

PROGRESS REPORT ON  
RIVER BASIN WATER QUALITY MANAGEMENT  
PLANNING  
(TACTICAL BASIN PLANNING)  
DURING 2016

10 VSA 1253(d)

Testimony for  
House Committee on Natural Resources, Fish, and Wildlife

Neil Kamman, Manager,  
Monitoring, Assessment and Planning Program

Watershed Management Division

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# Monitoring, Assessment and Planning Program (MAPP)

- Conduct and coordinate water quality testing statewide
- Relate results of testing to Water Quality Standards
- Create pollution control plans for individual lakes or streams (TMDLs)
- Develop Tactical Basin Plans to manage all waters of a watershed.
- Today's focus is on Basin Planning, and our annual report to the Committee.



### Monitoring, Assessment, and Planning Program

The Monitoring, Assessment, and Planning Program (MAPP) integrates three components of the Vermont water pollution control program. MAPP monitors water quality indicators and relations from indicators in light of applicable standards of drinkability, recreational use, and the condition of waters in Vermont.

A water assessment provides critical biological questions to assess the high quality of the Green Mountain National Forest basin.

Plan used to develop watershed plan that target water use practices or remediation. MAPP also monitors water quality modeling, assesses water quality compliance planning the regulatory process, and develops a comprehensive water quality database representing Vermont's surface waters.

KEY INITIATIVES

- Update water of use and data systems
- Update water quality modeling
- Update Basin Quality Assessment Plan
- Develop a robust modeling system for implementation priority and regionalized modeling
- Assess Land Use and Resource based Basin Planning

Water Use

- Water Use
- Water Use
- Water Use
- Water Use

Number of stream miles, and wetland acres under the surface water pollution:

## 860

### Introducing the Vermont Integrated Watershed Information System

Working to VIMS, Vermont's new Integrated Watershed Information System, VIMS allows users to search, view, and analyze data on all levels of water quality, quality, and monitoring data from the Watershed Management Division's data archive, and the online reporting website of public water providers.

- Site data using about search tools
- Day to date using Google Maps and the VIMS data
- Check monitoring and assessment of biological, chemical, and physical information
- Map monitoring and assessment data

Water quality monitoring and assessment data

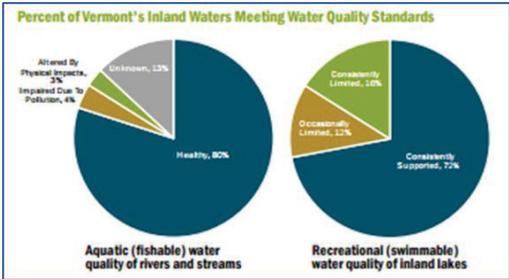
When planning these reports, please look for "Water Use" buttons, which provide access to more detailed data, and "The Water Quality" data to help describe the data being displayed.

The Monitoring, Assessment, and Planning Program's data archive will be developing additional search tools and integrated reporting capabilities, including multiple scenarios.

For more information on the Monitoring, Assessment, and Planning Program, visit our Vermont Watershed Management website.

Measurements such as the results are plotted as an impact indicator of Watershed Information System.

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# Tactical Basin Planning is a Process

- **Protect the Best**



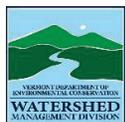
- **Restore the Rest**

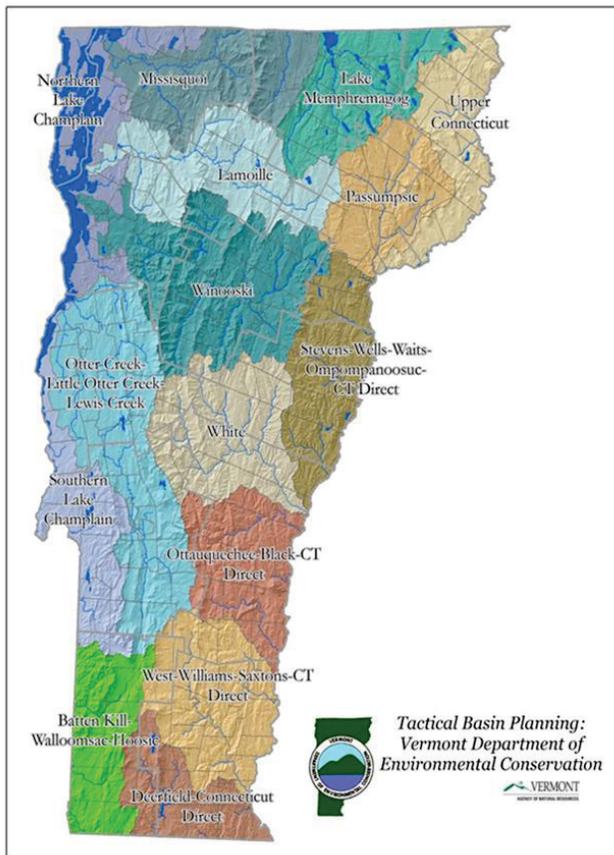


Statutory requirements for basin planning:

10 VSA 1253

40 C.F.R. 130.6



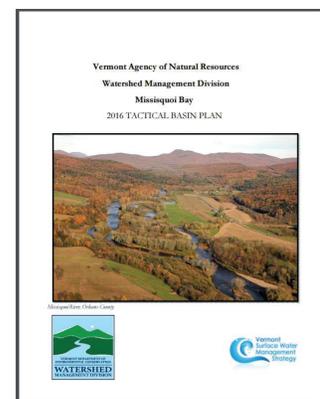
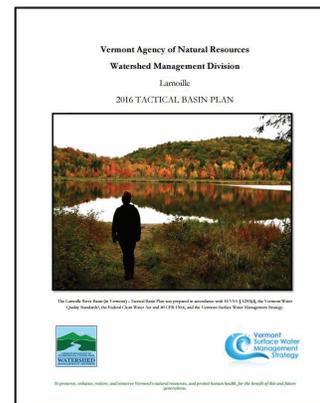


## Tactical Basin Planning

- 15 Planning Basins
- 5 Planners
- 5-year cycle
- 3 Phases:
  - Monitoring & assessment
  - Planning
  - Implementation

# Steps to Tactical Basin Planning

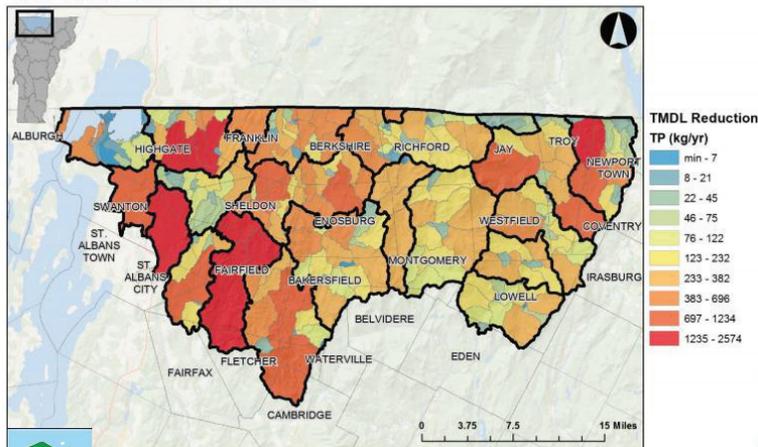
- Gather water quality information
- Compile and analyze other inventories and plans
- Consult water quality models
- Develop actions and projects
- Prioritize
- Identify partners and funding
- Implement projects
- Continually update project status
- Repeat



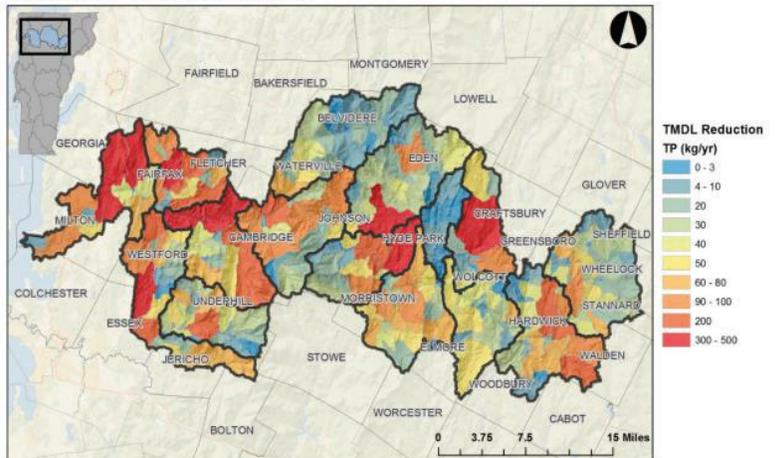


# Tactical basin plans also project phosphorus reductions for the Lake Champlain TMDL

Total TMDL Reduction Potential Missisquoi Bay

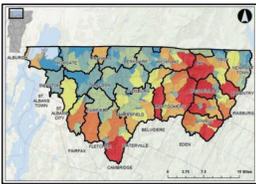


Total TMDL Reduction Potential Malletts Bay

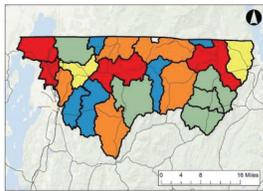


# We use the modeling to assist implementation of regulatory programs that control nutrient pollution

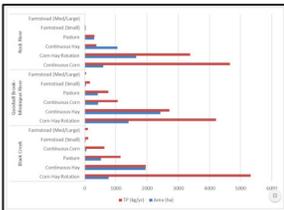
## Forests



## State roads/facilities



## Agriculture



## Local roads

Town	Paved Roads (kg/yr)	Unpaved Roads (kg/yr)	Town	Paved Roads (kg/yr)	Unpaved Roads (kg/yr)
Bakersfield	332.5	263.4	Jay	249.5	70.1
Berkshire	---	---	Lowell	316.6	47.4
Cambridge	291.5	144.4	Montgomery	302.7	119.3
Eden	4.7	---	Newport	256.2	104.4
Enosburgh	337.8	177.4	Richford	280.3	81.0
Fairfax	0.1	---	Swanton	240.9	56.7
Fairfield	398.4	232.5	St. Albans	87.1	43.5
Fletcher	11.0	30.6	Troy	398.6	27.0
Franklin	237.8	59.4	Woodfield	210.2	58.1
Highgate	402.9	66.4			
<b>Total loading from all roads (kg/yr)</b>				<b>6374</b>	
<b>Total reduction based on overall</b>					<b>2180</b>

## "MS4" communities

Approximate portions of the municipality area devoted to the various uses.

MS4 Municipality	Paved road (excluding Vtrans managed roads) (kg/yr)	Unpaved roads (kg/yr)	Other developed lands (kg/yr)
Essex	30	37	260
Milton	181	18	373

## Three-acre parcels

Town	Parcels (#)	Impervious (acres)
Eden	1	0.1
Highgate	8	75.5
Jay	4	74.0
Lowell	2	22.0
Montgomery	2	15.8
Richford	4	25.6
Swanton	8	38.1
Troy	1	3.6
<b>Total</b>	<b>30</b>	<b>254.7</b>

## Wastewater treatment facilities

Facility Name (ID)	Permit Expiration Date	Planned annual increase (MGD)	Design flow (MGD)	MS4 TSS (MMY)	Current annual load (MG/yr)	MS4 BOD (MG/yr)	2015 flow (MG/yr)	2015 flow percent of design flow	Treatment type	# of CDDs	Resolving water
Pacific (S-104)	5/9/2015	2017-18: 0.018	0.061	0.001	0.001	0.001	0.001/42%	2%	Advanced	0	Landscape
Johnson (S-110)	5/1/2016	2017-18: 0.019	0.061	0.001	0.001	0.001	0.001/42%	2%	Advanced	0	Landscape
Johnson (S-111)	5/1/2016	2017-18: 0.019	0.061	0.001	0.001	0.001	0.001/42%	2%	Advanced	0	Landscape
Montpelier (S-113)	12/1/2013	2017-18: 0.008	0.024	0.001	0.001	0.001	0.001/42%	2%	Advanced	0	Landscape
Winoona (S-115)	12/1/2016	2017-18: 0.004	0.012	0.001	0.001	0.001	0.001/42%	2%	Advanced	0	Landscape
Hardwick (S-116)	12/1/2016	2017-18: 0.011	0.033	0.001	0.001	0.001	0.001/42%	2%	Advanced	0	Landscape
PMU Montpelier (S-208)	6/30/22	2017-18: 0.425	NA	0.001	0.001	0.001	0.001/2%	2%	Advanced	0	Landscape



# Tactical basin plans present continually-refreshing lists of actions and projects

**WDP** Home Help

**Projects**

Name:  Status:  Grant Number:

Project Type:  County:  Project ID:

Basin Plan: Basin 7 - Lamolille Town:

Grade Type:  Grade:

ID	Project Name	Project Type	Status	Grant Number(s)
<a href="#">Edit</a> <a href="#">View</a> 161	Regional Hydroseeder Program	Stormwater Equipment - Roads	Implementation Funded	2017-CWF-2-02
<a href="#">Edit</a> <a href="#">View</a> 26	Rankin Farm River Corridor Easement	River Corridor Easement	Implementation Funded	2016-ERP-3-01
<a href="#">Edit</a> <a href="#">View</a> 140	Winooski Trees for Streams/Riparian Buffer Restoration, 2016	Riparian Planting - River	Implementation Funded	2016-ERP-2-15
<a href="#">Edit</a> <a href="#">View</a> 127	Jericho Stormwater Master Plan	Stormwater Master Planning	Scoping Funded	2016-CWF-1-04
<a href="#">Edit</a> <a href="#">View</a> 93	Hardwick Stormwater Master Plan	Stormwater Master Planning	Scoping Funded	2016-CWF-1-03
<a href="#">Edit</a> <a href="#">View</a> 60	Selawsky River Corridor Easement: Wild Branch - Phase 2	River Corridor Easement	Implementation Completed	2015-ERP-3-08
<a href="#">Edit</a> <a href="#">View</a> 61	Jeffersonville Easement Acquisition	River Corridor Easement	Implementation Funded	2015-ERP-3-07
<a href="#">Edit</a> <a href="#">View</a> 59	Selawsky River Corridor Easement: Wild Branch	River Corridor Easement	Scoping Completed	2015-ERP-3-06
<a href="#">Edit</a> <a href="#">View</a> 52	Hurteau River Corridor Easement, Lamolille River	River Corridor Easement	Implementation Completed	2015-ERP-3-03
<a href="#">Edit</a> <a href="#">View</a> 58	Hyde Park Stormwater Improvement Project	Stormwater	Implementation Funded	2015-ERP-2-20
<a href="#">Edit</a> <a href="#">View</a> 87	Implementation of Road Erosion BMPs along Class IV Roads	Road Project	Implementation Completed	2015-ERP-2-17
<a href="#">Edit</a> <a href="#">View</a> 68	Equine Manure Runoff Management Program	Agricultural Pollution Prevention	Implementation Completed	2015-ERP-2-10
<a href="#">Edit</a> <a href="#">View</a> 57	Cambridge Trail Bridge Replacement and Floodplain Restoration	Floodplain/Stream Restoration	Implementation Funded	2015-ERP-2-01
<a href="#">Edit</a> <a href="#">View</a> 235	Brewster River Stream Geomorphic Assessment and Corridor Planning	River Corridor Planning	Scoping Completed	2014-ERP-2-22
<a href="#">Edit</a> <a href="#">View</a> 238	Statewide Trees for Streams/Riparian Buffer Restoration, 2014-2015	Riparian Planting - River	Implementation Completed	2014-ERP-2-01
<a href="#">Edit</a> <a href="#">View</a> 274	Jeffersonville Riparian Corridor Easement	River Corridor Easement	Implementation Completed	2013-ERP-3-04.1
<a href="#">Edit</a> <a href="#">View</a> 92	Georgia Deer Brook Gully Stormwater Project	Stormwater	Scoping Graded	
<a href="#">Edit</a> <a href="#">View</a> 94	Upper Lamolille Bridge and Culvert Upgrades	Road Project	Discovery	
<a href="#">Edit</a> <a href="#">View</a> 96	Scribner Bridge over Giton River	Road Project	Scoping Completed	
<a href="#">Edit</a> <a href="#">View</a> 98	Bryan Pond Dam Removal	Dam/Structure Removal	Scoping Completed	
<a href="#">Edit</a> <a href="#">View</a> 110	Hardwick Road Erosion Inventory	Road Erosion Control Inventory	Scoping Graded	
<a href="#">Edit</a> <a href="#">View</a> 111	Stamard Road Erosion Inventory	Road Erosion Control Inventory	Discovery	
<a href="#">Edit</a> <a href="#">View</a> 112	Walden Road Erosion Inventory	Road Erosion Control Inventory	Scoping Graded	

- All projects that have a potential water quality benefit are entered into an online database
- Projects are prioritized with partner input (RPCs, Cons. Districts).
- Database summaries are publicly available.

# Tactical basin plans identify key partners and funding, when known

**WDP** Home Help

Project ID: 92  
 Project Name: Georgia Deer Brook Gully Stormwater Project  
 Grant Number(s): Exit

**Project** | Events | Measures | Grading | Related Projects

### Project View

**Project Name:** Georgia Deer Brook Gully Stormwater Project

**Description:** A series of connected underground storm drains and catch basins in the vicinity of the intersection of Route 7 and 104a in Georgia outfalls in to an area of erodible soils forming a gully that discharges sediment into Deer Brook. A project has been designed to stabilize the gully to mitigate severe erosion caused by stormwater runoff with a rock lined outfall. Eroding AOT culverts should also be replaced.

**Project Type:** Stormwater

**SGA Reach:** Deer Brook mouth to 2.5 miles upstream

**Latitude:** 44.69574 **Longitude:** -73.10653

**Notes:** Old plans need to be reviewed and redesigned to account for any changes. The designs should be reviewed by the Rivers Program. Source: Deer Brook Gully Remediation and Stormwater Treatment Georgia, Vermont, Summary Report, February 2007.

**Link:** [Link](#)

Exit

**Towns & Regions**

Town
Georgia

**Basin/Sub Basins**

Sub Basin
Tributaries to Lower Mid Lamoille
Lamoille River Basin

**Partners**

Partner	Status
Vermont Agency of Transportation	Active
Friends of Northern Lake Champlain	Active
Vermont Department of Environmental Conservation	Active

**Potential Funding Sources**

Funding Source
Ecosystem Restoration Program
Clean Water Fund

# The Role of the Community



- ✓ Identify water quality issues – what did we miss?
- ✓ Assist in targeting strategies
- ✓ Formulate a collaborative approach
- ✓ Be Involved in implementation.

# MAPP has evolved the planning program to deliver fully-integrated and online basin plans.

## Online Basin Plan Documents



**Hudson River Drainage Basin:**  
[Battenkill, Hoosic, Walloomsac](#)

**Lake Champlain Drainage Basin:**  
[Southern Lake Champlain](#),  
[Otter, Little Otter, Lewis Creeks](#)  
[Northern Lake Champlain](#)  
[Missisquoi Bay](#),  
[Lamoille](#)  
[Winooski](#)

**Connecticut River Drainage Basin:**  
[White](#)  
[Ottauquechee, Black](#)  
[West, Williams, Saxtons](#)  
[Deerfield](#)  
[Stevens, Wells, Waits, Ompompanoosuc](#)  
[Passumpsic](#)  
[Upper Connecticut River](#)

**Lake Memphremagog Drainage Basin:**  
[Lake Memphremagog, Coaticook, Tomifobia](#)

## Online Implementation Tables

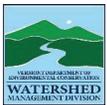
ID	Project Name	Project Type	Status	Grant Number(s)
04-00014	Upper Lamoille Bridge and Culvert Upgrade	Road Project	Discovery	
04-00018	Bryan Pond Dam Removal	Dam Removal	Discovery	
04-00111	Sharnard Road Erosion Inventory	Road Erosion Control Inventory	Discovery	
04-00111	Wheelock Road Erosion Inventory	Road Erosion Control Inventory	Discovery	
04-00114	Wentford Road Erosion Inventory	Road Erosion Control Inventory	Discovery	
04-00118	Yakim Road Erosion Inventory	Road Erosion Control Inventory	Discovery	
04-00118	Georgia Road Erosion Inventory	Road Erosion Control Inventory	Discovery	
04-00120	Fletcher Road Erosion Inventory	Road Erosion Control Inventory	Discovery	
04-00121	Fairfax Road Erosion Inventory	Road Erosion Control Inventory	Discovery	
04-00125	Woodbury Road Erosion Inventory	Road Erosion Control Inventory	Discovery	
04-00159	Emore Garage Stormwater Project	Stormwater	Discovery	
04-00162	Seymour River Watershed Stream Geomorphic Assessment and River Corridor Plan	Corridor Planning	Discovery	
04-00286	Mapping and baseline data for use of a full Phase 2) for the tributaries to the Upper Lamoille	Corridor Planning	Discovery	
04-00292	Flooding Culvert Inventory for Upper Lamoille	Road Project	Discovery	
04-00292	Watershed Education Projects	Education & Outreach	Discovery	
04-00295	Lamoille River Paddlers' Trail Support	Public Engagement	Discovery	
04-00296	Flood Resiliency Workshop and Related Projects	Education & Outreach	Discovery	
04-00297	Lamoille County Planning Commission Water Quality Database Updates	Technical Assistance	Discovery	
04-00303	Indian Brook Remediation Project	Floodplain/Stream Restoration	Discovery	
04-00303	Lowell asbestos mine - Nutchess Brook	Floodplain/Stream Restoration	Discovery	
04-00304	Johnson State College Monitoring Project	Water Quality Sampling	Discovery	
04-00305	George Sapp in Waterville Village	Floodplain/Stream Restoration	Discovery	
04-00304	Mapping and baseline data for use of a full Phase 2) for the tributaries to the Upper Lamoille	Corridor Planning	Discovery	
04-00305	Cabot Road Culvert Replacement, Walden	Road Project	Discovery	
04-00313	Beam Mapping in Cemetery Brook	Floodplain/Stream Restoration	Discovery	
04-00318	Culvert Replacement Project Lakeshore Road Greensboro	Road Project	Discovery	
04-00320	Restoration Project Bachelor Brook, Greensboro	Road Project	Discovery	
04-00320	Buffer Plantings on Tule Brook, Greensboro	Riparian Planting - River	Discovery	
04-00321	Upstream Buffer Planting, Tule Brook, Greensboro	Riparian Planting - River	Discovery	
04-00328	The North Shore Road Culvert replacement, Greensboro	Road Project	Discovery	
04-00329	Dry Culvert Rehabilitation, Greensboro	Road Project	Discovery	
04-00330	Foster Brook Buffer Planting, Captain Lake Tributary in Greensboro	Riparian Planting - River	Discovery	



## Highlights from the Annual Report on Basin Planning

## Plans Issued

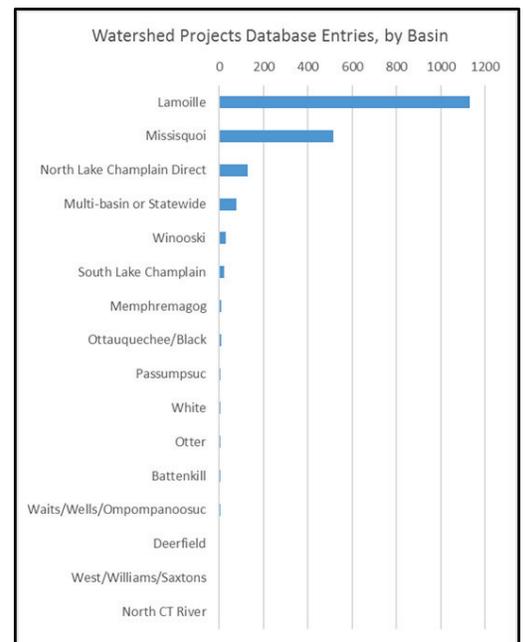
- [Battenkill, Hoosic, Walloomsac Tactical Basin Plan](#). Approved January, 2016
- [Lamoille Basin Tactical Plan and Phase II Lake Champlain TMDL Implementation Plan](#). Approved December, 2016
- [Missisquoi Bay Basin Tactical Plan and Phase II Lake Champlain TMDL Implementation Plan](#). Approved December, 2016
- [West, Williams, Saxton's Tactical Basin Plan](#). Approved January, 2016.
- The Lake Memphremagog Phosphorus TMDL and Lake Memphremagog and Coaticook Basin Tactical Basin Plan. *Forthcoming*



## Annual Report Highlights

## Business Process Improvement

- Standardized the tactical planning process
- Constructed a new database system for project *and* progress tracking;
- Developed planned project lifecycle stages;
- Aligned grant process with project priorities.



## Annual Report Highlights

## Partnership - Regional Planning Comm's

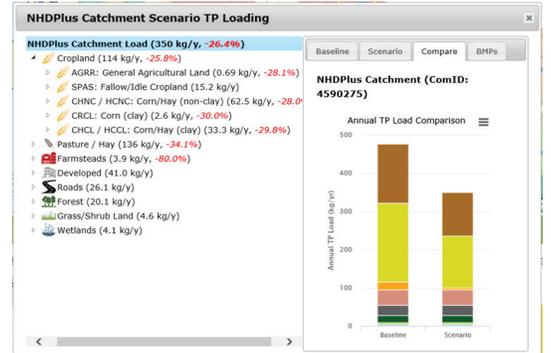
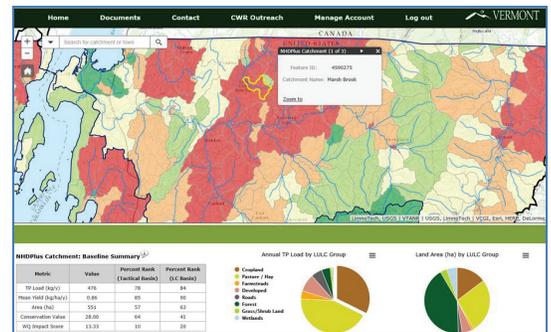
- Integrate municipal priorities into tactical plans.
- Municipal outreach for Act 64.
- Integrate tactical basin planning with RPC-led planning activities, such as transportation and hazard mitigation planning.
- Outreach to municipalities to support higher levels of protection.
- Water Quality Advisory Committees for municipalities.
- In some instances, RPC partner with Conservation Districts to augment support.



## Annual Report Highlights

## Clean Water Roadmap

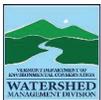
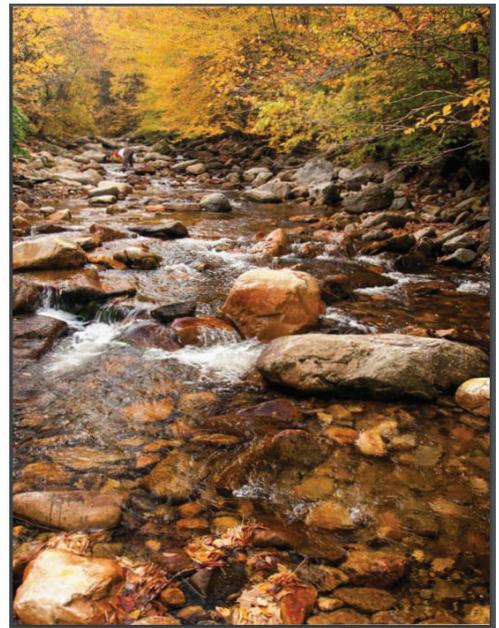
- Online phosphorus planning/mapping program - coming in March, 2017
- Funded by Keurig GMCR with support from TNC, DEC, and others
- Presents online maps of phosphorus pollution and appropriate reduction practices.
- Can be used to map phosphorus reduction projects from DEC's database for public.



## Annual Report Highlights

## Very High Quality Waters Protection

- Act 79 (2016) directed DEC to revise Vermont Water Quality Standards Rule to improve protection of surface waters.
- Rule amendment completed during 2016.
- Dozens of miles of new Class A(1) stream designated in Green Mountain National Forest lands.
- New temperature standards to protect fisheries.
- Four new Class 1 Wetlands in front of LCAR this morning.



## Annual Report Highlights

## Other useful content

- Three-year schedule for basin plan development
- Three-year strategic outline of actions established by tactical basin plans
- MAPP's planners – contact information
- Highlights from all 15 of Vermont's basins.



FEMA supported buyout and removal of Irene-damaged homes to restore natural floodplains

For additional information



VERMONT DEPARTMENT OF  
ENVIRONMENTAL CONSERVATION  
**WATERSHED  
MANAGEMENT DIVISION**  
MONITORING, ASSESSMENT &  
PLANNING PROGRAM

**Neil C. Kamman**, Program Manager  
1 National Life Dr., Main 2  
Montpelier, VT 05620-3522  
802 490-6137  
[neil.kamman@vermont.gov](mailto:neil.kamman@vermont.gov)

[www.watershedmanagement.vermont.gov](http://www.watershedmanagement.vermont.gov)  
See what we're up to on our [blog](#).

