

# Investigation of PFAS Impacts in Multiple Media at Portland International Airport (PDX), Oregon

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**Background/Objectives.** PDX historically used aqueous film forming foam (AFFF) in fire training areas, fire stations, and other areas within PDX. Working collaboratively with the Oregon Department of Environmental Quality (DEQ), the Port of Portland (Port; property owner) began an investigation in April 2017 to assess the potential environmental impacts of the historical use of AFFF, including per- and polyfluoroalkyl substances (PFAS) present in AFFF.

PDX and its fire department are regulated under Federal Aviation Administration and National Fire Protection Association regulations and guidance, which identify the type, testing, use, and training required for lawful use of AFFF based on airport size. The requirements, codes, and regulations governing the type of AFFF, frequency of live-fire training, and equipment testing protocols at airports have changed during the four decades since AFFF was originally developed and in use. Therefore, AFFF was utilized at several fire station areas at PDX since approximately 1970 and the use of AFFF at PDX has included firefighter training, application to fuel spills to inhibit combustion, and in mobile firefighting equipment and stationary systems.

For the PDX investigation, media of concern included shallow and deep groundwater, sediment, soil, surface water and stormwater. Deep groundwater in the immediate vicinity of PDX is used for irrigation, landscaping, and golf courses. To the east of PDX, the City of Portland (City) has developed the South Shore Wellfield as a backup supply of municipal water for the Portland Metro area. All City water wells obtain groundwater from the deep aquifers.

**Approach/Activities.** Shallow groundwater sampling conducted in April 2017 in the immediate vicinity of the current and historical fire training areas identified PFAS above the U.S. Environmental Protection Agency (EPA) Health Advisory (HA) for drinking water, which is 70 nanograms per liter (ng/L) for combined perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). Based on the results, a preliminary assessment was conducted, and additional investigative activities and data analysis (i.e., PFAS ratio plots, trend plots) were completed in 2017 through 2021 to further characterize PFAS impacts at PDX in soil, groundwater, surface water, stormwater, and sediment.

**Results/Lessons Learned.** Concentrations of PFAS were detected above conservative protection of residential drinking water screening levels in collected soil samples. Concentrations of PFAS were detected above conservative human health screening levels in stormwater and surface water. PFAS were not detected in sediment. PFAS have been detected primarily in the shallow aquifer in multiple wells in the vicinity of the co-located current and historical fire training areas. PFAS were not detected in deep groundwater above the EPA interim recommendation value of 40 ng/L.

Additional investigation is ongoing to determine the extent of soil, groundwater, surface water, and stormwater impacts, fate and transport of PFAS, and to evaluate the need for remediation of PFAS-impacted media. Since there are no current human health or ecological regulatory standards for PFAS in Oregon, the Port is proactively utilizing conservative standards promulgated in various states within the US as guidance, to assess PFAS impacts at PDX, while awaiting State and/or federal regulations to support future actions.