimum detected concentration was 4.9E+01 mg/kg at 200-HWTL-05 at a depth of 0-0.5 ft bHWTLs. The maximum detected sodium concentration was 4.10E+02 mg/kg at 200-HWTL-1.2 at a depth of 1-2 ft bHWTLs.”

NMED Comment: The minimum sodium concentration reported on Table 6.1 is 3.60E+01 mg/kg as reported on Table 6.1 and the analytical data Excel spreadsheet. Revise the Permittee statement for accuracy and provide a revised replacement page.

10. Investigation Report: Table 6.3, Semi-volatile Organic Compound Detection Summary Part I. Polynuclear Aromatic Hydrocarbons (PAH), Pages 100 and 101

NMED Comment: The location of the naphthalene concentration reported as 600-HWTL-06-015 on Table 6.3 is not accurate. The actual naphthalene detection was reported at 200-HWTL-06-015. Revise Table 6.3 for accuracy and provide a replacement table.

11. Investigation Report: Table 6.4, Metals Detection Summary, Page 105

NMED Comment: The following Table 6.4 issues must be addressed:

- a. Table header information indicates that the reported concentrations are at depths below ground surface; however, sample depths on the table appear to be reported as below the HWTL. Revise table header information to indicate that sample depths reported on the table are at depths below the HWTL or revise the table to report all sample depths as below ground surface and provide a revised replacement table.
- b. The reported maximum concentration for magnesium (4.3E+03 mg/kg) reported on the table is not accurate. Data reported in the chemical analytical data Excel spreadsheet indicates that the maximum concentration for magnesium is 4.3E+04 mg/kg. Revise the table for accuracy and provide a revised replacement table.

12. Risk Assessment Report: Section 6.1.2, Residential Non-cancer Risk Screening, Page 10

Permittee Statement: "Table 6.3 [Soil Residential Scenario – Non-cancer – Maximum Concentrations] presents the results of the non-cancer risk screening based on maximum COPC [Contaminant of Potential Concern] concentrations. Risk screening indicated the total combined residential non-cancer HI [Hazard Index] for SWMU 10 was 4.05E+00, which exceeds the target HI of 1."

NMED Comment: Table 6.3 data reports a total combined residential non-cancer HI 4.56E+00 for SWMU 10. Revise the Permittee statement for accuracy and provided a revised replacement page.

13. Risk Assessment Report: Section 6.8, Cumulative Risk and Hazard, Page 10

Permittee Statement: "However, to see if that hazard could be lowered with continued screening, EPC [exposure point concentration] (UCL [upper confidence level] 95) concentrations were calculated for soil vapor concentrations (Appendix B), since the final soil HI was already using EPC (UCL95) concentrations. Although the cumulative soil vapor HI was reduced from 6.58E-01 (maximum) to 5.63E-01 (UCL95), the cumulative HQ [hazard quotient] for both soils and soil vapor was only reduced by 0.1 to 1.22, which still exceeds the NMED target (1)."

NMED Comment: Table 6.4, Soil Residential Scenario – Non-cancer – UCL95, reports a cumulative soil HI 1.13 that would result in a total (soil and soil vapor) residential non-cancer HI of 1.69, not the HI 1.22 that was reported on Table 6.18. However, considering the uncertainty discussion provided in RAR Section 7.2, Residential Non-cancer HI Exceedance, revise the statement to clarify how the soil cumulative HI 6.58E-01 for residential non-cancer that was reported on Table 6.18 was calculated, provide the respective rationale for the calculation, and provide a revised replacement page.

14. Risk Assessment Report: Section 7.3.2, Soil-to-groundwater Exceedances, Page 18

Permittee Statement: "Exceedances were identified at locations 200-HWTL-01.4; 200-HWTL-2, 200-HWTL-2.1; 200-HWTL-3; 200-HWTL-21; 200-HWTL-22; and 600-HWTL-06."

NMED Comment: Revise the statement to indicate that soil-to-groundwater exceedances were identified at 200-HWTL-2.2 and 200-HWTL-3.1 rather than 200-HWTL-2.1 and 200-HWTL-3 for accuracy and to match information provided on Figure 6.1, SWMU 10 HWTLs Soil-to-Groundwater Scenario SL-SSL Exceedances and provide a replacement page.

15. Risk Assessment Report: Section 8.2, Recommendations, Page 22

Permittee Statement: "Based on the results of this risk assessment and evidentiary information detailed herein, no further actions are warranted in connection with soils at the former HWTLs location."

NMED Comment: As deemed necessary by NMED, the discovery of emerging contaminants of concern in association with WSTF SWMUs may require the need for additional investigation and risk assessment if site history, available information, or data indicate that contaminants beyond those investigated under a prior scope of work are believed to have been released to the environment at a site. This comment is provided as an additional note and no revisions to the Report are required in response.

The Permittee must provide replacement pages that address each of NMED's required modifications. In addition, a response letter that cross-references where the modifications were addressed must be provided. The response letter must also be provided as an electronic copy. Electronic copies of the revised Report and the redline-strikeout version of the Report showing where all changes were made must be submitted to NMED no later than **December 31, 2023**.

This approval is based on the information presented in the document as it relates to the objectives of the work identified by NMED at the time of review. Approval of this document does not constitute agreement with all the information or every statement presented in the document.

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: 2023.11.01 11:28:47 -06'00'

Ricardo Maestas
Acting Chief
Hazardous Waste Bureau

cc: N. Dhawan, NMED HWB
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