

Per- & Polyfluoroalkyl Substances Investigation and Drinking Water Sampling and Reporting at Southern Vermont Regional Airport

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Services / Expertise

DEC Program Oversight
PFAS Monitoring
Site Specific Health and Safety Plan (HASP)
Work Plan and Cost Estimate
Site Investigation Work Plan, including
Conceptual Site Model

Markets

State Government

Project Location

North Clarendon, Vermont

Date Completed

2019 to present

Project Owner

Vermont Agency of Transportation

Project ID#

19-043

Project Manager

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Southern Vermont Regional Airport AFFF testing and training areas.

IN 2018, the Vermont Department of Environmental Conservation (VT DEC) and the Vermont Agency of Transportation (VTtrans) evaluated the Southern Vermont Regional Airport (SVRA) in North Clarendon, Vermont for potential impacts related to the use of aqueous film-forming foam (AFFF) in firefighting apparatus during firefighting training and fire response activities. A phased sampling of bedrock groundwater monitoring wells revealed groundwater in bedrock was impacted by common constituents of AFFF known as per- and polyfluoroalkyl substances (PFAS). Subsequently, PFAS were detected in residential and a public non-community, non-transient (NTNC) water system bedrock water supply wells on and off the airport property. A limited site investigation, including soil and shallow groundwater sampling, was performed at one known firefighting training area.

In 2019, VTtrans contracted with Stone to perform periodic monitoring of approximately 45 residential water supply wells, including six with point-of-entry treatment systems (POETs), and a NTNC public water treatment and supply system serving a local business park. This work also included maintenance of the residential POET systems. As part of this project, Stone has reviewed the as-built drawings, developed a sampling procedure for the business park water system, and maintained compliance with the VT DEC Drinking Water Division.

Stone also completed groundwater, surface water, sediment, and spring monitoring at and near the SVRA in 2019 to evaluate further the distribution, fate, and transport of PFAS from suspected source areas. This work included resampling groundwater monitoring wells previously installed in the primary AFFF training area (Bravo) and collecting 16 surface water, 9 sediment, 3 spring, and 3 stormwater outfall samples. Sampling and subsequent testing confirmed site migration of PFAS from the Bravo

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training area to Mill River, located south of the airport, and an unnamed first-order stream northeast of the training area. Further assessment is required to determine whether PFAS detected in airport storm drain infrastructure results from stormwater runoff or groundwater infiltration.

Between 2020-2021, the Vermont Geological Survey—in conjunction with Middlebury College, the University of Vermont, and the State University of New York (SUNY) Plattsburgh—completed surficial bedrock mapping, spatial analysis of well reports, geophysical logging of bedrock wells, and chemical tracing to identify potential groundwater and PFAS transport pathways in bedrock. This work characterized bedrock structures and hydrogeology at and near SVRA, improving our understanding of subsurface conditions that affect the fate and transport of PFAS.

Currently, a high-resolution site investigation is underway to further investigate potential source areas and to assess the impact to shallow, overburdened groundwater, soils, and surface waters. Work plan development included a review of historical information to develop a historic chronology of airport construction and AFFF use to inform and update the Conceptual Site Model (CSM). Work began in April 2022 by first evaluating the site-wide hydrogeology of the unconsolidated aquifer. We completed soil and groundwater assessments within each fire training and emergency response area and crash sites in October 2022. This work will utilize both screening level and definitive analytical methods to guide a dynamic work strategy to delineate PFAS source areas. The site investigation will also include quarterly sampling of surface water and stormwater runoff and quarterly groundwater monitoring to evaluate temporal trends in PFAS concentrations and the role stormwater infrastructure plays in PFAS transport at the site.