Ahead of the Storm

LaPlatte Headwaters Town Forest

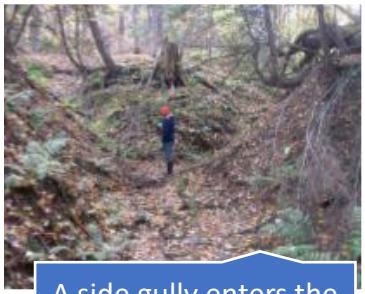
Gilman Road, Hinesburg

Introduction

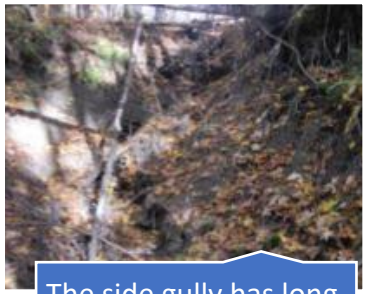
Ahead of the Storm (AOTS) grew out of a group of citizens from Charlotte, Hinesburg, and Shelburne who were concerned about the serious decline of Lake Champlain's health and water quality. Stormwater runoff from driveways, fields, parking areas, and lawns is a major factor in the deterioration of our 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?

The LaPlatte River continues to exceed the state standard for phosphorus, so it is crucial to keep the headwaters healthy. Gully erosion is occurring in several areas of the LaPlatte Headwaters Town Forest Area, specifically at the upstream end of two branches of a headwater tributary of the LaPlatte River. The gully erosion and head-cutting are likely caused by increases in runoff from historic changes to land use associated with farming and clearing the land between the 1800's and mid-1900's. This may have also been influenced by channel incision in the downstream LaPlatte River and subsequent tributary regeneration (incision of the tributary to match the new elevation of the receiving stream base elevation). Increased rainfall intensity and magnitude may also have led to the expansion of minor initial erosion to the larger erosion observed today. Many years ago, car tires were thrown into the gully to help stop the erosion.



A side gully enters the main gully



The side gully has long, steep side slopes

The upstream end of the fully has a headcut

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

Design: how can we filter the water?

Engineers at Milone & MacBroom focused on how to address eroding gullies that funnel stormwater and sediment into the headwaters of the LaPlatte River. Recommendations include rerouting the trails that are subject to erosion from the expanding gully, managing the site so the flow isn't concentrated, placing brush and logs in the upper gully to replicate the natural storage of sediment with wood, covering existing tires in the gully with soil to revegetate the gullies, and applying proper optimal conservation practices during timber management. This would allow for improved water quality protection and flood resiliency by slowing runoff, reducing erosion, and enhancing vegetation.

Implementation

For this site, instead of implementing the designs as part of the AOTS program, LCA and engineers created a management plan. This plan includes an explanation of the processes occurring at the gully site that have led to the formation of the gullies. It also provides general recommendations that should be considered prior to any action in the LHTF and specific stabilization options for the gullies. A range of active stabilization options have been included that could be implemented over time, possibly in a phased approach, as funding or materials become available.

Tires are accumulating some sediment and debris in the gully

Logs across the channel are stabilizing the channel bed

Example of a log check dam and brush log application

How much did it cost?

Funding for this project occurred in phases:

Concept Design $3,900

Planning and Design Phase II $0 (did not occur)

Implementation $0-40,000 (not included)

Total $3,900-$43,900