

# Tracking and Communicating Vermont's Clean Water Progress

Emily Bird and Helen Carr

Vermont Department of Environmental Conservation

February 14, 2019



AGENCY OF ADMINISTRATION  
AGENCY OF AGRICULTURE, FOOD & MARKETS  
AGENCY OF COMMERCE & COMMUNITY DEVELOPMENT  
AGENCY OF NATURAL RESOURCES  
AGENCY OF TRANSPORTATION

# Vermonters care about clean water



# Vermont's Clean Water Priorities and Clean Water Restoration Plans (i.e., Total Maximum Daily Loads, or TMDLs)

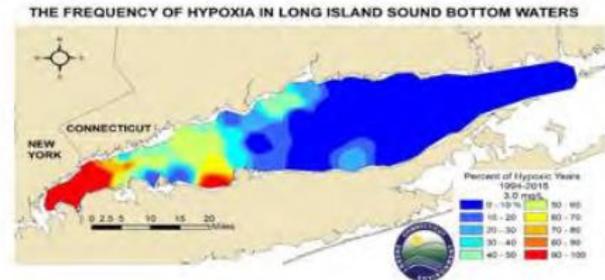
**Phosphorus TMDLs for Vermont Segments of Lake Champlain**



**Lake Memphremagog Phosphorus TMDL**



**Nitrogen TMDL for Dissolved Oxygen in Long Island Sound**



# Vermont Clean Water Act (Act 64 of 2015)

## “All-in for Clean Water”

Reasonable assurance to meet nonpoint source targets



New water quality regulations

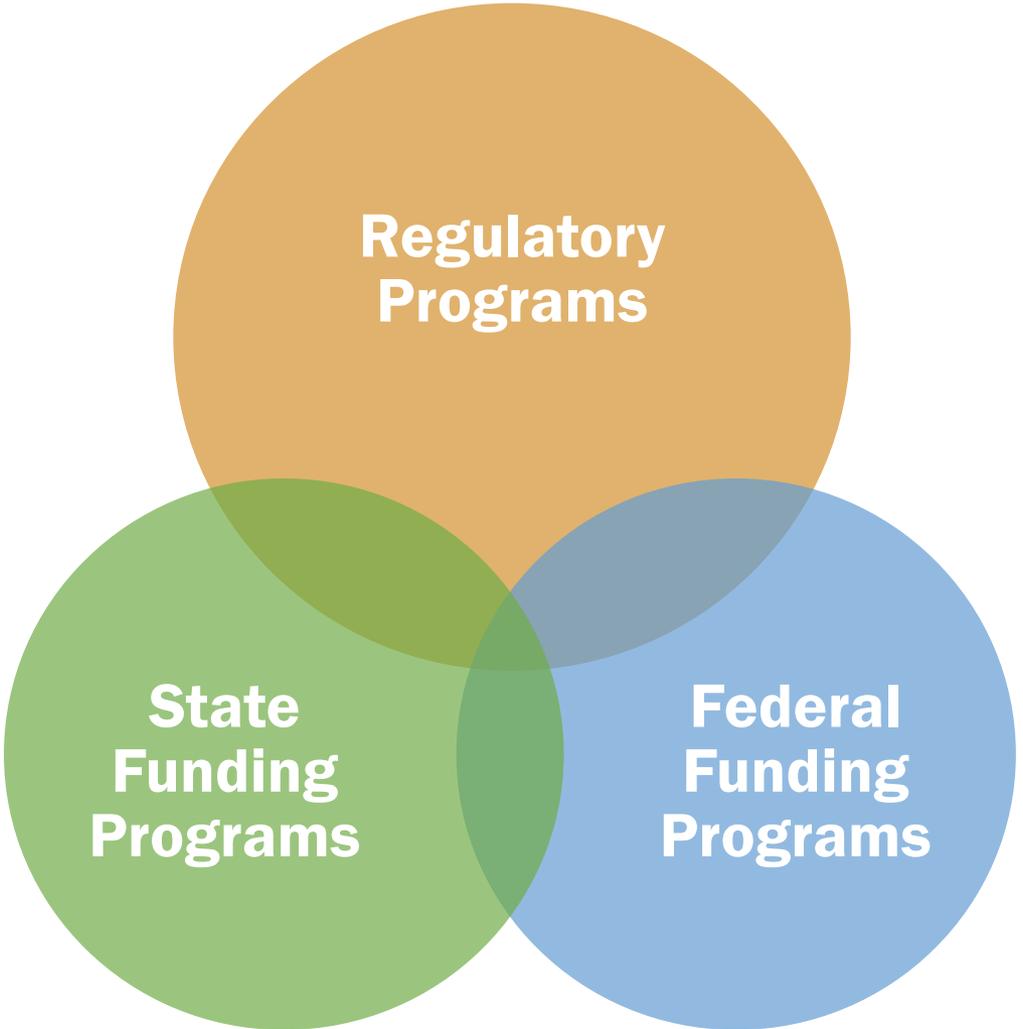
New Clean Water Fund



New tracking, accounting, and reporting requirements



**Scope of Vermont's Clean Water Restoration Tracking (i.e., TMDL Progress)**



# Lake Champlain TMDL Accountability Framework

TMDL establishes phosphorus targets



TBP I.D. five-year interim phosphorus planning targets



TBP I.D. priority actions to meet five-year planning targets



Track actions implemented via regulatory/funding programs



Estimate annual average phosphorus load reductions

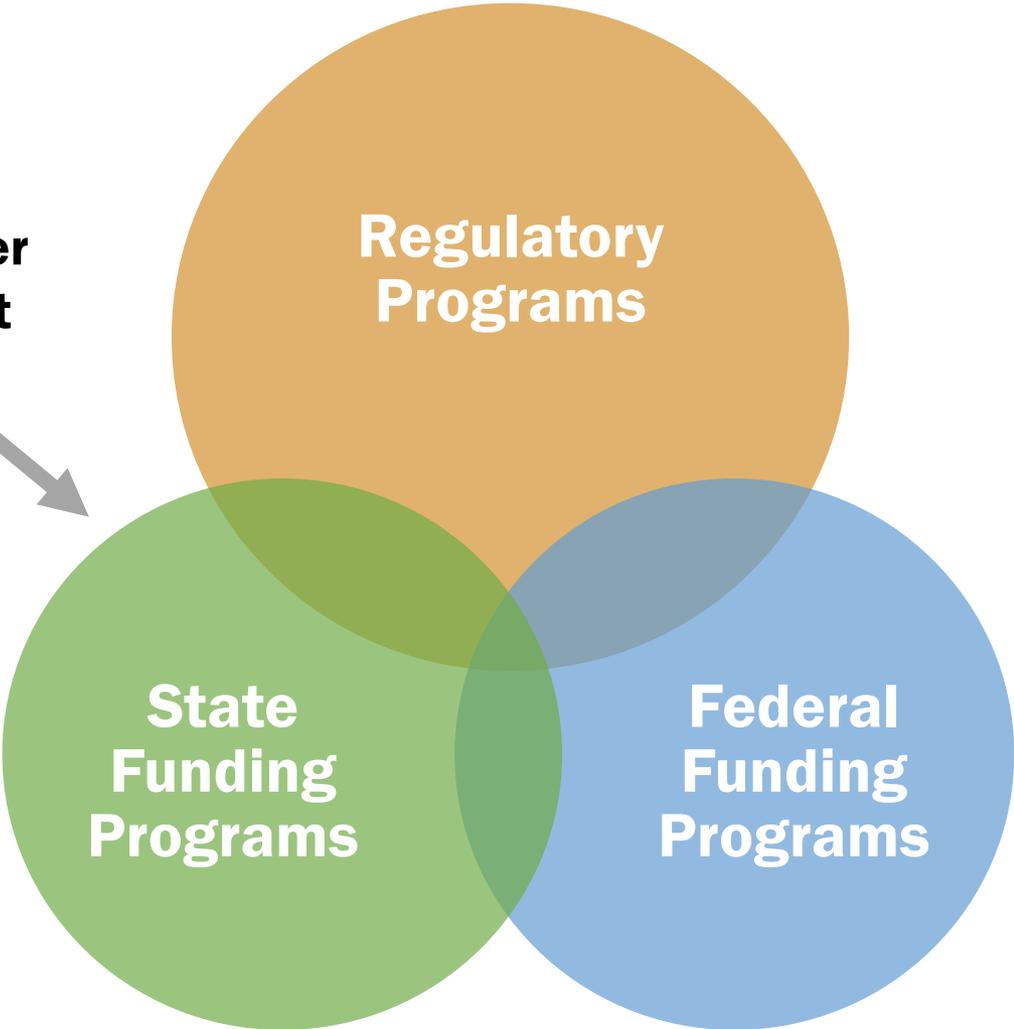
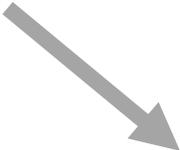


Measure progress against TMDL base load and targets

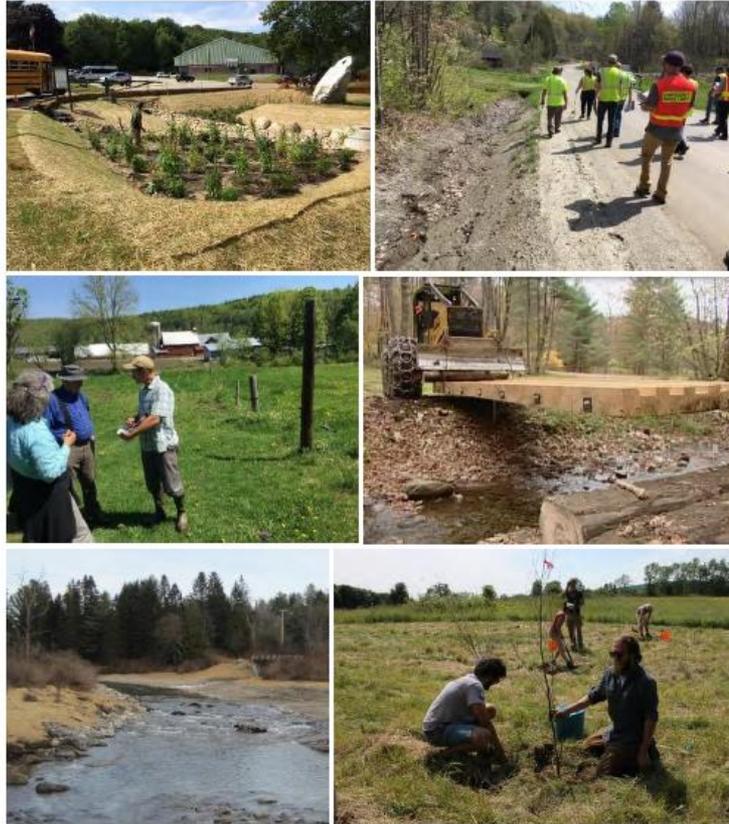
EPA issues report cards by planning basin on five year rotation

# Scope of Vermont's Clean Water Restoration Tracking (i.e., TMDL Progress)

**Vermont Clean Water Initiative Investment Report scope**

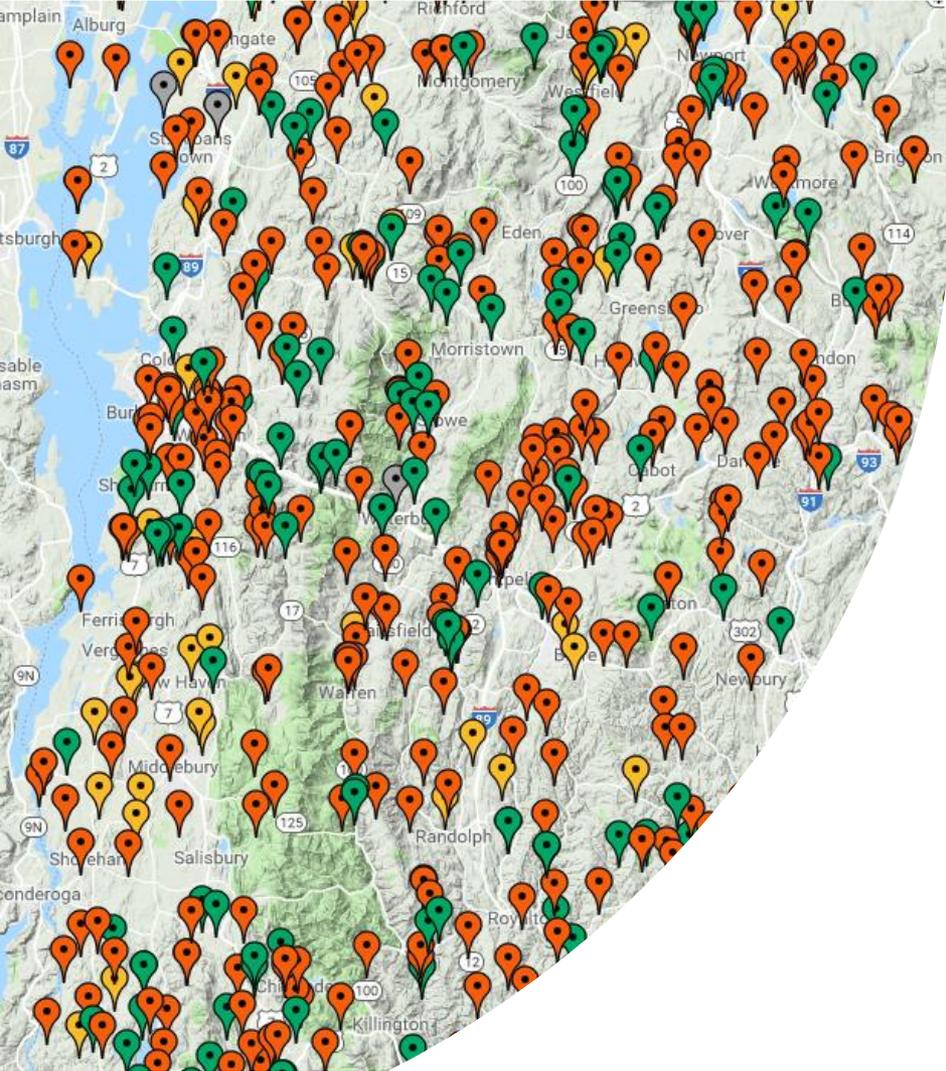


# VERMONT CLEAN WATER INITIATIVE 2018 INVESTMENT REPORT



AGENCY OF ADMINISTRATION  
AGENCY OF AGRICULTURE, FOOD & MARKETS  
AGENCY OF COMMERCE & COMMUNITY DEVELOPMENT  
AGENCY OF NATURAL RESOURCES  
AGENCY OF TRANSPORTATION

<http://dec.vermont.gov/watershed/cwi/cwf#report>



# Interagency Clean Water Projects Dashboard

Helen Carr

# What is the Dashboard?



An online interactive platform displaying clean water project data from the state's clean water tracking database to the public



Search clean water project data from six state agencies and view individual project reports with detailed information



Scope includes projects that have been funded or completed from state fiscal year 2016 to 2018



Complements the [Vermont Clean Water Initiative 2018 Investment Report](#)

Municipal Wastewater Improvements - Construction

St. Albans City - Wastewater Treatment Facility Upgrade -

Water Quality Sampling

Water Quality Monitoring - Tributary monitoring- Memphremagog

Agricultural Pollution Prevention - Implementation

Equine Manure Runoff Management Program

Lake Shoreland - Implementation

Lake Wise Practice Implementation- Lake Carmi, Franklin

Stormwater - Implementation

Harwood Union Middle and High School, Duxbury Stormwater Treatment  
AGENCY OF NATURAL RESOURCES

Towns: Duxbury

County: Washington

Watershed: Winnooski

State Funding: \$29,040

Funding Source: Capital Fund

Description: The project is located at the Harwood Union High School in the town of Duxbury. The construction of Harwood Union predates state stormwater regulations and the infrastructure, therefore, offers little to no stormwater treatment. With approximately 8.3 acres of impervious surface, deteriorating stormwater infrastructure, as well as encroachment on (and direct input into) Lozelle Brook, runoff from Harwood Union High School contributes to stream bank erosion, sedimentation and pollutant transport to a Dowsville Brook tributary. The result of this project will be the construction of a 1,400 square foot bioretention practice that will mitigate runoff from approximately 0.53 acres of rooftop runoff that collects in roof drains and empties into a pipe system that outlets in Lozelle Brook.

Partner: Friends of the Mad River



Project Status:

Funded SFY 2017

Completed SFY 2018

Results:

- 0.53 Acres of impervious surface treated
- 0.26 kg of phosphorus reduced annually, over 20 years

Area outside classroom before bioretention was installed

Completed construction of bioretention area with boardwalk



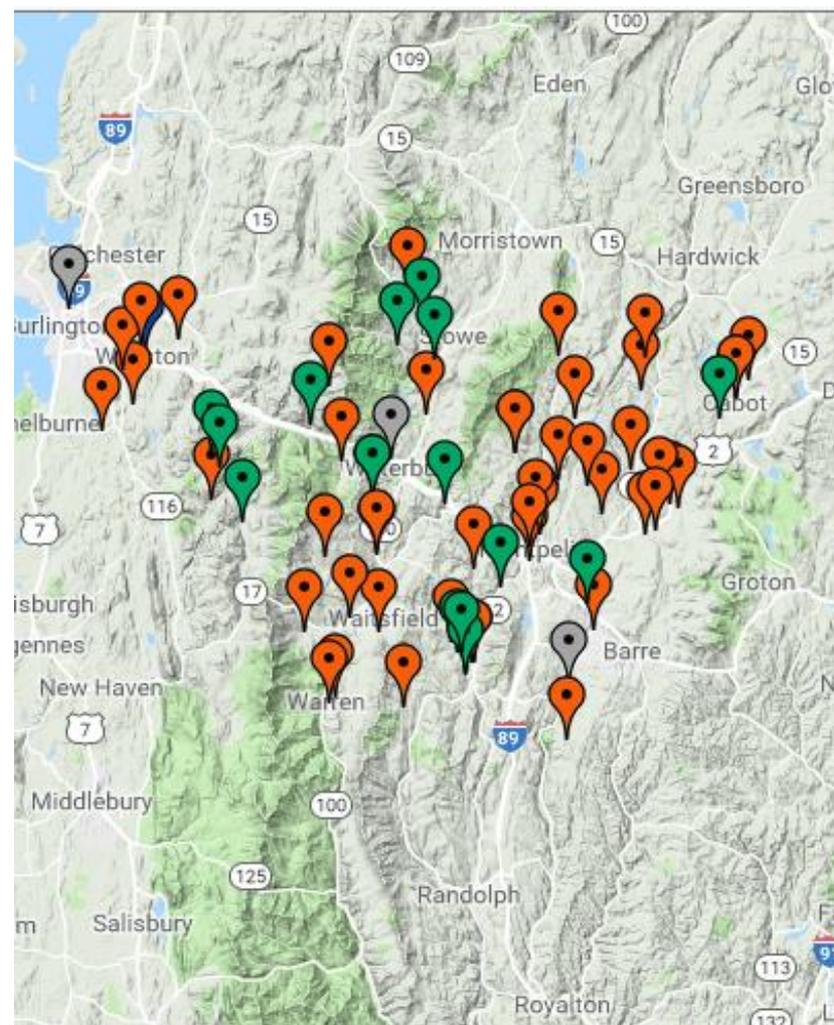
Data Source: <https://dec.vermont.gov/watershed/cw/projects>

For more information visit: <https://dec.vermont.gov/watershed/cw>



# Why create the Dashboard?

- Part of the Governor's **PIVOT** initiative
- Provides **transparency** to the public on investments made with state clean water funding and the outcomes of each
- Allows legislators, watershed groups and watershed planners to **search** and view the types and number of projects ongoing or completed in their regions
- Shows the **impact** each investment is making toward clean water goals



# Dashboard Functions

Access details of clean water projects funded by state agencies through a search engine and an interactive map.

**1 Project Search**

Listing | Map

Sector: [dropdown] Step: [dropdown]

Agency: [dropdown]

Town: [dropdown] County: [dropdown]

Basin Plan: [dropdown]

Project Status:  Funded  Completed  Both

Search | Clear

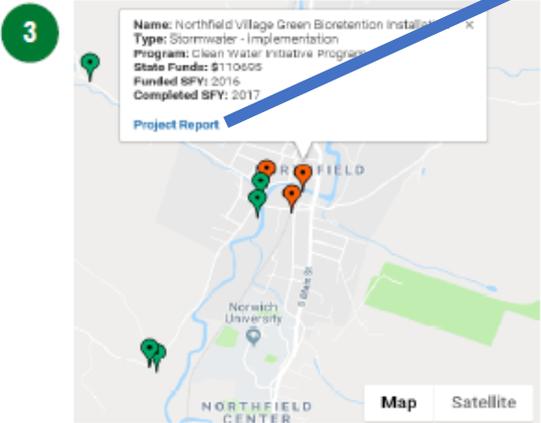
**1** A multiple parameter search with two viewing options. An individual project report can be viewed for each item searched (see reverse).

**2** List View: Displays a summary of information on each project searched.

**3** Map View: Displays projects within a defined geographic location. Click on pins to view project information and report.

**2**

Project
<p><b>Northfield Stormwater Mitigation Site Construction (Central Street and Main Street)</b></p> <p>Project Type: Stormwater - Implementation                      Program: Clean Water Initiative Program - Agency of Natural Resources                      Partner: Central Vermont Regional Planning Commission                      County: WASHINGTON                      Basin: Winooski                      Funded SFY: 2015                      Completion SFY: 2017                      State Funds: \$59,842</p> <p><a href="#">View</a></p>
<p><b>Northfield Village Green Bioretention Installation</b></p> <p>Project Type: Stormwater - Implementation                      Program: Clean Water Initiative Program - Agency of Natural Resources                      Partner: Central Vermont Regional Planning Commission                      County: WASHINGTON                      Basin: Winooski                      Funded SFY: 2016                      Completion SFY: 2017                      State Funds: \$193,095</p> <p><a href="#">View</a></p>
<p><b>Union and Water Street, Northfield Stormwater Treatment - Dog River</b></p> <p>Project Type: Stormwater - Implementation                      Program: Clean Water Initiative Program - Agency of Natural Resources                      Partner: Central Vermont Regional Planning Commission                      County: WASHINGTON                      Basin: Winooski                      Funded SFY: 2017                      Completion SFY: Ongoing                      State Funds: \$173,783</p> <p><a href="#">View</a></p>



## Floodplain/Stream Restoration - Implementation

### Birds of Vermont Museum, Huntington Stream Restoration and Gully Remediation

AGENCY OF NATURAL RESOURCES

**Towns:** Huntington  
**County:** Chittenden  
**Watershed:** Winooski  
**State Funding:** \$11,000  
**Funding Source:** Capital Fund



**Description:** This restoration project, located at the Birds of Vermont Museum on Sherman Hollow Rd in Huntington, restores a large gully developed during a 2013 flood event on the tributary of Sherman Hollow Brook. Results include the installation of a series of step-pools which act as energy dissipaters and can reduce flow velocity and erosion potential. The design prepares for the likelihood of more frequent and intense storms, and is being designed to accommodate 100 year floods. It will prevent further erosion and sedimentation from occurring. Additionally the owners are partnering with the Town of Huntington to replace the undersized culverts, culvert headers, rock lining the outfalls, and redo roadside ditches on Sherman Hollow Road.

**Partner:** Birds of Vermont Museum

Looking upstream towards Sherman Hollow Road from unnamed tributary before construction.



One month after construction and installation of culvert under the road. The new culvert with large boulders creates step-pools and a more erosion-resistant streambed.



**Project Status:**  
 Funded SFY 2015  
 Completed SFY 2017

- Results:**
- 0.25 Acres of river corridor buffer planted or restored
  - 300 Linear feet of riparian corridor buffer planted or restored

**Data Source:** <https://dec.vermont.gov/watershed/cwi/projects>  
**For more information visit:** <https://dec.vermont.gov/watershed/cwi>



# How do I get there?

## CLEAN WATER INITIATIVE



Stormwater - Implementation  
**Dishmill Brook/Burke Stormwater Treatment**  
AGENCY OF NATURAL RESOURCES

Town: Burke  
County: Caledonia  
Watershed: Passumpsic  
State Funding: \$40,000  
Funding Source: Clean Water Fund

Description: Dishmill Brook Stormwater Master Plan Phase 2 serves to design and implement sediment, nutrient and stormwater controls in the watershed. This grant involved the second phase of work for the Dishmill Brook Stormwater Master Plan, and included both design and implementation. Designs were prepared for priority projects selected from the SWMP, and included two concept 30% designs, and three 100% final designs. The grant also included funding to support the implementation of five practices identified in the SWMP. These road erosion control projects reducing sediment to the Dishmill Brook and its tributaries were installed, as well as ten Green Stormwater Infrastructure (GSI) practices.



## Projects



## Clean Water Dashboard



### Interagency Clean Water Projects Dashboard

An interactive application that displays clean water project information including, project type, project funding, project results and nutrient reductions from the states clean water tracking database. The user can search clean water project data from six state agencies and download individual project reports. This dashboard complements the [Vermont Clean Water Initiative 2018 Investment Report](#) and includes projects that have been funded or completed from state fiscal year (SFY) 2016 to 2018.

OR Google “Clean Water Projects Dashboard”

# Next Steps: Dashboard



Add projects that are planned but not yet funded- Coming soon!



Add a way to export searched projects



Provide options to summarize the project data you have searched for

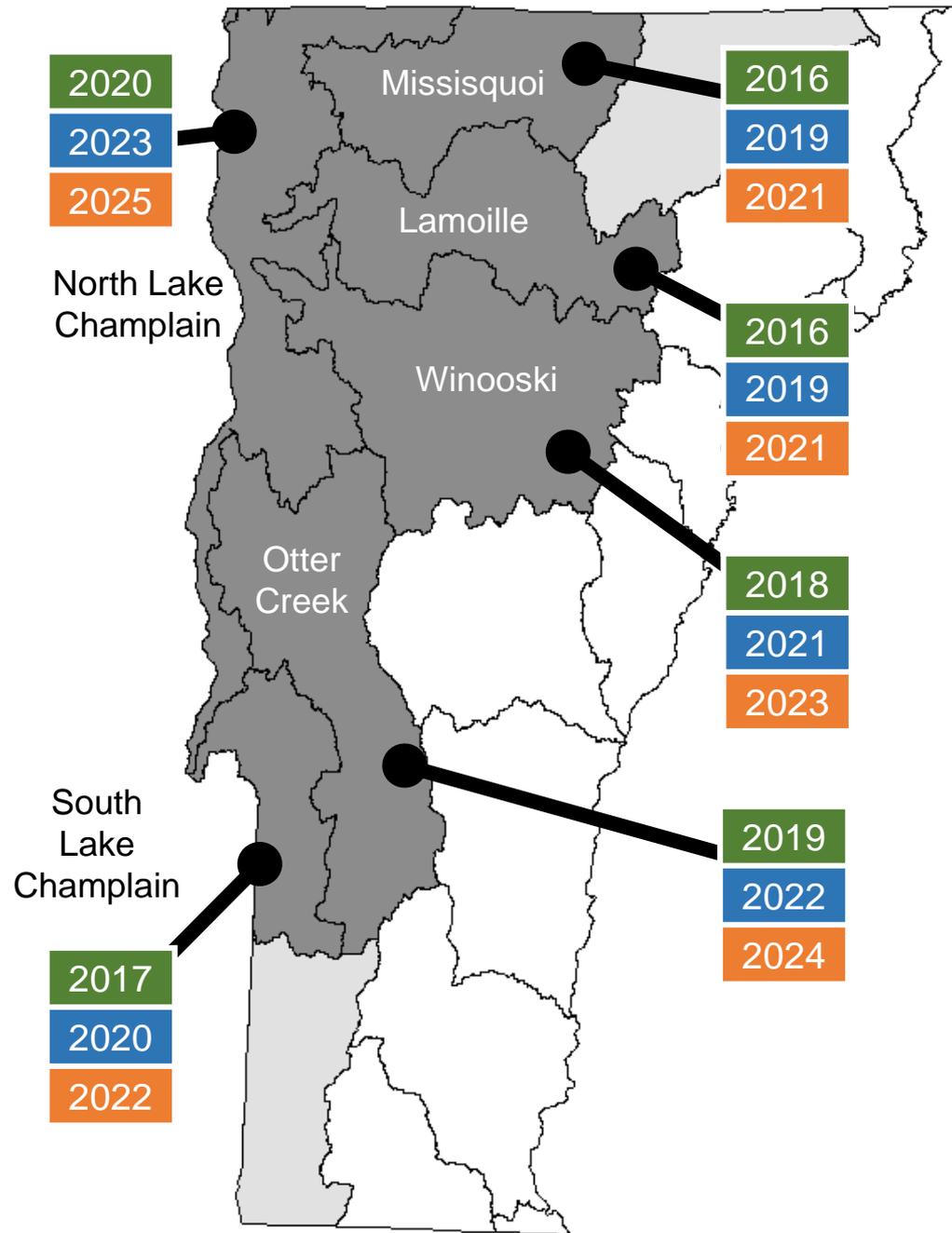
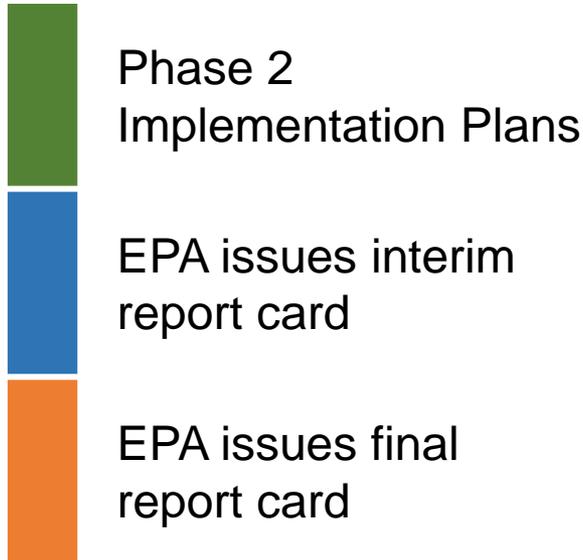


Develop accompanying documents to explain methods for tracking and accounting



We welcome your feedback!

# Next Steps: EPA Report Cards



# Next Steps: Additional Projects

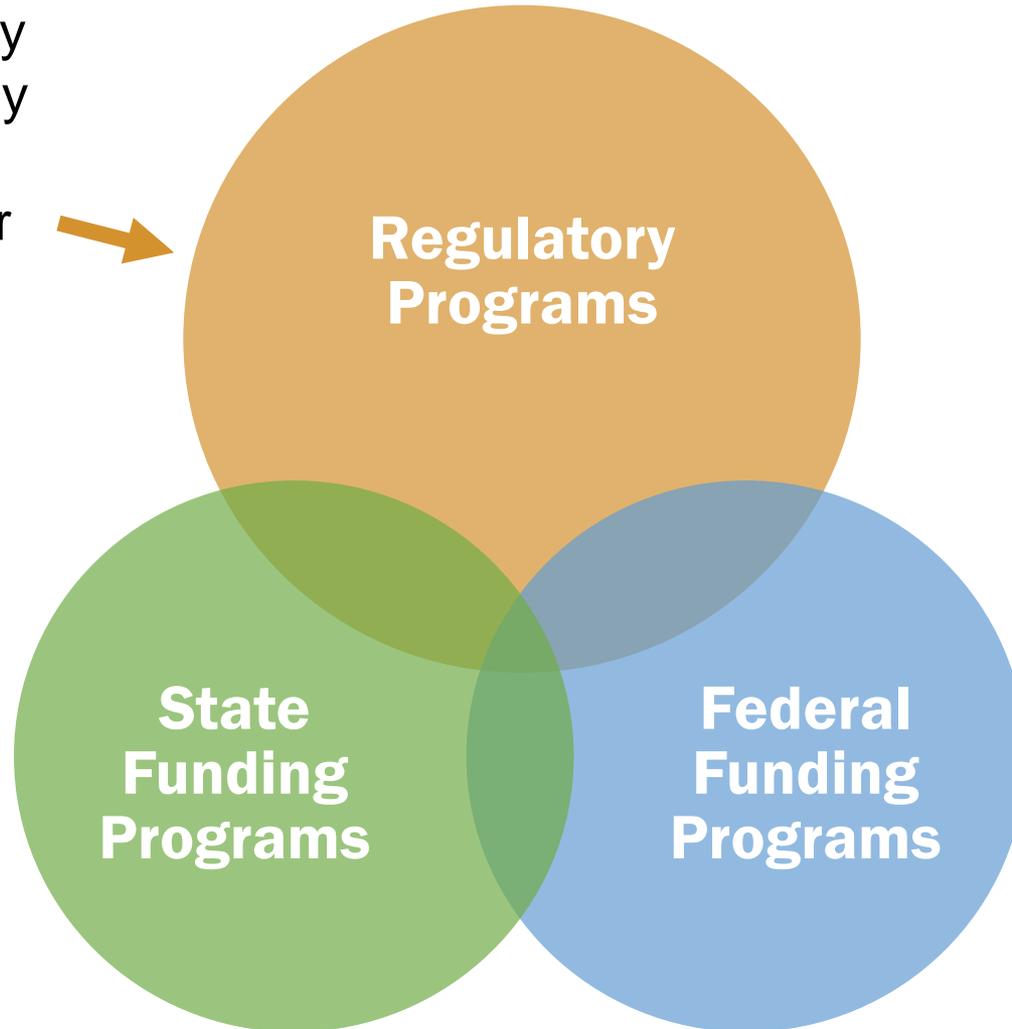
Key
Currently have ability to account for nutrient pollution reduction
Do not currently have ability to account for nutrient pollution reduction

Project Type	Lake Champlain	Lake Memphremagog	Connecticut River
Agricultural cropland and pasture conservation practices	Phosphorus	Phosphorus	Nitrogen
Agricultural forested riparian buffers	Phosphorus	Phosphorus	Nitrogen
Barnyard and production area management practices	Phosphorus	Phosphorus	Nitrogen
River and floodplain restoration	Phosphorus	Phosphorus	Nitrogen
Riparian buffer restoration	Phosphorus	Phosphorus	Nitrogen
Lakeshore restoration	Phosphorus	Phosphorus	Nitrogen
Wetland restoration	Phosphorus	Phosphorus	Nitrogen
Forest erosion control	Phosphorus	Phosphorus	Nitrogen
Stormwater treatment practices	Phosphorus	Phosphorus	Nitrogen
Road erosion control practices	Phosphorus	Phosphorus	Nitrogen
Wastewater treatment upgrades	Phosphorus	Phosphorus	Nitrogen
Combined sewer overflow abatement	Phosphorus	Phosphorus	Nitrogen
Summary of status to expand tracking and accounting ability	Developing methodologies to account for phosphorus reductions from all project types (where feasible) in 2017-2018. Expanded ability to quantify road erosion controls in SFY 2017.	Lake Memphremagog TMDL finalized in 2017, providing phosphorus pollution rates for this region. Use Lake Champlain methods to estimate phosphorus reduction efficiencies by project type.	Need Vermont nitrogen land loading rates to quantify the nitrogen load for land treated by practices (depends on timing and results of EPA's regional Nitrogen Reduction Strategy).

Expand ability to quantify pollutant reductions for projects in Connecticut River, and to cover additional project types

# Next Steps: Additional Programs

Expand tracking to new regulatory programs as they are rolled out (new stormwater permits and Required Agricultural Practices)



Expand tracking to federal funding programs, such as USDA-NRCS and Lake Champlain Basin Program



# Next Steps: Enhanced Documentation

## Standard Operating Procedures for Tracking Clean Water Initiative Activities

DRAFT

### Table of Contents

Table of Contents	2
Tracking & Accounting for Social Outcomes	5
Tracking Extent of Outreach Efforts using nFORM	5
Tracking Extent of Technical Assistance	5
Evaluating Social Indicators of Outreach & Technical Assistance	5
Tracking Investments of CWI Funding Programs	5
DEC Ecosystem Restoration Grant Program	5
F&W Watershed Implementation Grant Program	6
VTrans Better Roads Grant Program	6
AAFM Cost Share Programs	6
Tracking Performance Measures of CWI Funding Programs	6
Accounting for TMDL Implementation	6
Lake Champlain TMDL Implementation	6
Accountability Framework	6
Measuring Progress meeting TMDL WLAs & LAs	7
Wastewater WLA	7
Combined Sewer Overflow WLA	7
Developed Lands WLA	8
Future Growth WLA	9
Agriculture Production Area WLA	9
Agriculture LA	10
Forest LA	10
Streams LA	11
EPA Issued Report Cards	13
Schedule of TBPs and EPA Report Cards	13

# Next Steps: Verification

Verizon 8:56 AM

My Survey

**Project Information**

*Bioretention is a practice that treats runoff by passing it through a vegetated filter bed, with a filter mixture of sand, soil, and organic matter. Filtered stormwater is either returned to a conveyance system or infiltrated into the native soil.*

Ark ID  
138

BMP ID  
62

Town (Autocomplete)  
Northfield

Inspector  
Helen

Inspection Date  
April 18, 2018

Date of Last Rain Event

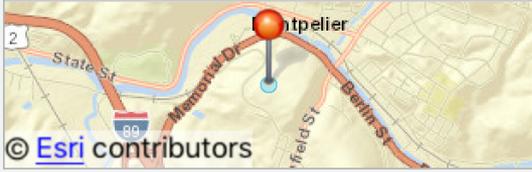
✓

Verizon 9:46 AM

My Survey

Project Location

44.257°N 72.584°W ± 65 m



Capture Photo / Browse to Photo

Camera icon Folder icon

▶ Erosion

▶ Sediment Accumulation/Deposition

▶ Debris Accumulation

▶ Vegetation

▶ Standing Water

✓

# For more information:

Website [cleanwater.vermont.gov](http://cleanwater.vermont.gov)

Reports <http://dec.vermont.gov/watershed/cwi/cwf#reports>

Projects <http://dec.vermont.gov/watershed/cwi/projects>

Emily Bird, [emily.bird@vermont.gov](mailto:emily.bird@vermont.gov), 802-490-4083

Helen Carr, [helen.carr@vermont.gov](mailto:helen.carr@vermont.gov), 802-490-6115

