

National Aeronautics and
Space Administration
Lyndon B. Johnson Space Center
White Sands Test Facility
P.O. Box 20
Las Cruces, NM 88004-0020



April 12, 2022

Reply to Attn of: RE-22-044

Mr. Rick Shean, Bureau Chief
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

Subject: NASA White Sands Test Facility (WSTF) Monthly Environmental Activity Report
for March 2022

Enclosed is the NASA White Sands Test Facility (WSTF) Monthly Environmental Activity Report for March 2022. This reporting format includes an Executive Summary that provides important events/observations as Enclosure 1, a paper copy of the report as Enclosure 2, and a CD-ROM with the report in PDF as Enclosure 3.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions or comments concerning this submittal, please contact Amanda Skarsgard of my staff at 575-571-9668.

TIMOTHY
DAVIS

Digitally signed by
TIMOTHY DAVIS
Date: 2022.04.12
08:13:53 -06'00'

Timothy J. Davis
Chief, Environmental Office

3 Enclosures

cc:

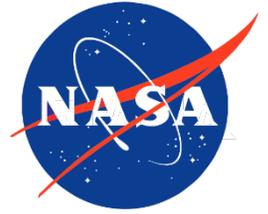
Mr. Gabriel Acevedo
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

Executive Summary

The following summarizes important information associated with NASA White Sands Test Facility (WSTF) environmental program activities in March 2022:

- NASA completed shipments of hazardous waste and scrap metal in March 2022.
- NASA sampled 42 of 42 groundwater monitoring wells scheduled for March 2022 and scheduled 44 groundwater monitoring wells for sampling in April 2022.
- NASA operated the Mid-plume Interception and Treatment System on 31 of 31 days in March 2022 and treated 1.27 acre-feet of contaminated groundwater and 1,250 gallons of investigation-derived waste (IDW).
- NASA operated the Plume Front Treatment System on 31 of 31 days in March 2022 and treated 75.2 acre-feet of contaminated groundwater.
- NASA continues follow-on activities associated with the recent perched groundwater investigation. NASA also continued extraction of perched groundwater at monitoring well 600-G-138.
- NASA completed and submitted a revised investigation report for the 200 Area Hazardous Waste Transmission Lines (SWMU 10).
- NASA plugged shallow soil vapor sampling borings at the 700 Area landfill and continued preparing the 700 Area Landfill Phase 1 investigation report.
- NASA received NMED's disapproval of the *Second TDRSS Underground Storage Tank (SWMU 52) Release Assessment Report* (February 18, 2021) and began reviewing NMED comments.
- NASA continued developing the NMED-required investigation work plan for the newly identified SWMU in the 500 Area (former oxidizer burner).
- NASA completed and submitted the pilot test report for the Targeted Mobile Remediation Process Pilot Test initiated in August 2019 and completed in September 2021.
- NASA continued project planning for several monitoring well projects.
- NASA submitted nine documents to the NMED Hazardous Waste Bureau in March 2022.
- There were no reportable non-compliance issues in March 2022.

National Aeronautics and Space Administration



Monthly Environmental Activity Report
March 2022

Report Deadline: April 15, 2022

NASA Johnson Space Center White Sands Test Facility
Monthly Environmental Activity Report

March 2022

NM8800019434

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

TIMOTHY DAVIS Digitally signed by TIMOTHY DAVIS
Date: 2022.04.12 08:14:36 -06'00'

See Electronic Signature

Timothy J. Davis
Chief, Environmental Office

Date

National Aeronautics and Space Administration

Johnson Space Center
White Sands Test Facility
12600 NASA Road
Las Cruces, NM 88012
www.nasa.gov/centers/wstf

www.nasa.gov

Executive Summary

The following summarizes important information associated with NASA White Sands Test Facility (WSTF) environmental program activities in March 2022:

- NASA completed shipments of hazardous waste and scrap metal in March 2022.
- NASA sampled 42 of 42 groundwater monitoring wells scheduled for March 2022 and scheduled 44 groundwater monitoring wells for sampling in April 2022.
- NASA operated the Mid-plume Interception and Treatment System on 31 of 31 days in March 2022 and treated 1.27 acre-feet of contaminated groundwater and 1,250 gallons of investigation-derived waste (IDW).
- NASA operated the Plume Front Treatment System on 31 of 31 days in March 2022 and treated 75.2 acre-feet of contaminated groundwater.
- NASA continues follow-on activities associated with the recent perched groundwater investigation. NASA also continued extraction of perched groundwater at monitoring well 600-G-138.
- NASA completed and submitted a revised investigation report for the 200 Area Hazardous Waste Transmission Lines (SWMU 10).
- NASA plugged shallow soil vapor sampling borings at the 700 Area landfill and continued preparing the 700 Area Landfill Phase 1 investigation report.
- NASA received NMED's disapproval of the *Second TDRSS Underground Storage Tank (SWMU 52) Release Assessment Report* (February 18, 2021) and began reviewing NMED comments.
- NASA continued developing the NMED-required investigation work plan for the newly identified SWMU in the 500 Area (former oxidizer burner).
- NASA completed and submitted the pilot test report for the Targeted Mobile Remediation Process Pilot Test initiated in August 2019 and completed in September 2021.
- NASA continued project planning for several monitoring well projects.
- NASA submitted nine documents to the NMED Hazardous Waste Bureau in March 2022.
- There were no reportable non-compliance issues in March 2022.

1.0 Waste Management Activities

1.1 NASA completed the following waste shipments in March 2022.

Date	Shipped To	Type of Waste	No. of Containers	Amount of Waste	Disposition
3/17/22	Clean Harbors El Dorado, El Dorado, AR	Hazardous Waste	2	1,852 kg	Incineration
3/22/22	W. Silver Recycling, Santa Teresa, NM	Scrap Metal	1	8,670 kg	Recycle
3/22/22	Clean Harbors Aragonite, Aragonite, UT	Hazardous Waste	12	292 kg	Incineration

- NMED is reviewing the Response to Approval with Modifications Closure Certification Report for the NASA WSTF Fuel Treatment Unit (FTU) (August 31, 2020).

2.0 Environmental Monitoring

2.1 NASA performed sampling at 42 of 42 groundwater monitoring wells or zones scheduled for sampling in March 2022, in accordance with the approved Groundwater Monitoring Plan (GMP). This includes well BLM-21-400, which was postponed from February 2022 because the sampling system was inoperable. Previous deviations from the planned sampling schedule are described below and have been reported to NMED in previous monthly reports:

- Wells 400-IV-123 (scheduled for sampling in January 2022), BLM-1-435 (scheduled for sampling in April 2021), PL-3-453 (scheduled for sampling in December 2020), and 400-C-118 (scheduled for sampling in November 2020) have not been sampled because the water levels are not sufficient for sampling.
- Well NASA 9, scheduled for sampling in October 2020, cannot be sampled because access to the screened interval was prevented by the intrusion of roots into the well casing and screen. NASA evaluated the monitoring well and has determined that it should be abandoned. NMED approved the 2021 GMP with a modification that required submittal of a work plan to replace well NASA 9 no later than April 29, 2022.
- Well BLM-28-515, scheduled for sampling in July 2019, cannot be sampled because of sampling system issues described in previous monthly reports. NASA plans to plug and abandon this well (Section 3.17) and remove it from the GMP.
- The Water FLUTE sampling system was removed from well WW-4 to support the collection of groundwater samples in accordance with the *Abbreviated Investigation Work Plan Groundwater Data Representativeness Phase I: Water FLUTE Well Evaluation* (July 30, 2019; revised). NASA replaced the Water FLUTE system in this well in late February 2022 and plans to resume routine groundwater sampling required by the GMP in April 2022.

2.2 NASA performed other regulatory groundwater sampling requirements as scheduled and as allowed by operational status. NASA did not sample wells PFE-1 and PFE-3 because they were not operational due to equipment failure.

2.3 NASA developed the April 2022 groundwater sampling schedule and plans to sample 44

NASA White Sands Test Facility

groundwater monitoring wells or zones based on GMP requirements.

3.0 Corrective Actions/Investigations

3.1 Mid-plume Interception and Treatment System Operations

Days Operated	Average Flow Rate (gpm)	Volume Extracted and Treated (acre-feet)	Volume of Groundwater Discharged to Infiltration Basin (acre-feet)	Volume of IDW Treated and Discharged to the Infiltration Basin (gallons)
31 of 31	9.5	1.27	1.26	1,250

Shutdown Date	Restart Date	Shutdown Status	Discussion
3/3/22	3/3/22	Unplanned	The system shut down automatically due to a low UV transmissivity alarm.
3/6/22	3/7/22	Unplanned	The system shut down automatically because of a disruption in the electrical power supply.
3/22/22	3/23/22	Planned	NASA shut down the system to replace damaged wiring in the UV system power distribution cabinet.
3/31/22	4/1/22	Unplanned	The system shut down automatically because of a disruption in the electrical power supply.

3.2 Plume Front Treatment System Operations

Days Operated	Average Flow Rate (gpm)	Volume Extracted/ Treated (acre-feet)	Volume Injected (acre-feet)	Volume Discharged to Grade (acre-feet)	Volume Discharged to Modu-Tank (acre-feet)
31 of 31	565	75.2	74.9	0.19	0.002

Shutdown Date	Restart Date	Shutdown Status	Discussion
3/1/22	3/1/22	Planned	NASA shut the system down to work on flow meters.
3/6/22	3/7/22	Unplanned	The system shut down automatically because of a disruption in the off-site electrical power supply.
3/8/22	3/8/22	Unplanned	The system shut down automatically due to a high pressure alarm caused while tuning the control system for the air strippers.

NASA White Sands Test Facility

3/29/22	3/29/22	Unplanned	The system shut down automatically due to a leak detection alarm caused by condensate in a section of the dual-walled extraction well piping.
---------	---------	-----------	---

3.3 200 Area Investigation

- NMED is reviewing the *NMED Disapproval Response for 200 Area and 600 Area Vapor Intrusion Assessment Report* (January 30, 2020).

3.4 400 Area

- NMED is reviewing the *Response to Disapproval of 400 Area Supplemental Groundwater and Soil Vapor Monitoring Plan* (July 14, 2021), the *NASA WSTF 400 Area Closure Investigation Report – NMED Third Disapproval Response* (July 27, 2021), and the *Response to Disapproval of 300 Area Supplemental Abbreviated Drilling Work Plan* (July 14, 2021).

3.5 600 Area Perched Groundwater Extraction Pilot Test and Investigation

- In March 2022, NASA extracted approximately 229 gallons of perched groundwater from monitoring well 600-G-138 in accordance with NMED’s March 1, 2013 *Approval Time Extension for Implementation of the Perched Groundwater Extraction Pilot Test at the 600 Area*. Groundwater elevation measurements indicate there is approximately 3.08 feet of perched groundwater within this well. Extracted groundwater was containerized for treatment at the Mid-plume Interception and Treatment System (MPITS) and discharged in accordance with DP-1255.
- NASA continued perched groundwater investigation fieldwork following the installation of conventional perched groundwater monitoring well 600A-001-GW and conventional monitoring well 600A-002-GW. NASA performed colloidal borescope evaluations at the two new wells 600A-001-GW and 600A-002-GW, existing perched groundwater monitoring well 600-G-138, and 12 other conventional wells in the fractured bedrock aquifer with significant locations relative to the evaluation of regional flow. Ongoing fieldwork includes well development, surveying, and sampling. The final investigation report is due to NMED by May 31, 2022, though NASA requested an extension of time to June 30, 2022.
- NASA completed characterization of the investigation-derived waste generated during the perched groundwater investigation as no longer containing listed waste. NASA prepared and submitted the *Request for a “Contained-in” Determination for Contaminated Media Associated with the 600 Area Perched Groundwater Abbreviated Investigation Work Plan* on March 22, 2022.

3.6 SWMUs 2, 8, and 34 and AOC 51 (Wastewater Lagoons)

- NMED is reviewing the *NASA White Sands Test Facility (WSTF) 200 Area Wastewater Lagoons Closure (SWMU 8) Investigation Report* (November 25, 2019), the *NASA White Sands Test Facility (WSTF) 600 Area Wastewater Lagoons Closure (SWMU 34) Investigation Report* (November 26, 2019), the *NASA White Sands Test Facility (WSTF) 100 Area Wastewater Lagoons Closure (SWMU 2) Investigation Report* (August 3, 2020), and the *NASA White Sands Test Facility (WSTF) STGT Wastewater Lagoons Closure (AOC 51) Investigation Report* (October 13, 2020).

- 3.7 SWMU 10 (200 Area Hazardous Waste Transmission Lines [HWTL])
- NASA submitted the *Response to Second Disapproval of NASA WSTF 200 Area HWTL (SWMU 10) Investigation Report and Risk Assessment Report* on March 4, 2022. The revised report addresses 16 NMED comments from the November 16, 2020 disapproval.
- 3.8 SWMU 16 (600 Area BLM Off-site Soil Pile)
- NMED is reviewing the *Accelerated Corrective Measures Work Plan for the NASA WSTF SWMU 16 (600 Area BLM Off-Site Soil Pile)* (September 28, 2021).
- 3.9 SWMUs 21-27 (Septic Tanks)
- NMED is reviewing the *Response to Second Disapproval of NASA White Sands Test Facility (WSTF) Septic Tanks (SWMUs 21-27) Investigation Report* (May 18, 2021).
- 3.10 SWMUs 29-31 (Small Arms Firing Ranges)
- NMED is reviewing the *Response to Second Disapproval Small Arms Firing Ranges (SWMUs 29-31) Remedy Completion Report and Risk Assessment Report* (August 3, 2020).
- 3.11 SWMU 33 (Test Stand 302 Cooling Water Pond)
- NMED is reviewing the revised *SWMU 33 Historical Investigation Summary and Investigation Work Plan* (August 17, 2020).
- 3.12 SWMU 47 (500 Area Fuel Storage)
- NMED is reviewing the *Response to Second Disapproval of 500 Area Fuel Storage (SWMU 47) Investigation Work Plan* (June 29, 2021).
- 3.13 SWMU 49 (700 Area Landfill)
- NASA continued preparation of the required Phase I investigation report, which is due to NMED by April 29, 2022.
 - NASA completed the plugging and abandonment of shallow soil borings installed for the Phase IA survey in accordance with the March 2019 *SWMU 49 700 Area Landfill Phase I Investigation Work Plan* and subsequent response to the NMED Disapproval.
- 3.14 SWMU 50 (TDRS Diesel Release)
- NMED is reviewing the *Response to Disapproval of First Tracking Data Relay Satellite System (TDRSS) Diesel Release (SWMU 50) Investigation Report and Risk Screen Evaluation Report* (November 9, 2020).
- 3.15 SWMU 52 (Second TDRS UST)
- The NMED Hazardous Waste Bureau disapproved the *Second TDRSS Underground Storage Tank (SWMU 52) Release Assessment Report* (February 18, 2021). NASA is addressing NMED's four comments and preparing the revised report, which is due to NMED no later than May 6, 2022.
- 3.16 Newly Identified SWMU Near 500 Area (Former Oxidizer Burner)
- NASA continued developing an investigation work plan for the former oxidizer burner in the 500 Area. The unit will be identified as a SWMU in the Permit at an appropriate time. The work plan is due to NMED no later than August 31, 2022.

3.17 Groundwater Monitoring Well Abandonment, Installation, and Reconfiguration

- NMED is reviewing the *NASA WSTF Westbay Well Reconfiguration Work Plan for Wells PL-7, PL-8, PL-10, ST-5, and WW-3* (April 29, 2021).
- NASA continued planning for the abandonment of well BLM-28 in accordance with NMED's January 10, 2022 approval of the *Well Abandonment Work Plan for Well BLM-28* (April 29, 2021).
- NASA developed the response to NMED's January 18, 2022 approval with modifications of the *NASA WSTF Well Reconfiguration Work Plan for Well BW-4* (June 29, 2021) and submitted the *Response to Approval with Modifications of NASA WSTF Well Reconfiguration Work Plan for Well BW-4* on March 8, 2022.
- NMED is reviewing the *NASA WSTF Work Plan for Drilling and Installation of Monitoring Well 600B-001-GW* (BLM-28 replacement; August 31, 2021).
- NMED is reviewing the *Work Plan for Drilling and Installation of Monitoring Well 600C-001-GW at the NASA White Sands Test Facility (WSTF)* (deeper well adjacent to BLM-10-517; August 31, 2021).
- NASA continued planning for the abandonment of wells 200-SG-2 and 200-SG-3 in accordance with NMED's January 10, 2022 approval of the *Well Plugging Plan of Operations for Multipoint Soil Vapor Groundwater Monitoring Wells 200-SG-2 and 200-SG-3* (November 30, 2021).

3.18 Targeted Mobile Remediation Process (TMRP)

- NASA completed and submitted the *NASA WSTF Targeted Mobile Remediation Process Pilot Test Report* on March 8, 2022.
- NMED is reviewing the *NASA White Sands Test Facility Monitoring Well ST-1-541 Contaminated Groundwater Release Abbreviated Investigation Work Plan* (June 3, 2021).

3.19 Groundwater Data Representativeness Evaluation

- NMED is reviewing the *Abbreviated Investigation Work Plan for Groundwater Data Representativeness, Phase 2: FLUTE Well Evaluation* (November 2, 2021).

3.20 Dye Tracer Test Investigation

- NMED is reviewing the *Report on Tracer Testing in the 200/600 Areas and Mid-plume Constriction Area* (August 31, 2020).

3.21 Site-wide Geophysics Investigation

- NASA and the off-site geophysics subcontractor completed the passive seismic field survey in the WSTF Plume Front area in February. Geophones were deployed across a 1 x 2-mile area that incorporates the Plume Front remediation wells, footprint of the westernmost groundwater plume, and the Western Boundary Fault Zone. The subcontractor initiated passive seismic data download, processing, and reporting in early March. NASA expects this process to require approximately 12 weeks to complete. This passive seismic survey is a component of the NASA site-wide geophysical investigation report that will be submitted to NMED later in 2022.

4.0 Non-compliance Issues

The NASA Hazardous Waste Permit requires that other non-compliance conditions be reported to NMED. There were no instances of other non-compliance conditions during this reporting period that require notification under the Permit. The criteria for non-compliance reporting in this report (as defined by 40 CFR 270.30 (l)(10) and EPA interpretations at RCRA Faxbacks 13142 and 13686) would be any non-compliance with permit conditions that is not classified as minor recordkeeping, reporting, and similar oversights that were corrected once discovered. Additionally, there were no issues meeting the previously defined criteria (minor items immediately corrected) that were part of a repeating pattern of non-compliance.

5.0 Documents Submitted

5.1 Documents submitted to the Hazardous Waste Bureau in March 2022

- NASA submitted the *NASA White Sands Test Facility 2021 Biennial Hazardous Waste Report* on March 1, 2022.
- NASA submitted the *Response to Second Disapproval of NASA WSTF 200 Area HWTL (SWMU 10) Investigation Report and Risk Assessment Report* on March 4, 2022.
- NASA submitted the *Response to Approval with Modifications of NASA WSTF Well Reconfiguration Work Plan for Well BW-4* on March 8, 2022.
- NASA submitted the *NASA WSTF Targeted Mobile Remediation Process Pilot Test Report* on March 8, 2022.
- NASA submitted the *Response to Approval with Modifications of NASA WSTF Periodic Monitoring Report – Second Quarter 2021* on March 15, 2022.
- NASA submitted the *Request for Second Extension of Time for Submittal of the 600 Area Perched Groundwater Investigation Report* on March 15, 2022.
- NASA submitted the *Fee Assessment for Periodic Monitoring Report for Fourth Quarter 2021 (NMED Invoice Number HWB-NASA-22-002)* on March 22, 2022.
- NASA submitted the *Fee Assessment for the Work Plan for Abandonment of NASA WSTF Well PL-6 and Replacement with Monitoring Well 600C-002-GW (NMED Invoice Number HWB-NASA-22-001)* on March 22, 2022.
- NASA submitted the *Request for a “Contained-in” Determination for Contaminated Media Associated with the 600 Area Perched Groundwater Abbreviated Investigation Work Plan* on March 22, 2022.

5.2 Pertinent documents submitted to other NMED bureaus in March 2022

- NASA submitted the *NASA White Sands Test Facility (WSTF) Semi-annual Report for Discharge Permit (DP)-1255 – Second Half of 2021* to the Ground Water Quality Bureau on March 1, 2022.
- NASA submitted the *Opacity Observation Report - Emergency Generators 2022* to the NMED Air Quality Bureau on March 17, 2022.
- NASA submitted the *Opacity Observation Report (2022Q1 - Units 4, 6, 7, 8, 9, 10, 17)* to the NMED Air Quality Bureau on March 17, 2022.

- NASA submitted the *NASA WSTF (White Sands Test Facility) Discharge Permit DP-697 Quarterly Analytical Results – First Quarter 2022* to the Ground Water Quality Bureau on March 22, 2022.
 - NASA submitted the *NASA White Sands Test Facility - FF First Quarter 2022 Disinfectant Residual Monitoring Report* to the Drinking Water Bureau on March 22, 2022.
- 5.3 Status of documents previously submitted to the NMED Hazardous Waste Bureau for which additional correspondence was recorded in March 2022
- NASA submitted the *NASA White Sands Test Facility Hazardous Waste Operating Permit SWMU 52 Incident Notification* on August 17, 2020. NMED responded to the notification on November 9, 2020 and directed NASA to submit a Release Assessment Report to the Hazardous Waste Bureau no later than February 26, 2021. NASA submitted the *Second TDRSS Underground Storage Tank (SWMU 52) Release Assessment Report* on February 18, 2021. NASA received NMED's April 8, 2021 fee assessment and invoice for review of the report and provided the \$8,500 review fee on April 21, 2021. NMED disapproved the report on March 1, 2022 and directed NASA to address four NMED comments and submit a revised report no later than May 6, 2022.
 - NASA submitted the *Periodic Monitoring Report – Fourth Quarter 2021* on February 1, 2022. NASA received NMED's March 3, 2022 fee assessment and invoice for review of the report and is processing the fee payment.
 - NASA submitted the *Work Plan for Abandonment of NASA WSTF Well PL-6 and Replacement with Monitoring Well 600C-002-GW* on February 1, 2022. NASA received NMED's March 3, 2022 fee assessment and invoice for review of the plan and is processing the fee payment.