



Ahead of the Storm

Charlotte Library
115 Ferry 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.

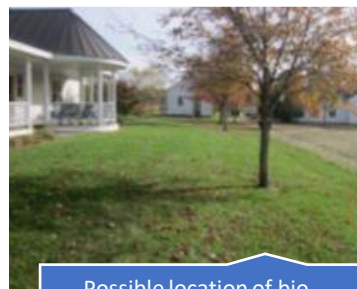
Why here?

Runoff from the Charlotte Library's 6,200 square foot building and associated driveway and sidewalks left the property untreated. Stormwater runoff flowed overland offsite either across the driveway to a swale which flows to Thorp Brook or to a newly installed trench drain on the Village Green leading to Pringle Brook, a tributary of Holmes Brook. Thorp Brook has shown high levels of nutrient and sediment loading, brought in part by stormwater. Runoff is unable to infiltrate into the lawn based on poorly draining soils.

Before construction photos:



West side of the library



Possible location of bio-retention area between 2 trees in lawn area



Possible location of bio-retention area to west of building, using existing bed



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

Design: how can we filter the water?

In order to improve water quality, engineers at Milone & MacBroom created designs to slow runoff, increase infiltration, and enhance vegetation on the half-acre property. The designs included bio-retention areas in existing landscaped beds on the west side of the building to slow runoff and increase storage capacity, and a rain barrel to water the gardens and flower beds from the untreated water coming off the roof. Since soils are tight and the water table is high at this site, infiltration or underground treatment practices would not be effective.

Implementation

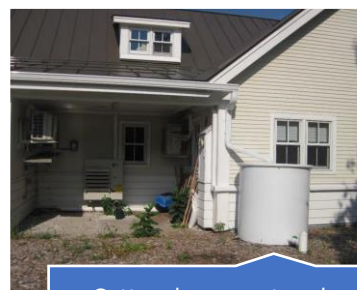
The library addition (constructed in 2020) somewhat altered the original designs, and included removing the library entrance driveway, replacing soil in the area, and installing gutters, rainbarrels, pipes, and a bio-retention area east of the building. This removed a net 0.06 acres of impervious and provided treatment for 0.14 acres of runoff from the roof. Additional bio-retention areas are planned for the west roof runoff. After construction photos:



Bio-retention area east of building with rain barrels (where former entrance driveway was)



Bio-retention area planned for this west side of building; runoff from sidewalk sheet flows into vegetation



Gutter, downspout, and installed rain barrel for garden watering

How much did it cost?

Funding for this project occurred in phases:

Survey and Concept Design \$3,900

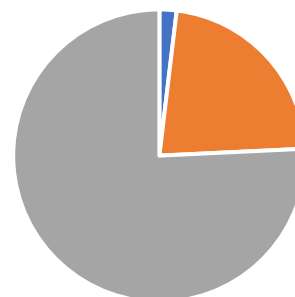
Planning and Design Phase II \$0 (volunteer)

Implementation \$20,000

Total \$23,900



Funding Sources



■ Lewis Creek Association ■ Grants ■ Library