

National Aeronautics and
Space Administration

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



December 8, 2022

Reply to Attn of: RE-22-151

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 November 2022

Enclosed is the NASA White Sands Test Facility (WSTF) Monthly Environmental Activity Report for November 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.

AMANDA
SKARSGARD

Digitally signed by
AMANDA SKARSGARD
Date: 2022.12.08
10:09:31 -07'00'

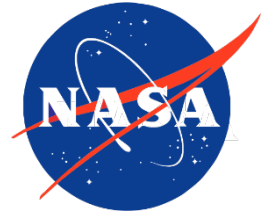
For: Timothy J. Davis
Chief, Environmental Office

3 Enclosures

cc:

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

National Aeronautics and Space Administration



Monthly Environmental Activity Report
November 2022

Report Deadline: December 15, 2022

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

November 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.

AMANDA SKARSGARD  Digitally signed by AMANDA
SKARSGARD
Date: 2022.12.08 10:09:59 -07'00'

See Electronic Signature

For: 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 November 2022:

- NASA completed shipments of hazardous, universal, and TSCA waste in November 2022.
- NASA sampled 39 of 41 groundwater monitoring wells scheduled for November 2022 and scheduled 36 groundwater monitoring wells for sampling in December 2022.
- NASA operated the Mid-plume Interception and Treatment System on 30 of 30 days in November 2022 and treated 0.70 acre-feet of contaminated groundwater and 230 gallons of Investigation-derived Waste (IDW).
- NASA operated the Plume Front Treatment System on 27 of 30 days in November 2022 and treated 33.8 acre-feet of contaminated groundwater.
- NASA continued extraction of perched groundwater at monitoring well 600-G-138.
- NASA continued addressing NMED's comments on the 200/600 Area vapor intrusion report.
- NASA continued reviewing and addressing NMED comments in their disapprovals of all four wastewater lagoon investigation reports.
- NASA began reviewing and responding to NMED's comments on the revised SWMU 50 investigation report and risk screening.
- NASA continued project planning for several monitoring well projects, including development of a drilling work plan for wells required by NMED's response to the dye tracer test report.
- NASA began reviewing and responding to NMED's comments on the Targeted Mobile Remediation Process (TMRP) pilot test report.
- NASA submitted six documents to the NMED Hazardous Waste Bureau in November 2022.
- There were no reportable non-compliance issues in November 2022.

1.0 Waste Management Activities

1.1 NASA completed the following waste shipments in November 2022.

Date	Shipped To	Type of Waste	No. of Containers	Amount of Waste	Disposition
11/2/22	Clean Harbors, El Dorado, AR	Hazardous	1	88 kg	Incineration
11/2/22	Clean Harbors, Aragonite, UT	Hazardous	10	196 kg	Incineration
11/29/22	Veolia, Phoenix, AZ	Universal	12	466 kg	Recycle
11/29/22	Veolia, Phoenix, AZ	TSCA	1	40 kg	Incineration
11/29/22	Clean Harbors, Aragonite, UT	Hazardous	9	134 kg	Incineration

2.0 Environmental Monitoring

2.1 NASA performed sampling at 39 of 41 groundwater monitoring wells or zones scheduled for sampling in November 2022, in accordance with the approved Groundwater Monitoring Plan (GMP). NASA rescheduled sampling of wells 600A-001-GW and 600A-002-GW because of equipment failure. Previous deviations from the planned sampling schedule are described below and have been reported to NMED in previous monthly reports:

- NASA could not sample well PL-7-480 in August 2022 because the Westbay zone did not produce water. NASA believes the water level at this location has dropped below this sample port and will monitor the water level during future planned sampling events.
- Well 400-IV-123, previously rescheduled from January 2022 because of insufficient water, was sampled in October 2022 after the water level recovered sufficiently.
- Wells 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. NMED approved NASA's recommendation to plug and abandon these wells. NASA discontinued sampling of well 400-C-118 for detection monitoring in accordance with Section 3.3 of the GMP and replaced it with well 400-C-143.
- 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 NASA's April 29, 2022 work plan to replace the well and directed NASA to submit a well completion report no later than September 29, 2023.

NASA White Sands Test Facility

- 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 abandon and replace this well (Section 3.17).
- 2.2 NASA performed other regulatory groundwater sampling requirements as scheduled and as allowed by operational status. NASA did not sample wells MPE-8, PFE-1, PFE-2, and PFE-3 because they were not operational due to equipment failure.
- 2.3 NASA developed the December 2022 groundwater sampling schedule and plans to sample 36 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)
30 of 30	5.5	0.70	0.69	230

Shutdown Date	Restart Date	Shutdown Status	Discussion
There were no system shutdowns in November 2022.			

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)
27 of 30	327	33.8	33.1	0.16	0.0

Shutdown Date	Restart Date	Shutdown Status	Discussion
10/17/22	11/2/22	Planned	NASA shut the system down to obtain updated static water level measurements needed for pending well repairs.
11/4/22	11/4/22	Unplanned	The system shut down automatically because of a high air flow alarm in air stripper #2.
11/4/22	11/7/22	Planned	NASA shut the system down to troubleshoot and repair a stuck valve at well PFI-2.

3.3 200 Area Investigation

- NASA continued evaluating and responding to NMED’s three multipart comments in their September 30, 2022 disapproval of the *NMED Disapproval Response for 200 Area and 600 Area Vapor Intrusion Assessment Report* (January 30, 2020). A revised report is due to NMED no later than April 28, 2023.

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 November 2022, NASA extracted approximately 117 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 3.18 feet of perched groundwater within this well. This perched groundwater thickness has been relatively consistent since the inception of extraction activities in 2013. Extracted groundwater was containerized for treatment at the Mid-plume Interception and Treatment System (MPITS) and discharged in accordance with DP-1255.
- NMED is reviewing the *600 Area Perched Groundwater Extraction Pilot Test Interim Status Report – Project Year 9* (April 26, 2022) and the *600 Area Perched Groundwater Investigation Report* (June 29, 2022).

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

- NASA initiated the additional fieldwork necessary to address NMED comments in their disapprovals of the *NASA White Sands Test Facility (WSTF) 200 Area Wastewater Lagoons Closure (SWMU 8) Investigation Report* (November 25, 2019) on June 6, 2022, the *NASA White Sands Test Facility (WSTF) 600 Area Wastewater Lagoons Closure (SWMU 34) Investigation Report* (November 26, 2019) on June 16, 2022, the *NASA White Sands Test Facility (WSTF) 100 Area Wastewater Lagoons Closure (SWMU 2) Investigation Report* (August 3, 2020) on July 5, 2022, and the *NASA White Sands Test Facility (WSTF) STGT Wastewater Lagoons Closure (AOC 51) Investigation Report* (October 13, 2020) on July 25, 2022.

3.7 SWMU 10 (200 Area Hazardous Waste Transmission Lines [HWTL])

- NMED is reviewing the *Response to Second Disapproval of NASA WSTF 200 Area HWTL (SWMU 10) Investigation Report and Risk Assessment Report* (March 4, 2022).

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 approved the *Response to Second Disapproval Small Arms Firing Ranges (SWMUs 29-31) Remedy Completion Report and Risk Assessment Report* (August 3, 2020) on November 16, 2022. NMED provided six comments that NASA must address with revised reports no later than January 30, 2023.

3.11 SWMU 33 (Test Stand 302 Cooling Water Pond)

- NMED is reviewing the *Response to Disapproval of NASA WSTF 300 Area Test Stand 302 Cooling Water Pond (SWMU 33) Investigation Work Plan (IWP) and Historical Information Summary (HIS)* (September 14, 2022).

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)

- NMED is reviewing the *700 Area Landfill Closure (SWMU 49) Phase I Investigation Report* (April 29, 2022).

3.14 SWMU 50 (TDRS Diesel Release)

- NMED approved 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) on November 16, 2022 with modifications. NMED provided seven comments that NASA must address with a revised report no later than January 30, 2023.

3.15 Newly Identified SWMU Near 500 Area (Former Oxidizer Burner)

- NMED is reviewing the *500 Area Former Oxidizer Burner (FOB) Investigation Work Plan (IWP) and Historical Information Summary (HIS)* (August 25, 2022).

3.16 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). Abandonment is scheduled for early 2023.
- NASA continued planning the reconfiguration of well BW-4 as described in the *Response to Approval with Modifications of NASA WSTF Well Reconfiguration Work Plan for Well BW-4* (March 8, 2022). Plugging of the lower portion of the borehole is scheduled for early 2023.
- NASA continued planning for well installation activities in accordance with NMED's May 2022 approvals of the *NASA WSTF Work Plan for Drilling and Installation of Monitoring Well 600B-001-GW* (BLM-28 replacement; August 31, 2021) and 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). Abandonment is scheduled for early 2023.

- NASA continued planning for the abandonment of well NASA 9 in accordance with NMED's October 31, 2022 approval of the *NASA WSTF Work Plan for Abandonment of NASA WSTF NASA 9 and Replacement with Monitoring Well 400-001-GW* (April 29, 2022). Abandonment is scheduled for early 2023.
- NASA began planning well installation and abandonment work in accordance with NMED's October 31, 2022 approval of the *NASA WSTF Work Plan for Drilling and Installation of Monitoring Well 600C-002-GW and Abandonment of PL-6* (February 1, 2022).

3.17 Targeted Mobile Remediation Process (TMRP)

- NMED approved the *NASA WSTF Targeted Mobile Remediation Process Pilot Test Report* (March 8, 2022) with modifications on November 29, 2022. NMED provided six comments that NASA must address with a revised report no later than January 30, 2023. NMED also directed NASA to submit the proposed TMRP Phase 2 pilot test work plan no later than April 28, 2023.
- NASA continued project planning and procurement activities for the small soils investigation to be performed at well ST-1-541 in accordance with the NMED-approved *Well ST-1-541 Contaminated Groundwater Release Abbreviated Investigation Work Plan* (June 3, 2021). NASA submitted a request for extension of time for submittal of the abbreviated investigation report on November 9, 2022.

3.18 Groundwater Data Representativeness Evaluation

- NASA continued reviewing analytical data from samples collected in accordance with the NMED-approved *Abbreviated Investigation Work Plan for Groundwater Data Representativeness, Phase 2: FLUTE Well Evaluation* (November 2, 2021).

3.19 Dye Tracer Test Investigation

- NASA continued developing the required drilling work plan to respond to NMED's comments in the April 5, 2022 approval with modifications of the *Report on Tracer Testing in the 200/600 Areas and Mid-plume Constriction Area* (August 31, 2020).

3.20 Site-wide Geophysics Investigation

- NASA completed and submitted the *Site-wide Geophysical Survey Investigation Report* on November 8, 2022.

3.21 PFAS Monitoring

- In the 2022 update of the Groundwater Monitoring Plan, NASA informed NMED of an ongoing preliminary assessment of PFAS being conducted by NASA Headquarters. The NASA Headquarters contractor for the preliminary assessment performed groundwater sampling at WSTF in April 2022 and provided the samples to their laboratory. Analytical data and the associated assessment report are currently being reviewed within NASA.

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 November 2022

- NASA submitted the *Exception Report of the 45-day Exceedance on Return of Hazardous Waste Shipping Manifests* on November 3, 2022.
- NASA submitted the *Site-wide Geophysical Survey Investigation Report* on November 8, 2022.
- NASA submitted the *Request for Extension of Time for Submittal of Monitoring Well ST-1-541 Contaminated Groundwater Release Abbreviated Investigation Report* on November 9, 2022.
- NASA submitted the *Response to Approval with Modifications of NASA WSTF Groundwater Monitoring Plan Update for 2022* on November 15, 2022.
- NASA submitted the *Exception Report for the 45-day Exceedance on Return of Hazardous Waste Shipping Manifest* on November 16, 2022.
- NASA submitted the *NASA White Sands Test Facility (WSTF) 2022 Waste Minimization Program Certification and Plan* on November 29, 2022.

5.2 Pertinent documents submitted to other NMED bureaus in October 2022

- NASA submitted the *NASA JSC White Sands Test Facility – FF (NM3590607) Proposed Public Education Materials* to the Drinking Water Bureau on November 10, 2022.

5.3 Status of documents previously submitted to the NMED Hazardous Waste Bureau for which additional correspondence was recorded in November 2022

- NASA submitted the *First Tracking and Data Relay Satellite System (TDRSS) Diesel Release (SWMU 50) Investigation Report* on March 14, 2019. NASA received NMED's April 12, 2019 fee assessment for review of the report on April 22, 2019 and submitted the \$7,500 review fee to NMED on May 28, 2019. NMED disapproved the report on July 8, 2020 and directed NASA to address 17 NMED comments and submit a revised report no later than October 30, 2020. NASA submitted the *Response to Disapproval of First Tracking Data Relay Satellite System (TDRSS) Diesel Release (SWMU 50) Investigation Report and Risk Screen Evaluation Report* on November 9, 2020. NMED approved the report with modifications on November 16, 2022 and directed NASA to address seven NMED comments and submit a revised report no later than January 30, 2023.
- NASA submitted the *Response to Second Disapproval Small Arms Firing Ranges (SWMUs 29-31) Remedy Completion Report and Risk Assessment Report* on August 3, 2020. NMED approved the reports on November 16, 2022 with modifications and directed NASA to address six NMED comments and submit revised reports no later than January 30, 2023.
- NASA submitted the *NASA White Sands Test Facility Monitoring Well ST-1-541 Contaminated Groundwater Release Abbreviated Investigation Work Plan* on June 3, 2021. NASA received NMED's July 15, 2021 assessment and invoice for review of the plan and provided the \$5,000 review fee on August 17, 2021. NMED approved the work plan on April 25, 2022 and directed NASA to perform the investigation and submit an investigation work plan no later than November 28, 2022. NASA submitted the *Request for Extension of Time for Submittal of*

Monitoring Well ST-1-541 Contaminated Groundwater Release Abbreviated Investigation Report on November 9, 2022.

- NASA submitted the *NASA WSTF Targeted Mobile Remediation Process Pilot Test Report* on March 8, 2022. NASA received NMED's April 27, 2022 fee assessment and invoice for review of the report and provided the \$10,000 review fee on May 24, 2022. NMED approved the report with modifications on November 29, 2022 and directed NASA to address four NMED comments and submit a revised report no later than January 31, 2023. NMED also directed NASA to submit the proposed TMRP Phase 2 pilot test work plan no later than April 28, 2023.
- NASA submitted the *NASA WSTF Groundwater Monitoring Plan Update for 2022* on April 29, 2022. NASA received NMED's June 8, 2022 fee assessment and invoice for review of the plan and provided the \$10,000 review fee on June 28, 2022. NMED approved the plan with modifications on October 31, 2022. NMED directed NASA to address seven comments and submit a revised monitoring plan no later than November 30, 2022. NASA submitted the *Response to Approval with Modifications of NASA WSTF Groundwater Monitoring Plan Update for 2022* on November 15, 2022.
- NASA submitted the *NASA WSTF Remediation System Monitoring Plan Annual Update for 2022* on July 29, 2022. NASA received NMED's August 31, 2022 fee assessment and invoice for review of the report and provided the \$10,000 review fee on October 4, 2022. NMED approved the plan with a modification on November 16, 2022 and directed NASA to provide documentation on the abandonment of well PFI-1 within 90 days of the completion of well abandonment.