

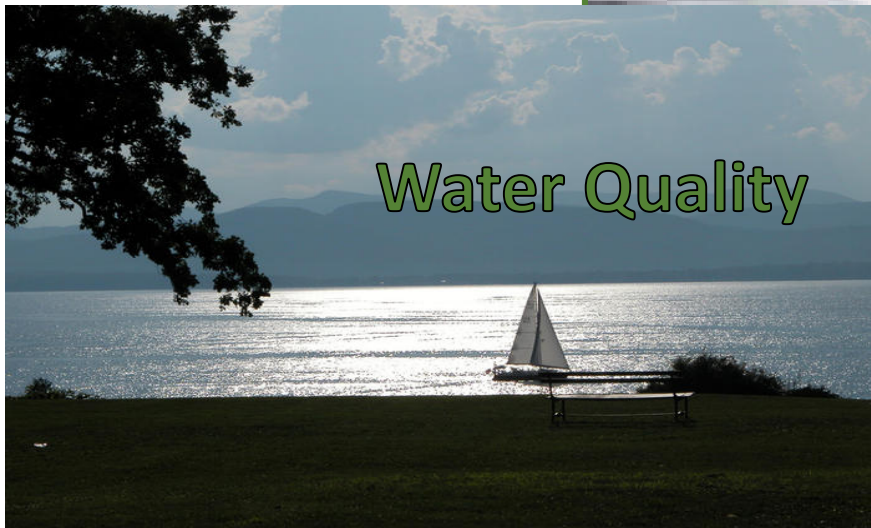
**Stormwater....what is it, why
is it a problem and what is
the transportation
connection**

**Current Regulatory Programs
Addressing Stormwater**

**VTrans Response to Those
Programs**

**Regulatory Outlook and What
it Means for VTrans**

*Responding to "Vermont's
Clean Water Initiative"*



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Road-Related Stormwater Management

Road surfaces can carry both land-adjacent and road-vehicle pollutants including heavy metals from tires, brakes, and engine wear, and hydrocarbons from lubricating fluids.

If these pollutants are not properly controlled they can cause waters to become impaired, meaning they no longer meet state Water Quality Standards.

Transportation authorities are **responsible for maintaining stormwater systems along streets, roads, highways and other transportation facilities** (Airports, Maintenance Yards, Park & Rides, Welcome Centers, Gravel Pits, etc) by managing the quality and quantity of stormwater discharging to our nation's waters via those systems.

Transportation stormwater management differs in some ways from traditional regulated entities (cities, towns, retail, commercial). Some of the differences include:

- **Linear transportation systems often stretch for many miles**, and cross numerous waterways, watersheds, and jurisdictions.
- Transportation storm conveyance systems often discharge stormwater and associated pollutants that originate **outside** of the transportation right-of-way.



Current Stormwater Regulations



Act 64 – Vermont’s Clean Water Act

A broad suite of programs and regulations to address water quality including:

- Transportation Separate Storm Sewer General Permit (TS4)
 - Municipal Separate Storm sewer System (MS4)
 - Multi-Sector Industrial General Permit (MSGP)
 - State Operational Stormwater Discharges (State OSW)
 - Total Maximum Daily Load(TMDL)
- State Construction Stormwater Discharges (not part of TS4)

VTrans Response to Current Stormwater Programs

- ✓ **Integration of stormwater** across the Agency and fostering a new way of thinking in the Agency

- ✓ **New programs, initiatives and focus** across the Agency:
 - ✓ Integration of stormwater concerns early in project delivery process (resource identification and scoping)
 - ✓ Greater focus on Asset Management (inventory, mapping, GIS) and Asset Maintenance (street sweeping, catch basin cleaning, repair, etc)
 - ✓ TMDL Planning and Implementation
 - ✓ Enhanced education, outreach and awareness
 - ✓ Improved internal coordination

- ✓ **Enhanced partnerships and collaboration** with Municipalities, Watershed Groups and State and Federal Agencies looking to gain efficiencies, raise public awareness and address surface water quality issues

- ✓ **Focused assistance to Municipalities** (Better Back Roads, VT Local Roads, VTrans Training Center, funding through Town Grant Programs and Municipal Assistance Bureau)

- ✓ New and reallocated **positions**

- ✓ **Committed funding** program for clean water projects averaging 7 million a year over the next 5 years.

Major Elements VTrans will undertake with TS4

TS4 takes what we are currently doing and apply it across the entire state to varying levels resulting in:

- ❑ **Increased asset management**, mapping, operation, maintenance, inventory, inspection, reporting and tracking activities
- ❑ **Building more stormwater treatment practices** targeting a variety of pollutants (sediment, phosphorus, nitrogen, bacteria, other)
- ❑ **Implementing a stormwater retrofit program** addressing environmental mitigation/restoration for legacy impervious surfaces
- ❑ **Public education and outreach**
- ❑ **Increased need to partner with municipalities** on Flow Restoration & Phosphorous Reduction Planning and TMDL implementation
- ❑ **Increased need to address source control**, pollution prevention, and stormwater management at all of the Transportation Maintenance Facilities (65 plus sites)
- ❑ **Increased need to manage “run-on”** and enforce against illegal connections and illicit (non-stormwater) discharges into the ROW
- ❑ **Implementing TMDLs**
- ❑ **Committing the necessary funding, resources and staff** to support these efforts

Municipal Separate Storm Sewer System (MS4)

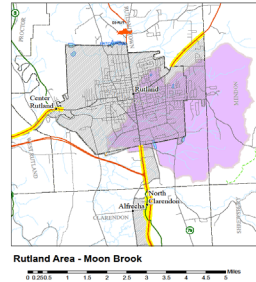
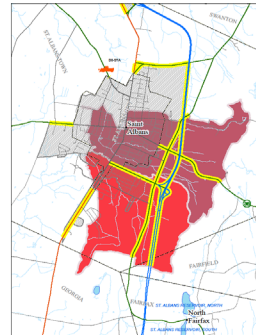
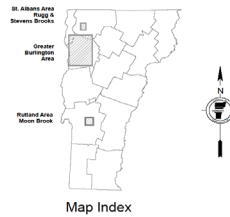
2003 with new provisions & expanded area in 2012

Municipal Separate Storm Sewer Systems General Permit Stormwater Management Program

Goals:

- Public education & participation
- Construction and post-construction stormwater measures
- Asset mapping/management
- Illegal discharge detection and elimination program
- MSGP activities for transportation garages
- Water quality monitoring
- TMDL compliance
- Good housekeeping at Transportation Garages
- and more...

VTrans is subject to this permit in 15 watersheds includes transportation infrastructure in multiple communities (Burlington, Colchester, Essex Town, Essex Jct, Jericho, Milton, Shelburne, So. Burlington, Williston, Winooski, St. Albans City & Town, Rutland Town).

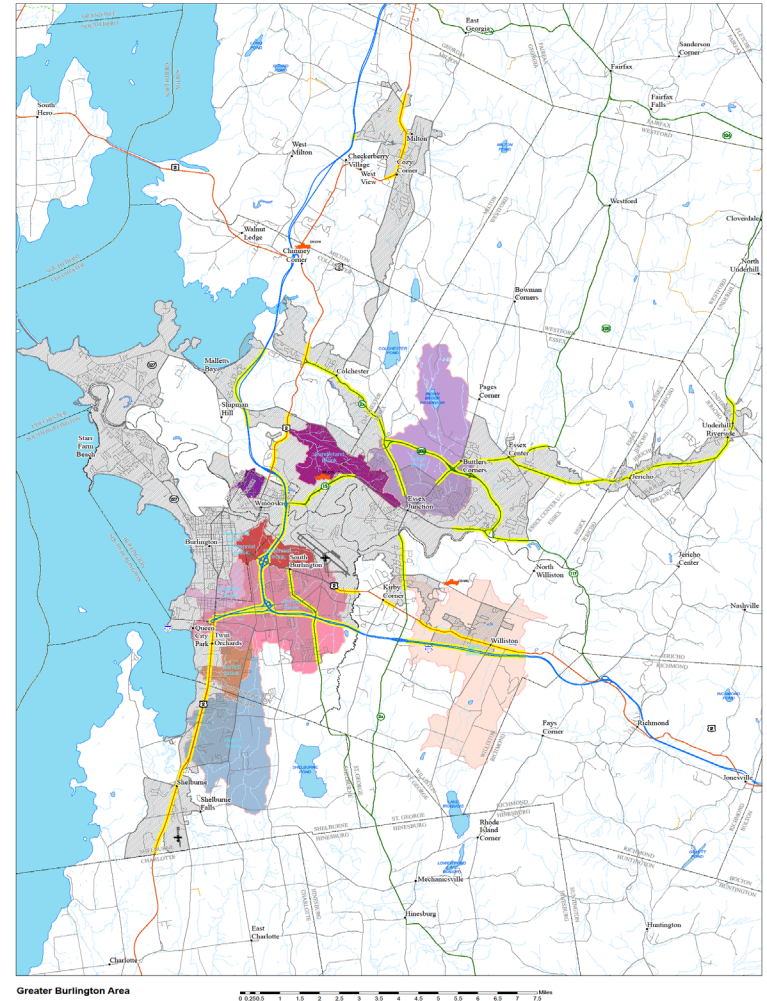


Note: This map highlights State Owned Highways within the Stormwater Impaired Watersheds and the Cities of Essex Town, So. Burlington, Williston, Winooski, St. Albans City & Town, Rutland Town. The VTrans R250 data layer was merged with the 2 polygon layers and the resulting road data layer was summarized. The mileage shown in the table is for the right of way of this summary. This mileage includes both lanes of divided highways, ramps at interchanges and approaches. This mileage was calculated using the length of the highways in the linear reference network, using dynamic compression and the locate feature using raster function to assign mileage to each impaired watershed. This mileage has then been summarized by watershed to provide total state highway mileage within the impaired watersheds.

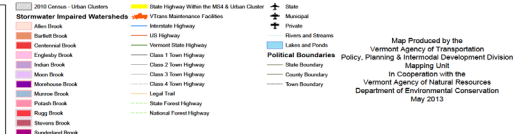
The estimated areas of right of way for state highways shown in the table was derived from estimated right of way boundaries of 3 feet (0.9143) width for all highways, except for the four-lane divided and V7 200, which were estimated at 100 feet in width from each side. The estimated right of way was then merged with the Watersheds Impaired by Stormwater data layer, through a clip routine. The resulting data layer was summarized for areas within the basin or urban area. This data does not reflect the impervious surface area, which is a separate data layer. Actual area has not been calculated and may differ from the estimate shown in the table.

Sources:

Stormwater Impaired Watersheds - Acquired from ANR DEC 2010 Census Urban Areas - Acquired from US Census Bureau
Highways - VTrans 1:50,000 R250 data layer
Maintenance Facilities - VTrans 1:50,000 point data layer
Aquifers - VTrans 1:50,000 point data layer
Sustained Water - 1:50,000 VSD from VCCI



Mileage of State Owned Highways Within Watersheds of Impaired Streams		Estimated Right of Way Area
Watershed	Sq. Miles	Acres
Albion Brook	0.753	19,126
Barrett Brook	0.003	4
Carleton Brook	2.973	61,009
Engelby Brook	0.000	0
Malin Brook	0.000	0
Moon Brook	0.148	1
Munroe Brook	3.383	10,028
Pulaski Brook	15.247	40,482
Rugg Brook	7.717	20,112
Stevens Brook	4.870	12,505
Sunfield Brook	0.172	1
Total Mileage of State Owned Highway	51.135	960,141



Map Produced by the Vermont Agency of Transportation Mapping Unit
In Cooperation with the Vermont Agency of Natural Resources Department of Environmental Conservation
May 2013

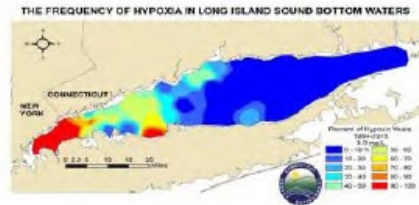
Phosphorus TMDLs for Vermont Segments of Lake Champlain



Lake Memphremagog Phosphorus TMDL



Nitrogen TMDL for Dissolved Oxygen in Long Island Sound



Total Maximum Daily Load (TMDL)

- TMDLs are issued to address the pollutant of concern or stressors (e.g. phosphorus, nitrogen, Stormwater, etc...).
- Watershed specific Plans (implementation under MS4/TS4)
- Requires collaborative planning/design/construction/maintenance of new & retrofit stormwater treatment.

Flow Restoration Planning (FRP) and Phosphorus Control Planning (PCP) under TMDL

FRP Implementation

- Focus on 303(d) listed waterways impaired for stormwater
 - Allen, Bartlett, Centennial, Indian, Moon, Munroe, Potash, Rugg, Stevens, and Sunderland Brooks
 - VTrans FRP has been developed and is now starting to be implemented
 - Allen Brook Final Design, construction planned for the 2019 construction season.
 - Beginning Final Design of Rugg and Stevens Brooks
 - **Complete implementation no later than December 5, 2032**

PCP Development and Implementation

- Lake Champlain TMDL schedule as outlined in the TS4 permit:
 - ✓ April, 2018 – establish baseline P load and reductions needed
 - ✓ October, 2018 – complete GIS inventory of P loading factors
 - April 2019 – complete development of coefficients of loading rates
 - April 2020 – complete generalized statewide PCP
 - October 2020 – 2032 - submit four 4-year implementation plans
 - **Complete implementation no later than June 17, 2036**



Gravel Wetland in St. Albans before (top) and after (bottom)

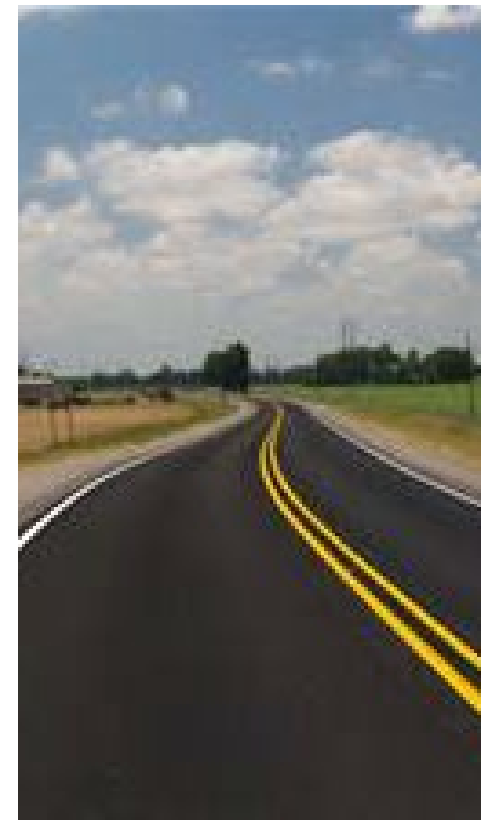
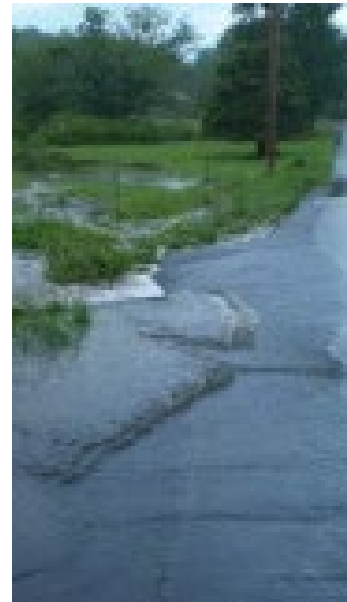
Multi-Sector Industrial Stormwater Permit (MSGP) 2007

- Transportation Sectors impacted include Airports, Gravel Pits, and Public Transit & Rail Facilities
- Goal is to manage sites for industrial stormwater runoff and source control, materials storage, usage & disposal, vehicle washing and equipment maintenance
- Requires development of a Stormwater Pollution Prevention Plan for each facility
- Requires facility audits, training, new and retrofit treatment and surface water quality testing



Vermont Post-Construction Operational Stormwater Discharge Permit Program pre-2002

- A State program addressing “post construction” stormwater discharge management off new or redeveloped impervious surfaces statewide (roads, buildings, parking lots, etc)
- Permanently treating stormwater with collection, conveyance, treatment and discharge practices.
- Average for VTrans is **10 projects** per year obtain this permit.
- Currently **82 projects** constructed and being maintained (and growing).
- Another **42 projects** under design development, permitting or construction.
- Statewide program only required on projects that trigger jurisdiction. **These numbers are expected to increase with lowered ½ acre threshold.**
- Site-by-site approach not a watershed approach.



Construction Stormwater Permit (CGP) 2004

- Statewide Program
- Goal is to prevent discharge of sediment to surface waters
- Project specific regulating temporary earth disturbance & construction
- Requires design & construction of temporary erosion prevention & sediment control practices
- On average 30 VTrans projects per year need this permit



VTrans Partnerships

VTrans Partners and collaborates with Municipalities, Watershed Groups, State and Federal Agencies, and others looking to gain efficiencies, raise public awareness and address surface water quality issues.

- Vermont DEC
- Vermont Agency of Agriculture
- US EPA
- LCBP
- Regional Planning Commissions
- Municipalities
- Watershed Groups
- Other New England DOTs
- The University of Vermont



The University of Vermont

