

# Clean Water Investment Report and Roads

To: House Committee on Transportation

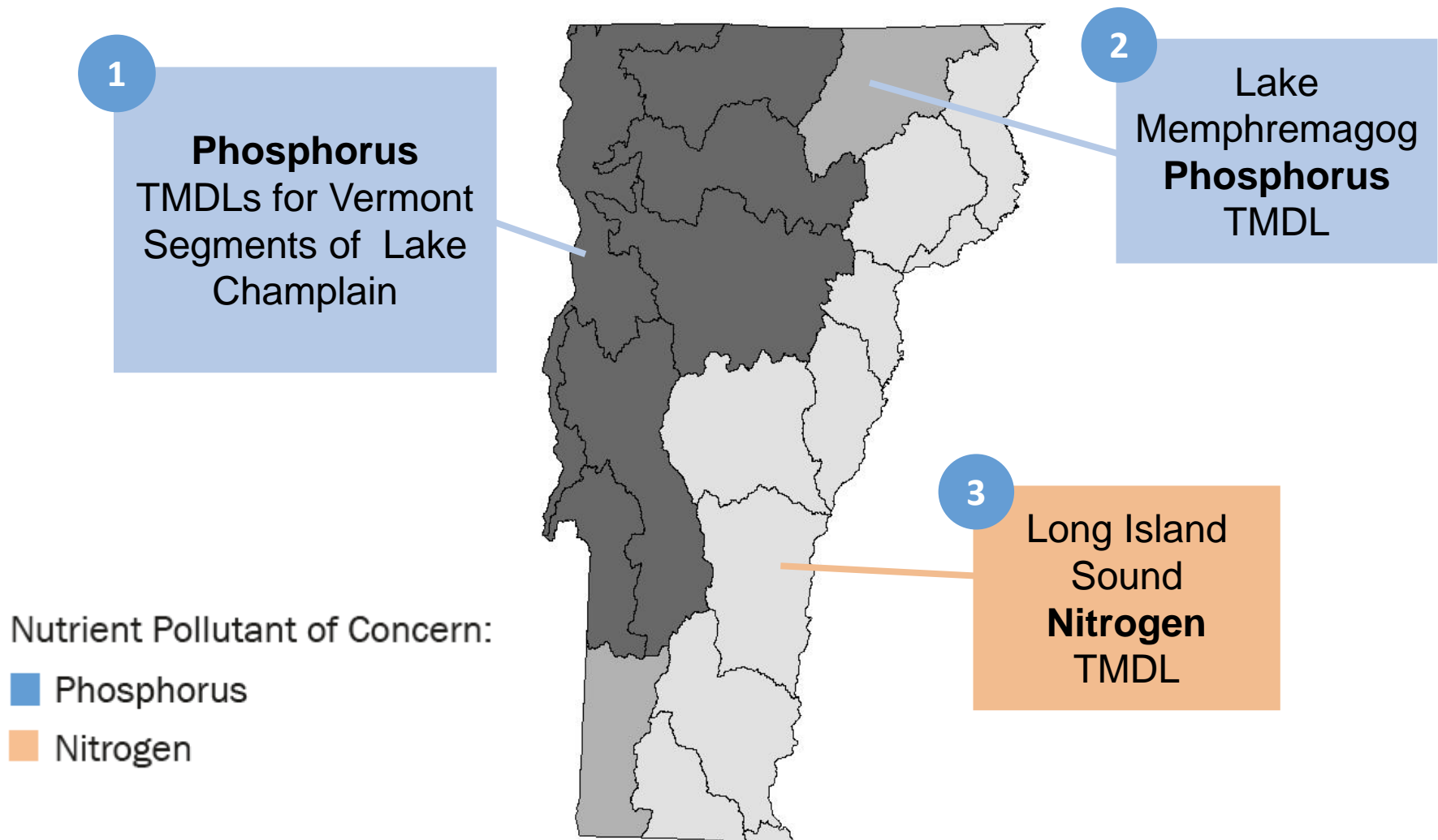
From: Kari Dolan  
Emily Bird  
Jim Ryan  
Vermont DEC

On: March 22, 2018



AGENCY OF ADMINISTRATION  
AGENCY OF AGRICULTURE, FOOD & MARKETS  
AGENCY OF COMMERCE & COMMUNITY DEVELOPMENT  
AGENCY OF NATURAL RESOURCES  
AGENCY OF TRANSPORTATION

# Nutrient Pollutant Reductions Required by Pollution Control Plans (i.e., TMDLs)



# VERMONT CLEAN WATER INITIATIVE 2017 INVESTMENT REPORT



AGENCY OF ADMINISTRATION  
AGENCY OF AGRICULTURE, FOOD & MARKETS  
AGENCY OF COMMERCE & COMMUNITY DEVELOPMENT  
AGENCY OF NATURAL RESOURCES  
AGENCY OF TRANSPORTATION



# Vermont Clean Water Initiative Annual Investment Report



**Outreach and technical assistance measures** to evaluate the level of clean water outreach and technical assistance provided by state agencies to support implementation of clean water funding and projects;



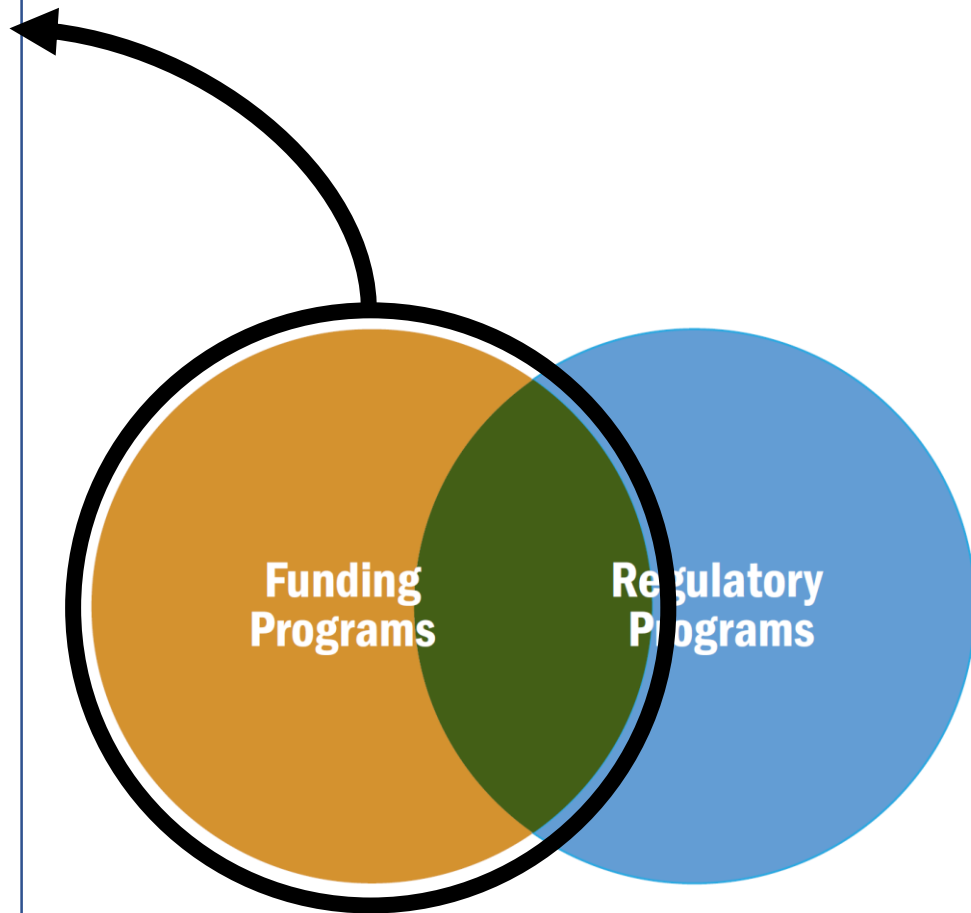
**Investment measures** on dollars invested in clean water restoration projects, addressing planning, design, and implementation of water quality improvement practices;



Measures of **project outputs**, quantifying the results of clean water restoration projects completed by project type; and



Measures of **environmental outcomes**, quantifying nutrient reductions achieved through State-funded clean water restoration projects.



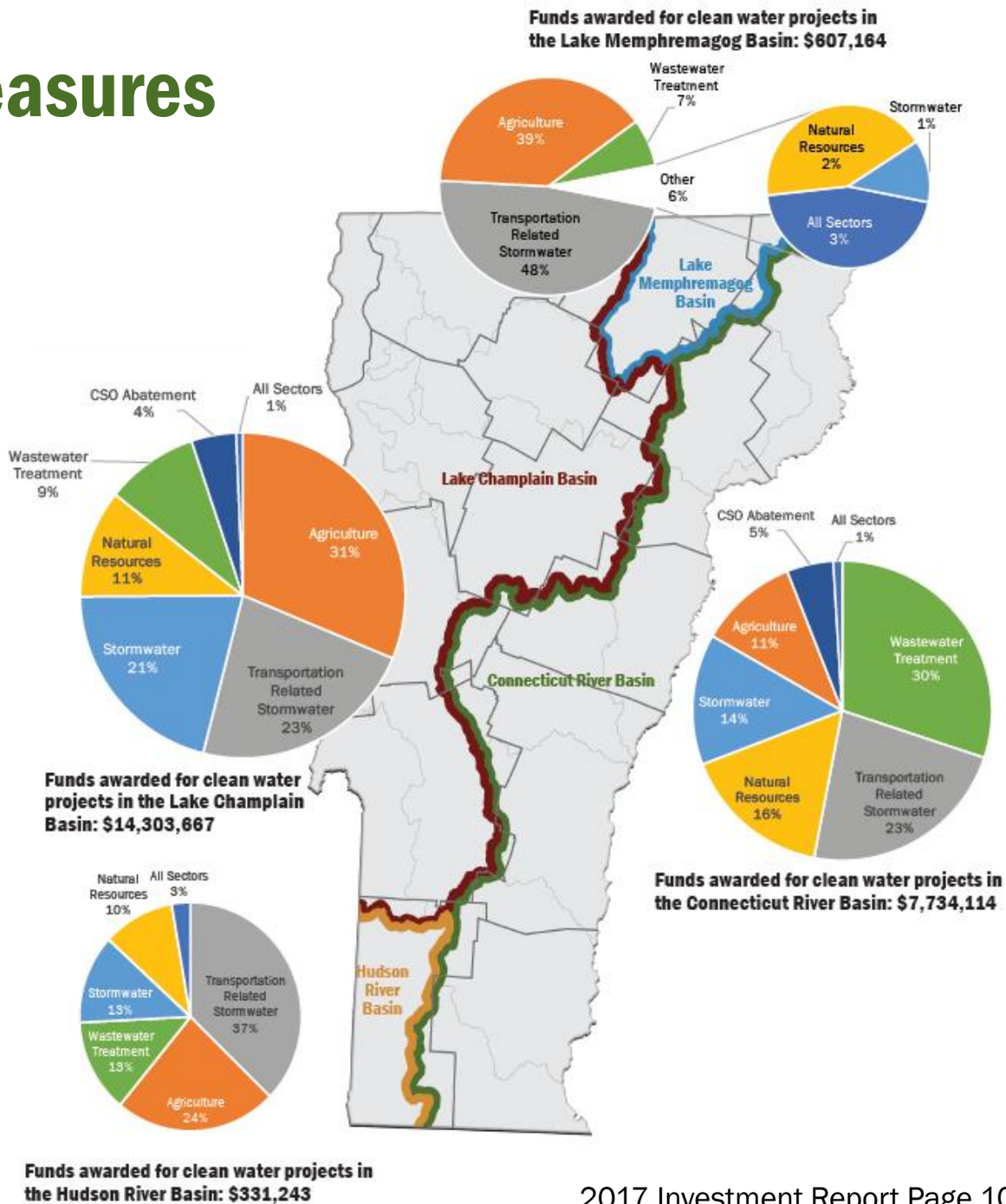


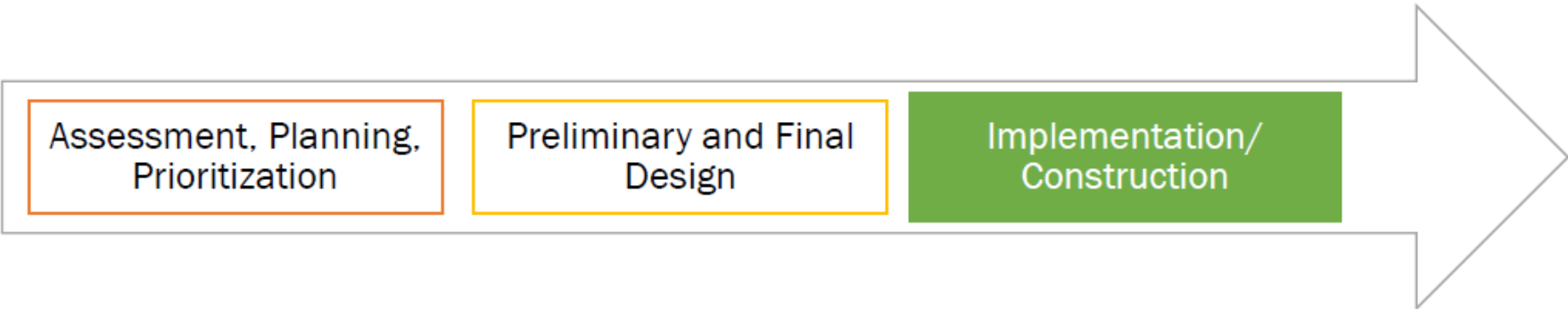
# Investment Measures

# 114%

## Increase in funds invested in clean water projects from 2016 to 2017

## Total state funds invested in clean water projects in SFY 2017: \$22,976,188





Assessment, Planning,  
Prioritization

Preliminary and Final  
Design

Implementation/  
Construction

## Why are these measures important?

- ✓ Implementation of TMDL requirements
- ✓ Implementation of Vermont Clean Water Act (Act 64 of 2015) requirements
- ✓ Compliance with Required Agricultural Practices
- ✓ Compliance with municipal stormwater permits
- ✓ Compliance with Municipal Roads General Permit
- ✓ Compliance with municipal wastewater discharge permits
- ✓ Compliance with the 2016 Combined Sewer Overflow (CSO) Rule
- ✓ Improved flood resiliency and flood hazard mitigation for public health and safety
- ✓ Support outdoor recreation, tourism, and property values
- ✓ Supports agricultural working lands
- ✓ Improved habitat function



# Results of Transportation Related Stormwater Projects

## Results of transportation related stormwater projects implemented in SFY 2017, statewide.<sup>1</sup>

| PROJECT RESULTS  |      |       | BENEFITS                         |                              |                              |                                 |                  |                  |
|--|------|-------|----------------------------------|------------------------------|------------------------------|---------------------------------|------------------|------------------|
| Performance Measures   | 2016 | 2017  | TMDL <sup>2</sup> Implementation | Act 64 (2015) Implementation | MRGP <sup>2</sup> Compliance | Municipal Stormwater Compliance | Flood Resiliency | Habitat Function |
| Miles of municipal road drainage improvements  | 1*   | 13**  | ✓                                | ✓                            | ✓                            | ✓                               | ✓                |                  |
| Number of municipal road drainage structures installed   | 176* | 68    | ✓                                | ✓                            | ✓                            | ✓                               | ✓                |                  |
| Number of municipal road drainage and stream culverts replaced   | 4*   | 109** | ✓                                | ✓                            | ✓                            | ✓                               | ✓                | ✓                |
| Stream miles enhanced and reconnected due to replaced stream culverts (also supports aquatic organism passage) | 27*  | 2.4*  |                                  |                              |                              |                                 | ✓                | ✓                |

\* Represents results of ANR-funded projects only, therefore, results are likely underreported. Data were not tracked/reported by VTrans for applicable reporting periods.

\*\* Data available for, and represent, two-thirds of projects completed in SFY 2017.





# Results of Transportation Related Stormwater Projects

## Results of transportation related stormwater projects implemented in SFY 2017, statewide.<sup>1</sup>

| POLLUTANT REDUCTION                           |      |      |            | EXTENT OF LOAD REDUCTION QUANTIFIED  |
|---|------|------|------------|--|
| Total Phosphorus Reduced (Kilograms per Year) | 2016 | 2017 | Cumulative | Pollutant reductions quantified for 38 percent of municipal road miles improved (projects in the Lake Champlain basin) |
| Road erosion control practices                | 4    | 22   | 26         |  |

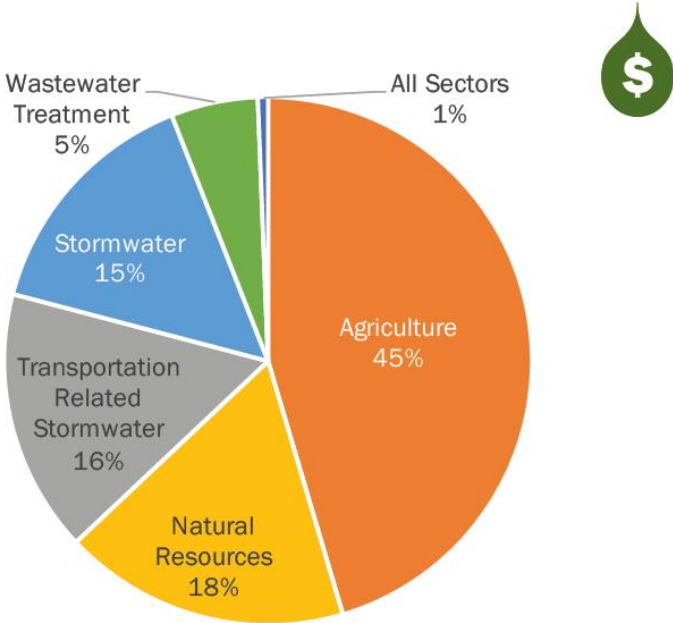
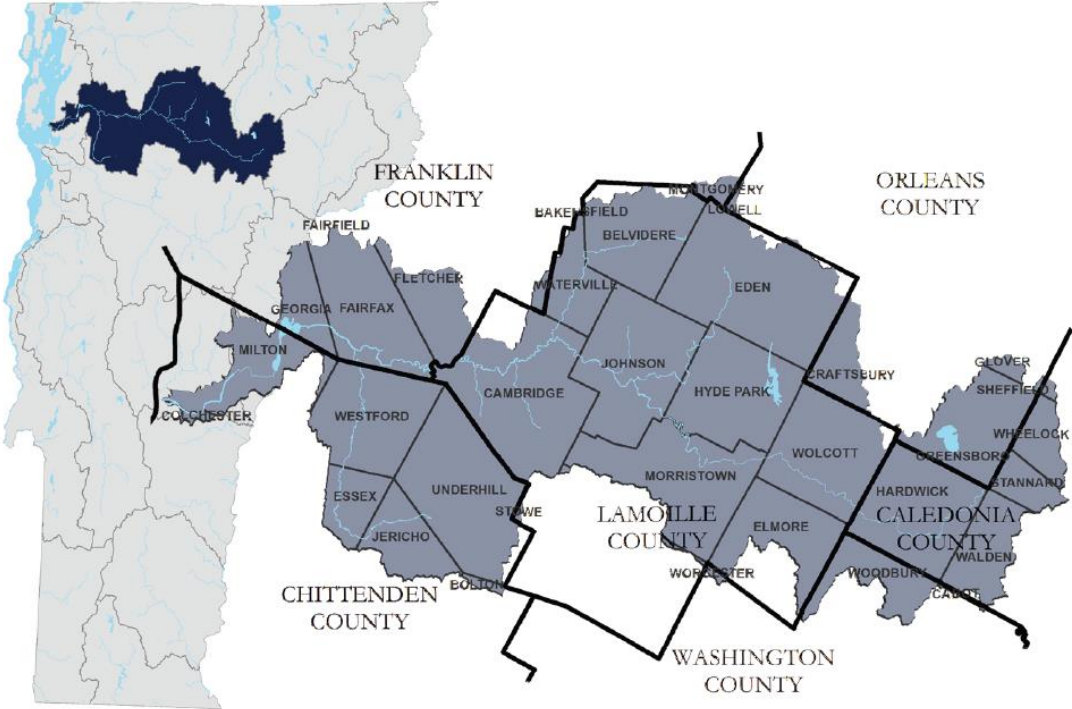
Figure 28. Before (left) and after (right) installation of a stone-lined ditch along Finel Hollow, Highland Gray, and Watkins Hill Roads in Poultney, completed by the Town of Poultney.





# Watershed Summaries – New this Year

## Lamoille River Watershed Summary





**State funding awarded in the Lamoille River watershed in SFY 2017, by sector**  
**Total: \$1,589,446**

**STATE FUNDS AWARDED IN SFY 2017**


# Clean Water Initiative Projects Dashboard

## Phase 1 (Complete)

Stormwater - Implementation

### Northfield Village Green Bioretention Installation





**Project Status:**  
Completed

**Results:**

- 4 kg/year phosphorus reduction
- 5 acres of impervious area treated

**Town:** Northfield  
**County:** Washington  
**Watershed:** Winooski  
**Funding Amount:** \$110,695  
**Funding Source:** DEC Ecosystem Restoration Grant (Capital Fund, SFY 2016)  
**Description:** This project is located behind the Village Green in Northfield. The result is the construction of a large bioretention basin which captures and treats surface stormwater runoff from 14 acres of the downtown, including 5 acres of impervious surface.  
**Partners:** Central Vermont Regional Planning Commission

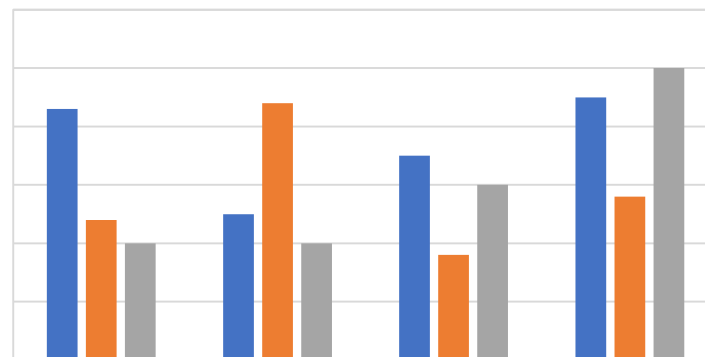
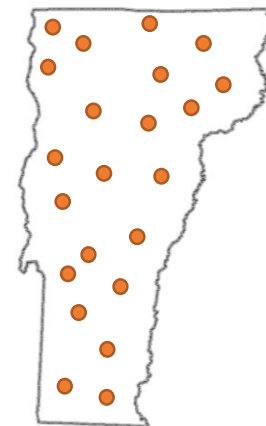
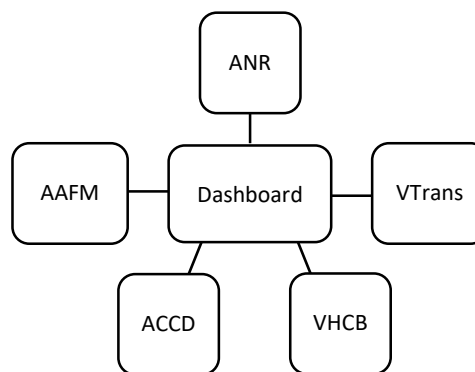
The back third of the parking lot covered by pavement before construction of the bio-retention area, behind the American Legion Hall.

After construction of the bioretention area, with grass established, guardrail installed, and willow trees planted to capture and treat stormwater from in and around Northfield Commons.

For more information visit: <http://dec.vermont.gov/watershed/cwi/projects>

## Phases 2-3 (2018)

Interagency data and data visualization



Available here: <http://dec.vermont.gov/watershed/cwi/projects>

# Municipal Roads Grants-in-Aid Overview

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Partners: Regional Planning Commissions (RPCs)  
coordinated by Northwest RPC

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Participation: 186 municipalities (75% participation)

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Funding: \$2.65 million  
\$2.5 million Capital Funds  
\$150,000 Clean Water Funds

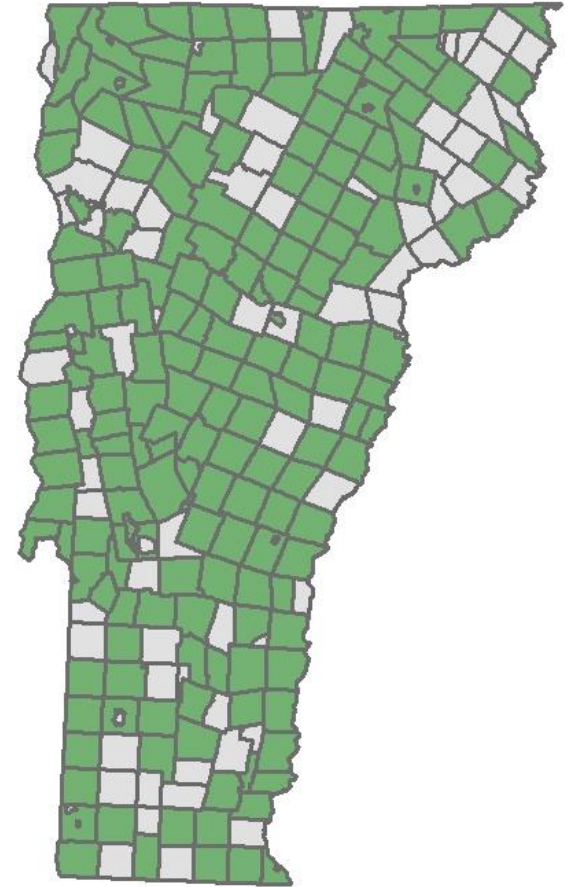
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Description: Implementation of best management practices to bring hydrologically connected municipal roads into compliance with the Municipal Roads General Permit (MRGP) standards to improve water quality

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Anticipated Results: 42 road miles achieve MRGP compliance

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# WEEKLY LEGISLATIVE REPORT

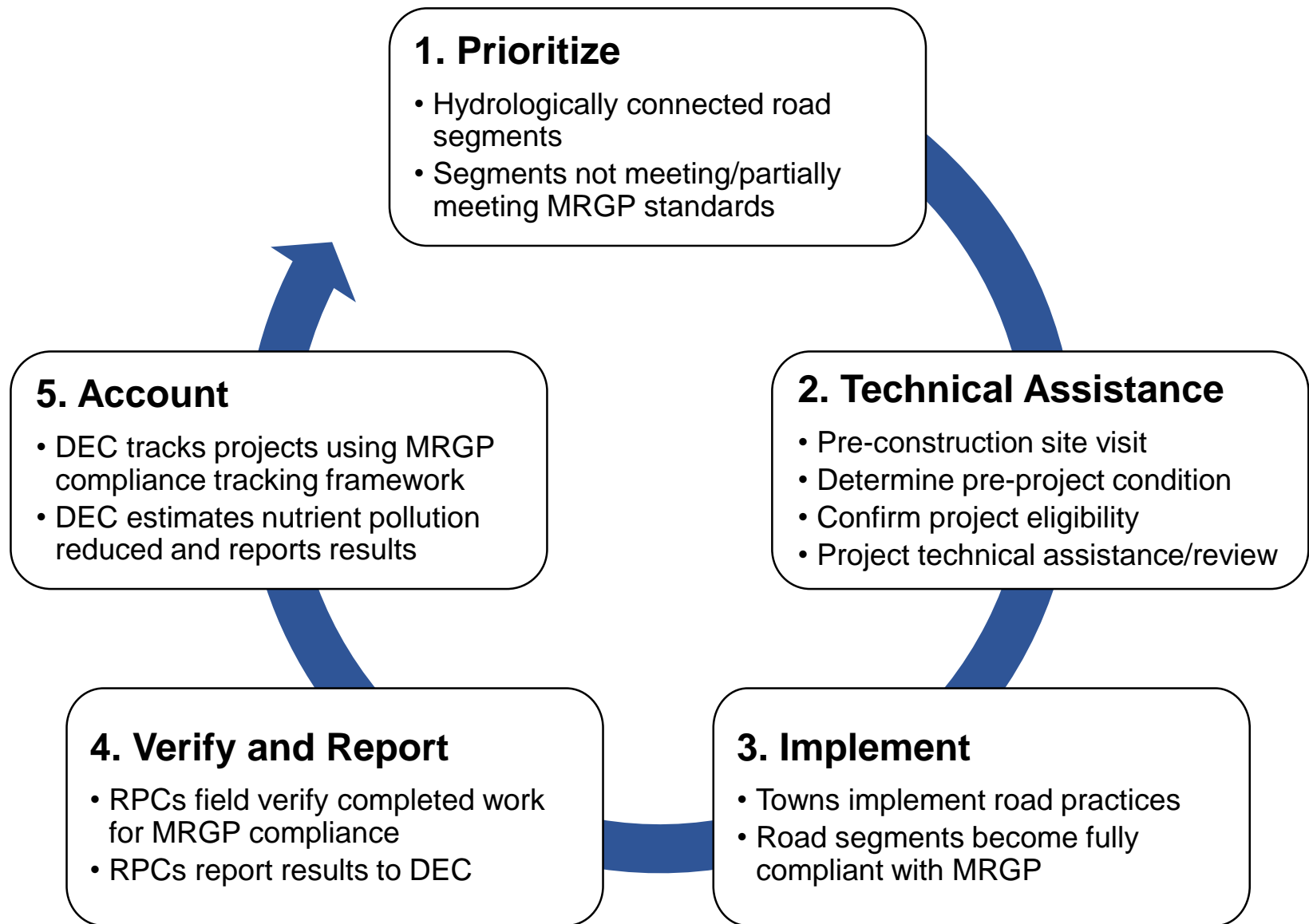
The Vermont League of Cities and Towns' **Weekly Legislative Report** is published each Friday during Vermont's legislative session.

The Municipal Roads Grants-in-Aid Pilot Program that the Agency of Natural Resources (ANR) instituted in 2017 is one example of this collaborative, flexible, and efficient approach to state and local cooperation. The program provided municipalities with money to help implement best management practices on municipal roads to help achieve water quality goals. **It was implemented quickly, efficiently, and without undue administrative or oversight burdens placed on towns and cities.** No grant applications were necessary. Municipalities could simply sign a letter of intent that specified the expectations under the pilot program. With the help of regional planning commissions, municipalities needed to show a minimum 20 percent local match, which could include in-kind contributions such as local labor, staff time, and use of road equipment. Examining the number of hydrologically connected road segments in municipalities that needed treatment to come up to mandated clean water road standards, **the state was able to get money to communities very quickly to get projects up and running.** Over 70 percent of Vermont's towns and cities submitted letters of intent; \$2.1 million was subsequently distributed to them. **Within a few short months, municipalities were able to successfully start and finish projects and use in-kind funding to meet the requisite local match.** The \$2.1 million was only able to bring 30 miles of roads into compliance with the MRGP, a sobering example of how much more money will be needed to fully implement the permit. Still, local officials hope that the state will continue to support these types of programs in the future.

*VLCT Weekly Legislative Report No. 1* ♦ December 15, 2017, pp7-8

Link: [https://www.vlct.org/sites/default/files/wlr\\_01\\_2.pdf](https://www.vlct.org/sites/default/files/wlr_01_2.pdf)

# Municipal Roads Grants-in-Aid Project Process



# Municipal Roads Grants-in-Aid Partners and Tasks

## DEC staff:

- Disburse funds
- Report results

## Regional Planning Commissions:

- Enroll towns
- Offer technical assistance
- Verify projects meet MRGP standards
- Track and report results to DEC

## Municipalities:

- Enroll
- Construct projects

## VTrans staff:

- Offer additional technical assistance





# Municipal Roads Grants-in-Aid Benefits

Targets hydrologically connected roads

Pre-construction meetings

Water quality education and technical assistance

Familiarizes municipalities with MRGP standards

Constructed projects count towards permit compliance and TMDL targets

Post-project field verification

Reporting assistance to track and account for results



**Municipal  
Roads  
General  
Permit  
compliance**

# For more information:

Website [cleanwater.vermont.gov](http://cleanwater.vermont.gov)

Reports <http://dec.vermont.gov/watershed/cwi/cwf#reports>

Projects <http://dec.vermont.gov/watershed/cwi/projects>

Grants <http://dec.vermont.gov/watershed/cwi/grants>

Kari Dolan, Clean Water Initiative Program Manager

[kari.dolan@vermont.gov](mailto:kari.dolan@vermont.gov) 802-490-6113

Emily Bird, Nonpoint Source Coordinator

[Emily.bird@vermont.gov](mailto:Emily.bird@vermont.gov) 802-490-4083



Jim Ryan

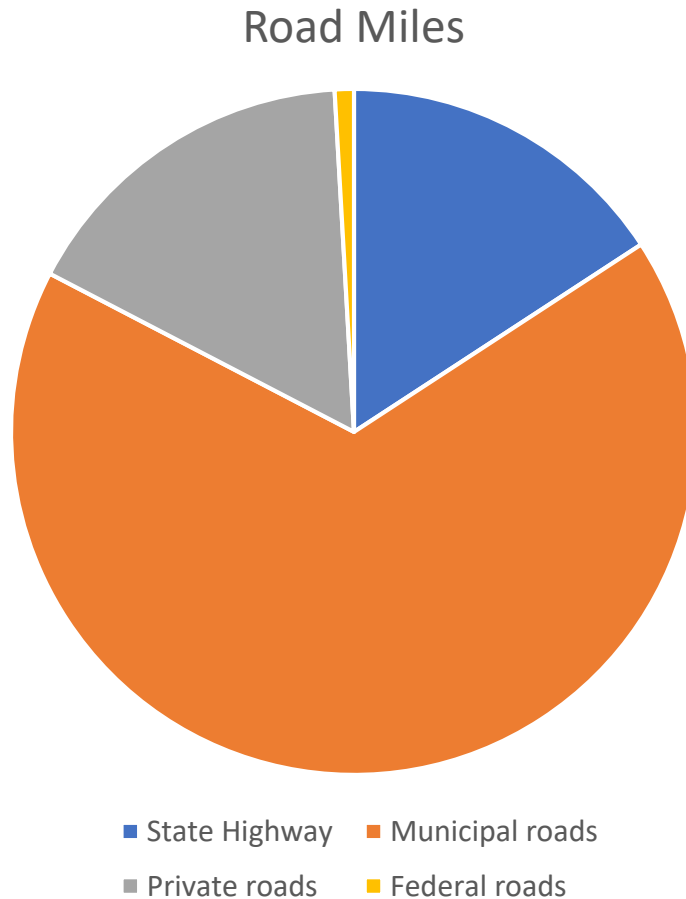


VERMONT DEPARTMENT OF  
ENVIRONMENTAL CONSERVATION  
**WATERSHED**  
MANAGEMENT DIVISION  
STORMWATER PROGRAM

# DEC's Municipal Roads General Permit



# Vermont Road Mileage



- 18,777 total road miles
- 155 miles of federal roads-1%
- 2,709 miles of state highway- 14%
- 2,823 miles of private roads-15%
- 13,090 miles of town highway (Classes 1-4)- 70%

# Secondary benefits: Flood resilience and reducing town road maintenance and costs



Photo Credits: Beverley Wemple



Wemple



Bryan Pfeiffer

# MRGP Coverage

Discharges of Stormwater (SW) from municipal roads including:

- Town highways, Classes 1-4
- SW infrastructure associated with town highways under the operational control of the municipality

Exemptions:

- **Unorganized towns and gores exempt** from MRGP permit
- **MS4 towns-** exempt from MRGP fee and permit application but MRGP standards implementation will be required in future SW Management Plans



# Hydrologically-Connected Road Segments

The screenshot displays the Vermont Natural Resources Atlas web application. The browser address bar shows the URL <http://enr.vermont.gov/maps/nr-atlas>. The application interface includes a navigation menu on the left with the following items: About Us, Planning and Permitting, Maps and Mapping, Natural Resources Atlas, Web Maps, GIS Data, Downloadable Maps, You and the Environment, and Contact Us. The main map area features a satellite view of a region in Vermont, with several road segments highlighted in purple to indicate hydrological connectivity. These segments are located along Tamarack Brook, Keeler Brook, Tucker Brook, and the road network surrounding Wolcott Pond. The map also shows other geographical features like Pond Brook, Currier Brook, and Carter Brook. A scale bar at the bottom of the map indicates distances up to 0.6 km. The footer of the map area contains the text "© 2010 DigitalGlobe, Image courtesy of USGS, Earthstar Geographics." The Windows taskbar at the bottom shows the system time as 3:46 PM on 8/25/2016.



# Hydrologically-Connected Roads

## Connected Criteria:

- Municipal roads within 100' of a water resource
- Municipal road that bisects (crosses) and drains to a water resource
- Municipal road located within the DEC river corridor
- Segments can be re-classified as connected, or not connected, during the inventories
- Catch basin outfalls within 500' of a water resource and those segments associated with those outfalls

## Water Resources:

- Perennial streams
- Intermittent streams
- Wetlands
- Lakes and Ponds

# Road Stormwater Management Plan Components

## Inventory



## Prioritize – Implementation Table

| Segment ID | TH Number | Road Name | Change in Elevation | Road Type      | Segment Slope % | Date of Assessment | Assessor  | Organization | Assessment Reason  | Assessment Reason Notes | Roadway Crown/Travel Lane | Roadway Crown/Travel Lane Erosion | Grader Berm /Window Assessment | Grader Berm /Window Erosion | Road Drainage Assessment | Rt Bit |
|------------|-----------|-----------|---------------------|----------------|-----------------|--------------------|-----------|--------------|--------------------|-------------------------|---------------------------|-----------------------------------|--------------------------------|-----------------------------|--------------------------|--------|
| 1          | VT-001    |           |                     | Gravel-ditched | 6               | 5/13/2017          | John Snow |              | Initial Assessment |                         | Fully Meets               | Bill                              | Fully Meets                    | Bill                        | Partially Meets          | Bill   |
| 2          | VT-002    |           |                     | Gravel-ditched | 10              | 5/13/2017          | John Snow |              | Initial Assessment |                         | Partially Meets           | None                              | Partially Meets                | None                        | Fully Meets              | No     |
| 3          | VT-003    |           |                     | Gravel-ditched | 11              | 5/13/2017          | John Snow |              | Re Assessment      | Storm Damage            | Down Not Meant            | Gully                             | Does Not Meet                  | Gully                       | Does Not Meet            | No     |
| 4          | VT-004    |           |                     | Class 4        | 5               | 5/13/2017          | John Snow |              | Re Assessment      | Storm Damage            |                           |                                   |                                |                             |                          | No     |
| 5          | VT-005    |           |                     | Class 4        | 9               | 5/13/2017          | John Snow |              | Work Done          |                         |                           |                                   |                                |                             |                          | No     |
| 6          | VT-006    |           |                     | Gravel-ditched | 4               | 5/13/2017          | John Snow |              | Work Done          | Rock lined Ditches      |                           |                                   |                                |                             | Partially Meets          | No     |
| 7          | VT-007    |           |                     | Paved-ditched  | 12              | 5/13/2017          | John Snow |              | Work Done          | Rock lined Ditches      |                           |                                   |                                |                             | Partially Meets          | No     |
| 8          | VT-008    |           |                     | Paved-ditched  | 12              | 5/13/2017          | John Snow |              | Work Done          | Rock lined Ditches      |                           |                                   |                                |                             | Partially Meets          | No     |
| 9          | VT-009    |           |                     | Paved-ditched  | 12              | 5/13/2017          | John Snow |              | Work Done          | Rock lined Ditches      |                           |                                   |                                |                             | Partially Meets          | No     |

## Implement



# Road Erosion Inventories (REIs)

## Separate REIs and standards for:

- Paved and gravel roads with ditches
- Paved roads with catch basins
- Class 4 roads

## REI “scores” for each 328 foot segment:

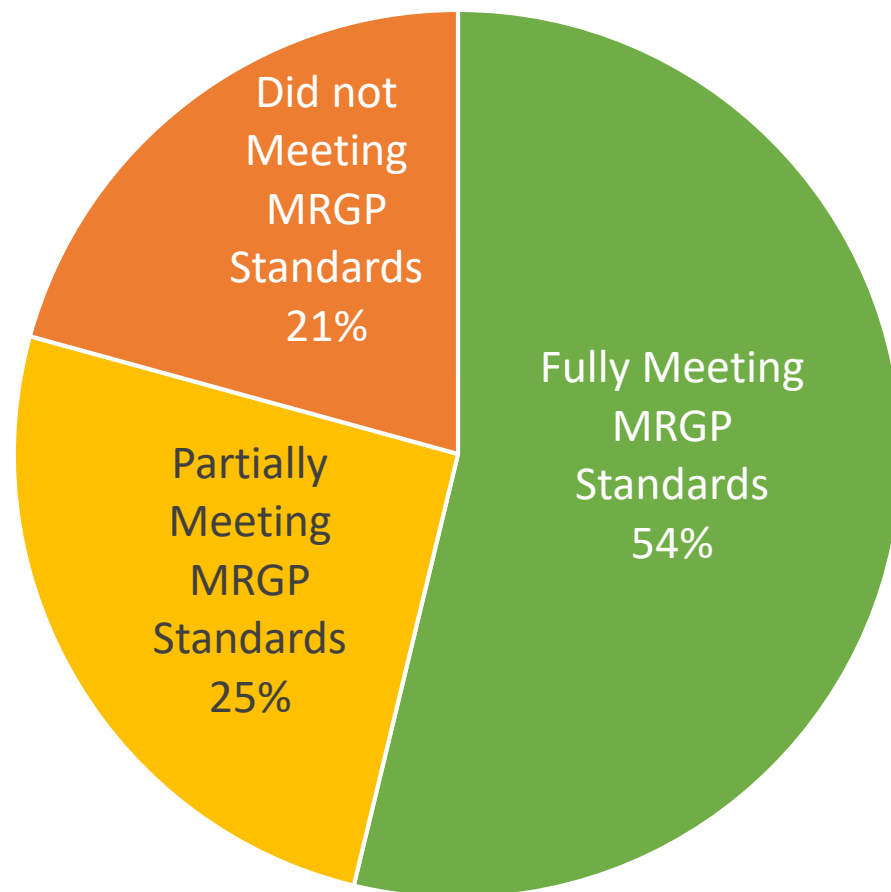
- *Fully Meets*
- *Partially Meets* or
- *Does Not Meet*



# Approximately half of connected roads already meet the MRGP Standards

Data available for 57 towns

Represents approximately 1/5<sup>th</sup> of towns and hydrologically connected municipal road segments





# Implementation Prioritization

- Towns will submit REI results and Implementation Tables by 12/31/2020
- All “connected” roads brought up to MRGP standards no later than 12/31/2036



# MRGP Implementation Example

**Town A. has 52 total road miles** (VT average)

- 26 road miles are **hydrologically-connected** road segments
- 26 miles not considered **connected** (no BMP work needed)
- 13 **connected** road miles currently fully meet MRGP standards (maintenance of BMPs only)
- 13 remaining **connected** miles – required to be brought up to MRGP Standards before 2036
- 15% of 13 miles = 1.95 miles or 31.2 segments will be brought up to standards over a 2 year period 2021 and 2022

# Implementation “Triggers”

**Required baseline standards- no matter what existing conditions are:**

- Road grading/crowning
- Grass and stone-lined ditching (based on slope) or distributed flow
- Removal of grader berm
- Lowering of shoulders
- Stable turnouts

**Practices are required when moderate (rill) to severe (gully) erosion present and for new construction:**

- 18” drainage culvert minimum-  
(Culvert sizing information for intermittent streams available)
- 15” drive culvert
- Culvert headwalls/headers
- Culvert outlet stabilization
- Class 4 roads- gully erosion present
- Catch basin outfall erosion

# MRGP Summary for Municipalities:

- **July 31, 2018:** MRGP application coverage – Notice of Intent and annual fees begin
- **April 1, 2019:** Annual Reporting begins
- **December 31, 2020:** Road Erosion Inventories and Implementation Plans due
- **2021 Field Season** (or sooner): Road upgrades begin
- **December 31, 2025** (or sooner): All *Very High Priority* segments brought up to standards, except Class 4's
- **December 31, 2028** (or sooner): All *Very High Priority* Class 4 roads brought up to standards
- **December 31, 2036** (or sooner): all connected roads meet MRGP standards



# Assistance to Towns



- Funding – *New*  
Municipal Grant-in-Aid
- Outreach and Technical Assistance
- Shared Equipment

# VTrans and DEC Road Roundtable Trainings



- 2018 Roundtable Forums
  - 4/26 Wallingford
  - 5/3 Bellows Falls
  - 5/10 Hinesburg
  - 5/17 Groton
  - 5/24 Wolcott
- 125 municipal road crew attendees in 2017
- Cover practice implementation, equipment, and practice costs

# For Additional Information:

<http://dec.vermont.gov/watershed/stormwater/permit-information-applications-fees/municipal-roads-program#Development of Permit>

**Jim Ryan**

[jim.ryan@vermont.gov](mailto:jim.ryan@vermont.gov)

**(802) 490-6140**



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ENVIRONMENTAL CONSERVATION  
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