

National Aeronautics and  
Space Administration

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



May 10, 2016

Reply to Attn of: RE-16-068

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

Subject: WSTF Monthly Environmental Activity Report for April 2016

Enclosed is the WSTF Monthly Environmental Activity Report for April 2016. 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 me at 575-524-5024.

A handwritten signature in black ink, appearing to read "T J Davis".

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

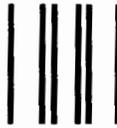
## **Executive Summary**

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The following summarizes important information associated with NASA White Sands Test Facility (WSTF) environmental program activities in April 2016:

- NASA completed and submitted a formal response to NMED's March 8, 2016 Notice of Violation resulting from the January 25, 2016 compliance evaluation inspection.
- NASA completed shipments of hazardous and New Mexico special waste in April 2016.
- NASA performed sampling at 37 of 41 groundwater monitoring wells scheduled for April 2016.
- The Mid-plume Interception and Treatment System operated on 19 of 30 days in April 2016 and treated 0.62 acre-feet of contaminated groundwater.
- The Plume Front Treatment System operated on 25 of 30 in April 2016 and treated 83.5 acre-feet of contaminated groundwater.
- NASA continued fieldwork associated with the investigation and closure of the WSTF wastewater lagoons (SWMUs 2, 8, and 34 and AOC 51).
- NASA continued the investigation and removal of WSTF septic tanks (SWMUs 21-27).
- NASA continued project planning activities for the upcoming investigation of the hazardous waste transmission line (SWMU 10) and the 400 Area Closure investigation in accordance with the NMED-approved work plans.
- NASA continued development of the investigation work plan and historical information summary for the TDRSS diesel release (SWMU 50).
- Post-introduction sampling required for the 200/600 Area and MPCA groundwater dye tracer test was performed and samples were submitted to the off-site laboratory for analysis.
- NASA extracted 208 gallons of perched contaminated groundwater from monitoring well 600-G-138 in April 2016 and continued development of a work plan to further investigate perched groundwater in the 600 Area.
- NASA submitted a variety of documents to NMED in April 2016, including a status report on 600 Area perched groundwater extraction, a request for additional time to complete corrective action at the firing ranges, and several fee assessments for NMED document reviews.
- There were no reportable non-compliance issues in April 2016.

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Gabriel Acevedo  
 Hazardous Waste Bureau  
 2905 Rodeo Park Drive East, Bldg 1  
 Santa Fe, NM 87505

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National Aeronautics and  
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# Monthly Environmental Activity Report

April 2016

Submitted May 12, 2016

NM8800019434

NASA Johnson Space Center White Sands Test Facility

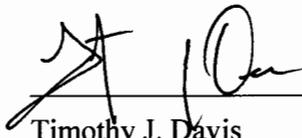
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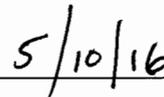
NASA Johnson Space Center White Sands Test Facility  
Monthly Environmental Activity Report

April 2016

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 J. Davis  
Chief, Environmental Office



Date

### Executive Summary

The following summarizes important information associated with NASA White Sands Test Facility (WSTF) environmental program activities in April 2016:

- NASA completed and submitted a formal response to NMED's March 8, 2016 Notice of Violation resulting from the January 25, 2016 compliance evaluation inspection.
- NASA completed shipments of hazardous and New Mexico special waste in April 2016.
- NASA performed sampling at 37 of 41 groundwater monitoring wells scheduled for April 2016.
- The Plume Front Treatment System operated on 25 of 30 days in April 2016 and treated 83.5 acre-feet of contaminated groundwater.
- The Mid-plume Interception and Treatment System operated on 19 of 30 days in April 2016 and treated 0.62 acre-feet of contaminated groundwater.
- NASA continued fieldwork associated with the investigation and closure of the WSTF wastewater lagoons (SWMUs 2, 8, and 34 and AOC 51).
- NASA continued the investigation and removal of WSTF septic tanks (SWMUs 21-27).
- NASA continued project planning activities for the upcoming investigation of the hazardous waste transmission line (SWMU 10) and the 400 Area Closure investigation in accordance with the NMED-approved work plans.
- NASA continued development of the investigation work plan and historical information summary for the TDRSS diesel release (SWMU 50).
- Post-introduction sampling required for the 200/600 Area and MPCA groundwater dye tracer test was performed and samples were submitted to the off-site laboratory for analysis.
- NASA extracted 208 gallons of perched contaminated groundwater from monitoring well 600-G-138 in April 2016 and continued development of a work plan to further investigate perched groundwater in the 600 Area.
- NASA submitted a variety of documents to NMED in April 2016, including a status report on 600 Area perched groundwater extraction, a request for additional time to complete corrective action at the firing ranges, and several fee assessments for NMED document reviews.
- There were no reportable non-compliance issues in April 2016.

## 1.0 Waste Management Activities

- 1.1 NMED performed a compliance evaluation inspection of WSTF on January 25, 2016, during which several potential waste management issues were observed. Following the inspection, NASA was provided with the Hazardous Waste Compliance Evaluation Report on January 27, 2016. NASA provided a response to that report on February 11, 2016. The official Notice of Violation, dated March 8, 2016, was received by NASA on March 14, 2016. NASA submitted a formal response to address the five violations identified in the Notice of Violation on April 13, 2016. NMED issued the *Resolution of Notice of Violation* on April 26, 2016.
- 1.2 NASA completed a shipment of hazardous waste to Veolia in Henderson, Colorado on April 21, 2016. The shipment consisted of seven containers with 189 kilograms of hazardous waste for disposal.
- 1.3 NASA completed a shipment of P078 ADGAS treatment residual (water) waste to Veolia in Henderson, Colorado on April 21, 2016. The shipment consisted of one container with 37 kilograms of hazardous waste for disposal.
- 1.4 NASA completed a shipment of New Mexico Special Waste (asbestos transite pipe) to the Otero/Greentree County Landfill near Alamogordo, New Mexico on April 21, 2015. The shipment consisted of one container with 43 kilograms of asbestos waste for disposal.

## 2.0 Environmental Monitoring

- 2.1 NASA performed sampling at 37 of 41 groundwater monitoring wells or zones scheduled for sampling in April 2016.
- 2.2 Other regulatory groundwater sampling requirements (such as those included in the Remediation System Monitoring Plan and discharge plans) were performed as scheduled, with the exception of PFE-3, which could not be sampled because of a pump failure.

## 3.0 Corrective Actions/Investigations

- 3.1 Plume Front Treatment System
  - PFTS Operation – The PFTS operated on 25 of 30 days in April 2016 at an average flow rate of 626 gallons per minute. The system extracted and treated approximately 83.5 acre-feet of groundwater, most of which was injected into the aquifer following treatment. Approximately 0.40 acre-feet of groundwater were discharged to the on-site Modu-tank system during system startup events. Approximately 1.63 acre-feet of groundwater were discharged to grade at the PFI wells during injection well backwashing and system startup activities.
  - PFTS Shutdowns, Repairs, and Modifications – The system remained offline at the beginning of April 2016 following a long-term shutdown that began December 26, 2015, when the electrical power supply was interrupted and subsequently determined to be of inadequate quality to safely operate the PFTS. NASA invested significant time and effort to support the off-site electrical power supplier in an investigation to determine the cause of the excessive power unbalance. The investigation identified an issue with a transformer at one of the substations that provides power to WSTF. NASA and the off-site electrical power supplier coordinated a site-wide electrical power outage on April 2, 2016 to more fully investigate the problem with the transformer. With the substation off-line, the electrical power supplier determined that a fuse was burned out in one of the transformers in the substation, resulting in a voltage induction that created the phase shift. The damaged fuse was replaced during the outage, which corrected the current unbalance observed at WSTF. The PFTS was restarted on April 5, 2016. There were three unplanned shutdowns of the system in April 2016. On April 9, 2016 the system shut down automatically because of an interruption in the off-site power

supply. Troubleshooting identified no impact to the PFTS and the system was restarted on April 11, 2016. On April 14, 2016 the system shut down automatically because of an interruption in the off-site power supply. The system was reset and restarted later that day. On April 15, 2016 the system shut down automatically because of an interruption in the off-site power supply. The system was reset and restarted later that day. On April 13, 2016 the pump motor in PFE-3 failed, reducing the overall extraction rate from approximately 1,000 gpm to approximately 800 gpm.

### 3.2 Mid-plume Interception and Treatment System

- MPITS Operation – The MPITS operated on 19 of 30 days in April 2016 and treated approximately 0.62 acre-feet of groundwater and 426 gallons of IDW. All treated water was discharged to the infiltration basin.
- MPITS Shutdowns, Repairs, and Modifications – There were five unplanned and one planned shutdowns of the MPITS in April 2016. On April 1, 2016 the system was taken offline as part of the site-wide power outage coordinated to investigate the electrical power unbalance issue (see above). The MPITS was restarted on April 4, 2016. On April 9, 2016 the system shut down automatically because of an interruption in the off-site power supply. The system was restarted on April 11, 2016. On April 14, 2016 the system shut down automatically because of an interruption in the off-site power supply. The system was reset and restarted later that day. On April 15, 2016 the system shut down automatically because of an interruption in the off-site power supply. The system was reset and restarted later that day, but the autodialer had been damaged by the power outage and caused another system shutdown. The autodialer was removed from service, repaired by the manufacturer, and replaced in the system on April 27, 2016, at which time the system was restarted. Later on April 27, 2016 the system shut down automatically because of a local interruption in the power supply. Repairs were performed on the power distribution system and the MPITS was restarted on April 28, 2016.

### 3.3 200 Area Investigation

- In February 2016, NASA completed and submitted the *200 and 600 Area Vapor Intrusion Assessment Work Plan* to NMED (February 25, 2016). NASA received NMED's March 8, 2016 fee assessment for review of the work plan and submitted the \$6,000 review fee to NMED on April 7, 2016.

### 3.4 400 Area

- NASA continued project planning activities for investigation fieldwork, which will be performed in accordance with the NMED-approved *400 Area Closure Investigation Work Plan* (June 27, 2011).

### 3.5 600 Area Perched Groundwater Extraction Pilot Test

- NASA continued extracting perched groundwater from monitoring well 600-G-138 in April 2016 in accordance with NMED's March 1, 2013, *Approval Time Extension for Implementation of the Perched Groundwater Extraction Pilot Test at the 600 Area*. Approximately 208 gallons of perched groundwater were removed from 600-G-138 in April 2016.
- NASA continued development of a work plan to further evaluate perched groundwater in the 600 Area as directed in NMED's February 11, 2016 *Additional Work Plan Requirements to Evaluate Potential Source of 600 Area Contamination*.

- 3.6 SWMUs 1, 3 and 15 (100/600 Area Burn Pit and Container Storage Area)
- The *NASA WSTF SWMUs 1, 3, and 15 (100 Area Burn Pit, 100 Area Container Storage Area, and 600 Area Burn Pit) Investigation Report* (November 23, 2015) remains under NMED review.
- 3.7 SWMUs 2, 8, and 34 and AOC 51 (Wastewater Lagoons)
- NASA continued transferring wastewater from the 100 Area lagoons to the 600 Area lagoons in order to more rapidly dry the 100 Area sludge and allow for the collection of fully representative sludge samples. Approximately 900,000 gallons of wastewater have been transferred, resulting in the removal of all readily accessible wastewater from the 100 Area lagoons.
  - NASA collected initial wastewater characterization samples from the STGT lagoons.
- 3.8 SWMU 10 (200 Area Hazardous Waste Transmission Line)
- NASA finalized project planning activities for investigation fieldwork in accordance with the *200 Area HWTL (SWMU 10) Investigation Work Plan and Historical Information Summary* (July 29, 2015) and prepared to initiate fieldwork in May 2016.
- 3.9 SWMU 16 (600 Area BLM Off-site Soil Pile)
- The *SWMU 16 (600 Area BLM Off-Site Soil Pile) Investigation Report* was submitted to NMED on February 25, 2016. NASA received NMED's March 8, 2016 fee assessment for review of the work plan and submitted the \$7,500 review fee to NMED on April 3, 2016.
- 3.10 SWMU 19 (800 Area Below Grade Storage Tank)
- The *SWMU 19 (800 Area Below Grade Storage Tank) Investigation Report* was submitted to NMED on February 17, 2016. NASA received NMED's March 8, 2016 fee assessment for review of the work plan and submitted the \$7,500 review fee to NMED on April 4, 2016.
- 3.11 SWMUs 21-27 (Septic Tanks)
- NASA completed septic tank abandonment forms for the 300 and 400 Area Main tanks, which were removed in March 2016. The forms were submitted to the NMED Liquid Waste Program.
  - NASA plans to collect additional cyanide samples from the soil at the bottom of the SWMU 22 septic tank in order to fully characterize the soil for waste management purposes.
  - NASA continues to plan for the removal of several more septic tanks and the investigation of the SWMU 22 tank location, which will be performed after non-SWMU tanks are removed.
- 3.12 SWMUs 29-31 (Small Arms Firing Ranges)
- Utilizing chemical and field screening data, NASA prepared updated maps of the firing ranges in accordance with the *Small Arms Firing Ranges (SWMUs 29 – 31) Accelerated Corrective Measures Work Plan* (February 26, 2015). The updated maps, which provide additional delineation of the horizontal extent of the firing range study areas, were submitted to NMED on March 8, 2016 as part of the *Status Update for NASA WSTF Small Arms Firing Ranges (SWMUs 29-31) Accelerated Corrective Measures*.
  - The March 8, 2016 submittal also included a proposal for a revised firing range cleanup strategy. NMED input was requested prior to further cleanup efforts at the firing ranges. NASA received NMED's April 18, 2016 fee assessment for the status update and is processing the request for payment.

3.13 SWMU 50 (TDRSS Diesel Release)

- NASA continued development of the investigation work plan and historical information summary for SWMU 50. These documents are due to NMED by June 30, 2016.

3.14 Groundwater Dye Tracer Test

- NASA continued a groundwater dye tracer test in accordance with the NMED-approved *Work Plan for Tracer Testing in the 200/600 Areas and Mid-plume Constriction Area* (May 10, 2012). Four fluorescent dyes were introduced at four locations (two in the 200 Area and two in the Mid-plume area) in June 2014, and post-introduction groundwater monitoring continued through March 2016 in accordance with the plan.
- Groundwater tracer samples have been regularly collected since dye introduction and submitted to the off-site contracted analytical laboratory as described in the work plan. Data are being received and reviewed by NASA project personnel. Rhodamine WT, which was introduced in monitoring well BLM-14-327, has been detected at three monitoring wells in the Mid-plume area. Eosine, which was introduced in monitoring well BLM-15-305, has been detected at several monitoring wells to the southwest of the Mid-plume area and in one location to the northwest of the Mid-plume area. To date, there have been no confirmed detections of the tracer dyes released in the 200 Area.

3.15 Westbay Monitoring Well Reconfiguration

- NASA developed an abbreviated work plan for the reconfiguration of Westbay monitoring wells JER-1, JER-2, and ST-7. The work plan was submitted to NMED on March 8, 2016. NASA received NMED's April 18, 2016 fee assessment for the work plan and is processing the request for payment.
- NASA completed and submitted to NMED Westbay Well Reconfiguration Reports for recently converted Westbay monitoring wells BLM-32, WW-4, and WW-5. NASA received NMED's April 18, 2016 fee assessment for the report and is processing the request for payment.
- Routine sampling of recently reconfigured Westbay wells BLM-32, WW-4, and WW-5 continues in accordance with the approved Groundwater Monitoring Plan. No significant issues have been encountered to date.
- NASA continues efforts to reconfigure previous Westbay monitoring well BLM-28. After a significant delay, the off-site vendor responsible for the construction of the dedicated low-flow bladder pump system (with packer) delivered the sampling system in late January 2016. The system was inspected and prepared for installation. However, attempts to install the system were unsuccessful. The partially installed sampling system was removed from borehole in March 2016 and it was determined that the inflatable packer supplied with the system is too large in diameter for installation in the open borehole. Alternate downhole equipment is required to complete the reconfiguration of this well.

3.16 Installation of New Monitoring Well PL-11

- NASA submitted the *Drilling Work Plan for Supplement Groundwater Monitoring Well (PL-11)* on February 10, 2016. NASA received NMED's March 8, 2016 fee assessment for review of the work plan and submitted the \$1,000 review fee to NMED on April 6, 2016.
- NMED approved the work plan on March 23, 2016. NASA continued planning and procurement activities for well drilling and installation work.

#### 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 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 April 2016

- NASA submitted the *Fee Assessment for SWMU 16 (600 Area BLM Off-Site Soil Pile) Investigation Report* on April 3, 2016.
- NASA submitted the *Fee Assessment for SWMU 19 (800 Area Below Grade Storage Tank) Investigation Report* on April 4, 2016.
- NASA submitted the *Fee Assessment for Drilling Work Plan for Supplemental Groundwater Monitoring Well (PL-11)* on April 6, 2016.
- NASA submitted the *Fee Assessment for Periodic Monitoring Report – Fourth Quarter 2015, January 2016* on April 7, 2016.
- NASA submitted the *Fee Assessment for NASA WSTF 200 and 600 Area Vapor Intrusion Assessment Work Plan* on April 7, 2016.
- NASA submitted the *NASA White Sands Test Facility (WSTF) Responses to Notice of Violation* on April 13, 2016.
- NASA submitted the *600 area Perched Groundwater Extraction Pilot Test Interim Status Report – Project Year 3* on April 14, 2016.
- NASA submitted the *Request for Extension of Time for NASA WSTF Small Arms Firing Ranges (SWMUs 29-31) Accelerated Corrective Measures* on April 18, 2016.
- NASA requested a short extension for submittal of the annual GMP Update on April 28, 2016 via email. The request was approved by NMED that day.

##### 5.2 Pertinent Documents submitted to other NMED Bureaus in April 2016

- NASA submitted the *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units – 40 CFR Part 60 Subpart DC (NSPS Dc) Quarterly Report* to the NMED Air Quality Bureau on April 13, 2016.
- NASA submitted the *On-Site Liquid Waste System Abandonment Forms for WSTF 300 Area and 400 Area Main Septic Tanks* to the NMED Liquid Waste Program on April 28, 2016.

##### 5.3 Status of documents submitted in previous months

- NASA submitted the *SWMUs 1, 3, and 15 (100 Area Burn Pit, 100 Area Container Storage Area, and 600 Area Burn Pit) Investigation Report* on November 23, 2015. NASA received NMED's January 6, 2016 Fee Assessment for review of the report and submitted the \$9,500 review fee payment on February 8, 2016.

- NASA submitted the *Drilling Work Plan for Supplement Groundwater Monitoring Well (PL-11)* on February 10, 2016. NASA received NMED's March 8, 2016 fee assessment for review of the work plan and submitted the \$1,000 review fee to NMED on April 6, 2016. NMED approved the work plan on March 23, 2016.
- NASA submitted the *Hazardous Waste Compliance Evaluation Report Response* on February 11, 2016. NASA received NMED's March 8, 2016 *Notice of Violation* and submitted the formal response on April 13, 2016.
- NASA submitted the *SWMU 19 (800 Area Below Grade Storage Tank) Investigation Report* on February 17, 2016. NASA received NMED's March 8, 2016 fee assessment for review of the work plan and submitted the \$7,500 review fee to NMED on April 4, 2016.
- NASA submitted the *SWMU 16 (600 Area BLM Off-Site Soil Pile) Investigation Report* on February 25, 2016. NASA received NMED's March 8, 2016 fee assessment for review of the work plan and submitted the \$7,500 review fee to NMED on April 3, 2016.
- NASA submitted the *200 and 600 Area Vapor Intrusion Assessment Work Plan* on February 25, 2016. NASA received NMED's March 8, 2016 fee assessment for review of the work plan and is submitted the \$6,000 review fee to NMED on April 7, 2016.
- NASA submitted the *Status Update for NASA WSTF Small Arms Firing Ranges (SWMUs 29-31) Accelerated Corrective Measures* on March 8, 2016. NASA received NMED's April 18, 2016 fee assessment for the report and is processing the request for payment.
- NASA submitted the *Westbay Well Reconfiguration Work Plan for Wells JER-1, JER-2, and ST-7* on March 8, 2016. NASA received NMED's April 18, 2016 fee assessment for the work plan and is processing the request for payment.
- NASA submitted the *Well Reconfiguration Reports for Wells BLM-32, WW-4, and WW-5* on March 30, 2016. NASA received NMED's April 18, 2016 fee assessment for the report and is processing the request for payment.