



Ahead of the Storm

DuBrul Residence Rain Garden

845 Greenbush Road, Charlotte

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.

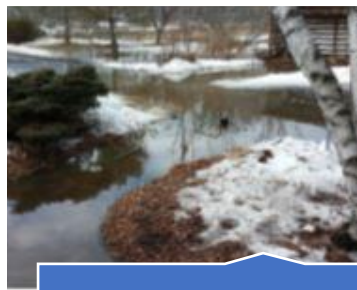
Why here?

Water quality sampling results note very high phosphorus and turbidity in the Holmes Brook watershed. Therefore, the purpose of this design was to slow water flows and filter pollutants while avoiding water damage to the house. The DuBrul residence experienced water damage at their garage and front house entrance during large rain and snow melt events. Previously, runoff from the road, adjacent property, driveway, and front yard collected near the house, draining a total of 5 acres of land. This stormwater then flows to Holmes Creek and then discharges to Lake Champlain at the Charlotte Town Beach.

The DuBrul property is an ideal location to treat stormwater from the town road. The rain garden is visible from the road, so neighbors and people driving by can view it and see it in action. The design slows water down, increases capacity to treat larger volumes and filters runoff while largely maintaining mature fruit trees, avoiding underground utilities, and reducing maintenance needs.



Runoff from the road and adjacent property flows toward DuBrul property



Water puddled in front of home



Bio-retention area identified adjacent to driveway

Take a tour of the AOTS locations at lewisecreek.org!



Design: how can we filter the water?

The landowner took initial steps toward stormwater treatment by hiring Landscape Design, Inc. to do an initial survey and concept design for the rain garden. Engineers at Milone & MacBroom advanced the concept to a final design with the goal to capture and treat stormwater, protect water quality, and reduce the potential for flood damage at the house.

This design creates a bio-retention area (or rain garden) in the front lawn to treat runoff from existing impervious surfaces; it slows runoff, increases water storage, retains sediment, promotes infiltration, and redirects flow away from the house and garage. Runoff calculations indicate that the bio-retention area treats the runoff from the 1-inch rain storm that occurs during 90% of all rain events.

Implementation

Implementation occurred in Fall 2017 by Junior Lewis Excavating. Several trees and hedges were removed and an attractive depression was dug to create the bio-retention area north of the driveway to store water. Flowering native perennials were planted and stones were placed at the rain garden outlet to control the ponding level.



After construction was completed in Fall 2017



Water is contained in the bio-retention area after a rain event



Spring Melt: water can slowly infiltrate the soil instead of running off

How much did it cost?

Funding for this project occurred in phases:

Survey and Concept Design: Paid for by landowner

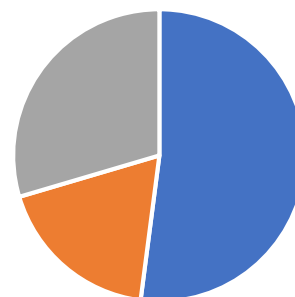
Final design \$8,500

Implementation \$4,828

Outreach \$3,000

Total \$16,328

Funding Sources



■ Grants ■ Lewis Creek Association ■ Landowner

