

PFAS Update at Military Bases and Private Sites in Maryland

MDE works with the U.S. Department of Defense (DOD) and the U.S. Environmental Protection Agency to assess, remediate and monitor DOD sites and private NPL sites in Maryland where PFAS are present.

DOD monitored military facilities throughout the country and in 2018 released [a report](#) on its investigation of PFAS at military bases. This report identified four sites in Maryland with PFAS contamination in groundwater. Those sites are the former Fort Meade Tipton Airfield; Naval Research Lab, Chesapeake Beach Detachment; the former Navy Bayhead Annex in Annapolis; and the former Naval Research Laboratory in White Oak.

Since that time, PFAS compounds have been identified at four additional military installations in Maryland. Those sites are Aberdeen Proving Ground; Naval Air Station Patuxent River; Joint Base Andrews; and the former Brandywine Defense Reutilization and Marketing Office. Preliminary Assessments/Site Inspections (PA/SIs) are being conducted at the rest of the military facilities in Maryland including Fort Detrick, Forest Glen Annex, and Naval Air Station Patuxent River's Webster Field Annex. These PA/SI's are required by Congress to be completed on all DoD facilities by December 2023.

Initial efforts were focused on determining whether any off-site properties are affected by PFAS. Three domestic wells at the Chesapeake Bay Detachment site had detections but they were far below the EPA's Health Advisory level. As additional testing proceeds there may be other DOD installations in Maryland where PFAS compounds are found in the groundwater.

On March 3, 2020, the U.S. Navy sponsored a public information meeting for residents in the vicinity of Naval Air Station Patuxent River to learn about the Navy's next stage of its assessment program to determine the occurrence of certain PFAS on the Navy installations that have known or potential releases of these compounds into the environment. Concerns were raised at this public meeting about potential exposures to these compounds associated with the use of PFAS-containing materials at the base's Webster Field Annex. As a result of the concerns expressed at this public meeting and in furtherance of MDE's mission to protect and restore the environment for the well-being of all Marylanders, the department initiated a pilot study to assess whether surface water and oysters in the vicinity of Webster Field Annex have elevated levels of PFAS. Results from this pilot study were released in September of 2020.

A summary of the actions at each of the bases in Maryland, as of August, 2022

Navy Facilities

Naval Research Laboratory, Chesapeake Bay Detachment, Chesapeake Beach.

The Navy R&D community has conducted testing of aqueous film-forming foam (AFFF) products for the U.S. Navy from 1968 to the present. The base drinking water supply well, approximately 500 feet

deep, was sampled for PFOA and PFOS in September 2016 and neither of those compounds were detected.

The Navy conducted a Site Investigation (SI) in 2017 that included installation and sampling of deep and shallow groundwater monitoring wells on the base and near base boundaries to determine the likelihood of off-site migration and impact to private drinking water wells. Sample analysis included three compounds: PFOS, PFOA, and PFBS. The SI confirmed the point of release to be the fire-testing pad area. A large associated plume of contamination in the shallow aquifer extends over much of the facility, with the highest concentration at the fire-testing pad (234,000 parts per trillion (ppt) of PFOS).

As a result of this detection of PFAS in the shallow groundwater aquifer, the Navy began notifying the public in areas potentially impacted by groundwater contaminants. Although a 150-foot-thick clay formation separates the shallow aquifer from the deeper aquifer tapped by area private drinking water wells, the Navy nevertheless planned off-site private well sampling to ensure there were no site contaminants affecting private drinking water wells. Sampling of approximately 80 private wells off-base took place in July of 2018 for 14 PFAS compounds, mainly to the northeast and southeast of the site, based on known groundwater flow direction. Although there were detections at three locations, none approached the EPA's PFAS Health Advisory of 70 parts per trillion. A public meeting occurred prior to and after the sampling, first to inform the public and obtain permission for sampling, and then to explain sampling results and further planned activities on-site.

The Navy is conducting an Expanded Site Investigation of the Fire Training Area (Site 10), with additional soil, groundwater and surface water sampling. Preliminary results shows significant PFAS in the streams exiting the facility to the northeast and the southeast as well as significant PFAS in the discharge from the WasteWater Treatment Plant. Additional sampling is ongoing and an interim measures are being designed to treat the surface water leaving the Northern Pond and the WasteWater Treatment Plant discharge.

Bay Head Road Annex, Annapolis

AFFF was used for fire training on a concrete burn pad at this former facility used by the Navy R&D community. The PFAS RI was finalized in May 2020. PFOS/PFOA contamination of surface/subsurface soil, surficial aquifer groundwater, and sediment/surface water downgradient of the former installation has been documented. There is no drinking water exposure to area residents, who are served by municipal water. A supplemental RI investigation is in the planning stages to better characterize the vertical extent of the groundwater plume and its interaction with the Little Magothy River where the plume discharges to pore water/surface water.

Former Naval Research Laboratory, White Oak

AFFF was used at a few locations at the site, including Site 7 and Site 5, at burn pits. A Preliminary Assessment was completed in January 2021 and additional sampling is in process.

Former Naval Training Center Bainbridge, Port Deposit

A Preliminary Assessment (PA) was completed in February 2021. It appears from the PA and the PFAS sampling done during the Five Year Review process at the Fire Training Pit during the summer of 2020 that there is no significant PFAS at the former installation.

Naval Support Activity Annapolis (NSAA)

The Preliminary Assessment/ Site Investigation is underway. Very minor concentrations of some PFAS have been detected in some wells at Site 1 and 2, including the background well for these sites. Currently, a Preliminary Assessment is in the planning stages for the North Severn and the Naval Academy properties.

David Taylor Research Center, Annapolis

This site is a former R&D facility adjacent to NSAA's site 1 and 2. Groundwater sampling was done, and very low concentrations of PFAS were detected in some wells.

David Taylor Research Center, Carderock

A Preliminary Assessment is in preparation.

NSF Indian Head, Indian Head

A PA/SI is currently underway, with an estimated completion in winter 2022. Five sites -- three on the main facility and two on the Stump Neck Annex -- have the potential to be contaminated with PFAS. The fieldwork for the forthcoming Site Inspection is expected to be concluded in spring of 2023.

NAS Patuxent River, St Mary's County

The PFAS Site Investigation work plan was approved by MDE's Land Restoration Program in June 2020. Sampling of groundwater and soil at sites where previous releases of AFFF were documented and began in early July 2020. The Preliminary Assessment identified 16 sites where AFFF releases were either documented or likely. Per the Site Investigation work plan, soil and groundwater samples will be collected from these 16 sites. Six in-use potable drinking water wells at the base were sampled for PFAS constituents between December 2014 and June 2015 and the results were non-detect for PFAS constituents. The potable wells were resampled in 2020 and are still non-detect. PFAS were detected in soil and shallow groundwater samples collected from Site 34, which was a drum disposal site. The maximum concentration of PFOS/PFOA in shallow groundwater at Site 34 was 1,137 ppt.

NAS Patuxent River, Webster Annex, St Mary's County

The PFAS Site Investigation Work Plan was approved by MDE's Land Restoration Program in June 2020. Sampling of groundwater and soil at two sites where previous releases of AFFF were documented were conducted in the summer and fall of 2020. The two sites identified in the PA where AFFF was used were the AFFF Crash Truck Maintenance Test Area and Fire Station 3. MDE received the first draft of the Site Investigation in March 2021. Two in-use potable drinking water wells at the base were sampled for PFAS constituents in October 2016 and the results were non-detect. These wells were resampled in 2021 and are still non-detect. Scoping for a RI has begun which will include more ground water and surface water sampling, including pore water sampling in the St Mary's River where groundwater is exiting to the surface water.

Solomons Island Recreation Center, Calvert County

A PA identified a AFFF foam spill in a grassed drainage swale at the facility. No cleanup was done after the spill so a SI is presently being scoped which will at the beginning include soil and groundwater sampling.

Army Facilities

Aberdeen Proving Ground, Aberdeen and Edgewood

A Preliminary Assessment has been completed, and a SI field work began in March 2021. Numerous sites around the facility have been identified as sites where AFFF foam was used, or releases occurred. In addition, several biosolid disposal areas on the bases are being sampled. The Harford County Perryman Well Field has been impacted by a groundwater plume emanating from a fire training pit at the Western Boundary Study Area of the Aberdeen Area above the EPA Health Advisory level. The water is treated with granulated activated carbon filtration and is tested monthly to ensure that there is no breakthrough of the carbon treatment. The Perryman well water is blended post-treatment with surface water from (primarily) the Loch Raven Reservoir and occasionally from the Susquehanna River before delivery to the public. It is expected that the SI Report will be completed in the winter of 2023 and a RI scoping will begin soon thereafter.

Forest Glen Annex, Silver Spring

A Preliminary Assessment was conducted. There is one confirmed usage of PFAS at the facility, at the fire station. By interview it was shown that the PFAS was only stored and never used.

Fort Detrick, Frederick

Sampling for the PFAS PA/SI is underway. Groundwater near the landfill was sampled for PFAS in advance of the Preliminary Assessment/Site Investigation sampling to aid in the design of the treatment system for the pump and treat pilot study. This pump and treat study is being done to determine the ability to remediate the Trichloroethylene (TCE) groundwater plume at Area B. During this sampling, levels of less than 20 parts per trillion were detected in groundwater near the landfills on Area B.

Fort Meade BRAC (the former and closed sections of the base), Odenton

The groundwater near Tipton Airfield was sampled in 2016. The highest detection near Tipton Airfield was 89,000 parts per trillion PFOS. Work in 2018 indicated that the PFAS was not migrating off-site, and not impacting water supplies for buildings on the Patuxent Wildlife Refuge. Additional PFAS sampling was conducted in 2020, and samples were all at or below the levels found in 2016. An RI for Tipton Airfield is being started and is expected to be underway in 2023.

Fort Meade (the present base) Odenton

A Preliminary Assessment is underway. MDE expects that there will be additional sampling performed at areas associated with past and current fire department buildings and training areas. The base drinking water supply wells were tested in January 2021 and were non detect for PFAS.

Army Research Laboratory, Adelphia

A preliminary Assessment/ Site Inspection is underway. It is expected that there will be sampling at a number of sites by the winter of 2023.

Air Force Facilities

Air Force Reserve, Martin State Airport, Middle River

A Preliminary Assessment/Site Investigation was completed in 2019. The Preliminary Assessment identified 13 locations where releases of AFFF might have occurred, including fire training areas, former and current fire stations, hangars, hazardous waste storage facilities, fire fighting equipment testing areas, and storm water outfalls with potential connectivity to areas of known or possible releases. Eleven of the 13 locations were recommended for further sampling. Eleven temporary wells were put in and nine of them showed concentrations above the EPA Health Advisory Level with concentrations for PFOS ranging from 71.2 to 13700 ppt. Concentrations of PFOA ranged from 92.9 to 1660 ppt. Concentrations of PFOA and PFAS combined ranged from 78.49 to 14500 ppt. A Remedial Investigation will be conducted in the future when funding becomes available. Groundwater flows directly into a tributary of the Chesapeake Bay. There is no possibility of drinking water impacts.

Joint Base Andrews, Camp Springs

The 2015 PA identified 10 AFFF areas requiring additional investigation. During the 2018 Site Investigation process, that number of sites was adjusted to nine, most of which are hangars and fire-training areas. The Site Investigation tested surface soil (up to 17,000,000 ppt PFOS; up to 150,000 ppt PFOA), subsurface soil (up to 21,000 ppt PFOS; up to 5,900 ppt PFOA), groundwater (up to 38,400 ppt PFOS/PFOA), surface water (up to 8,510 ppt PFOS/PFOA) and sediment (up to 27,000 ppt PFOS; up to 610 ppt PFOA) for PFBS, PFOA, and PFOS. A RI will be conducted when resources become available. Surface water sampling and fish tissue sampling by MDE during 2021 in the Piscataway Creek (which begins in the southeastern corner of Joint Base, Andrews) showed significant PFAS contamination and led to a fish consumption advisory. Presently an RI is being scoped as well as an interim measure to treat the storm water system that discharges into Piscataway Creek.

Brandywine Defense Reutilization and Marketing Office (DRMO), Brandywine

A Preliminary Assessment/Site Investigation was conducted in connection with the Joint Base Andrews effort. PFAS was found at one site due to improper storage of AFFF. The small groundwater plume will be investigated when resources become available.

U.S Coast Guard Facilities

Coast Guard Yard, Curtis Bay, Baltimore City

Several sites have been identified at the facility during recent preliminary sampling as well as a recent spill in the summer of 2022. The PA/SIs are ongoing.

Private Sites

Spectron, Inc Cecil County

This site was a waste lagoon that accepted liquid wastes from neighboring chemical companies. A sampling of a number of wells in the source area and down the axis of the plume found a maximum concentration in the groundwater of 22.2 ppt. Further investigation is being considered.

Bush Valley Landfill, Harford County

This unrestricted industrial landfill might have received PFAS waste. Well sampling for PFAS is being conducted in the fall of 2022.

Fairchild Hot Fire Training Pit, Washington County

Investigations are just beginning in concert with the EPA on this former aircraft manufacturing facility at the Washington County Airport. Past sampling in the suspected source area have found groundwater

concentrations of up to 49,000 ppt and recent sampling of drinking water wells in the vicinity have found some low levels. Investigations are on-going.