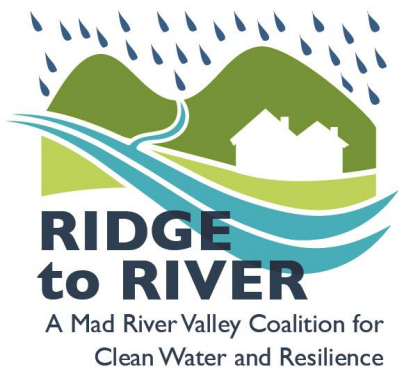




Photo: Hillary Martha



RESILIENCE & CLEAN WATER FOR THE MAD RIVER VALLEY

Brad Long
Ridge to River Taskforce, Waitsfield Resident

-
ridgetoriver.org





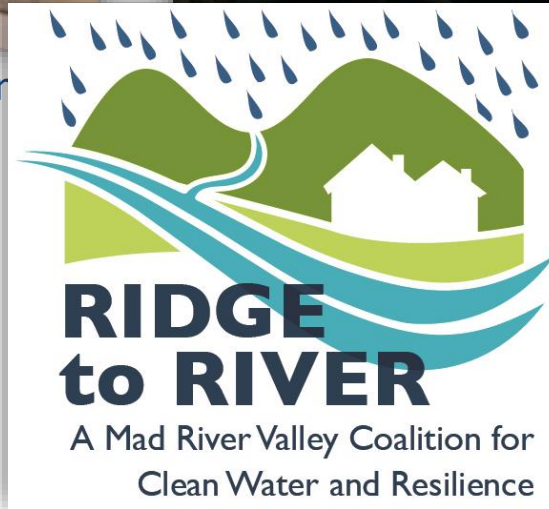
Ridge to River



2015 Leahy Environmental Summit



HIGH MEADOWS
FUND



**RIDGE
to RIVER**

A Mad River Valley Coalition for
Clean Water and Resilience

What We Know

Why It Matters

→ What We Can Do



2016 Embracing A Mad River Forum



RIDGE to RIVER

A Mad River Valley Coalition for
Clean Water and Resilience

Ridge to River Taskforce

Official Town Representatives:

Duxbury: Erin Lander (SB)
Alan Quackenbush (PC)

Fayston: Jared Cadwell (SB)
Carol Chamberlin (PC)

Moretown: John Hoogenboom (SB)
Dara Torre (PC)

Waitsfield: Sal Spinoso (SB)
Brian Voigt (PC)

Warren: Bob Ackland (SB)
Mike Bridgewater (PC)

Businesses & Community Members:

Richard Czaplinski, Friends of the Mad River

Brad Long, Waitsfield

Kinny Perot, Friends of the Mad River

Margo Wade, Sugarbush Resort



RIDGE to RIVER

A Mad River Valley Coalition for
Clean Water and Resilience

Taskforce Support



Consultants and Researchers:

- Community Workshop LLC
- Stone Environmental
- Vermont Natural Resources Council
- Vermont League of Cities and Towns
- Watershed Consulting Associates LLC

Leadership:

- Friends of the Mad River

Organizational Partners:

- Central Vermont Regional Planning
Commission
- Mad River Valley Planning District

Emerging Collaborations:

- Mad River Path Association
- Valley Arts
- Yestermorrow Design Build School

Funders: High Meadows Fund

- Lake Champlain Basin Program, Vermont Dept of Environmental Conservation



RIDGE to RIVER

A Mad River Valley Coalition for
Clean Water and Resilience

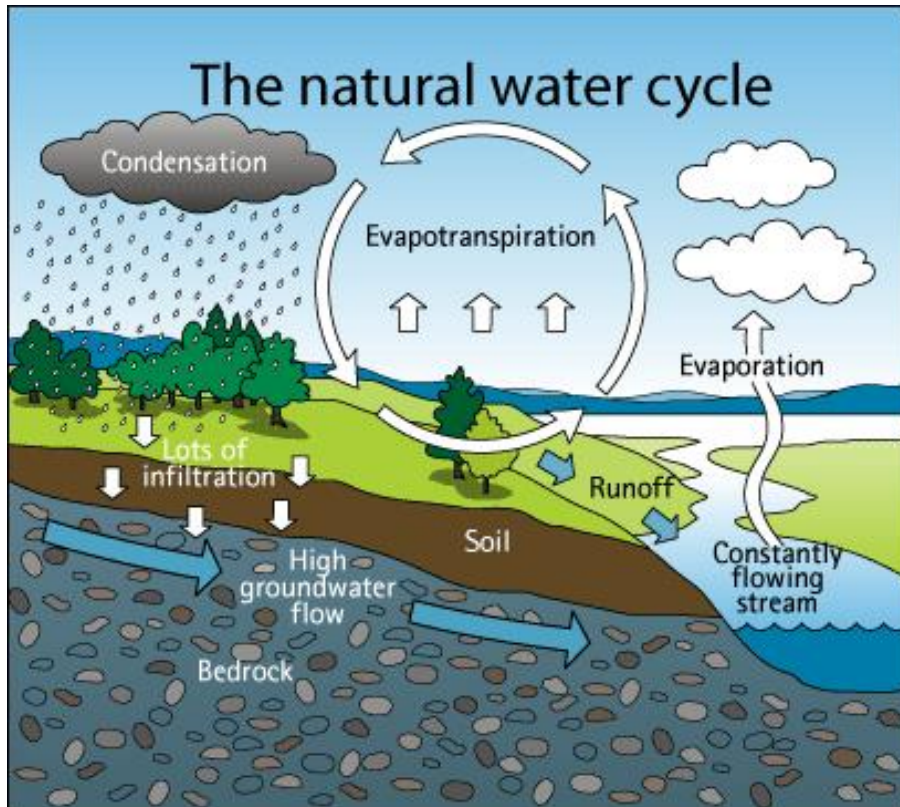
Ridge to River Taskforce

**WHY IT
MATTERS**

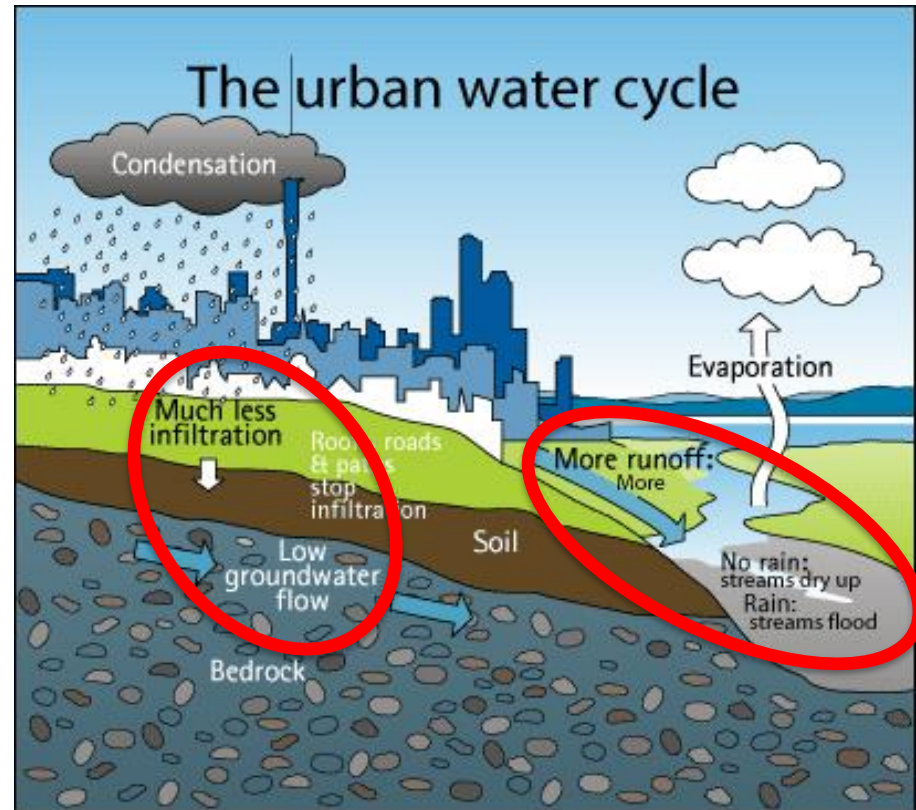
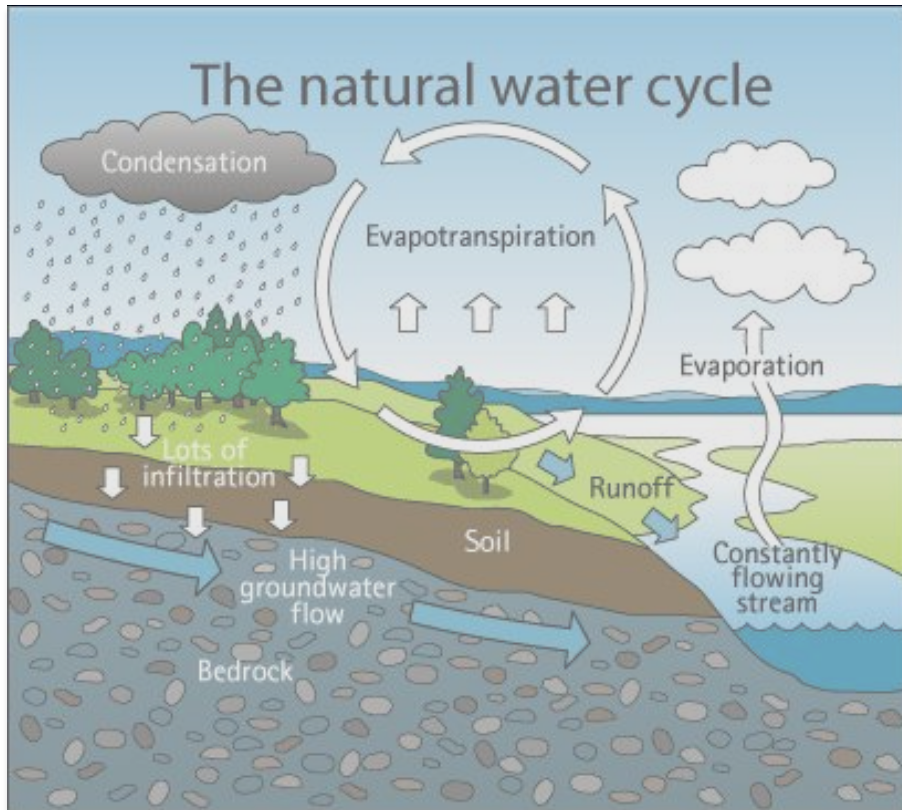
**WHAT
WE KNOW**

**WHAT WE
CAN DO**

Remember This?



It's Changing



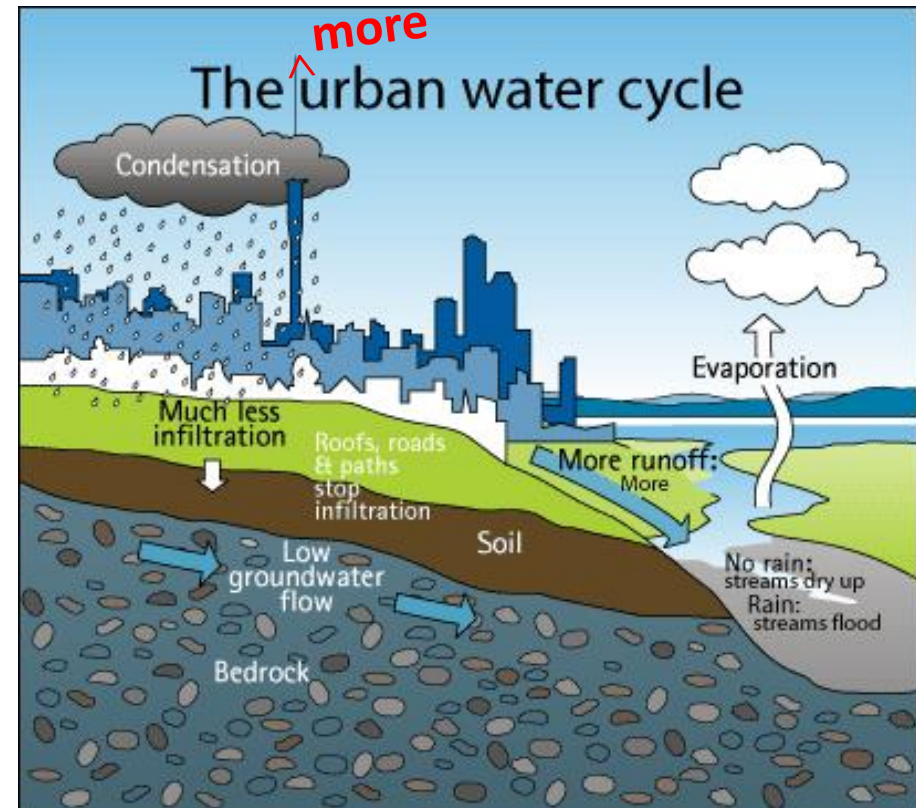


Longtime Mindset

Pave It, Pipe It & Pump It

“Get the water away...and fast”

- *Impervious Surfaces*
 - *Hard Engineering*
 - *Gray Infrastructure*
- More runoff filling streams
- Faster erosive water in streams
- Dirtier water in streams





Realities of Climate Change



Photos, in order:
Corrie Miller,
Ember Photo,
Kim Greenwood



Emerging Mindset

Slow It, Spread It & Sink It

“Land is a sponge...keep water local”

- Porosity & Permeability
- *Soft Engineering*
- *Green Infrastructure*



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 water

Multiple Benefits!



**WHAT
WE KNOW**



WHAT WE KNOW

Road Mileage, Slope & Density

437 miles of roadway in the MRV

- 290 miles are **public**, maintained by VTrans & municipalities (66%)
- 147 miles are **private** roads and driveways (33%)

- **Steep Slope:** Of private roads & drives, 60 miles (40%) have slopes > 15%
- **High Road Densities:** 1/2 of MRV subwatersheds have road densities that compare to outer Chittenden County towns (2.2 km/sq km)
 - Associated with increased nutrient and sediment levels, declining habitat, and stream instability

All Roads

WHY IT
MATTERS



Runoff Causes
Maintenance Issues



Roads Act as **Fast** Route to Streams
→ Flash Flooding



Runoff Carries **Pollutants**
and **Sediment** to
Rivers/Streams

Private Drives

WHY IT
MATTERS

No Maintenance Standards

Few Construction Standards

Often in Highest, Steepest Areas



WHAT WE KNOW

Recreational Trails

We love the outdoors!

300+ miles of managed recreational trails in the MRV

- Many miles used as trails but not managed

If poorly sited, not well-built, or not maintained, trails can have a big impact.



Forest Cover Loss

WHAT
WE KNOW

Between 2001-2011, the National Land Cover Database shows that within the Mad River Watershed:

- 468 acres of “Forest” cover changed to “Shrubland/Herbaceous” class
- 34 acres of “Forest” cover changed to “Developed” land cover class
- ~500 acres of forest cover lost in 10 years

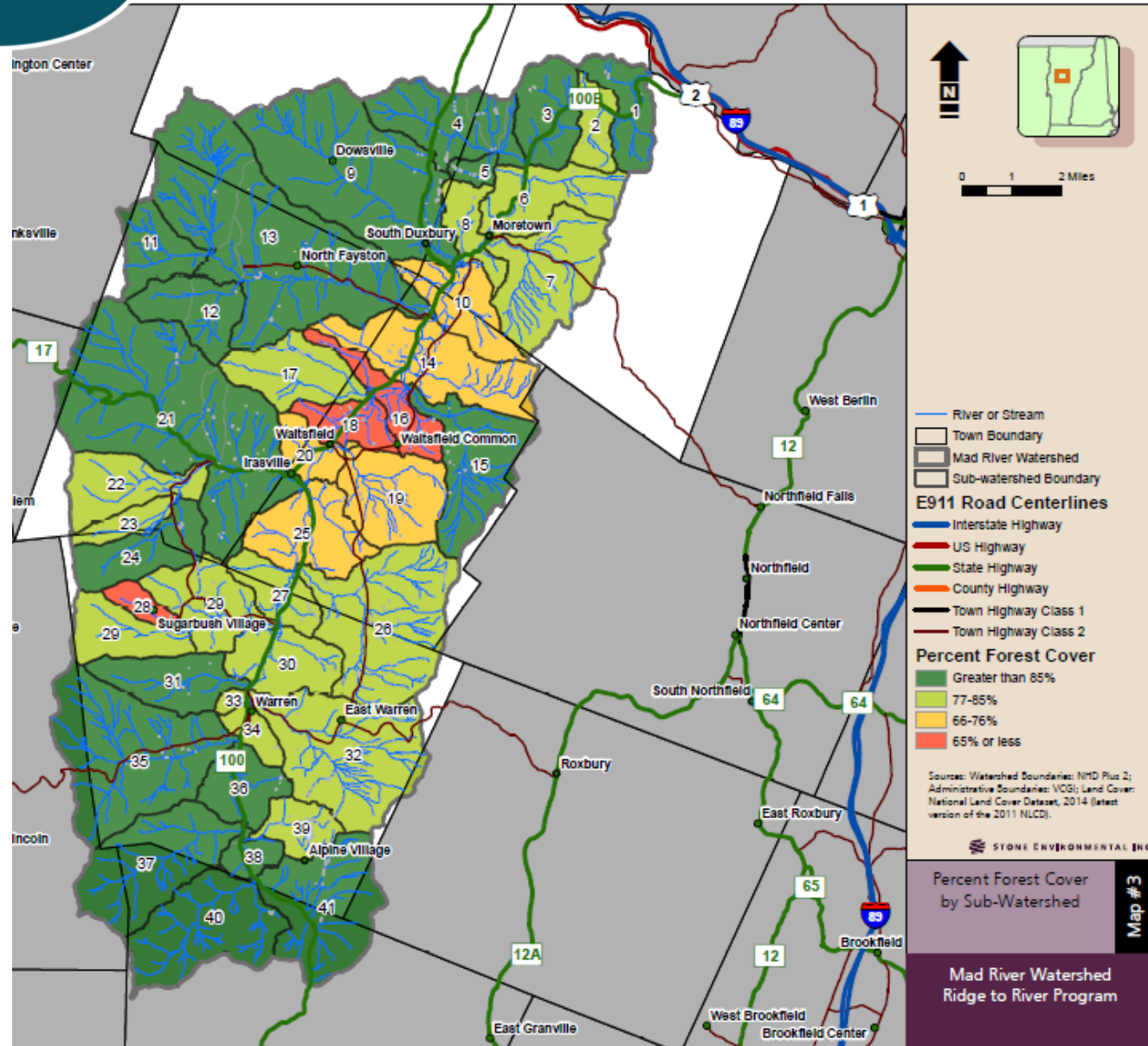
WHY IT MATTERS

Forest Cover Value

Studies in Pacific Northwest mark an observed transition in downstream channels being severely degraded when forest cover threshold is below 65%.

Red = < 65% forest cover:

- Mad Direct in Waitsfield x2
- Rice Brook



**WHAT
WE KNOW**

Minor Land Disturbances

On-the-Ground Interviews suggest that minor, unregulated land disturbing activities are a major source of erosion, sedimentation, and flooding in the watershed.

- driveway culvert replacement, or small culverts
- view clearing
- residential soil disturbance and soil moving
- backyard "quasi" forestry

**WHY IT
MATTERS**

Across the watershed landscape, these small actions add up to much larger impacts.

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 surfaces over the long-term

**WHAT
WE KNOW**

Enforcement Challenge

Regulation effectiveness hinges on the capacity of municipal staff and volunteers to enforce it.

Staff Zoning Administrators (usually part-time positions) & Development Review Boards (volunteer positions) have a lot on their shoulders:

- conduct development review
- enforce regulatory documents
- ensure community involvement

→ MRV ZAs and DRB members report that there's a need to invest in training and support for staff and board members.

**WHY IT
MATTERS**

The MRV Cares

WHAT
WE KNOW

Valley Residents Care about Water

- 100% of survey respondents care about clean water
- 97% say managing stormwater protects their quality of life

Many Residents are Aware & Taking Action

- Only one respondent had never heard the terms "pollution," "runoff," and "sediment"
- 85% report actively trying to minimize erosion and runoff on their properties

→ Stormwater Action is Limited by Resources & Skills

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



WHAT WE
CAN DO

Action Framework



Storm Smart Valley & Watershed



Public Art Projects – Rain barrels, catch basins, and other green stormwater infrastructure meets art!

Green Stormwater Infrastructure (GSI) Demo Sites – Places where people can see GSI in action and learn more
→ Village Square & Harwood raingardens

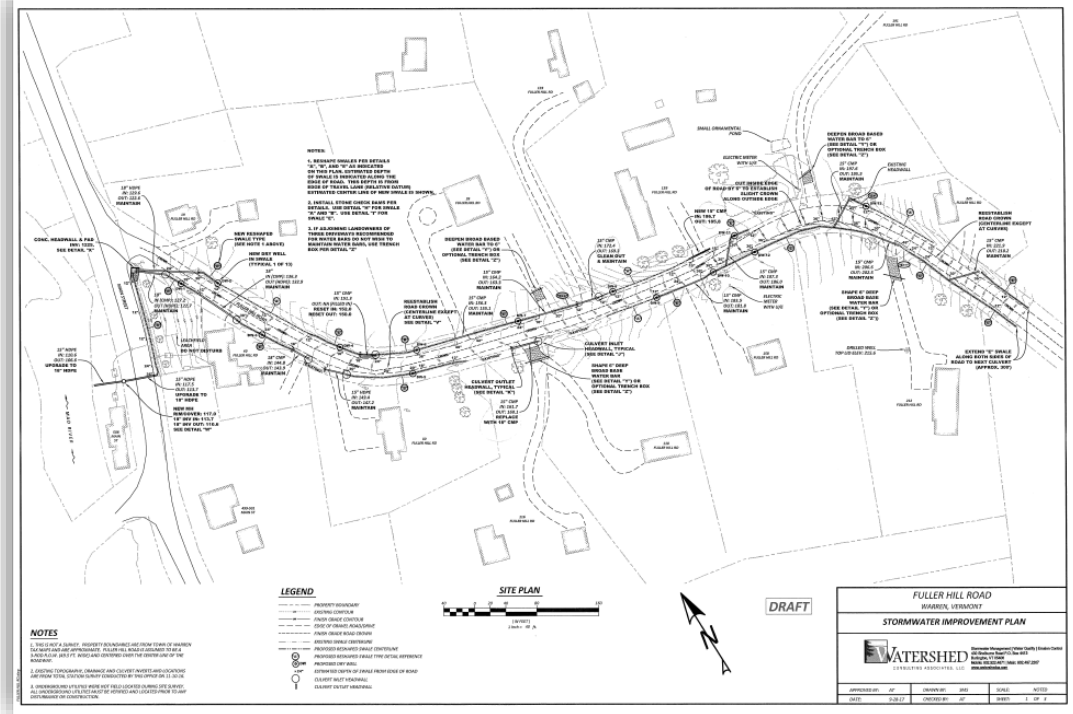
WHAT WE
CAN DO



Action Framework

Storm Smart Municipalities

Stormwater Master Plans – Locate problem areas on a site and the opportunities for GSI or Best Management Practices (BMPs)
→ Harwood Union, Warren & Fayston Schools; Fuller Hill Rd (Warren); Chase Brook subwatershed (Fayston); whole MRV



WHAT WE
CAN DO



Action Framework

Storm Smart Roads



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

→ December 2016 & July 2017, organized by R2R selectboard reps

Municipal Road General Permit (MRGP) – !

**WHAT WE
CAN DO**



Action Framework

Storm Smart Homes & Private Drives

Storm Smart Toolkit – Tools for landowners, “how to” videos, online resources

Storm Smart Challenge – diagnostic quiz, home visits, and individualized GSI/BMP “prescriptions”



→ Friends of the Mad River has funding to set the program’s foundation, create toolkit, help 30 homeowners, and re-engineer 5 problematic private roads.

**WHAT WE
CAN DO**



Action Framework

Storm Smart Wish List

- Trails
- Contractors
- Farms & Forests
- Municipal Planning

ridgetoriver.org



Questions? Comments?

**Brad Long & fellow R2R
Taskforce Members**

and/or

Corrie Miller

Friends of the Mad River

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