

RIDGE TO RIVER - RESILIENCE & CLEAN WATER

FOR THE MAD RIVER VALLEY



Photo: Peregrine Productions



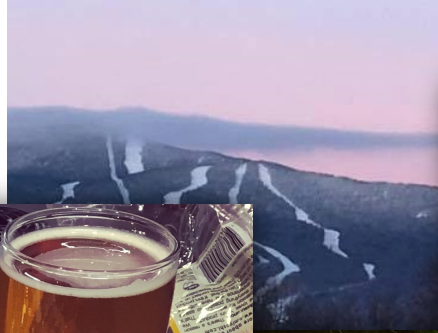
Corrie Miller

Executive Director, Friends of the Mad River
Representing Ridge to River Taskforce





Quality of Life in the Mad River Valley



Photos, clockwise: Kimberly Canarecci, Katrina Howe, Jody Kay Mitchell, Brad Long

Threats to our Quality of Life

Big Climate Events



Photos, clockwise:
Ember Photo, Jen
Ryan Peterson,
Kim Greenwood

Threats to our Quality of Life



Increasingly regular events...
and, just regular rain



Photos, clockwise:
Corrie Miller,
Peregrine Productions



Ridge to River 2015



2015 Leahy Environmental Summit



WHY IT MATTERS

If we *slow down* rainwater and snowmelt and help it *sink into the ground* ...

- we are less vulnerable in larger rain events
- we reduce infrastructure maintenance costs
- we benefit from cleaner swimming holes & ground water

Multiple Benefits!





A Mad River Valley Coalition for
Clean Water and Resilience

Ridge to River Taskforce

Businesses & Community Participants:

Richard Czaplinski, Friends of the Mad River
Brad Long, Waitsfield
Kinny Perot, Friends of the Mad River
Margo Wade & Joel Rhodes, Sugarbush Resort
Eric Brattstrom, Warren
Dotty Kyle, Warren

Official Town Representatives:

<u>Duxbury:</u>	Mari Pratt (SB) Alan Quackenbush (PC)
<u>Fayston:</u>	Jared Cadwell (SB) Carol Chamberlin (PC)
<u>Moretown:</u>	John Hoogenboom (SB) Dara Torre (former PC)
<u>Waitsfield:</u>	Sal Spinosa (SB) Brian Voigt (PC)
<u>Warren:</u>	Bob Ackland (SB) Mike Bridgewater (PC)



Taskforce Support

Leadership:

Friends of the Mad River

Organizational Partners:

Central Vermont Regional Planning
Commission

Mad River Valley Planning District

Consultants and Researchers:

Community Workshop LLC

Stone Environmental

Vermont League of Cities and Towns

Watershed Consulting Associates LLC

WHAT WE KNOW

People Care

 **STONE ENVIRONMENTAL**

525 Stone Cutters Way / Montpelier / VT / 05602
802.220.1541 / info@stone-env.com / www.stone-env.com

A FRAMEWORK FOR ACTION
Ridge to River

 **WATERSHED**
CONSULTING ASSOCIATES

To: Corrie Miller, Executive Director, Friends of the Mad River
From: Andres Torizzo, Watershed Consulting Associates, LLC
Date: January 4, 2017

Ridge to River Initiative Community Baseline Survey

VALLEY RESIDENTS CARE ABOUT CLEAN WATER

We asked people how much they care about clean water and how much stormwater and their personal actions matter.



100%

Of survey respondents care about clean water in the Mad River Valley



97%

Say that managing stormwater is important in protecting our quality of life



96%



2016 Embracing A Mad River Community Forum

2018 Climate of Change Community Forum



WHAT
WE KNOW

437 Miles of Roads

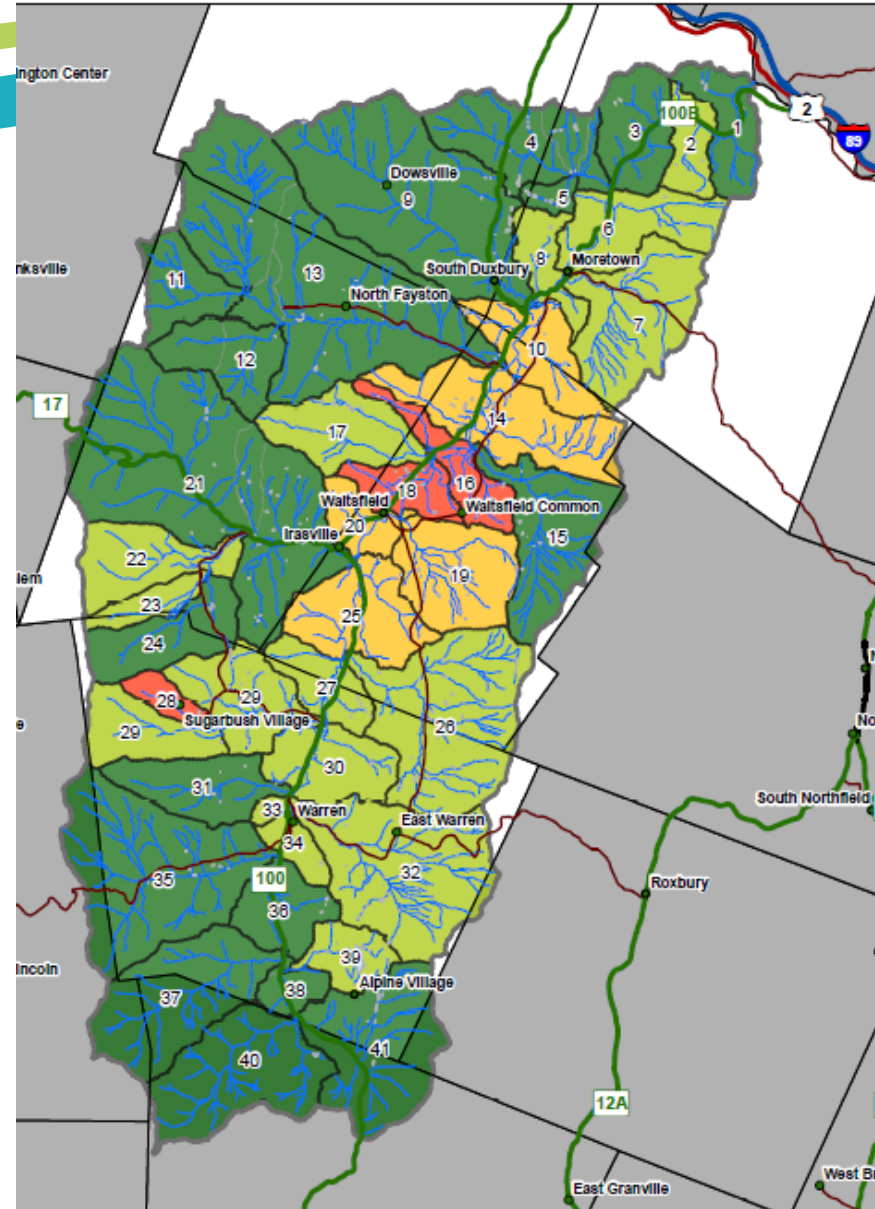


33% are **private** roads and driveways

WHAT WE KNOW

500 Acres of Forest Cover Lost

- 500 acres of forest cover converted in 10 years
- Forest cover correlates to damage downhill (>65% threshold)
- Thought to be caused by minor land disturbances



WHAT WE KNOW

New Development

Most MRV development falls under state and local stormwater runoff permitting thresholds.

State: Most MRV development is 1 and 2-family structures

→ Often **does not** trigger state stormwater permitting thresholds

Local: Local municipal regulations address temporary construction site erosion controls

→ Limited in mitigating the impacts of new impervious surface over the long-term



WHAT WE CAN DO

The Moral of the Story

Small & dispersed problems across the watershed can add up to a lot of damage.

BUT...

Small & dispersed changes can add up to a lot of good.



WHAT WE
CAN DO

Action Framework

ridgetoriver.weebly.com/action-framework.html



**WHAT WE
CAN DO**

Storm Smart Development



Stormwater Master Plans & Fixes

- Mad River Glen Parking
- Warren School
- Fayston School
- Harwood Union
- Fuller Hill Rd



Warren School SWMP, sub-surface chambers, & raingarden

**WHAT WE
CAN DO**

Storm Smart Development



Stormwater Master Plans & Fixes

- Mad River Glen Parking
- Warren School
- Fayston School
- Harwood Union
- Fuller Hill Rd



Fuller Hill Road drywells & Harwood Union Middle School raingarden

**WHAT WE
CAN DO**

Storm Smart Development



Stormwater Master Plans & Fixes – prior to this year

- Warren School
- Harwood Union
- Mad River Glen Parking
- Fayston School
- Fuller Hill Rd



Warren School SWMP, sub-surface chambers, & raingarden



Storm Smart Development



Town-Wide & Mount Ellen Stormwater Master Plans

Grant partners:

- Central Vermont Regional Planning Commission
- Watershed Consulting Associates
- Friends of the Mad River & Ridge to River

Stakeholders:

- Road foreman
- Selectboard member
- Planning commission member
- Zoning Administrator
- Town administrator



Storm Smart Development



Town-Wide & Mount Ellen Stormwater Master Plans

- Top 20 prioritized sites / Town
- 5 – 30% Engineering Plans / Town
- 3 – 30% plans at Mount Ellen



54 Waitsfield Sites

Waitsfield Stormwater Master Plan

A Story Map


esri

Waitfield Stormwater Master Plan

Sites to Assess

A total of 54 locations were identified for field investigation. Each of these locations are shown with a star on the map to the right.

These locations were evaluated in the field during the Spring and Summer of 2018. Data collected during this time included: site suitability, photographic documentation, follow-up notes, and other pertinent data.



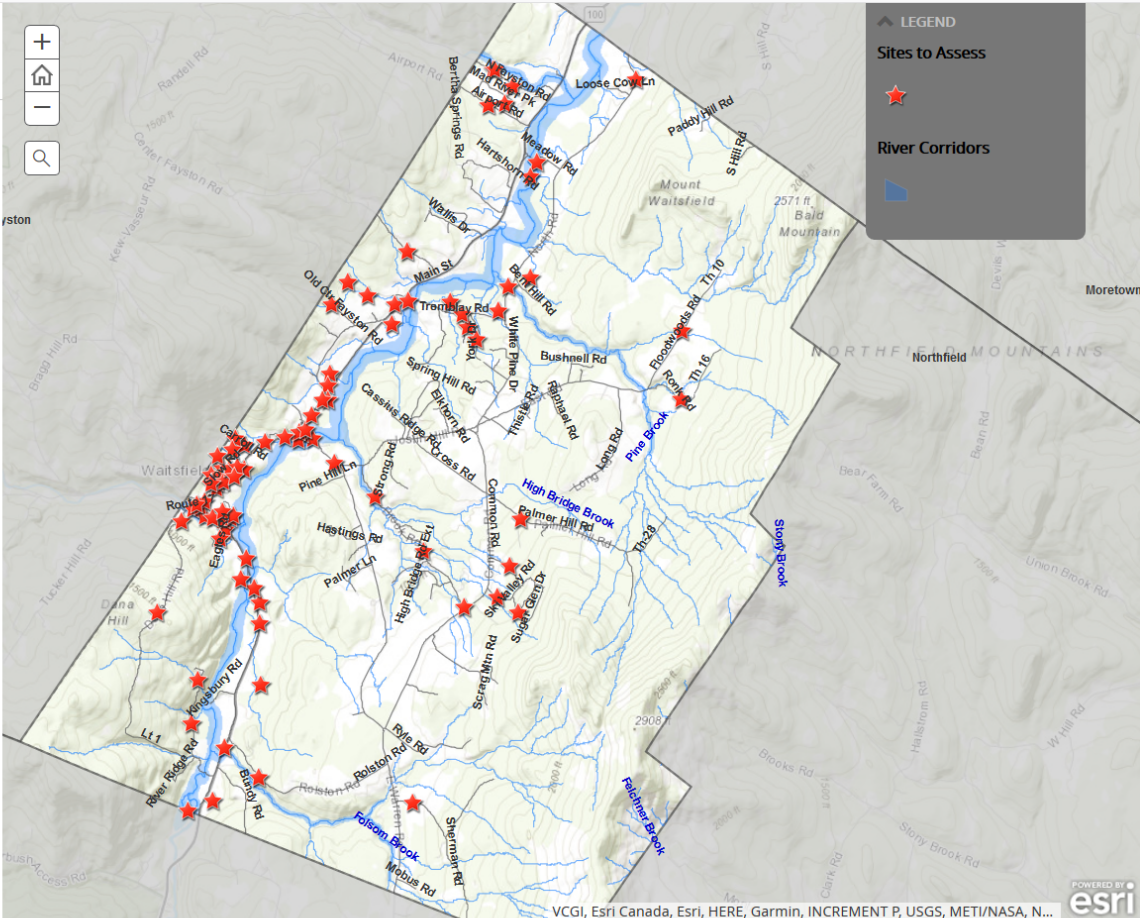
Watershed staff assess a site within the Town.

+

Home

-

Search



LEGEND

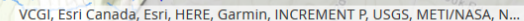
Sites to Assess

River Corridors

VCGI, Esri Canada, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, N...



The screenshot displays a web application for a stormwater retrofit tour in Waitsfield, VT. The main map shows the town's location with 20 numbered markers indicating retrofit sites. An inset photo on the right shows a covered bridge over a river, with the text 'Town of Waitsfield, Vermont' and 'Welcome to the Waitsfield, VT Photo Tour of the Top 20 stormwater retrofit locations identified as part of the Waitsfield Stormwater Master Plan.' Below the map, a horizontal bar contains six thumbnail images of specific locations, each with a numbered label: 01 - Town Garage, 02 - Main St Infiltration, 03 - Mad River Green Field, 04 - Bridge and Main Commercial, 05 - Lareau Park, and 06 - Slow Rd Infiltration. A right arrow indicates further locations are available.





5 - 30% Designs

Waitsfield Stormwater Master Plan

← → ↺ ↻

https://watershedvt.maps.arcgis.com/apps/MapJournal/index.html?appid=2d3055efe8494f15a2ac61e50046295b

Toggl Trello Neon MailChimp PPF Cpanel ANR Stormwater Financial Portals Flooding Funding Opps Resources MRW & LaRosa FERC Log In Town Websites Website Developers Leadership Resources

A Story Map


esri

Waitsfield Stormwater Master Plan


Site #1: Town Garage

The Waitsfield Town Garage is located on Tremblay Rd by the intersection with North Rd. The majority of the site drains towards the west to an existing swale located south of the solar panels. Drainage from the swale flows down the bank into an unnamed tributary before discharging to the Mad River by the adjacent farm fields. The Mad River is located northwest of this site.


The concept for this site includes the installation of an infiltration basin in the swale by the solar panels. Two inflow swales, one along the northwestern edge of the site, and one around the southwestern corner, will direct drainage to the basin. Regrading the parking lot will improve drainage at this site. The final retrofit includes creating a paved apron in front of the salt shed to improve chloride management.



Most of the site drains to this swale by the solar panels.



Salt storage at the Town Garage should be improved and any spills cleaned up immediately.



The majority of the Town Garage site drains to a swale northwest of the main building.


A summary of the project benefits are shown below:

+

Home

Layers

Search



LEGEND

POWERED BY

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USDA FSA, DigitalGlobe, GeoEye | Esri, HERE, Garmin, IPC



ISSUED FOR 30% REVIEW
NOT FOR CONSTRUCTION

NOTES

1. TOPOGRAPHY BASED ON LIDAR FROM VERMONT CENTER FOR GEOGRAPHICAL INFORMATION (VCGI). FEATURES INCLUDING, BUT NOT LIMITED TO, ROADWAYS, HOUSES, BUILDINGS, SEAWALLS, ETC. WERE TRACED FROM THE MOST RECENT VCGI ORIGINALLY. FIELD SURVEY WILL BE REQUIRED TO VERIFY ALL TOPOGRAPHY AND FEATURES LISTED.



WATERSHED
CONSULTING ASSOCIATES, LLC

[illegible]

WAITSFIELD TOWN
GARAGE
SITE PLAN

DATE JAN	PROJECT NO. 17124
DRAWN JON	DRAWING 1
CHECKED JAN	
DATE FEB, 2018	



Storm Smart Municipalities



Road Roundtables –
Opportunities for road crews to gather and share challenges, tips, techniques, and solutions.

→ 7 Roundtables (so far)
organized by R2R
Selectboard
representatives

Next one in December!

WHAT WE CAN DO

Road Roundtables

Increase communication & foster shared understanding

Now we're seeing Selectboard members come out and see what the problems are and we've never seen that before...They can help give us the tools that we need...

-Ray Weston, Warren Foreman

"We're not competitors, we're all a part of taking care of this Valley. You [other crews] need something, we'll help."

-Rodney Jones, Waitsfield Foreman

"There's been a lot of learning 'up the ladder' to the Selectboards and we've developed a lot more trust in the road crews from these meetings."

-Bob Ackland, R2R Rep, Warren Selectboard



Storm Smart Homesites & Drives



Engaging homeowners and property managers in **small** changes on their properties, that collectively make a **big** difference.



WHAT WE CAN DO



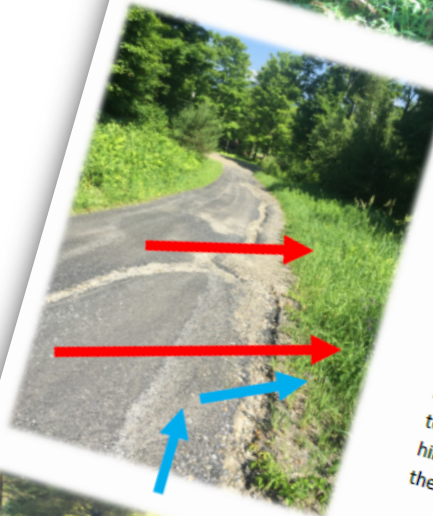
Storm Smart Homesites & Drives

- Home Visit “Assessment”
- Individualized GSI/BMP “Prescriptions”
- Support for simple actions



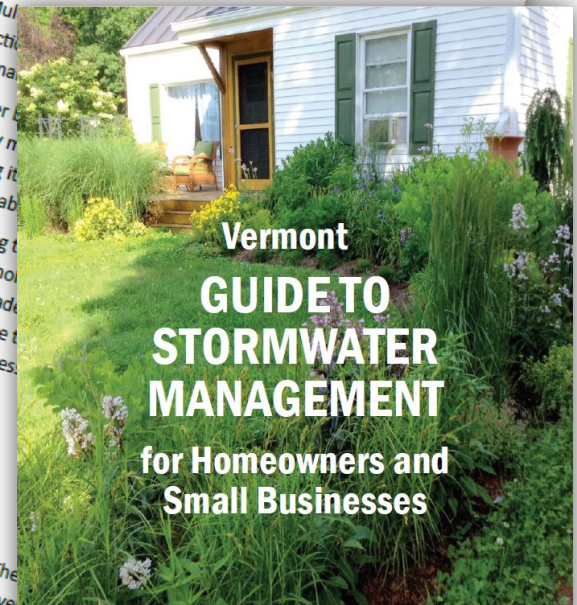
Culvert Care

The culvert pictured here has leaves and sediment blocking the lower quarter of the entrance. The risk is not in small cumulative rain. Its when a big storm comes that you want the culvert to handle as much volume as possible.



Erosion Issues

Mulch section to make Water site by n packing it into a stable In the long t and the whole ter bars, grade hill. The more t the road the less



Vermont GUIDE TO STORMWATER MANAGEMENT for Homeowners and Small Businesses



The diver Tuck road a see the that enters is ultimately diverted back to the vegetated ditch on the right



Storm Smart Homesites & Drives



→ Add small fixes like planting trees, digging a waterbar, letting grass grow longer..

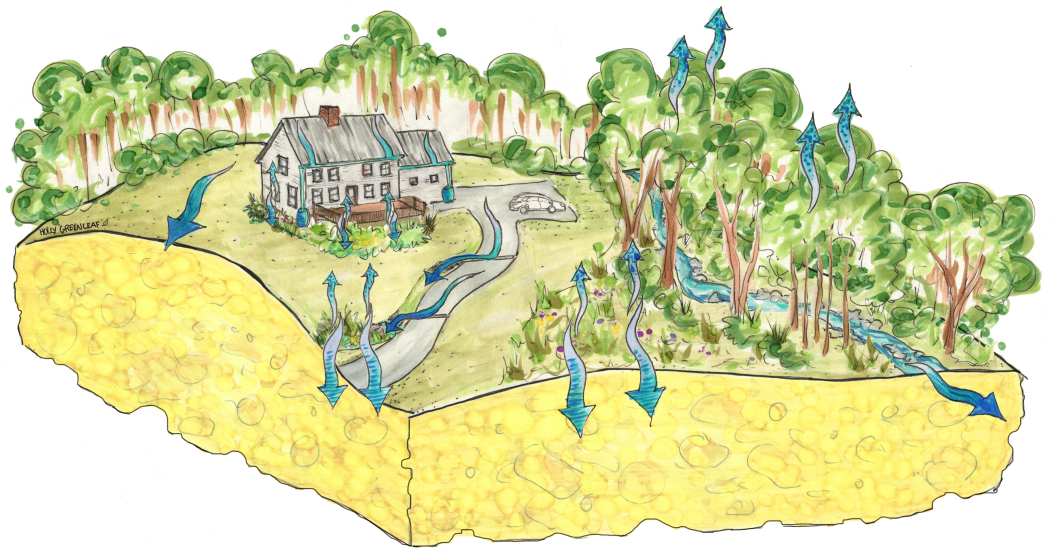
WHAT WE
CAN DO

Storm Smart Homesites & Drives



WHAT WE
CAN DO

Storm Smart Homesites & Drives





Storm Smart Homesites & Drives

- 65 assessments
- 17 Homeowners have implemented GSI/BMP “Prescriptions”
- Lots of outreach to community





Storm Smart Homesites & Drives



"What a great program – we got the expert advice we were looking for along with follow-up visits for feedback and to help us implement solutions!"

This is a win/win for the river and anyone with a driveway."

-Waitsfield resident

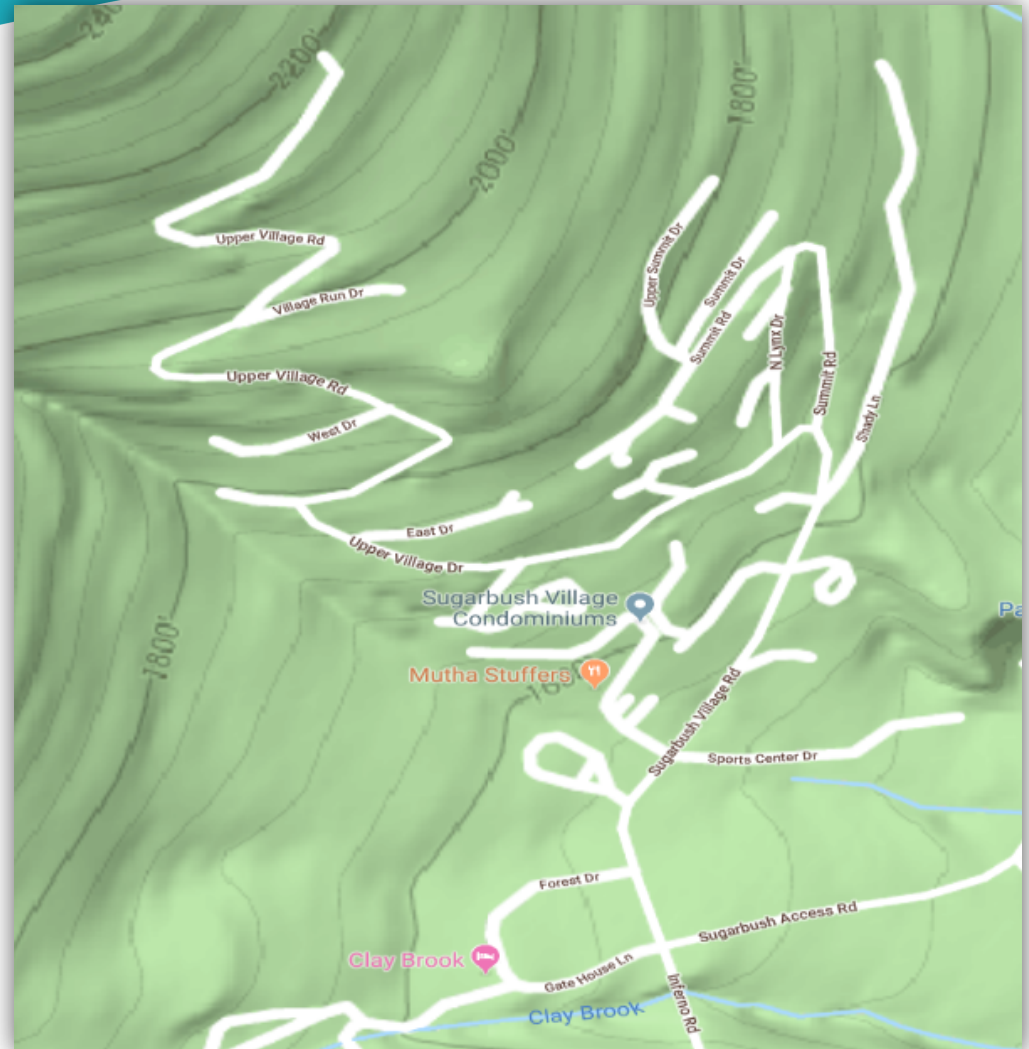
WHAT WE
CAN DO



Storm Smart Private Drives

Identify and engineer solutions to complex shared private driveway challenges

- Engineering plans at 6 private driveway networks
- Working with landowners at top 3 sites





To Date...

Dollars Brought to the Mad River Valley since 2015 =
~\$750,000



To Do...



Photo: Joshua Schwartz



Questions? Comments?

Thank you!

Corrie Miller

Friends of the Mad River

corrie@friendsofthemadriver.org • (802) 496-9127

or

Ridge to River Taskforce Members

www.ridgetoriver.org

GIS Story Maps



- Duxbury - <http://arcg.is/XSDLW>
- Fayston - <https://arcg.is/5b0Le>
- Moretown - <https://arcg.is/i1XC5>
- Waitsfield - <https://arcg.is/04qbDD>
- Warren - <https://arcg.is/1Lbu9X>