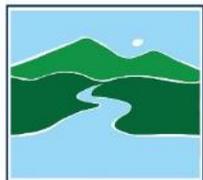


Jim Ryan



VERMONT DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
WATERSHED
MANAGEMENT DIVISION
STORMWATER PROGRAM

DEC's Municipal Roads General Permit

Problems Facing Our Waters Statewide



Potential Road Pollutants

- Nutrients- Phosphorus
- Sediment
- Trace heavy metals
- Hydrocarbons
- Road salt



Secondary benefits: flood resilience and reducing town road maintenance and costs



Photo Credits: Beverley Wemple

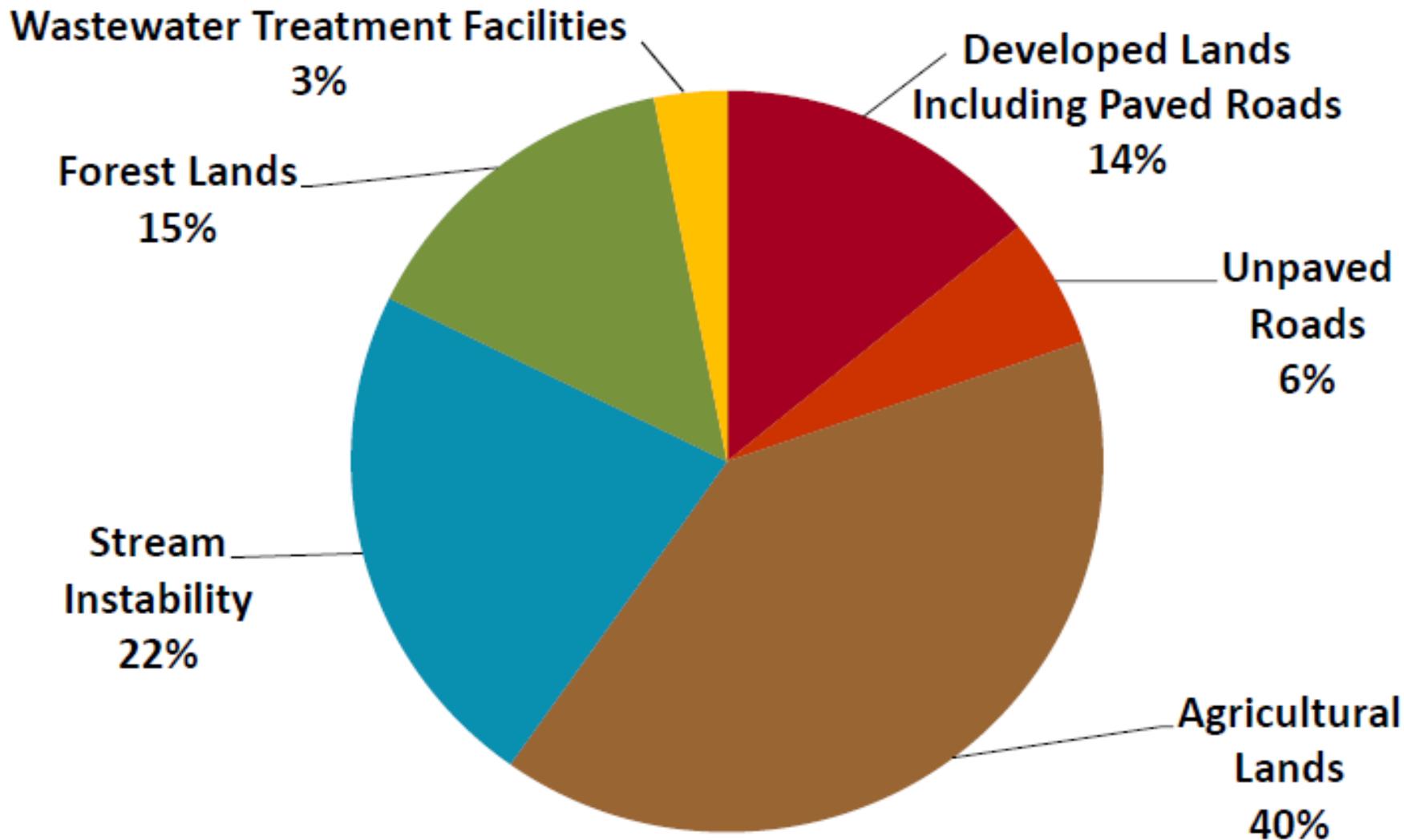


Wemple



Bryan Pfeiffer

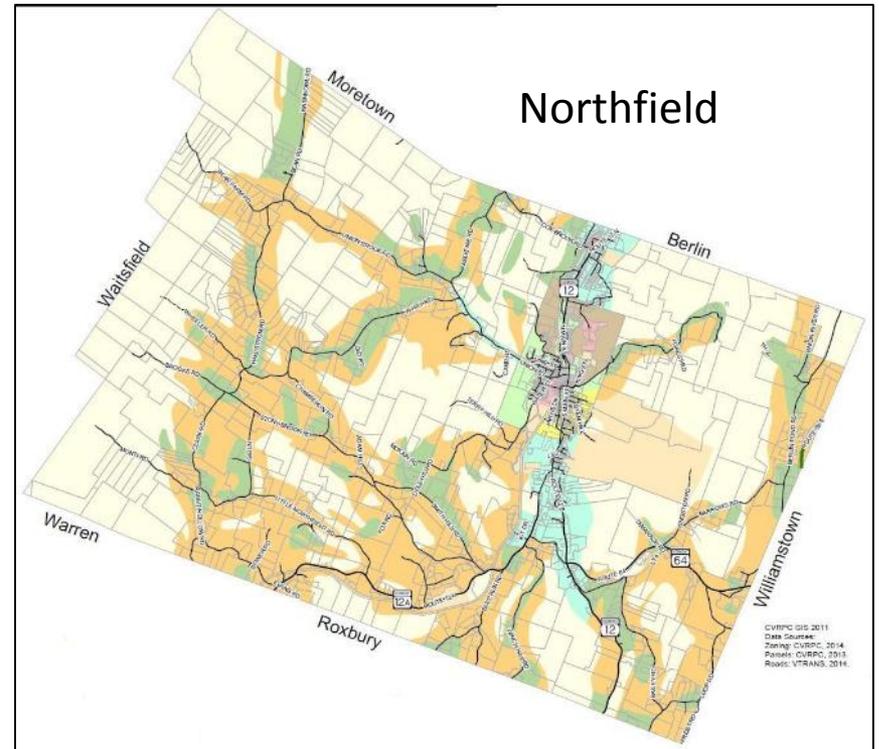
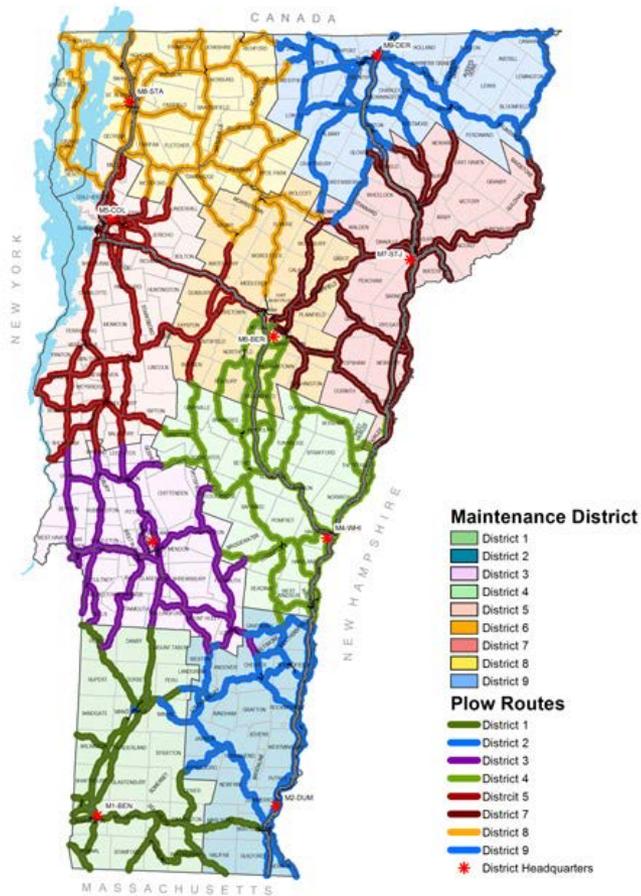
Sources of phosphorus in the Vermont portion of the Lake Champlain Basin (Preliminary estimates from Tetra Tech, 2013)



Stormwater & Roads

VTrans TS4 Permit

Municipal roadways



Act 64 Language regarding the MRGP

(2)(A) The Secretary shall issue on or before December 31, 2017, a general permit for discharges of regulated stormwater from municipal roads

(i) Establish a schedule for implementation of the general permit by each municipality in the State. Under the schedule, the Secretary shall establish:

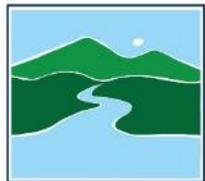
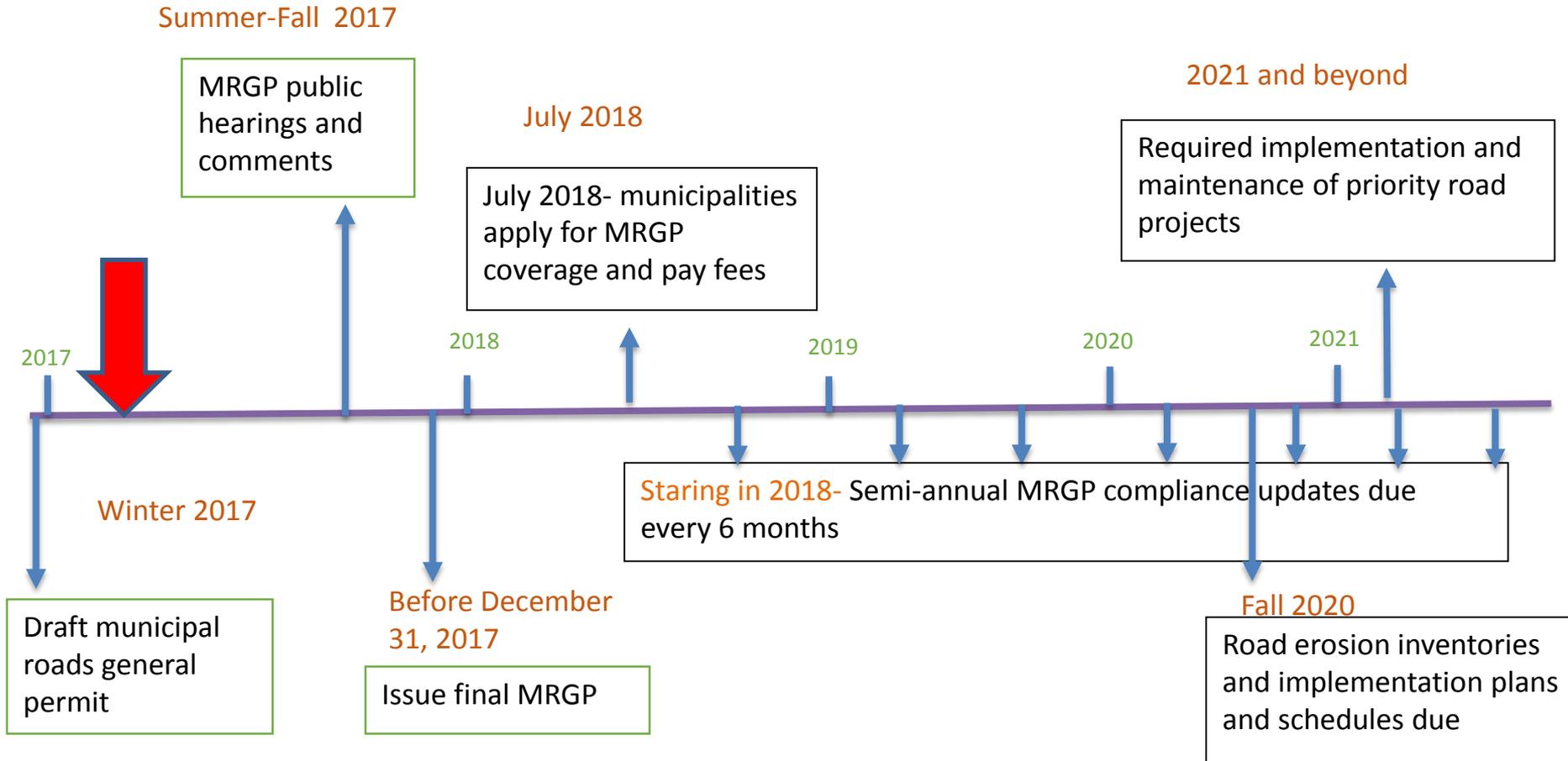
(I) the date by which each municipality shall apply for coverage under the municipal roads general permit;

(II) the date by which each municipality shall inventory necessary stormwater management projects on municipal roads;

(III) the date by which each municipality shall establish a plan for implementation of stormwater improvements that prioritizes Stormwater improvements according to criteria established by the Secretary under the general permit; and

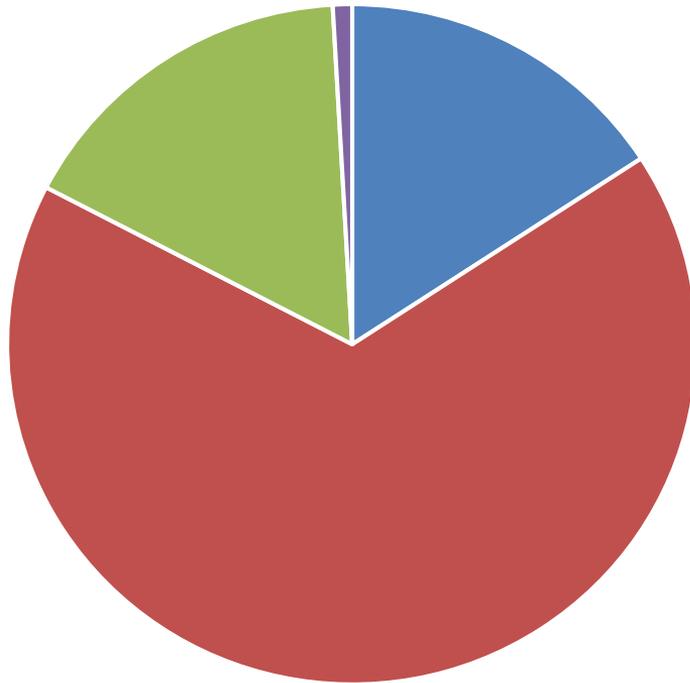
(IV) the date by which each municipality shall implement stormwater improvements of municipal roads according to a municipal implementation plan.

MRGP Timeline of Deliverables 2017-forward



Vermont Road Mileage

Road Miles



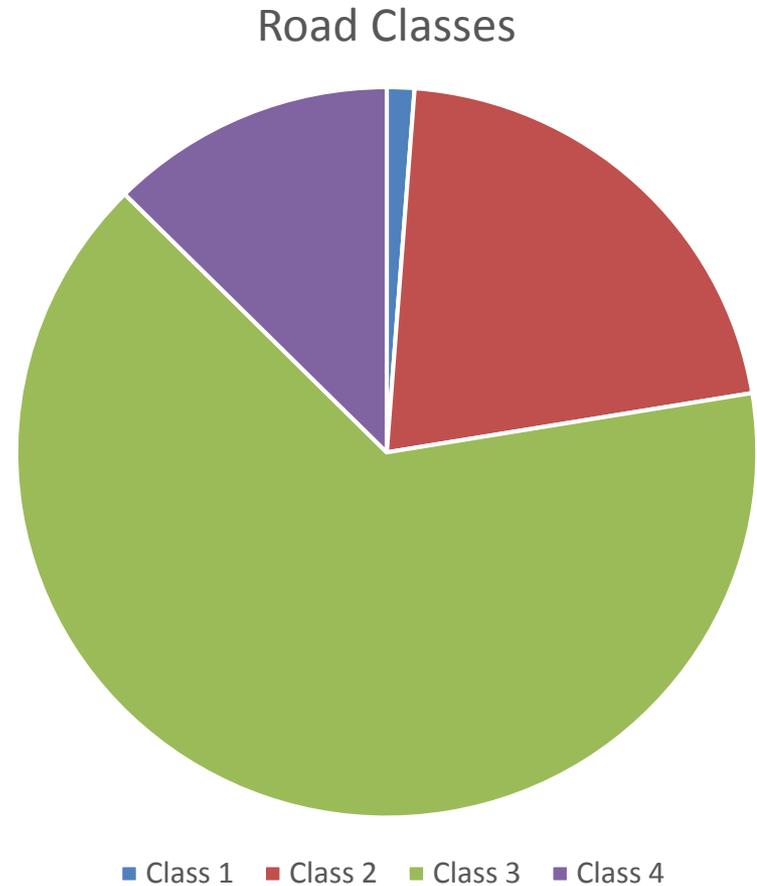
■ State Highway ■ Municipal roads
■ Private roads ■ Federal roads

- 18,818 total road miles
- 155 miles of federal roads- 1%
- 2,709 miles of state highway- 14%
- 2,823 miles of private roads- 15%
- 13,131 miles of town highway (Classes 1-4)- 70%

Municipal Road Classes

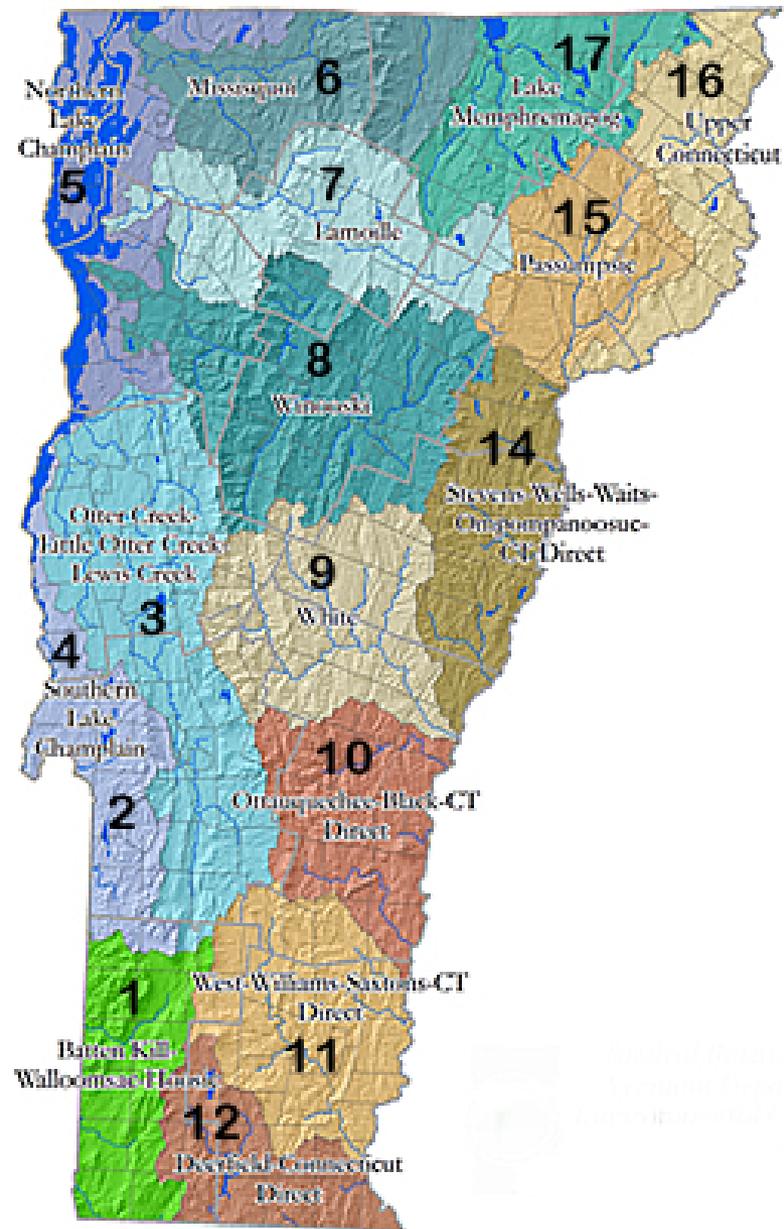
Road Class Distribution

- Class 1: 1.2% (VTrans and municipally- maintained)
- Class 2: 21.2%
- Class 3: 65.1%
- Class 4: 12.5%



Municipal Roads General Permit (MRGP)

- Will cover all Vermont municipalities
- Jurisdiction limited to ROW



Purpose of the Roads Permit

- Bring **connected** road segments up to basic maintenance standards



- By implementing **Best Management Practices (BMPs)** necessary to reduce erosion

Hydrologically-connected Road Segments

The screenshot displays a web browser window at the URL <http://anr.vermont.gov/maps/hr-atlas>. The page features 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 content area is titled "Natural Resources Atlas" and "Vermont Agency of Natural Resources" with the vermont.gov logo. A "Quick Tools..." button is visible above the map. The map itself shows a satellite view of a forested area with several roads highlighted in purple, indicating hydrologically-connected segments. Labeled roads include Tamarack Brook, Keeler Brook, Tucker Brook, and Wolcott Pond Brook. Other features include Wolcott Pond, Carter Brook, and Pond Brook Ln. The map includes a scale bar (0 to 0.6 km) and a copyright notice: "© 2010 DigitalGlobe, Image courtesy of USGS, Earthstar Geographics." The Windows taskbar at the bottom shows the time as 3:46 PM on 8/25/2016.

Road Stormwater Management Plans

Plan components will include:

- Road erosion **inventory** of Hydrologically-connected segments
- **Implementation Plan** and **Schedule** to bring non-complying road segments to MRGP standards

New inventory and Implementation Plan **every 5 years**



Interim Road Inventory and Evaluation Form B
GRAVEL/OPEN (DITCHED) NON CLASS 4 ROADS

1 Road Segment = 100 meters = 328 feet

Both sides of road = 200 meters = 656 feet

Measure erosion quantity, noting moderate and severe erosion.

ROAD SEGMENT ID NUMBER(S):

ROADWAY CROWN: <i>Map where erosion is evident within the travel lane/roadway</i>		
What percentage of the segment is NOT properly crowned (1/4"/ft.), in-sloped, or out-sloped?		
0% - 49%	50% - 89%	90% - 100%

GRADER BERM/WINDROW/HIGH SHOULDER: <i>Map where erosion is forming a secondary ditch</i>		
What percentage of the segment (both sides of road, 200m, 656') is the grader berm/windrow/high shoulder NOT removed?		
0% - 49%	50% - 89%	90% - 100%

ROAD DRAINAGE: <i>Map where erosion is evident in the ditch</i>		
What percentage of the segment (both sides of road, 200m, 656') is the drainage ditch NOT stabilized with vegetation ($\leq 5\%$ slope) or stone ($> 5\%$ slope) or NOT allowed to sheet flow to a vegetated or forested filter area?		
0% - 49%	50% - 89%	90% - 100%

DRAINAGE CULVERTS		
SIZING: <i>Map where drainage culverts are undersized, absent but needed, and/or where erosion is present due to culvert size</i>		
Total drainage culverts within segment:		
Total drainage culverts that are LESS THAN 18":		
END TREATMENTS: <i>Map where drainage culvert end treatment is needed and/or where erosion is present</i>		
Total drainage culvert ends lacking appropriate stone or headwall treatment:		
OUTLET STABILITY: <i>Map where drainage culvert outlet stabilization is needed and/or where erosion is present</i>		
Total drainage culvert outlets lacking appropriate stone apron, splash pad, or equivalent stabilization:		
CONVEYANCE ZONE/AREA: <i>Map where drainage outlets/conveyance zone/areas are not turned out or stabilized with vegetation ($\leq 5\%$ slope) or stone ($> 5\%$ slope), and/or where erosion is present.</i>		
Total # drainage outlets/conveyance zone/areas within segment:		
Total # drainage outlets/conveyance zone/areas NOT turned out or stabilized:		

DRIVEWAY CULVERTS		
SIZING: <i>Map where driveway culverts are undersized, absent but needed, and/or where erosion is evident due to culvert size</i>		
Total driveway culverts within segment:		
Total driveway culverts that are LESS THAN 15":		
END TREATMENTS: <i>Map where driveway culvert end treatment is needed and/or where erosion is present</i>		
Total driveway culvert ends lacking appropriate stone or headwall treatment:		

Implementation Plan and Schedule

Draft Inventory Planning spreadsheet.xlsx - Excel

File Home Insert Page Layout Formulas Data Review View Tell me what you want to do

Clipboard Font Alignment Number Styles Cells Editing

Reason for Condition- also include recent flooding damage here

1	Town Name					Planned and Actual Remediation Practices						
2	Initial Inventory date (2016) and findings, next inventory due (2021)											
3	Connected s	Connected o	Road Type	Segment slope%	Condition	Reason for Condition- also include re	Remediation pl	Planned Action (only fill in details for 2021-2023)	Actual implementation specific	Date Completed	2020	Apr-21
4	VT-001		Paved-ditched	9	Partially Meets	Gullied ditch; culvert condition	2017	500'sld, 1 culvert header	grass ditch; replaced culvert	2017	Fully Meets	
5	VT-002		Gravel-ditched	10	Does Not Meet	steep ditch slope, no sld	2019	250' sld	300' sld	2017	Fully Meets	
6	VT-003		Class 4	11	Does Not Meet	gully erosion	2018	100' gully restoration	150' gully restoration	2018	Fully Meets	
7	VT-004		Paved-ditched	5	Does Not Meet	no ditch	2018	300' gld	310' gld, install 2-18" culverts	2019	Fully Meets	
8	VT-005		Paved-ditched	9	Does Not Meet	no ditch stone	2017	600' sld	800' sld, 3 turnouts	2018	Fully Meets	
9	VT-006		Gravel-ditched	4	Partially Meets	no crown, undersized culvert	2020	crown 328', install 18" culvert	crown 328', install 4-18" culvert	2020	Fully Meets	
10	VT-007		Gravel-ditched	12	Partially Meets	2 undersized culverts	2020	Install 2-18" culverts	installed 2-18" culverts	2020	Fully Meets	
11	VT-008		Gravel-ditched	0%	Partially Meets	bare ditches	2023	Hydro-seed 400'				
12	VT-009		Gravel-ditched	8	Partially Meets	undersized conveyance culvert	2023	Install 3' diameter culvert				
13	VT-010		Gravel-ditched	3	Partially Meets	no crown, no ditch	2021	crown 328', install 656' gld				
14	VT-011		Class 4	5	Partially Meets	undersized drainage culvert	2021	Install 18" culvert				
15	VT-012		Class 4	7	Partially Meets	gully erosion	2021	Install 6 water bars				
16	VT-013	Added segme	Gravel-ditched	7	Does Not Meet	drive culvert lacking and erosion	2022	Install 4-15" drive culverts				
17	VT-014	Added segme	Gravel-ditched	2	Does Not Meet	drive culvert lacking and erosion	2022	Install 6-15" drive culverts				
18	VT-015		Paved-ditched	1	Does Not Meet	no veg in ditch	2022	Install 400' of gld				
19	VT-016		Paved-ditched	1	Does Not Meet	no crown, bare ditch	2023	Hydro-seed 656' of ditch				
20	VT-017		Gravel-ditched	4	Does Not Meet	culvert outlet erosion	2023	Install 5 culvert stone aprons				
21	VT-018		Gravel-ditched	6	Does Not Meet	culvert outlet erosion	2021	Install 4 culvert stone aprons				
22	VT-019		Gravel-ditched	9	Does Not Meet	culvert outlet erosion	2022	Install 2 culvert plunge pools				
23	VT-020		Class 4	10	Partially Meets	gully erosion on travel lane	2024-2028 permit cycle					
24	VT-021		Class 4	15	Partially Meets	gully erosion around culverts	2024-2028 permit cycle					
25	VT-022		Paved-ditched	17	Partially Meets	high shoulder	2024-2028 permit cycle					
26	VT-023		Paved-ditched	18	Partially Meets	high shoulder	2024-2028 permit cycle					
27	VT-024		Class 4	12	Does Not Meet	culvert gully erosion	2024-2028 permit cycle					
28	VT-025		Class 4	3	Does Not Meet	culvert outlet erosion	2024-2028 permit cycle					
29	VT-026		Class 4	3	Does Not Meet	culvert outlet erosion	2024-2028 permit cycle					
30	VT-027		Gravel-ditched	5	Does Not Meet	culvert outlet erosion	2024-2028 permit cycle					
31	VT-028		Gravel-ditched	5	Does Not Meet	culvert outlet erosion	2024-2028 permit cycle					
32	VT-029	Added segme	Gravel-ditched	3	Partially Meets	drive culvert lacking and erosion	2024-2028 permit cycle					
33	VT-030	Added segme	Gravel-ditched	17	Partially Meets	drive culvert lacking and erosion	2024-2028 permit cycle					
34	VT-031		Gravel-ditched	10	Partially Meets	gully erosion on travel lane	2024-2028 permit cycle					

Sheet1

Ready

1:29 PM 1/4/2017

MRGP Practices

- Stone-lined ditches and check dams
- Grass-lined drainage ditches
- Turn outs
- Road crowning
- Properly sized drainage culverts
- Culvert headers
- Culvert outlet stabilization



Draft MRGP standards for different road types

	Paved- curbed	Paved- not curbed	Gravel (Not Class 4)	Class 4*
18" minimum drainage culverts	New construct or major rehab only	Replace or retrofit if erosion present	Replace or retrofit if erosion present	*
Culvert headwalls/ stable outlets	N/A	Install or retrofit if erosion present	Install or retrofit if erosion present	*
Grass-lined ditch and/or check dams	N/A	Required <8% slopes	Required <8% slopes	*
Stone-lined ditch	N/A	Required all slopes 8%+	Required all slopes 8%+	*
Road crowning	N/A	New construction or major rehab only	Required	*
Gully stabilization	At CB outlets	Required	Required	*If gully erosion is present anywhere within ROW, stabilization needed
Water bars/dips	N/A	N/A	N/A	*
Stable turnouts and conveyances	Required	Required	Required	*

Implementation “Triggers”

Required baseline standards- no matter what existing conditions are:

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

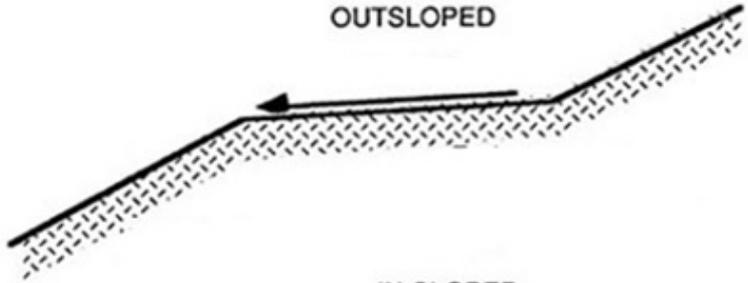
Only required when moderate to significant erosion present:

- 18” drainage culvert minimum
- 15” drive culvert
- Culvert headwalls/headers
- Culvert outlet stabilization
- Class 4 roads- gully erosion present
- Winter sand pile erosion
- Catch basin outfall erosion

Required Baseline Standard

Road crowning

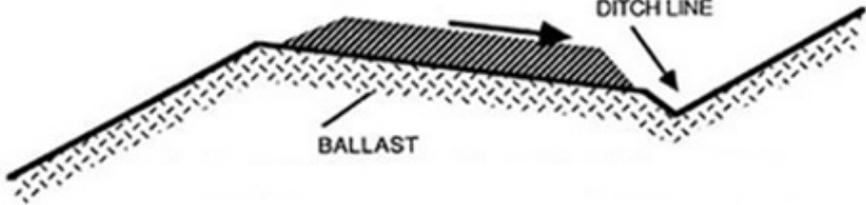
OUTSLOPED



IN SLOPED

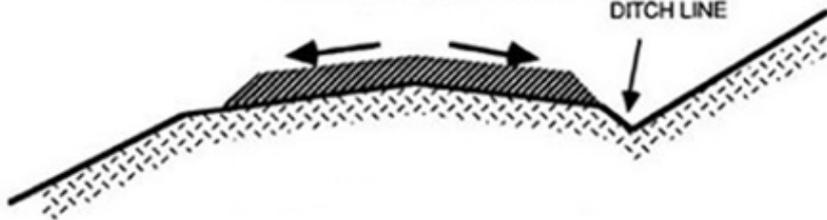
DITCH LINE

BALLAST

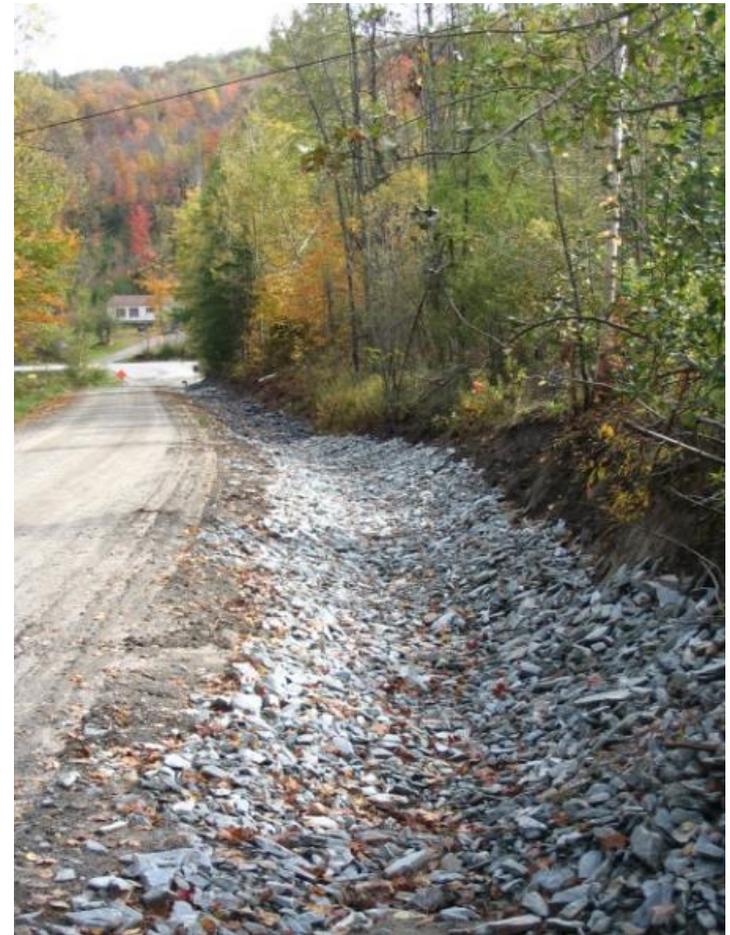


CROWNED SURFACE

DITCH LINE



Required Baseline Standard- grass and stone-lined drainage ditches



Required Baseline Standard

Stable turnouts and conveyances



Lack of culvert headwall/header



Driveway culvert erosion and remediation



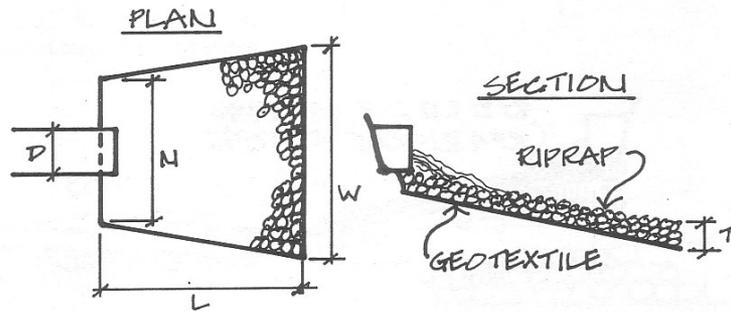
Improperly maintained cutouts



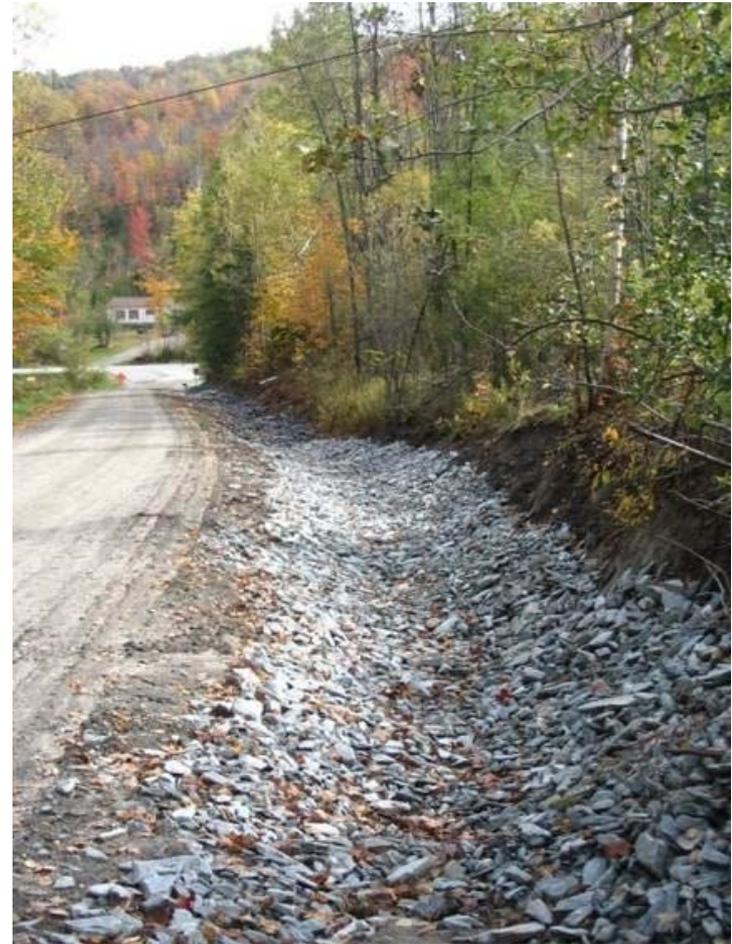
Culvert outlet gully erosion and downstream sedimentation



Water quality BMPs= Good road drainage practices= Long term \$\$ savings



DETAIL - ROCK APRON



Municipal Sand Piles



MRGP- Town Example

Town A. has 50 total road miles

- 25 road miles are **hydrologically-connected** road segments
- 25 miles not considered **connected** (no BMP work needed)
- 15 **connected** road miles currently fully meet MRGP standards (maintenance of BMPs only)
- 10 remaining **connected** miles- required to be brought up to MRGP standards

FAQs



“The first commandment is: Thou shalt not shoot the messenger.”

New MRGP Fees?

- \$400/Application review fee (one-time fee)
- \$240/Administrative processing fee (every 5 years)
- \$2,000/annual operating fee
- Fee established through Act 64 Legislation



Are all road classes covered by the MRGP?

- Yes, All road classes will be covered by the permit (Classes 1-4)
- Requirements for Class 4 roads will be less stringent



Will in-stream perennial culvert replacements be part of the MRGP?



- No, only the replacement of drainage culverts if erosion present
- Drainage and conveyance culverts will be properly-sized and aligned if eroding
- Culverts may require header and/or outlet stabilization if eroding

MRGP and VTrans *Orange Book* Road and Bridge Standards Compatibility?

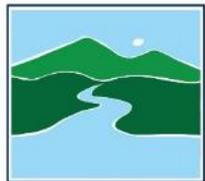
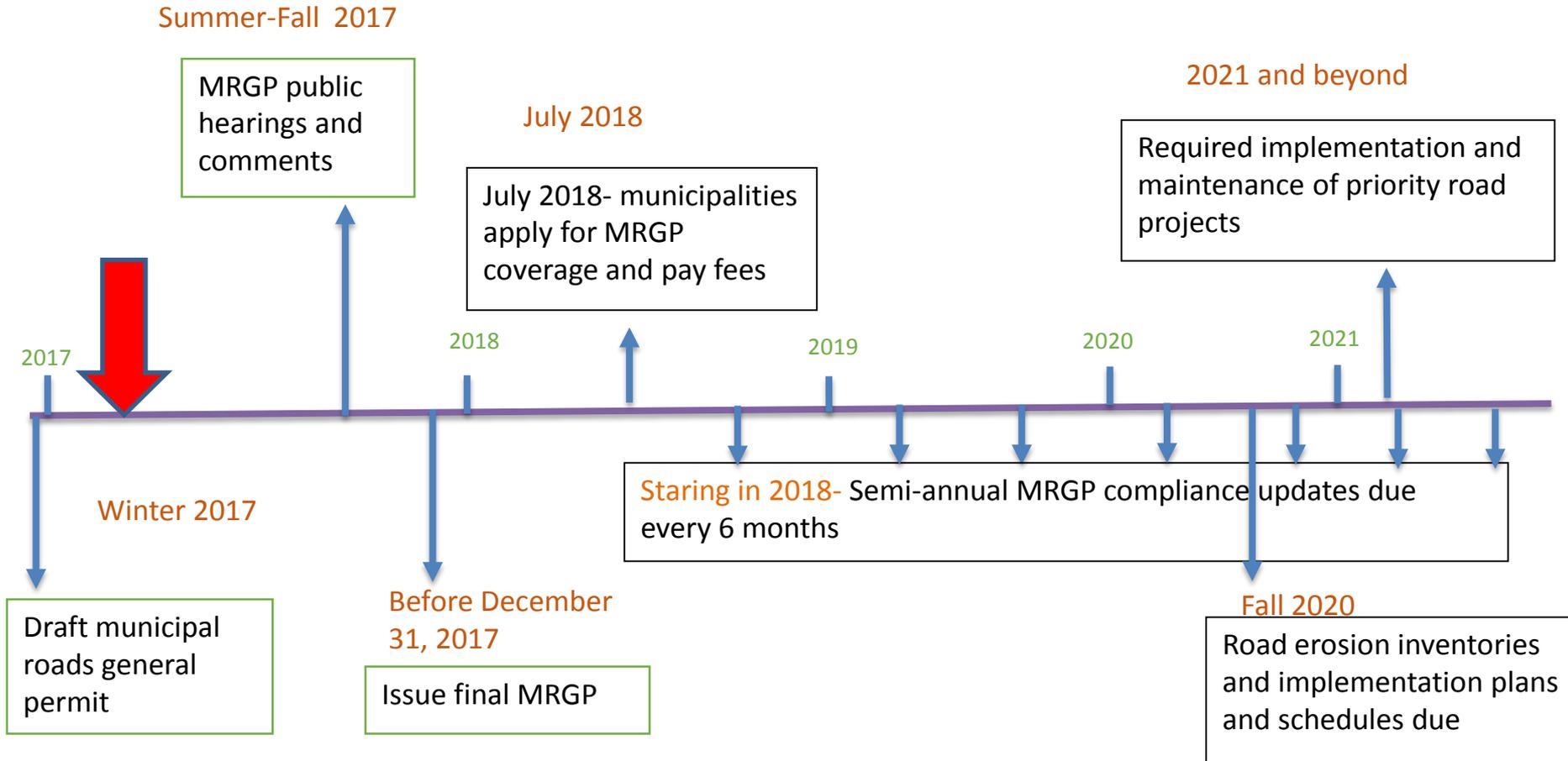
- Current VTrans *Orange Book* Standards will be extended until MRGP coverage begins
- Practices Standards will be compatible
- The geographic applicability will likely differ



Summary for municipalities:

- New DEC municipal roads general permit
- Application coverage and annual fees to begin in mid-2018 (currently proposed)
- Road erosion inventories for **hydrologically-connected roads**
- Implementation plans and schedules
- Road BMP implementation and brief annual compliance reports
- New inventories and implementation plans every 5 years

MRGP Timeline of Deliverables 2017-forward



Assistance to towns?



- Funding
- Outreach and Technical assistance
- Shared Equipment

VTrans Local Roads Program



Some Trainings Include:

- Grader operations
- Road fundamentals
- Road drainage
- Rivers and Roads (with DEC)
- Roads Roundtables (with DEC)



<http://localroads.vermont.gov/>

VTrans Better Roads Program

Better Roads Grants:

- All municipal roads eligible
- Road erosion inventories
- Culvert inventories
- Road BMP installation
- Bank stabilization
- Culvert replacement



<http://vtrans.vermont.gov/highway/better-roads>

Community road site visits



Vermont Clean Water Initiative: Water Quality Grants for Municipalities

GRANT PROGRAM	DESCRIPTION	FUNDING AVAILABILITY	CONTACT	DUE DATE
Ecosystem Restoration	Municipal capital equipment assistance (e.g. hydroseeders, high efficiency vacuum street sweepers, etc.)	⇒ Total Program Funding: \$395,000 ⇒ Match: 50% MS4 municipalities 20% non-MS4 municipalities	VTDEC David Pasco, Grants Management Specialist david.pasco@vermont.gov 802-490-6112 www.watershedmanagement.vt.gov/grants	Spring 2016 & Fall 2016
Ecosystem Restoration	Erosion/stormwater control projects on high priority private roads	⇒ Total Program Funding: \$30,000 ⇒ Grant Max: \$10,000 ⇒ Match: 20% local	VTDEC David Pasco, Grants Management Specialist david.pasco@vermont.gov 802-490-6112 www.watershedmanagement.vt.gov/grants	Spring 2016 & Fall 2016
Better Roads	Roadway improvements that have a positive impact on water quality	⇒ Grant Max: Category A: \$8,000 Category B: \$20,000 Category C & D: \$40,000 ⇒ Match: 20% local	Alan May, Better Roads Project Coordinator alan.may@vermont.gov 802-828-4585	Annually, late Spring
Town Highway Structures	New, repair, or replacement of structures over 36"	⇒ Grant Max: \$175,000 ⇒ Match: 20%, or 10% if town has a full infrastructure or network inventory and	VTrans District Office	April 15
Town Highway Class 2	Class 2 roadways work	⇒ Grant Max: \$175,000 ⇒ Match: 30%, or 20% if town has a full infrastructure or network inventory and signed Codes & Standards	VTrans District Office	April 15
Transportation Alternatives Program	Environmental mitigation, bike/pedestrian/alternative transportation needs, and community improvement activities	⇒ Grant Max: \$300,000 ⇒ Match: 20% for design/construction, 50% for scoping	Scott Roberson, Project Manager scott.robertson@vermont.gov 802-828-5799	Annually, September



MRGP Regional Outreach Groups:



- County road foremen groups
- TAC and CWAC groups
- RPC transportation planners
- Roads Roundtables
- Town Officer trainings
- Selectboard Institute
- VLCT WQ Advisory Committee

MRGP- Stakeholder Groups

- **Core Team-** assists DEC in developing MRGP development, process, and determines municipal needs
- **Technical Team-** assists DEC in developing science-base road standards
- **New-** Road Foremen Advisory Committee



What's Next?

- **First half of 2017-** MRGP outreach push
- **Second half of 2017-** MRGP public hearing, comments, and finalization



Questions, Comments, Suggestions?

Jim Ryan- DEC Municipal Roads Program

http://www.watershedmanagement.vt.gov/stormwater/htm/sw_municipalroads.htm

jim.ryan@vermont.gov

(802) 490-6140