



Ahead of the Storm

Big Oak Lane Stormwater Mitigation

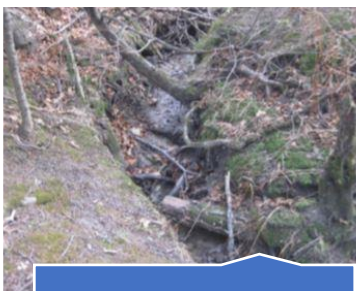
Big Oak Lane, Charlotte

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?

The Big Oak Lane neighborhood is a residential development of six houses with active agricultural fields that drains 16.9 acres of land. Stormwater and runoff have created rills in the agricultural field and a large gully that continues to erode close to one of the houses carrying significant amounts of sediment to the downstream wetland and tributary. The development is directly adjacent to a headwater tributary of Thorp Brook, which drains to Town Farm Bay in Lake Champlain. Water quality sampling done by the South Chittenden River Watch shows this area has high phosphorus and sediment loading.



Eroding gully west of the development



A mowed field/open space with rill erosion



Deposition of sediment and nutrients are occurring at the downstream end of the swale



This project was funded in part by a Vermont Watershed Grant.

Take a tour of the AOTS locations at lewis creek.org!

Design: how can we filter the water?

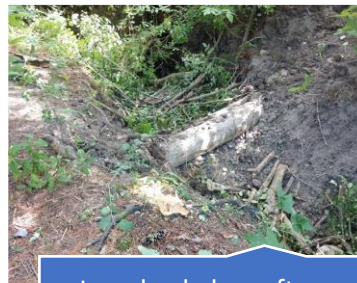
This project is designed to improve water quality entering Thorp Brook and will drastically reduce the erosion occurring that could become a threat to the houses in the neighborhood. This project will include upgrading a culvert adjacent to Thorp Brook, which is designed to safely pass a larger volume of water, slowing the water entering the gully, and preventing water overtopping the road in large rain events. The design also includes natural log check dams and gully stabilization adjacent to Thorp Brook. Over time, the logs will trap sediment and slowly fill in the gully, while slowing water and reducing pollutants that end up in Thorp Brook.

Implementation

Construction was completed over 3 days in August 2018. Lewis Excavating of Charlotte removed the existing culvert and added a 21-inch-diameter culvert going diagonally under the bend in the road. The gully west of the road was filled in with logs and woody debris to slow water moving through and reduce erosion. Landowners contributed logs and woody debris and helped install the wood in the gully. Please view the culvert upgrade, stone-lined swale, and gully fixes from the road and not from neighbors' property.



Completed swale and culvert replacement east of Big Oak Lane



Log check dam after installation



Logs about to be installed in gully as check dams

How much did it cost?

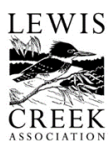
Funding for this project occurred in phases:

Concept Design \$8,300

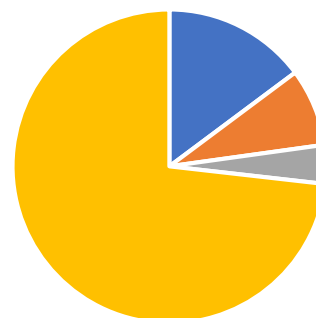
Planning and Design Phase II \$3,700

Implementation \$13,000

Total \$25,000



Funding Sources



■ Lewis Creek Association ■ Landowner Match
■ Kelsey Trust ■ Grants