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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

November 30, 2015

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

Attention of: RE-15-070

**RE: APPROVAL WITH MODIFICATION
200 AREA PHASE II INVESTIGATION REPORT
NATIONAL AERONAUTICS SPACE ADMINISTRATION (NASA)
JOHNSON SPACE CENTER (JSC) WHITE SANDS TEST FACILITY (WSTF)
DOÑA ANA COUNTY, NEW MEXICO
EPA ID #NM08800019434
NASA-15-008**

Dear Mr. Davis:

The New Mexico Environment Department (NMED) has received the *NASA WSTF 200 Area Phase II Investigation Report* (Report), dated June 29, 2015 and received July 1, 2015 from NASA WSTF (Permittee). NMED has completed its review of the Report and hereby issues this Approval with Modification.

Comments:

1. **Executive Summary, First and Second Bullet, Page vi.**

Permittee's Statement: "No further investigative or corrective action for 200 Area vadose zone

soils based on the analytical results and conclusions presented in this study.” “No further investigative action for 200 Area bedrock through the evaluation of matrix diffusion. The most important assessment tool will be the continued monitoring of the declining groundwater volatile organic compounds (VOCs) concentrations within secondary porosity pathways targeted by monitoring wells in accordance with WSTF GMP guidance.”

NMED Comment: NMED cannot approve a “no further investigation or corrective action” status for the 200 Area until the nature and extent of the soil vapor plume has been defined and all identified chemicals of concern (COCs) have been assessed.

For further clarification on development of lines of evidence for evaluating the risk criteria regarding vapor intrusion, the Permittee should refer to NMED’s most recent July 2015 Risk Assessment Guidance for Site Investigations, Section 2.5.2.3, Complete Pathway; Quantitative Assessment for vapor intrusion and supported by the most current Environmental Protection Agency (EPA) guidance such as:

- U.S. Environmental Protection Agency (EPA). 2012a. U.S. EPA’s Vapor Intrusion Database: Evaluation and Characterization of Attenuation Factors for Chlorinated Volatile Organic Compounds and Residential Buildings. EPA 530-R-10-002.
- U.S. Environmental Protection Agency (EPA). 2012b. Conceptual Model Scenarios for the Vapor Intrusion Pathway. EPA-530-R-10-003.
- U.S. Environmental Protection Agency (EPA). 2015. Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air. OSWER Publication 9200.2-154.

2. Volatile Organic Compounds (VOCs) Field Screening

NMED Comment: In accordance with Permit Attachment 17, Section 17.2.2.d, Soil, Rock, and Sediment Field Screening, VOCs screening must be conducted during logging of all soil and rock samples collected during the advancement of all environmental borings. VOCs field screening must be conducted utilizing a properly calibrated photo-ionization detector (PID), combustible gas indicator or other instrument approved by NMED utilizing heated headspace analysis methodology. Descriptive information pertaining to evidence of odors and/or staining are also important and should be noted in the submitted boring and excavation logs for all environmental assessment work. Field screening information provides addition information pertaining to the presence of some contaminants during initial data collection and is used to aid in the selection of soil, rock, sediment and vapor-phase samples for laboratory analysis. The Permittee must comply with Permit Attachment 17, Section 17.2.2.d during all future field investigations. The collected field screening results must always be presented in exploratory boring and excavation logs and discussed in the associated reports.

3. Analytical Data Results Submittals

NMED Comment: Per Permit Attachment 17, Section 17.3, "Chemical Analyses", all analytical data (non-detects, estimated values, and detects) shall be provided in Microsoft Excel or other NMED approved format and must be provided with every report submittal. Summary tables shall include only detects of the data including detects based on the corresponding qualifiers. The submittal of data tables in the requested format facilitates review of the document. The Permittee must comply with Permit Attachment 17, Section 17.3 in all future assessment report submittals.

4. Section 4.3.2 Soil Vapor Analytical Results, Page 29

NMED Comment: It is unclear why soil vapor results were reported in microgram per kilogram ($\mu\text{g}/\text{kg}$) for the VOCs analyzed by EPA Method TO-15. Per Permit Attachment 17, Section 17.3.4.b, "Comparability", the facility permit emphasizes sample result compatibility to data presented in past studies, comparable sites, and screening and clean-up levels. Any procedure or variation that may affect comparability shall be noted and the data shall be qualified. Comply with Permit Attachment 17, Section 17.3.4.b when reporting COCs concentration data in all future reports.

5. Final Data Report for Laboratory Services-REVISION 1, (SDG-3) Second Paragraph, Page 3 of 65 and (SDG-4) Second Paragraph, Page 3 of 92

Permittee Statement: "Samples were overnight shipped via FedEx to the laboratory by Stone field personnel and received by laboratory personnel on June 26, 2014. All samples in this SDG (SDG-3) were delayed in transit by one day and were received two days later instead of overnight. Sample receipt temperatures ranged from 21.9 to 22.3 degrees C. These temperatures are above the receipt temperature acceptance limit of 10 degrees C for methanol samples." The samples submitted for SDG-4 were also reported as delivered 2 days later. Sample receipt temperatures ranged from 9.4 to 20.0 degrees C.

NMED Comment: VOCs samples must always be preserved at adequate temperatures to ensure reported concentrations accurately represent site conditions at the time the sample was collected. Additionally, in accordance with Permit Attachment 17, Section 17.3.2, the Permittee shall evaluate the sample data, field, and laboratory QA/QC results for acceptability with respect to the project objectives. Each group of samples shall be compared with project objectives and evaluated using data validation guidelines contained in EPA guidance documents and industry-accepted QA/QC methods and procedures.

This significant deviation in sample shipment for the 200 Area Investigation Report and supporting Matrix Diffusion Data Report was not adequately addressed in the Report. Based on this information, the samples submitted for SDG-3 and SDG-4 should have been qualified by the lab and/or the Permittee. The implications of significant deviations in sample receipt, laboratory data qualification or significant changes in the field sampling program due to unforeseen circumstances must, at a minimum, be adequately discussed in future reports.

6. Section 8.3, Soil Vapor, First Bullet, Page 42

Permittee's Statement "Following NMED approval of the 200 Area Phase II Investigation Report, NASA recommends that NMED perform a supplemental review and provide a formal response to the document "Development of Site-Specific Risk Based Regulatory Criteria for Soil Vapor at the NASA White Sands Test Facility (WSTF)."

NMED Comment: The risk based concentrations (RBCs) as presented in the 2012 "*Development of Site-Specific Risk-based Regulatory Criteria for Soil Vapor at NASA White Sands Test Facility (WSTF)*" document are not currently applicable to evaluation of soil vapor data as new toxicity values are available. The 2012 RBCs must be updated and modified to incorporate new toxicity data, new exposure factors, and effects of mutagenicity. If NASA intends to continue the use of the RBCs, the levels require a 2015 update.

In lieu of conducting the revisions and maintaining annual reviews and revisions, the Permittee may choose to apply the updated 2015 NMED site assessment guidance and use the NMED vapor intrusion screening levels (VISLs) in the initial screening assessment. It should also be noted that NMED VISLs may be modified using additional site-specific data, which would require prior approval by NMED.

7. Section 8.3, Soil Vapor, Second Bullet, Page 42

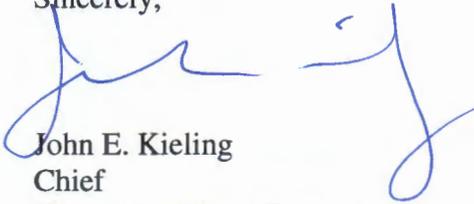
Permittee's Statement "In accordance with NMED guidance, NASA recommends the performance of a quantitative assessment of the complete vapor intrusion pathway in the WSTF 200 Area adjacent to the foundation of Building 200 near the location of the former Clean Room tank and soil borings 200-SB-06. By NMED definition, this location exceeds NMED vapor intrusion screening levels (VISLs) for TCE in industrial/occupational soil vapor and falls into the "complete pathway" category for vapor intrusion. Within 90 days of NMED approval of this 200 Area Phase II Investigation Report, NASA will develop and submit a Work Plan for a quantitative vapor intrusion assessment."

NMED Comment: NMED agrees with NASA's intent to collect and address potential vapor intrusion pathways with additional assessment. Newly revised July 2015 NMED VISLs should be utilized during the screening process for identified site COCs as site specific RBCs presented in the "*Site-Specific Risk-based Regulatory Criteria for Soil Vapor*" must be updated and approved by NMED prior to further use. Currently, data review indicates residential and industrial NMED VISLs have been exceeded for maximum reported concentrations at the 200 Area for TCE, PCE and Freon 113.

Mr. Davis
November 30, 2015
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If you have any questions regarding this Approval with Modification, please contact Gabriel Acevedo at (505) 476-6043.

Sincerely,



John E. Kieling
Chief
Hazardous Waste Bureau

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