

PFAS Frequently Asked Questions

Updated – June 2024

Note that current FAQs may supersede archived FAQ responses.

What is PFAS? PFAS (Perfluoroalkyl substances) are "forever chemicals" designed to be resistant to biological, chemical, and thermal breakdown. It is found in many products, such as non-stick pans, water repellent fabrics and applications, microwave popcorn, pizza boxes and even some brands of dental floss. It is also found in Aqueous Film Forming Foam (AFFF) used by some fire departments and was previously required by the Federal Aviation Administration (FAA), for use in emergencies at commercial service airports in the United States. Because PFAS is used in so many applications, most Americans have some level of PFAS in their bloodstreams.

PFAS comprises more than 10,000 individual man-made substances. Of these, perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) are two of the substances most commonly associated with AFFF.

What has been done regarding AFFF use at airports nationally? In December 2022, Congress directed the FAA to develop a plan for airports to transition from using AFFF to a replacement firefighting foam (fluorine-free foam or F3) that does not contain PFAS. Even before this direction, in November 2022, the Jackson Hole Airport ("JAC") had proactively developed a Fluorine-free Foam Transition Plan that outlined steps to promptly procure and transition to the use of F3, when available. On May 8, 2023, FAA released the Aircraft Firefighting Foam Transition Plan which provides high-level guidance on concepts that airports should consider in developing a transition plan but does not include details on specific technical elements. JAC's Transition Plan was compatible with FAA's recommended approach.

In January 2023, after extensive testing, the FAA announced that F3 could be used as a fire-extinguishing agent at airports served by airlines once products had been certified. In September 2023, the FAA certified the first F3 that could be used at airports. In anticipation of this announcement, JAC prepared to transition its fleet of firefighting vehicles for use of this new extinguishing agent. Once the announcement occurred in September 2023, JAC acquired the new certified F3 and completed its transition to the PFAS-free fire extinguishing agent in October 2023.

What has JAC done to minimize PFAS use? Prior to the first certification of fluorine-free foam (F3) in 2023, JAC's fire department updated training practices to eliminate active sprays of AFFF in 2022. This included periodic tests required by the FAA to determine the product's usefulness in which AFFF was contained during these tests and not released into the environment. JAC's procedures for after an emergency event were also revised to contain the spread of AFFF.

Once a fluorine-free foam (F3) was certified for use at airports by the FAA in September 2023, JAC immediately acquired this product and transitioned its fleet of firefighting emergency response vehicles. The completion of this transition occurred in October 2023; thus, JAC no longer uses AFFF.

Why was AFFF containing PFAS used at Airports? From the 1970s until September 2023, the Federal Aviation Administration (FAA) required all fire departments at airports served by airlines to use AFFF containing PFAS to extinguish aircraft fires. AFFF with PFAS was required by the FAA because at the time it was the only fire extinguishing agent that was stable and did not react with other chemicals, including jet fuel. AFFF extinguished fires by sequestering fuel sources from oxygen, thus preventing them from reignition.

With an understanding of the environmental and human health considerations of PFAS, an industry effort began in the late 2010s to find a fire extinguishing agent that could match the performance of AFFF but did not contain PFAS. After extensive testing of potential firefighting foams by the FAA, in January 2023 the FAA announced that fluorine-free firefighting foams (F3), could be used at airports served by airlines. It was not until September 2023 that the first F3 was certified by the FAA for use at airports. While airports currently have the option to use AFFF containing PFAS or fluorine-free firefighting foams to meet FAA requirements, JAC has fully transitioned to F3.

Why is PFAS a problem? Several studies have linked PFAS exposure to health issues and more studies are underway to evaluate potential health effects. PFAS were classified by the Environmental Protection Agency (EPA) as a hazardous substance in April 2024. This rule becomes enforceable on 8 July 2024. After that date, any PFOS or PFOA materials will be stored, transported, and disposed of in the appropriate manner using EPA approved methods.

What more is being done to investigate PFAS at JAC? JAC works with environmental consultants who are experts in PFAS to determine where PFAS exists on and off the JAC airfield as a result of prior use of AFFF. We learned that PFAS does exist in some monitoring wells on JAC's airfield and in domestic wells in surrounding areas.

The Airport continues to work with the consultants to monitor both on- and off-airport water wells and to determine the next steps for PFAS mitigation. The Jackson Hole Airport Board (Board) has committed to semi-annual (approximately February and August) testing for selected residences to monitor the plume's migration off airport, in addition to semi-annual well testing on the JAC airfield.

Does my current drinking water filtration system work for PFAS? Many household filters, such as sand and granular activated carbon (GAC), are only partially effective at removing PFAS from drinking water.

Do the filtration systems provided by JAC remove the PFAS substances that have been found in the water? The selected filtration systems are certified by NSF/ANSI (National Sanitation Foundation/American National Standards Institute) Standard 53 to remove PFOA and PFOS from water. PFOA or PFOS have not been detected in samples of water taken post-filtration system in off-airport wells, which is an indication that these filtration systems are indeed working. To date, NSF has certifications for only PFOA and PFOS. Other PFAS substances are probably removed using the same filtration system, but only PFOA and PFOS has thus far been certified for removal.

Will the Board purchase a water filtration system for my domestic water well? JAC tested and found PFAS in some domestic drinking water wells off the JAC airfield. In an exercise of caution, the Board offered to purchase, upon request, point-of-entry treatment (POET) water filtration systems for all homes located within a defined Eligibility Boundary (EB).

The EB, which was revised in April 2024, is based on changes in EPA Maximum Concentration Limits (MCLs), defines an area where it is estimated that 4 ppt of PFOS or PFOA might be detected in groundwater. Residents whose parcels fall within the EB will be eligible to receive, at no cost to them, a whole-house domestic water filtration system that is certified to remove PFOS and PFOA. If any portion of a parcel is located within the EB, any domestic water well on the parcel will continue to be eligible for a filter. Water filters will be provided for domestic drinking water wells only. It is the property owner's responsibility to request installation of a filter system and to replace filters as indicated by system status lights. The Airport Board will provide main filter replacements for the foreseeable future. If a single residence requires more than one filter due to its size, additional system(s) will be provided and installed.

Will JAC continue to monitor any wells that have already been tested? JAC will continue to test a selected number of domestic drinking water wells off the JAC airfield to better understand conditions with regard to seasonality and to track changes over time.

What is a plume? Where is it and is it moving? A plume is a pattern of contaminant concentrations in groundwater that moves in the direction of the groundwater flow. Generally speaking, a plume is typically narrowest and most concentrated at the source of the contaminants. Concentrations may decrease and vary as it dissipates away from the source.

USGS, in conjunction with JAC, installed a series of groundwater wells on the JAC airfield in the 2000s to evaluate water quality within the Snake River Aquifer. In February 2020, JAC voluntarily collected groundwater samples from these wells on the airfield. These samples were tested for PFAS compounds, which were detected in several wells. Note that none of these USGS installed on-airfield wells are drinking water wells.

A voluntary residential well testing program was started in April 2020 with domestic well water samples collected and analyzed for PFAS compounds. Three phases of voluntary residential testing were performed between April 2020 and February 2021. The results of the airfield well data and the residential well data allowed the scientists to plot the PFAS plume and determine areas (outside the EB) which have shown no detection of PFAS. The continued residential monitoring program began in August 2021. Its purposes were to (1) collect domestic well water samples, analyze them for PFAS, and compare the results to previous data; and (2) monitor the concentrations within the plume and along the EB boundary.

The PFAS plume is traveling in a southwesterly direction along a relatively fast-moving groundwater channel and appears to have retained its shape to date. As the groundwater moves through the source area, it picks up PFAS and transports it along the channel as it flows downstream. The plume diffuses as it encounters pathways with less resistance. In addition, groundwater flows and water depths vary with the seasons, which can affect not only the speed of groundwater flow but also how and where it disperses. As a result, we see concentrations vary at different locations in the plume with time, as well as distance from the source area, in ways that are difficult to predict.

Continued monitoring of domestic water wells shows decreases in results – why is this the case? The results at any well in the plume area depend not only upon the amount of PFAS remaining in the source area, but also the amount of groundwater flowing through the area and the pathways it is taking at any given time. Because groundwater is replenished by rainfall and snowmelt, the depth, flow rate, and path of groundwater are often affected by seasonal hydrology. Variability in concentrations is inherent in groundwater investigations and the long-term goal is a trend of decreasing concentrations. To date, the overall trend shows a decrease in the residential testing area.

Will the Airport continue to provide replacement filters? Upon request, the Airport currently provides replacement filters at no cost to residents that have had filtration systems installed through the airport program.

What if I purchase a home located within the Eligibility Boundary?

Call Megan Jenkins, Communications Manager of the Jackson Hole Airport, at 307-699-4387.

Does seasonality play a major role in the fluctuating results? Because groundwater is replenished by rainfall and snowmelt, the depth, flow rate, and path of groundwater are often affected by seasonal hydrology. At this time, there has not been enough historical data collected to state

definitively whether seasonality is a factor in fluctuating monitoring results. JAC will continue to sample wells and collect data with a goal of

better understanding trends.

What does it mean if my test result is a “J” or “J-” value or reading?

See “Understanding Lab Results”

Is the plume moving enough that the Eligibility Boundary (EB) will need to be expanded? We are continuing to compile data both inside and outside the EB. The EB will be revised if and as needed based upon the data. Changes to the EB will be announced on the airport’s website and a new EB Map will be published. New parcels and their residents included within the EB if it’s modified, will be notified by airport staff.

What are EPA Regulations regarding PFAS?

EPA’s regulations regarding PFAS have evolved over time. The EPA’s first interim **lifetime health advisory** (LHA) for drinking water was established **in 2016** at 70 parts per trillion (ppt) for either chemical or the sum of the two. The LHA was based upon the following:

- An adult
- Weighing 70 kg (154 pounds)
- Drinking 2 liters/day (8.5 cups)
- From only the unfiltered house tap (no other water sources)
- For 70 years
- Concentration of PFAS is greater than the LHA (70 ppt combined PFOS and PFOA).

So, an average-size adult would need to drink at least 8 cups of water per day from the same unfiltered tap with PFAS concentrations above 70 ppt for a total of 70 years. A ppt, or part per trillion, is an extremely small measurement unit. The original lifetime health advisory of 70 parts per trillion equates to approximately 3.5 droplets of water in an Olympic size swimming pool (660,000 gallons). When these substances were found in groundwater near the JAC airfield, in an exercise of caution the Board offered to fund the installation of whole-house water filters where detection was at a 10 ppt or less – far more stringent than the 70 ppt LHA.

In June 2022, EPA issued revised LHAs of 0.004 ppt for PFOA and 0.02 ppt for PFOS. These are 1,000 and 100 times, respectively, lower than the ability of current laboratory methods to detect. The Board responded by expanding its filter Eligibility Boundary (EB) to encompass all areas near the JAC airfield in which **any** amount of PFOA or PFOS were expected to be present.

It’s important to understand that these interim LHA concentrations were based on risk assessment analyses of toxicological studies. They were advisory concentrations and that were not enforceable requirements at the time. As such, they did not reflect any consideration of feasibility or practicality relative to measurement, treatment or regulatory requirements and compliance.

In November 2022 and **May 2023**, EPA issued Regional Screening Levels (RSLs) for six PFAS compounds and an additional two PFAS compounds, respectively. EPA RSLs are used for on-airport water results from groundwater monitoring wells and domestic water wells. RSLs are not cleanup standards and are calculated using conservative exposure assumptions and available toxicity data.

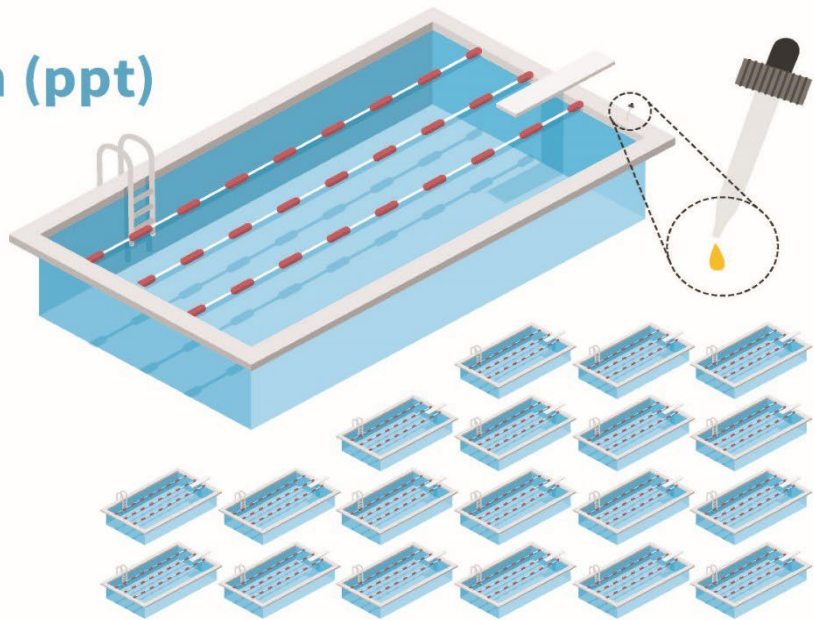
In March 2023, EPA **proposed** to adopt enforceable MCLs for PFOS and PFOA at 4 ppt each. Commercial laboratories using the current analytical methods can detect these compounds at 4 ppt. Certain treatment systems (including granulated activated carbon filters such as those funded by the Board) are already capable of removal of PFOS/PFOA at these proposed levels.

What are the final MCLs? In April 2024, EPA published enforceable Maximum Concentration Limits (MCLs) for PFOS and PFOA at 4 ppt each. One ppt is equal to 1 drop in 20 Olympic-size swimming pools. Public water supply systems /municipalities will be required to meet these limits within three-to-five years. JAC's environmental scientists have been comparing data to the 4 ppt levels since February 2023. JAC continues to monitor regulatory developments regarding PFAS, and will adapt testing, evaluation, and mitigation approaches accordingly.

1 part per trillion (ppt)

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Why is the airport only talking about PFOA and PFOS ? PFOA and PFOS are the primary PFAS substances associated with AFFF formulations. They are also the two most studied PFAS substances amongst the 10,000+ PFAS class of substances. They are also the only two PFAS that the EPA has designated as hazardous substances, effective July 8, 2024.

Why hasn't EPA or WDEQ set limits on all PFAS substances in drinking water? With a class of over 10,000+ substances, EPA must select the substances which most likely represent a concern to human health and the environment. PFOA and PFOS were the first substances selected for evaluation and proposed health advisories in drinking water supplies. The EPA continues to add PFAS substances to its Unregulated Contaminant Monitoring Rule (UCMR), which can lead to setting drinking water standards. WDEQ typically adopts EPA's MCLs.

Where did the other PFAS substances found in the groundwater come from? These other PFAS substances detected in groundwater samples collected during JAC investigations might have come from the AFFF used at JAC. They may be impurities introduced during the manufacture of AFFF formulations or they may be degradation (breakdown) substances from chemical, physical and biological processes in the environment. These may also have come from other sources. For instance, household plumbing may contain Teflon based plastics in the pipe, tape, or joint compounds, which contain PFAS.

What's next? In determining our next steps, JAC remains in contact with Wyoming DEQ, the Teton County Health Department, the FAA, and other agencies to stay current with the latest information regarding changes to regulations, policies, and best practices.

Our number one priority at JAC is the safety of our operations – both for passengers and the surrounding community. Along with safety, we also make environmental stewardship a vital part of airport operations.