



WALLOPS FLIGHT FACILITY

NASA'S EFFORTS TO ADDRESS PFAS ARE MAKING A DIFFERENCE

In 2016, NASA started investigating the historical use of per- and polyfluoroalkyl substances (PFAS) at Wallops Flight Facility. That early assessment found known or suspected releases of PFAS to the environment related to emergency response and training activities. Aqueous film-forming foam known as AFFF, or "A-triple-F" contains PFAS and is most effective in extinguishing aircraft fires. AFFF was used at WFF in fire training operations and emergency responses beginning in the late 1970s and today, AFFF is used only for aircraft emergencies. Since 2016, NASA has been actively addressing the environmental effects from historical PFAS use as highlighted below.

NASA IS TAKING ACTION

Protecting the Area's Water Supply

In the Town of Chincoteague

NASA initiated a groundwater testing program at the start of the investigation, and when PFAS were detected in the Town of Chincoteague's (Town) drinking water wells, **NASA immediately took action to protect public health.** When the Town's shallow wells closed in 2017, NASA began supplementing the Town's water supply with water from Wallops' drinking water system. NASA also began work on groundwater treatment options to allow the Town's shallow production wells to reopen.

Today, a groundwater treatment system funded, designed, and installed by NASA is removing PFAS from wells that supply water to the Town of Chincoteague. With a permit from the Virginia Department of Health, the system has been fully operational since April 2021 and has successfully treated 96 million gallons of groundwater as of the end of June 2023. The system uses a proven technology for removing PFAS known as granular activated carbon (GAC). The Town's wells and drinking water are sampled regularly, and results are shared with the Town and with federal and state health and environmental agencies.

Groundwater Treatment for the Town of Chincoteague Succeeds in Removing PFAS and Is Already Meeting EPA Proposed National Drinking Water Standards

While federal and state agency guidance on PFAS evolves, NASA's efforts to identify and address PFAS at Wallops continues. The United States Environmental Protection Agency (EPA) announced its PFAS Strategic Roadmap in October 2021. An important step was EPA's proposal on March 14, 2023, to establish drinking water standards for PFOA and PFOS at 4 parts per trillion (ppt) each—a level that can be reliably measured in drinking water, and to regulate four others—PFNA, PFHxS, PFBS, and Gen X chemicals—as a mixture. The drinking water standard would require public water systems like the Town of Chincoteague to monitor for these contaminants, to notify the public if levels are exceeded, and to reduce levels below the legal standard. **Stringent, regular testing of the treated groundwater shows PFAS are being removed successfully and continuously from the Town's water to levels below EPA's proposed national drinking water standards.**

On the Wallops Main Base

NASA installed a new drinking water well (Well #6) to supplement drinking water supply at the main base. The new well replaces Well #5, which was shut down in January 2019 after tests showed low concentrations of PFAS that were likely due to the old construction methods used. The new well went into operation in January 2023 and no PFAS have been detected.



HOW GROUNDWATER TREATMENT WORKS

Four large tanks each contain 10,000 pounds of granular activated carbon (GAC).

As groundwater passes through the tanks, GAC adsorbs the PFAS.

Over time, the GAC becomes saturated and needs to be replaced. The tanks are set up so when the GAC is being replaced, another tank takes the lead, and the other tanks provide backup. This layout ensures PFAS removal continues uninterrupted.

NASA's ongoing testing of the treated water shows the system is effective in removing PFAS and meets EPA's proposed drinking water standards.

Understanding PFAS in the Environment

When NASA began its investigation in 2016, there were no state or federal requirements for addressing PFAS. NASA was proactive then and continues today to conduct sampling. NASA has a network of 23 groundwater monitoring wells at and around the Wallops main base and has sampled these wells quarterly (except for four months in 2020 per COVID protocol). NASA uses this information to monitor for PFAS at the facility boundary and near the drinking water wells. Samples are evaluated using existing PFAS screening levels (see side bar), and NASA re-evaluates all data as new state and federal PFAS requirements are developed.

NASA's additional sampling efforts have detected levels of some PFAS in surface water at the outfalls and tributaries of Little Mosquito Creek and Jenny's Gut on the Wallops main base.

NASA is now focused on understanding the interaction of groundwater and surface water to direct our next steps.



As of May 2023, EPA has a total of eight PFAS regional screening levels (RSLs) for drinking water and soil. RSLs help NASA determine if further investigation is needed or action is required to protect public health. There are no state screening levels for groundwater, soil, or surface water.

TARGETED CLEANUP AND PILOT STUDIES

NASA is conducting studies to contain or remove possible PFAS source areas to ensure the protection of public health and the environment. These include:

■ An area near the former fire training location and Outfall 3 was identified where groundwater was discharging to surface water. NASA designed and installed a system that has been capturing the seep water and treating it to remove PFAS prior to it being discharged back into surface water. NASA has upgraded the system twice since it began operating in June 2022 – reducing a discharge.

■ NASA traced a primary source of PFAS identified at the wastewater treatment plant to Wallops Island where groundwater enters the wastewater collection system. Two manholes in the area and the pipe connecting them were sealed in July 2023 – reducing this source.

■ Outfalls 3 and 10 discharge to Little Mosquito Creek and Jenny's Gut, respectively. PFAS-adsorbent matting was placed along the stream bed to remove PFAS from groundwater as it enters the stream. Additionally, filter bags and baskets containing adsorbent were placed in the stream flow to capture and remove PFAS from the surface water. Results are being used to design more permanent systems for the two streams and the Outfall 1 area – reducing a source and preventing discharge.

■ NASA is conducting studies to remove PFAS coming from the wastewater treatment plant that discharges to surface water at Outfall 1. PFAS adsorbents and pre-treatment technologies are being tested to determine how to design the most efficient effluent treatment system – removing a source.

TRACKING NEW DEVELOPMENTS

NASA is implementing the investigation at Wallops using the latest scientific information and regulatory guidance available. EPA-approved analytical methods currently exist for 29 unique PFAS in drinking water and that number is likely to expand. NASA increases the number of PFAS included in our analysis as new EPA-approved methods and certified laboratories become available. All results are provided to the Virginia Department of Environmental Quality and the Virginia Department of Health, the U.S. Environmental Protection Agency, and Agency of Toxics Substances and Disease Registry for their review and input on the next steps.

FOR MORE INFORMATION, CONTACT:

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July 2023

KEEPING YOU INFORMED

NASA remains committed to communicating about our ongoing efforts to address PFAS at and in the vicinity of Wallops. NASA hosts periodic information sessions for community members and employees at Wallops to come and ask questions and learn more about current activities. NASA regularly posts updates to its Website <https://www.nasa.gov/feature/background-latest-information-on-pfas-at-nasa-wallops/>. Fact sheets will be published and we will continue to share information about the progress being made.