

Combining Neighborhood-Scale Green Infrastructure with “Gray” Infrastructure to Reduce Combined Sewer Overflow Events



Awards & Recognition



2019 Engineering Excellence Merit Award, American Council of Engineering Companies (ACEC/VT)

Services / Expertise

Water Quality Improvements
Stormwater Management and Planning
Green Stormwater Infrastructure
BMP Engineering and Design
Integrated Solution

Markets

Local & Regional Planning
State Government

Project Location

St. Johnsbury, Vermont

Date Completed

2015 - 2018

Project Owner

Caledonia County Natural Resources
Conservation District (CCNRCD)

Project Manager

Amy Macrellis



Construction of a bioretention swale with an underdrain at the drain outlet designed to allow water that is unable to infiltrate to flow to the stormwater collection system (left) and photo of a bioswale following construction (right).

THE OAK STREET Neighborhood Project is the first in Vermont to combine neighborhood-scale green infrastructure with “gray” infrastructure to reduce combined sewer overflow events. In June 2019, Stone was part of the team that won an Engineering Excellence Merit Award from the Vermont chapter of the American Council of Engineering Companies for the project.

The Oak Street Neighborhood Project started as a traditional utility improvement led by Dufresne Group, including water main replacement and new sewer and stormwater collection systems. During the design phase, a Stormwater Master Plan was being developed by CCNRCD and the Town of St. Johnsbury, with support from Stone and funding from the Vermont DEC Ecosystem Restoration program. The residential neighborhood slated for utility improvements was underlain by sandy soils, making incorporation of green stormwater infrastructure (GSI) a high priority for all partners. Design and construction of the GSI was funded through a Vermont DEC Ecosystem Restoration grant secured by CCNRCD. Stone completed final design, pre-construction coordination, and construction inspection services for the GSI in close coordination with Dufresne Group.

The GSI improvements, bioretention swales sited in the green space along roadways, were constructed in the fall of 2018 and represent one of a very small number of neighborhood-scale GSI projects in Vermont. The swales treat runoff from 7.5 acres, with 2.1 acres of impervious rooftops, driveways, and roads. A total of 22 practices provide 2,000 cubic feet of storage and treatment capacity in bioretention swales without underdrains and 3,550 cubic feet in bioretention swales with underdrains. This represents almost 300% of the “first-inch” Water Quality Treatment Standard on a project where water quality treatment for runoff, was not required by the Vermont Stormwater Management Rule. Through CCNRCD’s and Stone’s work in securing grants and providing engineering support, the town was able to install GSI at no cost but great benefit by reducing stormwater runoff in the Oak Street drainage area.