



Congressional Authorization:

Water Resources Research Act of 1964 (Public Law 88-379)

FY 2025 Funding to Vermont:

Federal Funds
\$146,052

Non-Federal Funds
\$146,052

**Total Funds
\$292,104**

Host:

University of Vermont
Rubenstein School of
Environment and Natural
Resources

Contact:

Dr. Anne Jefferson
vwrlsc@uvm.edu

Vermont Water Resources and Lake Studies Center

The Vermont Water Resources and Lake Studies Center is one of 54 state water resources research institutes established by the Water Resources Research Act of 1964 and located at land-grant universities. Through cooperation with the U.S. Geological Survey, the Vermont Water Center leverages expertise in research and communications to address Vermont's water resource challenges.

The Vermont Water Center runs an annual competition to fund research projects that are relevant to important and timely Vermont water resource issues, including an increasing number of projects focused on community resilience and changing winter conditions. Projects are led by researchers based at Vermont colleges and universities.

USGS-NIWR annual base funding for Vermont supports:

- A website and quarterly newsletter about recent ecological findings in Vermont available at www.econewsvt.org.
- 4–5 research projects per year that include training for approximately 5 graduate and 5 undergraduate students from a range of disciplines.
- 3–5 peer-reviewed publications, 2–4 theses and dissertations, and 12+ outreach products per year.
- Scientific knowledge that informs and impacts water resources management in Vermont.

Examples from recent research:

- First published report of bloom-forming cyanobacteria in Vermont's high-elevation acid-impaired lakes contributes to development and implementation of biotic indices for rapid assessment of water quality impairment.
- The development and investigation of the use of a novel filter device to reduce nutrient runoff from agriculture, particularly Phosphorus.
- Assessment of Vermonter flood risks including a dataset and map connecting flood risk with socio-economic variables.



2026 Research Projects

Quantifying the Flood Resilience Value of Water Quality Best Management Practices on Vermont Roads

Dr. Elizabeth Doran and Dr. Beverley Wemple, University of Vermont

This project will improve management of rural transportation networks to maintain accessibility and reduce their impact on water quality in the context of large floods. We will work with municipal officials to understand the costs associated with best management practice implementation on their road networks, how effective those practices are in the face of large flood events and quantify the benefit of implementation for users, taxpayers and downstream water quality.

The Effect of Warming Winters on Nutrient Export in a Forested Northeastern U.S. Headwater Catchment

Dr. Andrew Schroth, Dr. Carol Adair, and M.S. student Addie Hedges, University of Vermont

Winters are getting warmer and wetter in the northeast. One gap in knowledge that has arisen due to these changes is how, and to what degree, nutrients are moving through watersheds during the winter. To fill these gaps, researchers will collect water samples and sensor data at Sleepers River Research Watershed (SRRW) in northeastern Vermont throughout the winter. This study will inform how changes in winter weather and hydrology impact nutrient cycles in forested watersheds typical of the northeast. It will also help to understand how these changes in dynamics have impacts on downstream ecosystems.

Seasonal Changes with Nutrient Availability in Agricultural and Forested Sites in the Missisquoi River Watershed

Dr. Andrew Schroth, Dr. Carol Adair, and M.S. student Madeline Winer, University of Vermont

How warming winters impact soil nutrients is not well understood and greater exploration into the seasonality of soil nutrient cycling and loss is needed to resolve modern water quality issues. Identifying the timing and magnitude of inorganic nitrogen sources in watersheds will contribute to a greater understanding of Vermont's dynamic watershed system responses to winter warming. With more detailed knowledge on winter nutrient cycling and mid-season melt events, we can better support managers and communities that are striving to improve water quality for human health and the environment.

Building Flood Resilience and Promoting Disaster Justice: Empowering Vulnerable Communities for Sustainable Disaster Recovery in Vermont

Dr. Salim Uddin, University of Vermont

This project focuses on understanding how communities can better prepare for, respond to, and recover from flood disasters. The results will guide local leaders, policymakers, and residents in creating stronger, more resilient communities that can better handle the increasing impacts of extreme weather and environmental disasters.

Knowledge Matters: Understanding Resilience and Adaptation to Extreme Events within Vulnerable Communities in Vermont

Dr. Salim Uddin, University of Vermont

The dramatic increase in flooding disasters in Vermont has disproportionately impacted our most vulnerable populations which face many systemic barriers to accessing resources for flood risk management. The project will benefit Vermont's frontline communities by identifying the knowledge and perceptions of extreme weather events, community resilience attributes and indicators to enhance the ability to respond to and recover from flooding and other environmental disasters.