Municipal Roads General Permit (MRGP)- Road Erosion Inventory (REI)

Introduction: The following Road Erosion Inventory (REI) was developed for municipalities to fulfill requirements of the Vermont Department of Environmental Conservation's Municipal Roads General Permit (MRGP). The form is based on practice standards that have developed as part of the MRGP. Vermont municipalities will have to adhere to the MRGP requirements starting in 2018. These requirements include conducting road erosion inventories of all hydrologically-connected roads.

The primary goal of the road erosion inventory is to establish baseline conditions of road segments and evaluate progress of implementation efforts. For those road segments not meeting MRGP standards (*Does Not Meet* or *Partially Meets* scores), towns will be required to develop Implementation Plans and Schedules and implement those plan practices. See MRGP REI Supplement document for assistance in filling out this form:

http://dec.vermont.gov/watershed/stormwater/permit-information-applications-fees/municipal-roads-program

Steps for completing the Municipal Road Inventory:

1. Review GIS road segment connectivity maps, made available for each municipality by DEC at anr.vermont.gov/maps/nr-atlas. The GIS road segment connectivity is determined by road segment proximity to waters of the state (wetlands, lakes, ponds, perennial and intermittent streams), both bisecting and lateral distance.
2. Record each Road Segment Identification Number and segment slope from the Hydrologically-Connected Road layer, road name, and Town Highway Number. Additional road segments not included in the GIS road segment connectivity map may be found to be connected in the field and evaluated with this form.
3. For each hydrologically-connected road segment complete the corresponding *REI Form or* corresponding App. Apps must answer all the questions included in these forms.
    a. Paved Roads with Open Ditches and Gravel/Open (Ditched) Non-Class 4 Roads: Form A
    b. Class 4 Roads: Form B
    c. Paved Roads with Curbing Drainage and Catch Basins: Catch basin outlet erosion inventories, Form C

MRGP Overall Segment Scoring:

- Any standards that score ***Does Not Meet*** individual practice scores= ***Does Not Meet*** segment score (except for crown)
- One or two ***Partially Meets**** individual scores= ***Partially Meets*** segment score
- Three or more ***Partially Meets*** individual practice scores= ***Does Not Meet*** segment score
- ***Fully Meet*** for all individual practice scores= ***Fully Meets*** segment score

*Note: both ***Partially Meet*** and ***Does Not Meet*** scores indicate road segment does not meet MRGP standards and will require the implementation of road best management practices (BMPs) in order to meet MRGP standards.

Segment Slope:	Fully Meets	Partially Meets	Does Not Meet
1. Crown			
2. Berm/windrow			
3. Drainage ditch/shoulder			
4. Conveyance area/turn out		N/A	
5. Drive culvert			
6. Drainage culvert			
Overall Segment Score			

Road Erosion Inventory Form A
PAVED ROADS WITH OPEN DITCHES
GRAVEL/OPEN (DITCHED) NON-CLASS 4 ROADS

1 road segment = 100 meters = 328 feet
Both sides of road = 200 meters = 656 feet
Sheet Flow <1" erosion depth
Rill 1"-11" erosion depth
Gully 12"+ erosion depth

Name: **Date:**

Road Segment Name, Town Highway Number & Segment ID Number:	**ANR Atlas Slope:**	**Field Determined Slope:**	**Road Type:**
			☐ Paved ☐ Gravel

1. ROADWAY CROWN/TRAVEL LANE: *(N/A for Paved)* What percentage of the segment is properly crowned (¼" to ½" per foot), in-sloped, or out-sloped? Note if erosion is present due to poor road surface material.			**Erosion Type Present**
☐ 0%-49% (0' – 163') Does Not Meet	☐ 50%-89% (164' – 294') Partially Meets	☐ 90%-100% (295' – 328') Fully Meets	☐ Rill ☐ Gully
2. GRADER BERM/WINDROW: What percentage of the segment **(both sides of road, 200m, 656')** is the grader berm/windrow removed? (N/A for paved roads)			**Erosion Type Present**
☐ 0%-49% (0' – 327') Does Not Meet	☐ 50%-89% (328' – 589') Partially Meets	☐ 90%-100% (590' – 656' Fully Meets	☐ Rill ☐ Gully
3. ROAD DRAINAGE: What percentage of the segment **(both sides of road, 200m, 656')** is the allowed to shed in a distributed manner to a vegetated or forested filter area (shoulder lower than travel lane) or drainage ditch stabilized appropriately for the slope range below? • <5% slope: stabilized with vegetation, stone-lined, or check dams • >5% to <8% slope: stabilized with stone-lined ditch or combination of grass lined ditch with check dams or grass-lined ditch if installed with disconnection practices such as turnouts and cross culverts • >8% slope: stone-lined ditch required			**Erosion Type Present**
☐ 0%-49% (0' – 327') Does Not Meet	☐ 50%-89% (328' – 589') Partially Meets	☐ 90%-100% (590' – 656') Fully Meets	☐ Rill ☐ Gully
4. CONVEYANCE AREA/TURNOUT: Do drainage outlets/conveyance areas meet the standard of being turned out, shed in a distributed manner down the bank (shedding water), and/or stabilized with vegetation (<5% slope) or stone (>5% slope)?			**Erosion Type Present**
☐ One or more areas does not meet standard.	☐ All areas meet standard.		☐ Rill ☐ Gully

5. & 6. DRIVEWAY & DRAINAGE CULVERTS				
A. Type of culvert?	B. Is erosion present?	C. Where in the culvert cross section is erosion present and is it rill or gully erosion? SEE CULVERT CROSS SECTION DIAGRAM		
		C1. Failing header/end treatment?	C2. Outlet scour or perched culvert?	C3. Undersized/missing structure/poor condition?
☐ Driveway ☐ Drainage	☐ No (Fully Meets) ☐ Yes (complete C)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)
☐ Driveway ☐ Drainage	☐ No (Fully Meets) ☐ Yes (complete C)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)
☐ Driveway ☐ Drainage	☐ No (Fully Meets) ☐ Yes (complete C)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)
☐ Driveway ☐ Drainage	☐ No (Fully Meets) ☐ Yes (complete C)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)	☐ Rill (Partially Meets) ☐ Gully (Does Not Meet)

(Optional) IS OTHER RILL OR GULLY EROSION PRESENT?		**Check if Present in Segment and Note Linear Feet (LF)**
☐ River-road embankment erosion ☐ Outside the Right of Way: i.e. agriculture, logging erosion, or private road/drive erosion ☐ Other:	☐ Rill ☐ Gully	☐ Historic stone walls, LF: ___________ ☐ Historic large trees, LF: ___________ ☐ Buried utilities, LF: ___________ ☐ Wetland, LF: ___________

Notes:

Overall Segment Score	☐ Fully Meets	☐ Partially Meets	☐ Does Not Meet

Updated December 2017

VERMONT CLEAN WATER INITIATIVE

VERMONT

Road Erosion Inventory Form B
CLASS 4 ROADS

1 road segment = 100 meters = 328 feet
Both sides of road = 200 meters = 656 feet
Sheet Flow <1" erosion depth
Rill 1"-11" erosion depth
Gully 12"+ erosion depth

Name: **Date:**

ROAD SEGMENT NAME, Town Highway Number & Segment ID number:	**SLOPE:**

Linear feet (L)	Width (W)	Depth (D)	Total Cubic Yards (LWD/27)	Location of erosion within road cross section	Notes and likely cause of erosion
				Travel lane	
				Embankment/shoulder	
				Drainage ditch	
				Ditch outlet/conveyance zone/turnout	
				Drainage culvert or water bar (presence/absence or size/quantity)	
				Drainage culvert outlet	
				Drainage culvert headwall	
				Stream and road conflict	
				Other area:	

Total Segment Score	☐ **Any Gully Erosion = Does Not Meet**	☐ **No Gully Erosion = Fully Meets**

Updated December 2017

VERMONT CLEAN WATER INITIATIVE

VERMONT

Road Erosion Inventory Form C: PAVED ROADS WITH CATCH BASINS: Use the following ***Catch Basin Outfall Erosion Evaluation Method*** for paved road segments with catch basins without drainage ditches (typically these road segments have curbs or water sheet flows from the road but no ditches are present).

OUTFALL ID#	CULVERT DIAMETER (inches)	Outfall discharges directly into waters of the state? (Y/N)	EROSION RANK <1" = sheet 1-11" = rill >11" = gully	SLOPE of Bank adjacent to channel (% slope)	AVERAGE DEPTH (D) OF EROSION AS MEASURED FROM OUTFALL PIPE INVERT (FT)	LENGTH (L) OF EROSION (FT)	AVERAGE WIDTH (W) OF EROSION (FT)	RECOMMENDED TREATMENT: 1-STONE LINING 2-STONE APRON 3-STONE HEADER 4- STONE WEIR	3 BEFORE PHOTOS √	NOTE

ADDDITIONAL DATA REQUIRED BUT NOT INCLUDED IN FIELD SHEET ARE CUBIC YARDS OF MATERIAL ERODED (= (D x L x W)/27), DATE OF REPAIR, DIGITAL PHOTO OF REPAIR