

# VTrans Water Quality Initiatives

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PRESENTED TO THE HOUSE TRANSPORTATION COMMITTEE

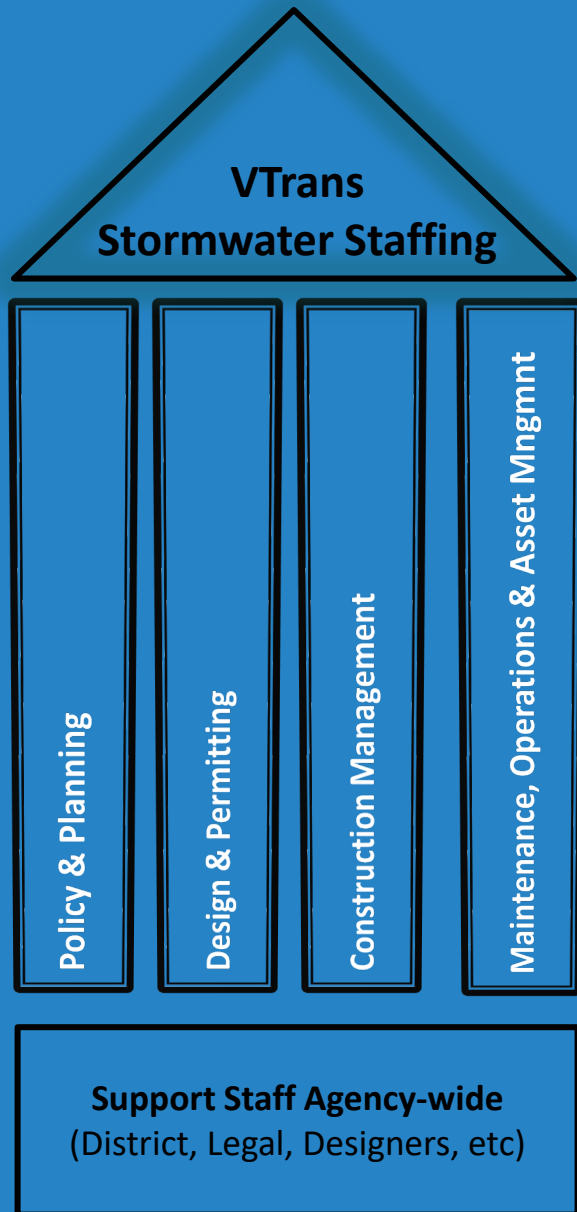
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# Integrating Stormwater Across the Agency

Staffing across the Agency focused on stormwater includes 4 primary environmental units that work on policy, procedure and rule making and also take projects and asset management from planning stage through design development, permitting, construction, implementation and into ongoing operation and maintenance:



- Policy Planning and Intermodal Development Division
  - Environmental Policy Planner – legislation, policy, procedure
- Project Delivery – Highway Division
  - Stormwater Management Engineer – scoping, design development, permitting
- Construction Management – Highway Division
  - Construction Environmental Engineer – monitor construction for compliance
- Maintenance Division
  - Stormwater Technicians – policy, procedure, best management practices, research, scoping, design development, mainly post construction maintenance and compliance with other Federal NPDES Clean Water Act Programs (MS4, MSGP, TMDL)

Numerous positions throughout the Agency support the stormwater staff and/or are involved in stormwater design, permitting, ongoing compliance, operation, maintenance and asset management.

# How is VTrans implementing Act 64

- Act 64 of 2015 – “Vermont’s Clean Water Act” – a broad suite of programs and regulations addressing: agricultural practices, stormwater runoff from roads and non-road developed lands, and natural infrastructure (river corridors, wetlands and forest management).
- As part of its Phase I Implementation Plan developed in response to the Lake Champlain Phosphorus TMDL, the Vermont ANR, in December 2016, issued the Transportation Separate Storm Sewer System (TS4) general permit to VTrans.



# Major Elements of the TS4 Permit

## Municipal Separate Storm sewer System (MS4)

- Public Education & Participation, Training & Education
- Asset Mapping, Inventory, and management
- Spill Prevention and Stormwater Pollution Source Control

## Multi-Sector Industrial General Permit (MSGP)

- Covers discharges of stormwater from industrial facilities which conduct activities that have the potential to impact the quality of Vermont's waters
- Regulated VTrans facilities - 9 State Airports and 3 State Gravel Pits

## State Operational Stormwater Discharges

- Discharges of regulated stormwater runoff from the construction, expansion, and redevelopment of impervious surfaces greater than 1/2 acre

## Total Maximum Daily Load(TMDL) requirements

- Establishes reduction targets for specific pollutants (e.g. stormwater flow, phosphorus, E. coli, etc.) to attain water quality standards
- Stormwater-impaired and Phosphorus

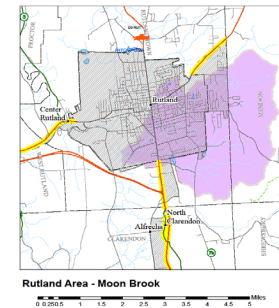
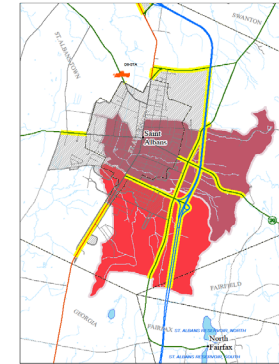
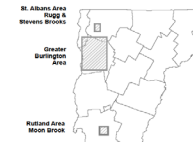


# Municipal Separate Storm Sewer System (MS4)

## Goals:

- Public education & participation
- Construction and post-construction stormwater measures
- Asset mapping/management
- Illegal discharge detection and elimination program
- TMDL compliance
- Good housekeeping at Transportation Garages
- and more...

## Municipal Separate Storm Sewer Systems General Permit Stormwater Management Program

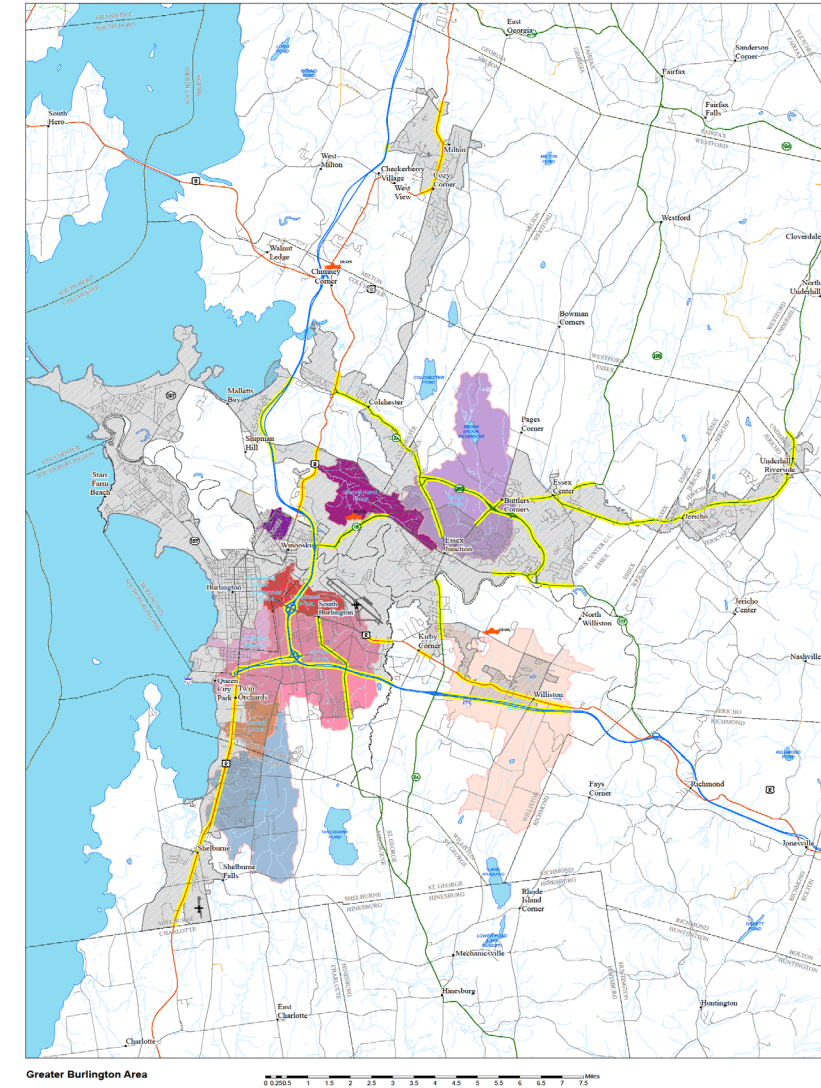


**Note:**  
This map highlights State Owned Highways within the Stormwater Impaired Watersheds and the 2010 Census Urban Areas. The VTtrans RDS data layer was merged with the 2 polygon layers and the resulting data layer was summarized. The mileage shown in the table to the right is a result of this summary. The mileage includes both miles of divided highways, ramps at interchanges and approaches. This mileage has been calculated using the length of the highways in the brook reference network using dynamic segmentation and the local feature along route function to assign mileage to each impaired watershed. This mileage has been summarized by watershed to provide total state highway mileage within the impaired watersheds.

The estimated area of right of way for state highways shown in the table was derived from estimated Right of Way boundaries of 3 feet (91.3 feet) width for all highways except the Interstate System and VT-289, which were estimated at 100 feet in width from each centerline. This estimated Right of Way was then merged with the Watersheds Impaired by Stormwater data layer, through a clip routine. The resultant data layer was summarized for area within the brook or urban area. This data does not reflect the impermeable surface area, solely an estimate of miles of area. Actual area has not been calculated and may differ from the estimate shown in the table.

Please note that this map may contain errors or omissions.

**Sources:**  
Stormwater Impaired Watersheds - Acquired from ANR DEC 2010 Census Urban Areas - Acquired from US Census Bureau  
Highways - VTtrans 1:5,000 RDS data layer  
Municipal Facilities - VTtrans 1:5,000 point data layer  
Asphalt - VTtrans 1:5,000 point data layer  
Surface Water - 1:5,000 VHD from VCSII



Mileage Of State Owned Highways Within Watersheds of Impaired Streams	Estimated Right of Way Area	Acres	SQ Miles
Watershed	SH Miles		
Allen Brook	0.539	191	0.798
Bartlett Brook	0.003	4	0.008
Carroll Brook	0.972	63	0.008
Conant Brook	0.000	0	0.000
Engley Brook	0.998	128	0.200
Indian Brook	0.148	10	0.018
Mason Brook	0.000	0	0.000
Morehouse Brook	3.383	18	0.000
Murray Brook	19.347	310	0.485
Polansky Brook	7.133	123	0.152
Rugg Brook	4.819	67	0.105
Stevens Brook	0.172	0	0.001
Sturdevant Brook			
<b>Total Mileage of State Owned Highway</b>	<b>51.135</b>	<b>906</b>	<b>1.414</b>

**Stormwater Impaired Watersheds**

- 2010 Census Urban Clusters
- VTtrans Watershed Facilities
- Interstate Highway
- US Highway
- Vermont State Highway
- Class 1 Town Highway
- Class 2 Town Highway
- Class 3 Town Highway
- Class 4 Town Highway
- Legal Trail
- State Forest Highway
- National Forest Highway

**State Highway Within the MSA & Urban Cluster**

- State Highway
- US Highway
- Vermont State Highway
- Class 1 Town Highway
- Class 2 Town Highway
- Class 3 Town Highway
- Class 4 Town Highway
- Legal Trail
- State Forest Highway
- National Forest Highway

**Rivers and Streams**

- River and Stream
- State Boundary
- County Boundary
- Town Boundary

**Map Produced by the**  
Vermont Agency of Transportation  
Policy, Planning & Intermodal Development Division  
Mapping Unit  
In Cooperation with the  
Vermont Agency of Natural Resources  
Department of Environmental Conservation  
May 2013



# NPDES Multi-Sector Industrial Stormwater Permit (MSGP)

- Covers discharges of stormwater from industrial facilities which conduct activities and use materials that have the potential to impact the quality of Vermont's waters
- Requires facility audits, training, new and retrofit treatment and surface water quality testing
- Requires development of a Stormwater Pollution Prevention Plan for each facility
- Regulated VTrans facilities including 9 State Airports and 3 State Gravel Pits





# Vermont Post-Construction Operational Stormwater Discharge Program

- A State program addressing “post construction” stormwater discharges from new or redeveloped impervious surfaces statewide (roads, buildings, parking lots, etc)
- Permanently treating stormwater with structural Best Management Practices (BMPs) i.e. Gravel Wetlands, Sand Filters, Disconnection Area, Stormwater Ponds, etc.
- Statewide program only required on projects that trigger jurisdiction.
  - Effective July 1, 2022 the operational permitting thresholds for new development changed from 1 acre to ½ acre.
- Currently 92 projects constructed and being maintained (and growing).

# Total Maximum Daily Load (TMDL)

- TMDLs are issued to address the pollutant of concern or stressors (Phosphorus and Stormwater).
- Development and implementation of watershed specific plans required in the TS4
  - Flow Restoration Plans
  - Phosphorus Control Plans
    - Lake Champlain
    - Lake Memphremagog
- Requires collaborative planning/design/construction/maintenance of new & retrofit stormwater treatment.

Phosphorus TMDLs for Vermont Segments of Lake Champlain



Lake Memphremagog Phosphorus TMDL





# 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 being implemented
    - Projects in Allen, Rugg, and Stevens Brooks completed
    - Completing final design of projects in Potash, Centennial and Indian Brooks – advertisement expected in the first quarter of 2025
  - Complete implementation no later than December 5, 2032

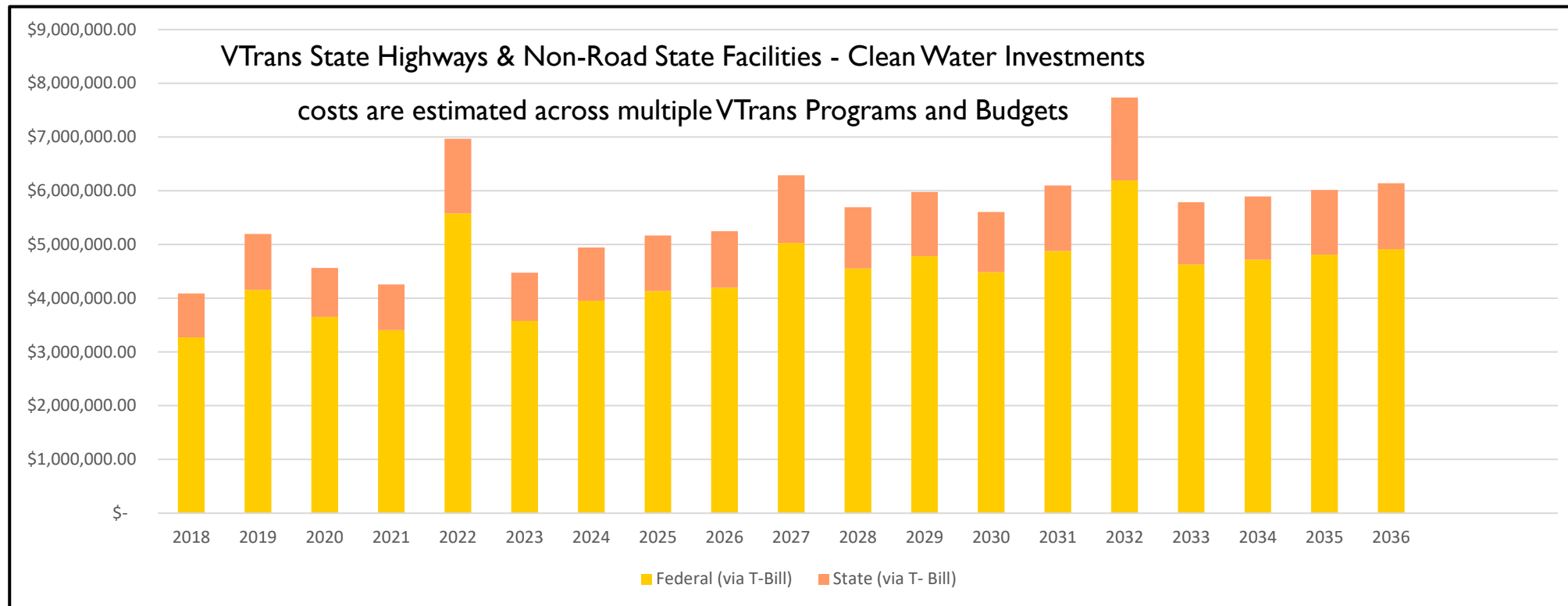
## PCP Development and Implementation

- Lake Champlain TMDL schedule as outlined in the TS4 permit
  - April 2020 – submitted generalized statewide PCP
  - October 2020 – submitted 1<sup>st</sup> 4-year implementation plan
    - Began work on Swanton – Highgate PCIP and will be constructed next season
  - October 2024 – submitted 2<sup>nd</sup> 4-year implementation plan
  - October 2028 – submit 3<sup>rd</sup> 4-year implementation plan
  - October 2032 – submit 4<sup>th</sup> 4-year implementation plan
  - No later than June 17, 2036 – complete implementation of PCP

*VTrans has implemented BMPs to reduce P by more than 28% of the 1605 kg/yr target after the 2023 construction season*

- Lake Memphremagog Development and Implementation
  - Finalizing PCP due on April 1, 2025
  - Complete implementation no later than Sept 28, 2037

VTrans' Clean Water and Stormwater Regulatory Compliance Investments for the State Highway System and VTrans non-road developed lands are anticipated to be covered by the Transportation Bill and Federal Funds where eligible. *See estimated costs below through SFY36 (the compliance date for the LC TMDL) which include Project Development, Construction, O&M and FTE for implementing the Agency's obligations under the TS4.*



# FACT SHEET - VTRANS CLEAN WATER INITIATIVES & STORMWATER INVESTMENTS

Prepared for 2025 Legislative Session on behalf of Vermont Agency of Transportation  
by Jennifer Callahan, Manager, Pollution Prevention & Compliance, VTrans Maintenance & Fleet Division

Specific to Water Quality Initiatives and Investments Targeting Regulatory Compliance for VTrans' Highways and Developed Lands

## How do roads impact stormwater?

- Impervious roadway surfaces can quickly convey polluted stormwater runoff to nearby waterways.
- VTrans is responsible for stormwater collection, conveyance, and treatment along its highways and at other transportation facilities (airports, maintenance yards, park & rides, welcome centers, gravel pits).
- Linear transportation stormwater management differs from city, town, retail, and commercial entities:
  - Highways stretch for many miles, crossing multiple waterways, watersheds, and jurisdictions.
  - Transportation storm conveyance systems are linear and often discharge stormwater and associated pollutants that originate outside of the transportation right-of-way.

Photo: Road stormwater collection



## How is VTrans Implementing Vermont's Clean Water Act?

- Act 64 of 2015 – referred to as Vermont's Clean Water Act – laid the foundation for the protection and restoration of Vermont's waters by adopting a cross-sector "all in" approach, with a broad suite of programs and regulations addressing: agricultural practices, stormwater runoff from roads and non-road developed lands, and natural infrastructure (river corridors, wetlands and forest management).
- In addition, The U.S. Environmental Protection Agency, in June 2016, established Total Maximum Daily Loads (TMDLs) and reduction targets for phosphorus in the 12 lake segments of Lake Champlain Basin.
- As part of its Phase 1 Implementation Plan developed in response to the Lake Champlain Phosphorus TMDL, the Vermont ANR, in December 2016, issued the National Pollutant Discharge Elimination System (NPDES) General Permit 3-9007 for Stormwater Discharges from the State Transportation Separate Storm Sewer System (TS4) to VTrans.

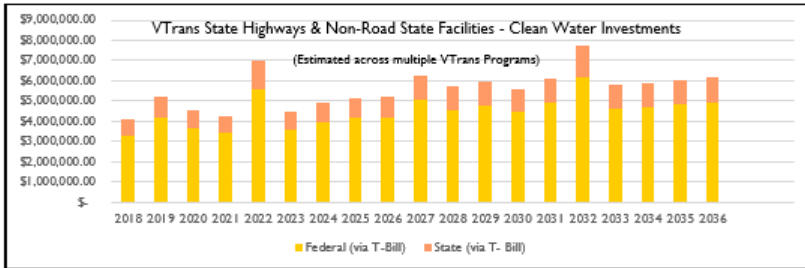
Photo: Algal Bloom



## How is VTrans implementing the TS4?

- The TS4 General Permit is the primary regulation ensuring that stormwater discharged from VTrans owned or controlled impervious surfaces is managed according to State water quality policy. It combines VTrans' compliance obligations from several permit programs, including the Municipal Separate Storm Sewer System (MS4) General Permit and its associated Flow Restoration Plan and Phosphorus Control Plan requirements, Multi-Sector General Permit (MSGP), and Operational (post-construction) Stormwater Permit. Refer to back page for Clean Water Programs and Regulations VTrans complies with and VTrans Report on Clean Water Projects Planning & Implementation.
- VTrans' Clean Water and Stormwater Regulatory Compliance Investments for the State Highway System and VTrans non-road developed lands are anticipated to be covered by the Transportation Bill and Federal Funds where eligible. See estimated costs below through SFY36 (the compliance date for the LC TMDL) which include Project Development, Construction, O&M and FTE for implementing the Agency's obligations under the TS4.

Photo: St. Albans I-89 Median Stormwater Retrofit



## VTRANS' STORMWATER REGULATORY REQUIREMENTS

PERMIT PROGRAMS	COVERAGE AND APPLICABILITY	COMPLIANCE ACTIVITIES (as of end of 2024 calendar year)
<b>TS4 GP</b> Transportation Separate Storm Sewer System General Permit	<ul style="list-style-type: none"> <li>• Regulates stormwater discharges from the Statewide VTrans TS4 (including road and non-road developed lands)</li> <li>• Specific to the unique linear nature of VTrans' infrastructure</li> <li>• Allows several stormwater programs to be rolled into one comprehensive regulatory program (4 programs listed below)</li> </ul>	<ul style="list-style-type: none"> <li>• Requires development of a Stormwater Management Plan addressing the requirements set forth in the TS4 GP</li> <li>• Requires, at a minimum, compliance with all of the regulatory standards of those programs rolled into the TS4 GP</li> <li>• Requires VTrans to develop and implement a Phosphorus Control Plans (PCP) in the Lake Champlain Basin for all of its land within the TS4</li> <li>• View the <a href="#">TS4 annual report</a>.</li> </ul>
<b>TS4 GP ENCOMPASSES:</b>	<b>MS4 -&gt; Municipal Separate Storm Sewer System</b> <ul style="list-style-type: none"> <li>• Includes VTrans highways and non-road developed lands in 12 MS4 communities including: Burlington, Colchester, Essex, Essex Junction, Milton, Rutland Town, Shelburne, South Burlington, St. Albans City and Town, Williston, Winooski</li> <li>• Regulates discharge of stormwater runoff from construction activities</li> <li>• Construct temporary stormwater management and treatment practices designed to control erosion and prevent sediment transport</li> </ul>	<ul style="list-style-type: none"> <li>• Public Education &amp; Participation, Training &amp; Education</li> <li>• Compliance with State Stormwater Regulations and TMDLs</li> <li>• Asset Mapping, Inventory, and management</li> <li>• Spill Prevention and Stormwater Pollution Source Control</li> <li>• 17 of the 117 active construction projects required Construction Stormwater Permit coverage and implemented erosion prevention and sediment controls, with a total of 197 compliance visits by agency staff</li> </ul>
<b>TMDL -&gt; Total Maximum Daily Load</b>	<ul style="list-style-type: none"> <li>• Establishes reduction targets for specific pollutants (i.e., stormwater flow, phosphorus, etc.) to attain water quality standards.</li> <li>• Applies to watersheds with identified impairments for which a TMDL has been issued by ANR and approved by EPA</li> <li>• Phosphorus Control Plans (PCP) in the Lake Champlain Basin and Lake Memphremagog, Flow Restoration Plans in Stormwater Impaired watersheds.</li> </ul>	<ul style="list-style-type: none"> <li>• 54 practices identified, 8 designed, and 31 constructed to meet the agency's Flow Restoration Reduction Targets across 10 stormwater impaired watersheds</li> <li>• Completed the VTrans generalized PCP and first and second 4-year implementation plan. Continued work on the Lake Memphremagog PCP due April 2025</li> <li>• VTrans has implemented BMPs to reduce P by more than 28% of the 1605 kg/yr target after the 2023 construction season</li> </ul>
<b>MSGP -&gt; Multi-Sector Industrial Stormwater</b>	<ul style="list-style-type: none"> <li>• Covers discharges of stormwater from industrial facilities which conduct activities and use materials that have the potential to impact the quality of Vermont's waters</li> <li>• Regulated VTrans facilities including 9 State Airports and 3 State Gravel Pits</li> <li>• Facilities are required to examine potential sources of pollution, implement measures to reduce the risk of stormwater contamination, and test stormwater discharges for sources of pollution</li> </ul>	<ul style="list-style-type: none"> <li>• VTrans develops and maintains Stormwater Pollution Prevention Plans (SWPPPs) at each facility that include training and education, stormwater management, asset management, erosion control, spill prevention, and stormwater pollution source control</li> <li>• 42 Stormwater Pollution Prevention Plans (SWPPPs) for VTrans maintenance facilities, airports, and gravel pits being maintained.</li> </ul>
<b>State OSW -&gt; Operational Stormwater Discharges</b>	<ul style="list-style-type: none"> <li>• Coverage under the general permit is required for discharges of regulated stormwater runoff from the construction, expansion, and redevelopment of impervious surfaces pursuant to the permit threshold triggers established in Vermont Statutes</li> </ul>	<ul style="list-style-type: none"> <li>• 4 projects in the project development process were designed pursuant to, applied for, and/or obtained permit coverage under the State Operational (post-construction) Stormwater Program</li> <li>• 4 new projects constructing new stormwater treatment practices</li> <li>• 92 previously constructed projects with stormwater treatment practices were inspected and maintained</li> </ul>

Prepared for 2024 Legislative Session on behalf of Vermont Agency of Transportation  
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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 including

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- Vermont DEC
- US EPA
- LCBP
- Regional Planning Commissions
- Watershed Groups like Friends of the Mad River and Friends of the northern Lake Champlain
- Other New England DOTs
- The University of Vermont



The University of Vermont

