

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



February 9, 2023

Reply to Attn of: RE-23-026

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 January 2023

Enclosed is the NASA White Sands Test Facility (WSTF) Monthly Environmental Activity Report for January 2023. 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.

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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
January 2023

Report Deadline: February 15, 2023

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

January 2023

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.

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For: Timothy J. Davis
Chief, Environmental Office

Date

National Aeronautics and Space Administration

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Executive Summary

The following summarizes important information associated with NASA White Sands Test Facility (WSTF) environmental program activities in January 2023:

- NASA completed shipments of hazardous and universal waste in January 2023.
- NASA sampled 36 of 36 groundwater monitoring wells scheduled for January 2023 and scheduled 35 groundwater monitoring wells for sampling in February 2023.
- NASA operated the Mid-plume Interception and Treatment System on 27 of 31 days in January 2023 and treated 0.45 acre-feet of contaminated groundwater and 238 gallons of IDW.
- NASA operated the Plume Front Treatment System on 27 of 31 days in January 2023 and treated 34.1 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 investigation fieldwork necessary to address NMED comments in their disapprovals of all four wastewater lagoon investigation reports.
- NASA prepared responses to NMED's approvals with modifications of the SWMUs 29-32 RCR and SWMU 50 investigation and risk screen reports.
- NASA plugged and abandoned 12 wells and partially abandoned another well in January 2023. NASA also continued project planning for several additional monitoring well projects.
- NASA addressed NMED's comments on the Targeted Mobile Remediation Process (TMRP) pilot test report and submitted a revised report.
- NASA submitted seven documents to the NMED Hazardous Waste Bureau in January 2023.
- There were no reportable non-compliance issues in January 2023.

1.0 Waste Management Activities

1.1 NASA completed the following waste shipments in January 2023.

Date	Shipped To	Type of Waste	No. of Containers	Amount of Waste	Disposition
1/19/23	Clean Harbors, Aragonite, UT	Hazardous	8	304 kg	Incineration
1/19/23	Clean Harbors, El Dorado, AR	Hazardous	1	689 kg	Incineration
1/19/23	US Ecology, Beatty, NV	Hazardous	5	152 kg	Macroencapsulation, Solidification, or Off-site Management
1/31/23	Big Green Box	Universal	2	29 kg	Recycle

2.0 Environmental Monitoring

2.1 NASA performed sampling at 36 of 36 groundwater monitoring wells or zones scheduled for sampling in January 2023, in accordance with the approved Groundwater Monitoring Plan (GMP). Previous deviations from the planned sampling schedule are described below and have been reported to NMED in previous monthly reports:

- Wells 600A-001-GW and 600A-002-GW (scheduled for sampling in November 2022) were not sampled because of equipment failure. NASA obtained replacement sampling equipment in December 2022 for use in January 2023. Upon further evaluation, NASA determined that previous development of these wells using on-site equipment after colloidal borescope tests may have been inadequate. NASA is working to acquire the services of an off-site subcontractor to perform additional development at these wells prior to sampling. NASA will provide an update on well development progress in future 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.
- 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. NASA plugged and abandoned well 400-C-118 on January 8, 2023 and is planning the abandonment of wells BLM-1-435 and PL-3-453.
- 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 plugged and abandoned this well on January 7, 2023 (Section 3.16).

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 plugged and abandoned this well on January 29, 2023 (Section 3.16).
- 2.2 NASA performed other regulatory groundwater sampling requirements as scheduled and as allowed by operational status. NASA did not sample wells PFE-1, PFE-2, PFE-3, and MPE-8 because they were not operational due to equipment failure. NASA continues efforts to resolve these equipment issues and will provide updates in future reports.
- 2.3 NASA developed the February 2023 groundwater sampling schedule and plans to sample 35 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)
27 of 31	4.3	0.45	0.50	238

Shutdown Date	Restart Date	Shutdown Status	Discussion
1/11/23	1/12/23	Planned	The system was shut down because well MPE-1 was not operational and the overall system flow rate was inadequate to maintain continuous operation.
1/12/23	1/17/23	Planned	The system was shut down because well MPE-11 was not operational and the overall system flow rate was inadequate to maintain continuous operation.
1/22/23	1/23/23	Planned	The system was shut down because wells MPE-8 and MPE-11 were not operational and the overall system flow rate was inadequate to maintain continuous operation.
1/29/23	1/30/23	Planned	The system was shut down because well MPE-1 was not operational and the overall system flow rate was inadequate to maintain continuous operation.

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 31	326	34.1	33.3	0.17	0.02

Shutdown Date	Restart Date	Shutdown Status	Discussion
1/1/23	1/4/23	Unplanned	The system automatically shut down due to a component fault within the air compressor.
1/22/23	1/23/23	Unplanned	The system automatically shut down due to a false leak detection alarm.
1/27/23	1/30/23	Unplanned	The system shut down automatically due to low influent flow.

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 January 2023, NASA extracted approximately 72 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 approved the *600 Area Perched Groundwater Extraction Pilot Test Interim Status Report – Project Year 9* (April 26, 2022) on January 56, 2023 and is reviewing the *600 Area Perched Groundwater Investigation Report* (June 29, 2022).

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

- NASA continued 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.

- NASA mobilized the subcontracted drilling company to WSTF and initiated the installation of soil borings and monitoring wells in accordance with the plan. NASA completed soil boring 600L-SB-28 at a location topographically and hydrogeologically downgradient from the 600 Area wastewater lagoons. NASA collected the required soil samples from the boring, which intercepted perched groundwater at approximately 151 feet below ground surface. NASA installed a groundwater monitoring well in the borehole and monitored groundwater as it recovered to approximately 145 feet below ground surface. NASA completed the installation and sampling of two additional soil borings within the 600 Area wastewater lagoon. All samples were submitted to the off-site laboratories for analysis.
- 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) with modifications on November 16, 2022. NASA addressed NMED's six comments and prepared the revised reports for submittal to NMED. NASA submitted the *Response to Approval w/Mods – Revised Small Arms Firing Range (SWMUs 29-31) RCR* on January 27, 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) with modifications on November 16, 2022. NASA addressed NMED's seven comments and submitted the *Response to Approval with Modification of First Tracking Data Relay Satellite System (TDRSS) Diesel Release (SWMU 50) Investigation Report* on January 26, 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).
- On January 6, 2023, NASA completed abandonment of the lower portion of the borehole at 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). NASA continued planning the remainder of reconfiguration activities (sampling system installation) and initiated development of the reconfiguration report that is due to NMED no later than March 30, 2023.
- On January 7, 2023, NASA completed 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). NASA continued planning the installation of the replacement well and related abandonment and replacement report, which is due to NMED no later than September 29, 2023.
- On January 10, 2023, NASA completed abandonment of the borehole at well BLM-30 in accordance with the NMED-approved *NASA WSTF Drilling Work Plan for Abandonment of Well BLM-30 and Drilling of New Groundwater Monitoring Well BLM-43* (August 21, 2020; revised February 3, 2021). NASA continued planning the installation of the replacement well and related abandonment and replacement report, which is currently due to NMED no later than April 28, 2023.
- On January 29, 2023, NASA completed abandonment of the borehole at 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 is developing the well abandonment report for submittal to NMED no later than March 15, 2023.
- On January 30, 2023, NASA completed 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). NASA is developing the well abandonment report for submittal to NMED no later than March 31, 2023.
- NASA completed abandonment of wells 400-C-118 (January 8, 2023), 400-LV-125 (January 7, 2023), 400-KV-142 (January 7, 2023), BLM-2-482 (January 20, 2023), and NASA 8 (January 30, 2023) as described in the NMED-approved *NASA WSTF Groundwater Monitoring Plan Update for 2022* (April 29, 2022; revised November 15, 2022). NASA began preparing the well abandonment reports, which are due to NMED within 90 days of well abandonment as directed by NMED.
- NASA completed abandonment of wells PFE-4 and PFE-6 as described in the September 20, 2022 *Plugging and Abandonment of WSTF Wells 400-KV-142, 400-LV-125, BLM-2-482, NASA 8, PFE-4, and PFE-6*. NASA began preparing the well abandonment reports, which are due to NMED within 60 days of well abandonment in accordance with the GMP.
- 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 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. NASA addressed NMED's six comments and submitted the *Response to Approval with Modifications Targeted Mobile Remediation Process Pilot Test Report* on January 18, 2023.
- NASA continued development of the proposed TMRP Phase 2 pilot test work plan that is due to NMED no later than April 28, 2023.
- NASA performed investigation fieldwork 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) and provided soil samples to the off-site analytical laboratory. NMED is reviewing the request for extension of time for submittal of the abbreviated investigation report (November 9, 2022).

3.18 Groundwater Data Representativeness Evaluation

- NASA continued developing the investigation report for the NMED-approved groundwater data representativeness investigation (*Abbreviated Investigation Work Plan for Groundwater Data Representativeness, Phase 2: FLUTE Well Evaluation* [November 2, 2021]). The report is due to NMED no later than April 28, 2023.

3.19 Dye Tracer Test Investigation

- NMED is reviewing the *Abbreviated Drilling Work Plan in Response to the NMED Approval with Modification of the Report on Tracer Testing in the WSTF 200/600 Areas and Mid-plume Constriction Area* (December 20, 2022).

3.20 Site-wide Geophysics Investigation

- NMED is reviewing the *Site-wide Geophysical Survey Investigation Report* (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 January 2023

- NASA submitted the *Request for Extension of Time for Submittal of NASA WSTF Periodic Monitoring Report – Fourth Quarter 2022* on January 5, 2023.
- NASA submitted the *Request for Extension of Time for NASA White Sands Test Facility (WSTF) 100 Area Wastewater Lagoons Closure (SWMU 2) Investigation Report Response to Disapproval* on January 18, 2023.
- NASA submitted the *Request for Extension of Time for NASA White Sands Test Facility (WSTF) Second Tracking and Data Relay Satellite Ground Terminal (STGT) Wastewater Lagoons Closure (Area of Concern [AOC] 51) Investigation Report Response to Disapproval* on January 18, 2023.
- NASA submitted the *Response to Approval with Modifications Targeted Mobile Remediation Process Pilot Test Report* on January 18, 2023.
- NASA submitted the *NASA White Sands Test Facility (WSTF) 2023 Soil Vapor Risk Based Concentrations (RBC) Memorandum* on January 26, 2023.
- NASA submitted the *Response to Approval with Modification of First Tracking Data Relay Satellite System (TDRSS) Diesel Release (SWMU 50) Investigation Report* on January 26, 2023.
- NASA submitted the *Response to Approval w/Mods – Revised Small Arms Firing Range (SWMUs 29-31) RCR* on January 27, 2023.

5.2 Pertinent documents submitted to other NMED bureaus in January 2023

- NASA submitted the *NASA White Sands Test Facility - FF Fourth Quarter 2022 Disinfectant Residual Monitoring Report* to the Drinking Water Bureau on January 11, 2023.
- NASA submitted the *NASA White Sands Test Facility (WSTF) Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units – 40 CFR Part 60, Subpart Dc (NSPS Dc) Semi-annual Report for Period July 1 through December 31, 2022* to the Air Quality Bureau on December 5, 2022.
- NASA submitted the *NASA-JSC White Sands Test Facility (WSTF), NM3590607, Well J2 Project – Request for Extension of Time for Further Documentation* to the Drinking Water Bureau on January 17, 2023.
- NASA submitted a semi-annual *Compliance Report (NESHAP)(RICE)* to the Air Quality Bureau on January 17, 2023.
- NASA submitted the *NASA White Sands Test Facility (WSTF) Discharge Permit DP-1170 Semi-Annual Monitoring Report* to the Ground Water Pollution Prevention Section on January 19, 2023.
- NASA submitted the *Analytical Results for Discharge Permit DP-392 (NASA White Sands Test Facility 100 Area, 200 Area, and 600 Area Sewage Lagoons)* to the Ground Water Pollution Prevention Section on January 23, 2023.

- NASA submitted the *NASA White Sands Test Facility 700 Area Landfill Detection Monitoring Results for 2022 Second Semi-annual Sampling Event* to the Solid Waste Bureau on January 26, 2023.
- 5.3 Status of documents previously submitted to the NMED Hazardous Waste Bureau for which additional correspondence was recorded in January 2023.
- 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 Approval with Modification of First Tracking Data Relay Satellite System (TDRSS) Diesel Release (SWMU 50) Investigation Report* on January 26, 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 *Response to Approval w/Mods – Revised Small Arms Firing Range (SWMUs 29-31) RCR* on January 27, 2023.
 - NASA submitted the *NASA WSTF 100 Area Wastewater Lagoons Closure (SWMU 2) Investigation Report* on August 3, 2020. NASA received NMED’s September 22, 2020 fee assessment for review of the report on October 13, 2020 and provided the \$18,000 review fee to NMED on November 30, 2020. NMED disapproved the report on July 5, 2022 and directed NASA to address 20 comments and submit a revised report no later than January 31, 2023. NASA submitted the *Request for Extension of Time for NASA White Sands Test Facility (WSTF) 100 Area Wastewater Lagoons Closure (SWMU 2) Investigation Report Response to Disapproval* on January 18, 2023. NASA requested that the due date for response to NMED disapproval be extended from January 31, 2023 to May 30, 2023.
 - NASA submitted the *Response to Approval with Modifications for NASA WSTF STGT Wastewater Lagoons Liner Management Plan Addendum* on December 5, 2019. NASA submitted the *NASA White Sands Test Facility (WSTF) STGT Wastewater Lagoons Closure (AOC 51) Investigation Report* on October 13, 2020. NASA received NMED’s December 18, 2020 fee assessment for review of the report on January 27, 2021 and provided the \$18,000 review fee to NMED on February 18, 2021. NMED disapproved the report on July 25, 2022 and directed NASA to address 16 comments and submit a revised report no later than February 28, 2023. NASA submitted the *Request for Extension of Time for NASA White Sands Test Facility (WSTF) Second Tracking and Data Relay Satellite Ground Terminal (STGT) Wastewater Lagoons Closure (Area of Concern [AOC] 51) Investigation Report Response to Disapproval* on January 18, 2023. NASA requested that the due date for response to NMED disapproval be extended from February 28, 2023 to May 30, 2023.
 - NASA submitted the *Report on Tracer Testing in the 200/600 Areas and Mid-plume Constriction Area* on August 31, 2020. NMED approved the report on April 5, 2022 with a modification that included direction for NASA to install six additional groundwater monitoring wells at WSTF. NASA submitted the *Abbreviated Drilling Work Plan in Response to the NMED Approval with Modification of the Report on Tracer Testing in the WSTF 200/600 Areas and Mid-plume Constriction Area* on December 20, 2022. NASA received NMED’s January 23, 2023 fee assessment for review of the work plan and is processing the review fee payment.

- NASA submitted the *NASA White Sands Test Facility (WSTF) 200 Area Wastewater Lagoons Closure (SWMU 8) Investigation Report* on November 25, 2019. NASA received NMED's January 15, 2020 fee assessment for review of the report on February 3, 2020 and provided the \$7,500 review fee on February 25, 2020. NMED disapproved the report on June 6, 2022 and directed NASA to address 14 NMED comments and submit a revised report no later than December 30, 2022. NASA submitted the *Request for Extension of Time for NASA White Sands Test Facility (WSTF) 200 Area Wastewater Lagoons Closure (SWMU 8) Investigation Report (IR) Response to Disapproval* on December 8, 2022. NASA requested that the due date for response to NMED disapproval be extended from December 30, 2022 to March 30, 2023. NMED approved the request on January 23, 2023.
- NASA submitted the *NASA White Sands Test Facility (WSTF) 600 Area Wastewater Lagoons Closure (SWMU 34) Investigation Report* on November 26, 2019. NASA received NMED's January 15, 2020 fee assessment for review of the report on February 3, 2020 and provided the \$7,500 review fee on February 25, 2020. NMED disapproved the report on June 16, 2022, directed NASA to address 14 NMED comments and submit a revised report no later than December 30, 2022. NASA submitted the *Request for Extension of Time for NASA White Sands Test Facility (WSTF) 600 Area Wastewater Lagoons Closure (SWMU 34) Investigation Report Response to Disapproval* on December 8, 2022. NASA requested that the due date for response to NMED disapproval be extended from December 30, 2022 to April 30, 2023. NMED approved the request on January 19, 2023.
- NASA submitted the *NASA White Sands Test Facility (WSTF) Background Groundwater Study Investigation Work Plan* on February 18, 2021. NASA received NMED's April 8, 2021 fee assessment and invoice for review of the work plan and provided the \$5,000 review fee on April 21, 2021. NMED disapproved the work plan on May 10, 2022 and directed NASA to address two comments and submit a revised work plan no later than July 29, 2022. NASA submitted the *Response to Disapproval for NASA White Sands Test Facility (WSTF) Background Groundwater Study Investigation Work Plan* on July 29, 2022. NMED approved the work plan with modification on January 19, 2023 and directed NASA to provide a revised report no later than February 28, 2023 and an investigation report no later than June 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. NMED approved the request on December 30, 2022, extending the due date for submittal of the investigation report to March 31, 2023.
- 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 *Response to Approval with Modifications Targeted Mobile Remediation Process Pilot Test Report* on January 18, 2023.
- NASA submitted the *600 Area Perched Groundwater Extraction Pilot Test Interim Status Report – Project Year 9* on April 26, 2022. NASA received NMED's June 8, 2022 fee

assessment and invoice for review of the report and provided the \$8,000 review fee on June 28, 2022. NMED approved the report on January 6, 2023.

- NASA submitted the *NASA WSTF Periodic Monitoring Report – Second Quarter 2022* on July 26, 2022. NASA received NMED's August 24, 2022 fee assessment and invoice for review of the report and provided the \$5,000 review fee on September 6, 2022. NMED approved the report on January 30, 2023.