



Ahead of the Storm

CVU High School Stormwater Retention

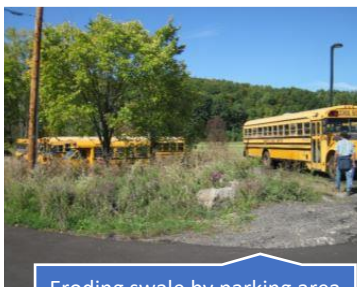
369 CVU Road, Hinesburg

Introduction

Ahead of the Storm (AOTS) grew out of a group of citizens from Charlotte, Hinesburg, and Shelburne who were concerned about the serious decline of Lake Champlain's health and water quality. Stormwater runoff from driveways, fields, parking areas, and lawns is a major factor in the deterioration of our water quality. Most impervious surfaces were created before regulations requiring water quality treatments were in place or fall below regulatory thresholds. Therefore, runoff is not managed to remove pollutants or slow flows and soils and phosphorus are mobilized and end up in Lake Champlain. AOTS helps communities change the way stormwater is managed on properties to reduce water pollution and be more prepared for extreme weather events and impacts of climate change. Fifteen municipal, educational, and private properties have been selected to become demonstration sites to showcase more optimal conservation practices in a variety of landscape settings. Monitoring and stewardship over time is crucial to successfully addressing water quality issues.

Why here?

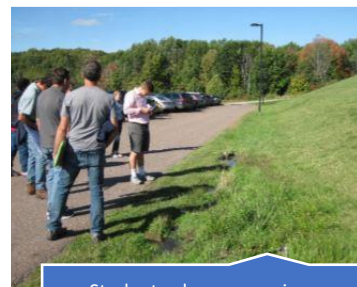
CVU is in the headwaters of the LaPlatte River, with runoff from the CVU school grounds draining either southwest to a tributary of the LaPlatte River or southeast to a tributary of Patrick Brook. The school property includes buildings, parking lots, roads, playing fields, lawns, and forest. The school holds a stormwater permit for 11.69 acres of impervious surface and maintains numerous treatment elements across the property. Water is collected in a series of grass swales, underdrains, roof drains, catchbasins, and pipes, and is directed to the fire pond or other smaller detention areas. This project expands existing treatment to reduce the volume and speed of stormwater runoff on the site to improve water quality and flood resiliency beyond the permit requirements to prepare for climate change. Students, teachers, and school staff assisted with the site assessment, alternatives analysis, and design.



Eroding swale by parking area presents opportunity for treatment



Discharge from upper playing fields has some erosion



Students observe erosion, puddling, and rutting between the playing field and parking lot



Design: how can we filter the water?

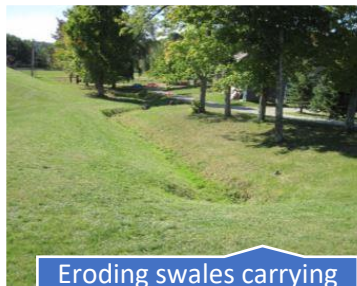
A collaborative process with students, teachers, school maintenance staff, and engineers identified problems at nine sites that if corrected would improve water quality and flood issues around the CVU campus. An alternatives analysis was performed and implementation information was summarized for treatment practices at each site. Students, with design support from staff and engineers, took ownership over seven of the sites and produced concept designs to address problems identified. A teacher, the maintenance staff, and principal have been involved in the project and have assigned priorities, timelines, and budget options for project implementation. Implementation has started.

Implementation

Revegetation has occurred at one site, and a swale bio-retention area was constructed off the north parking lot in 2020. Other sites are awaiting either final designs or implementation. Implementation of a stormwater treatment for the greenhouse, plant buffers near the cow pasture, swale improvements east of the school at the sports fields, vegetation plantings at the north parking lot snow storage area, and erosion control at the disk golf area are expected to occur in the next couple years, dependent on funding. Some projects will be included in the school maintenance budget.



Southwest portion of parking lot drains to eroding swale



Eroding swales carrying water from the upper playing fields



Existing fire pond provides some treatment for water quality

How much did it cost?

Funding for this project occurred in phases:

Survey and Concept Design (complete) \$15,000

Final Design (bio-retention swale) \$4,007

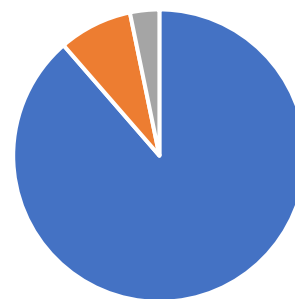
Implementation (bio-retention swale) \$40,718

(final design and implementation partially complete)

Total \$59,725



Funding Sources



■ Grants ■ School ■ Lewis Creek Association