Problems Facing Our Waters Statewide
Lake Champlain post TS-Irene

(photo credit Bill Howland)
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)

- Wastewater Treatment Facilities: 3%
- Forest Lands: 15%
- Developed Lands Including Paved Roads: 14%
- Unpaved Roads: 6%
- Agricultural Lands: 40%
- Stream Instability: 22%
Stormwater & Roads

VTrans TS4 Permit

Municipal roadways

Northfield
(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.
Draft municipal roads general permit

Summer-Fall 2017

- MRGP public hearings and comments

July 2018

- July 2018- municipalities apply for MRGP coverage and pay fees

2017

- Winter 2017

- Before December 31, 2017

- Issue final MRGP

2018

- Starting in 2018- Semi-annual MRGP compliance updates due every 6 months

2019

2020

2021

- 2021 and beyond

- Required implementation and maintenance of priority road projects

Fall 2020

- Road erosion inventories and implementation plans and schedules due
Vermont Road Mileage

- 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
MRGP - Components

Inventory

Prioritize

Implement
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
Measure erosion quantity, noting moderate and severe erosion.

<table>
<thead>
<tr>
<th>ROAD SEGMENT ID NUMBER(S):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>ROADWAY CROWN: Map where erosion is evident within the travel lane/roadway</th>
</tr>
</thead>
<tbody>
<tr>
<td>What percentage of the segment is NOT properly crowned (1/4”/ft.), in-sloped,</td>
</tr>
<tr>
<td>or out-sloped?</td>
</tr>
<tr>
<td>0% - 49%</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>ROAD DRAINAGE: Map where erosion is evident in the ditch</th>
</tr>
</thead>
<tbody>
<tr>
<td>What percentage of the segment (both sides of road, 200m, 656') is the drainage</td>
</tr>
<tr>
<td>ditch NOT stabilized with vegetation (≤5% slope) or stone</td>
</tr>
<tr>
<td>(≥5% slope) or NOT allowed to sheet flow to a vegetated or</td>
</tr>
<tr>
<td>forested filter area?</td>
</tr>
<tr>
<td>0% - 49%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DRAINAGE CULVERTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZING: Map where drainage culverts are undersized, absent but needed, and/or</td>
</tr>
<tr>
<td>where erosion is present due to culvert size</td>
</tr>
<tr>
<td>Total drainage culverts within segment:</td>
</tr>
<tr>
<td>Total drainage culverts that are LESS THAN 18&quot;:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>END TREATMENTS: Map where drainage culvert end treatment is needed and/or where erosion is present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total drainage culvert ends lacking appropriate stone or headwall treatment:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OUTLET STABILITY: Map where drainage culvert outlet stabilization is needed and/or where erosion is present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total drainage culvert outlets lacking appropriate stone apron,</td>
</tr>
<tr>
<td>splash pad, or equivalent stabilization:</td>
</tr>
</tbody>
</table>

| CONVEYANCE ZONE/AREA: Map where drainage outlets/conveyance zone/areas are not turned out or |
| stabilized with vegetation (≤5% slope) or stone (≥5% slope), and/or where erosion is present |
| Total # drainage outlets/conveyance zone/areas within segment: |
| Total # drainage outlets/conveyance zone/areas NOT turned out or stabilized: |

<table>
<thead>
<tr>
<th>DRIVEWAY CULVERTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZING: Map where driveway culverts are undersized, absent but needed, and/or where erosion is evident due to culvert size</td>
</tr>
<tr>
<td>Total driveway culverts within segment:</td>
</tr>
<tr>
<td>Total driveway culverts that are LESS THAN 15&quot;:</td>
</tr>
</tbody>
</table>

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<th>END TREATMENTS: Map where driveway culvert end treatment is needed and/or where erosion is present</th>
</tr>
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<tbody>
<tr>
<td>Total driveway culvert ends lacking appropriate stone or headwall treatment:</td>
</tr>
</tbody>
</table>
## Implementation Plan and Schedule

<table>
<thead>
<tr>
<th>Town Name</th>
<th>Initial Inventory date (2016) and findings, next inventory due (2021)</th>
<th>Planned and Actual Remediation Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>VT-001</td>
<td>Connected: Paved-ditch, Segment slope: 9, Condition: Partially Meets</td>
<td>Remediation plan: 2023, Planned Action: Replace culvert</td>
</tr>
<tr>
<td>VT-002</td>
<td>Class 4, Segment slope: 10, Does Not Meet</td>
<td>Remediation plan: 2022, Planned Action: Install 6&quot; concrete culvert</td>
</tr>
<tr>
<td>VT-003</td>
<td>Gravel-ditch, Segment slope: 11, Does Not Meet</td>
<td>Remediation plan: 2021, Planned Action: Install 6&quot; concrete culvert</td>
</tr>
<tr>
<td>VT-004</td>
<td>Paved-ditch, Segment slope: 5, Does Not Meet</td>
<td>Remediation plan: 2020, Planned Action: Replace culvert</td>
</tr>
<tr>
<td>VT-005</td>
<td>Paved-ditch, Segment slope: 9, Does Not Meet</td>
<td>Remediation plan: 2019, Planned Action: Install 6&quot; concrete culvert</td>
</tr>
<tr>
<td>VT-007</td>
<td>Gravel-ditch, Segment slope: 12, Partially Meets</td>
<td>Remediation plan: 2017, Planned Action: Install 6&quot; concrete culvert</td>
</tr>
</tbody>
</table>

### Additional Details
- Reason for Condition: Include recent flooding damage data here.
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

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Paved- curbed</th>
<th>Paved- not curbed</th>
<th>Gravel (Not Class 4)</th>
<th>Class 4*</th>
</tr>
</thead>
<tbody>
<tr>
<td>18” minimum drainage culverts</td>
<td>New construct or major rehab only</td>
<td>Replace or retrofit if erosion present</td>
<td>Replace or retrofit if erosion present</td>
<td>*</td>
</tr>
<tr>
<td>Culvert headwalls/ stable outlets</td>
<td>N/A</td>
<td>Install or retrofit if erosion present</td>
<td>Install or retrofit if erosion present</td>
<td>*</td>
</tr>
<tr>
<td>Grass-lined ditch and/or check dams</td>
<td>N/A</td>
<td>Required &lt;8% slopes</td>
<td>Required &lt;8% slopes</td>
<td>*</td>
</tr>
<tr>
<td>Stone-lined ditch</td>
<td>N/A</td>
<td>Required all slopes 8%+</td>
<td>Required all slopes 8%+</td>
<td>*</td>
</tr>
<tr>
<td>Road crowning</td>
<td>N/A</td>
<td>New construction or major rehab only</td>
<td>Required</td>
<td>*</td>
</tr>
<tr>
<td>Gully stabilization</td>
<td>At CB outlets</td>
<td>Required</td>
<td>Required</td>
<td>*</td>
</tr>
<tr>
<td>Water bars/dips</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>*</td>
</tr>
<tr>
<td>Stable turnouts and conveyances</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
<td>*</td>
</tr>
</tbody>
</table>
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
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
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
"The first commandment is: Thou shalt not shoot the messenger."
New MRGP Fees?

- New application
  - $400 review fee
  - $240 admin processing fee

- Annual operating fee
  - $2,000

- Renewal application (~every 5 years)
  - $240 admin processing fee

- Fee established through Legislative Fee Bill
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

Summer-Fall 2017
- MRGP public hearings and comments

July 2018
- July 2018- municipalities apply for MRGP coverage and pay fees

2017-2020
- Road erosion inventories and implementation plans due

2017-2018
- Winter 2017
- Draft municipal roads general permit

Before December 31, 2017
- Issue final MRGP

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2018-2019
- Required implementation and maintenance of priority road projects

Starting in 2018-
- Semi-annual MRGP compliance updates due every 6 months

2020

Fall 2020
- Road erosion inventories and implementation plans and schedules due

2021 and beyond
- Required implementation and maintenance of priority road projects

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
STORMWATER PROGRAM
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

<table>
<thead>
<tr>
<th>GRANT PROGRAM</th>
<th>DESCRIPTION</th>
<th>FUNDING AVAILABILITY</th>
<th>CONTACT</th>
<th>DUE DATE</th>
</tr>
</thead>
</table>
| Ecosystem Restoration | Municipal capital equipment assistance (e.g., hydroseeding, 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 | 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 | 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 | 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.roberston@vermont.gov | 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

jim.ryan@vermont.gov
(802) 490-6140