Photo of paddlers enjoying Lake Champlain.

Vermont Clean Water Initiative 2025 Performance Report

Published:
January 15, 2026

VERMONT CLEAN WATER INITIATIVE

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

VERMONT CLEAN WATER INITIATIVE 2025 PERFORMANCE REPORT

Submitted on behalf of the Vermont Agency of Administration
January 15, 2026

Relevant Reporting Requirements:	Fulfilled by:
10 V.S.A. § 1389a (a) The Report shall summarize all investments, including their cost-effectiveness, made by the Clean Water Board and other State agencies for clean water restoration over the prior fiscal year.	Chapter 2
10 V.S.A. § 1389a (b)(1) Documentation of progress or shortcomings in meeting established indicators for clean water restoration.	Chapter 3 & Chapter 4
10 V.S.A. § 1389a (b)(3) A summary of water quality problems or concerns in each watershed basin of the State, a list of water quality projects identified as necessary in each basin of the State, and how identified projects have been prioritized for implementation.	Refer to Tactical Basin Plans[1]
10 V.S.A. § 1389a (b)(4) & (d)(3) A summary of any changes to applicable federal law or policy related to the State's water quality improvement efforts, including any changes to requirements to implement total maximum daily load plans in the State; Submit to the Joint Fiscal Committee a summary of available federal funding related to or for water quality efforts in the State.	2025 Report on Federal Funding Related to Water Quality Improvement Efforts in Vermont[2]
10 V.S.A. § 1389a (b)(6) Beginning January 2024, a summary of the administration of the grant programs established under sections 925–928 of this title [Act 76 of 2019], including whether these grant programs are adequately funding implementation of the Clean Water Initiative and whether the funding limits for the Water Quality Enhancement Grants under subdivision 1389(e)(1)(D) of this title should be amended to improve State implementation of the Clean Water Initiative.	Appendix A
10 V.S.A. § 1389a (d)(2) The Secretary of Administration shall develop user-friendly issue briefs, tables, or executive summaries that make the information required under subdivision (b)(3) available to the public separately from the report required by this section.	Clean Water Interactive Dashboard[3] Executive Summary
10 V.S.A. § 1386(e) Report the status of Lake Champlain total maximum daily load implementation plan milestones, phase 2 and beyond, identified in tactical basin plan implementation tables for each basin due for a U.S. Environmental Protection Agency interim or final report card in accordance with the TMDL Accountability Framework schedule.	Chapter 3 & Appendix B
10 V.S.A. § 1264 (k)(1–3) Report on installation of stormwater treatment practices through operational stormwater permits, including: (1) permitted new development is achieving at least a 70 percent average phosphorus load reduction; (2) estimated total phosphorus load reduction from new development, redevelopment, and retrofit of impervious surface permitted; and (3) number and percentage of projects that implemented Tier 1, 2, or 3 stormwater treatment practices.	Appendix C

[1] To learn more about Tactical Basin Planning and view the plans for all 15 of Vermont's basins, visit: https://dec.vermont.gov/water-investment/watershed-planning

[2] 2025 Report on Federal Funding Related to Water Quality Improvement Efforts in Vermont, available at: https://dec.vermont.gov/sites/dec/files/WID/CWIP/2025_Vermont%20Federal%20Clean%20Water%20Funding%20Report.pdf

[3] For more ways to interact with the data presented in this report, visit the Clean Water Portal: https://anrweb.vt.gov/DEC/cleanWaterDashboard/

Acknowledgements

This report was prepared by the Vermont Agency of Natural Resources Department of Environmental Conservation (DEC) Clean Water Initiative Program (CWIP) on behalf of the Vermont Secretary of Administration with assistance from partner agencies. CWIP coordinates with staff of the Vermont Agency of Administration; Vermont Agency of Agriculture, Food & Markets; Vermont Agency of Commerce and Community Development; Vermont Agency of Transportation; Vermont Fish and Wildlife Department; Vermont Department of Forests, Parks and Recreation; DEC's Water Investment Division; DEC's Watershed Management Division; Vermont Housing and Conservation Board; U.S. Department of Agriculture Natural Resources Conservation Service; and Lake Champlain Basin Program to complete this report. Vermont Agency of Digital Services supported data management and database development.

Vermont Clean Water Initiative: https://dec.vermont.gov/water-investment/cwi

Vermont Clean Water Initiative Partner Agencies

Agency of Administration: aoa.vermont.gov

Agency of Agriculture, Food & Markets: agriculture.vermont.gov

Agency of Commerce and Community Development: accd.vermont.gov

Agency of Natural Resources: anr.vermont.gov

Agency of Transportation: vtrans.vermont.gov

Vermont Clean Water Initiative Affiliate and Partner Entities

Vermont Housing and Conservation Board: vhcb.org

Lake Champlain Basin Program: lcbp.org

U.S. Department of Agriculture Natural Resources Conservation Service: usda.nrcs.gov

Report available electronically at: dec.vermont.gov/water-investment/cwi/reports

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Vermont Clean Water Initiative 2025 Performance Report Executive Summary

Vermont's waterways are important environmental and economic resources for residents and visitors alike. In 2015, the Vermont Legislature passed Act 64 – Vermont's Clean Water Act – which established the Clean Water Fund and affirmed Vermont's commitment to supporting clean water projects to protect, enhance, and restore water quality across the state. The primary purpose of the Clean Water Fund is to support implementation of the Lake Champlain and Lake Memphremagog phosphorus Total Maximum Daily Loads (TMDLs), consistent with commitments made to the U.S. Environmental Protection Agency (EPA). State-funded clean water projects are regulatory or non-regulatory practices or protections that address water pollution, focused on reducing sediment and excess nutrients like phosphorus and nitrogen. The *Vermont Clean Water Initiative 2025 Performance Report*, referred to hereafter as Report, summarizes efforts of state government, along with federal and local partners, to improve water quality across Vermont from state fiscal year (SFY) 2016 to 2025 (July 1, 2015-June 30, 2025).

Clean Water Investments

Vermont's clean water funding helps municipalities, farmers and other landowners, and nonprofit organizations complete clean water projects statewide. State and federal funding programs, as well as regulatory requirements, drive clean water implementation efforts in Vermont.

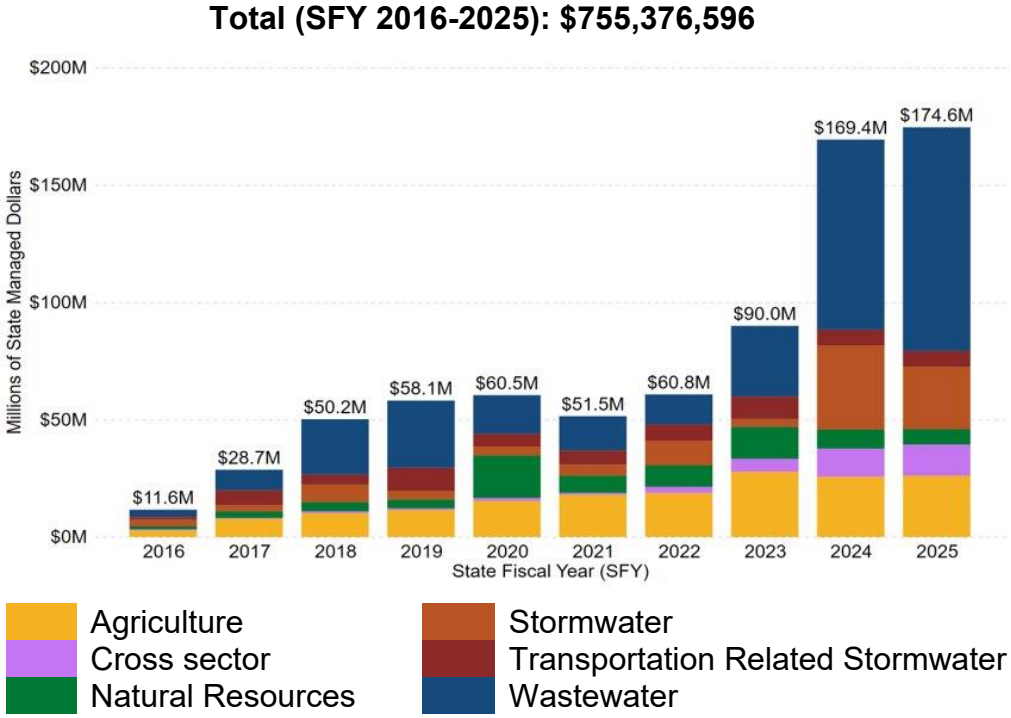
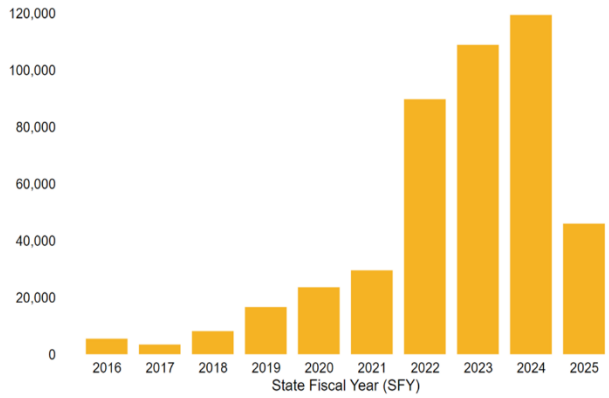


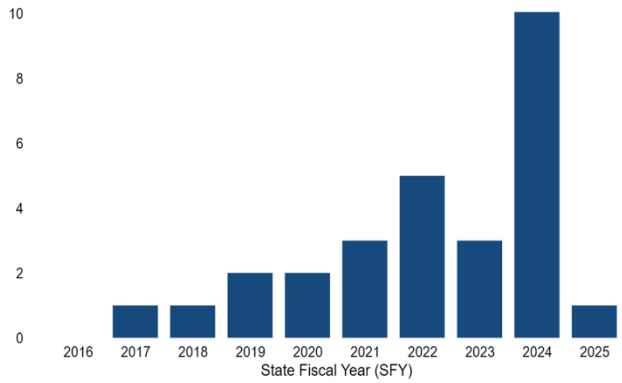
Figure ES-1. Total dollars awarded by State of Vermont agencies to clean water projects statewide by land use sector, SFY 2016-2025.

The State of Vermont invested over $755 million in clean water projects through grants, contracts, loans, and assistance programs from SFY 2016 to SFY 2025. The annual amount of funding awarded to clean water projects has risen significantly over the reporting period. Project funding varies annually based on project readiness, award timing, and economic factors. Increased funding levels in SFY 2023-2025 are a result of federal funding made available to Vermont through the American Rescue Plan Act (ARPA). The short-term availability of ARPA funding is expected to continue through SFY 2025, but ARPA funding is not available to support new awards after December 31, 2024. *See Report Chapter 2 to learn more about clean water funding and investments.*

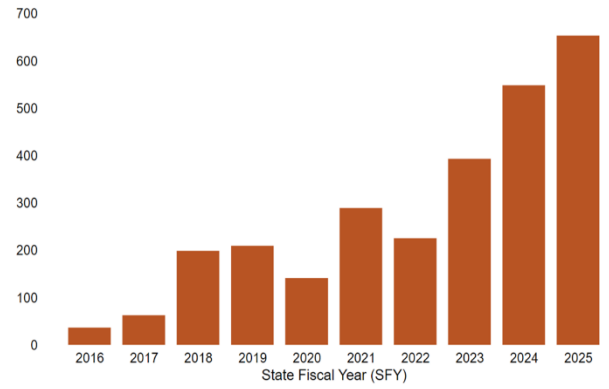
Results of State Funded Investments — Highlights



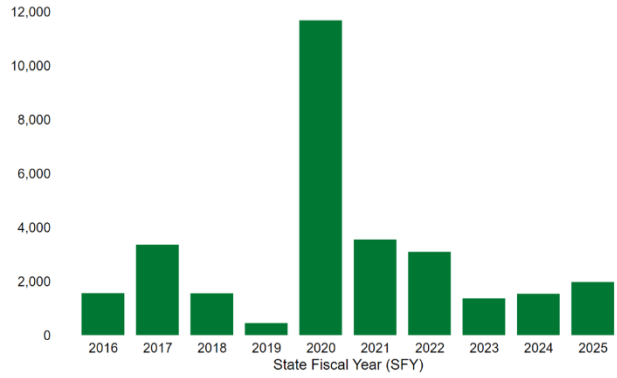
450,861 acres of agricultural conservation practices implemented
Recent increase is in part a result of the launch of the new innovative Vermont Pay for Performance Program. SFY 2025 data is preliminary and will be updated in future reports.



28 wastewater collection systems refurbished
Recent increase in SFY 2024 is a result of flood damage assessments, prompted by 2023 and 2024 flooding events, focused on identifying affected collection infrastructure.



2,756 acres of existing impervious surface treated by stormwater treatment practices under stormwater permits
Results of stormwater permits are reported at the time of permit issuance, and permittees have five years to implement the required stormwater control measures. Recent increase is driven by the issuance of permits for Vermont's Three-Acre sites.



30,114 acres of land conserved with natural resources protections
The increase of acres conserved in SFY 2020 was due to several multi-thousand-acre conservation efforts.

During construction photo of a subsurface sand filter system constructed at Bellows Free Academy in Fairfax, VT as part of the Green Schools initiative.

DEC and partners held a 2025 field day to train verifiers on assessing clean water projects. Attendees learned onsite about determining project function, maintenance needs, and improvements.

Total Maximum Daily Load (TMDL) Progress

The 2025 Report summarizes the state's progress implementing the Lake Champlain and Lake Memphremagog phosphorus Total Maximum Daily Loads (TMDLs). TMDLs identify water pollution reductions necessary to meet water quality standards. The figures below show the estimated total phosphorus load reductions, in metric tons per year, achieved by clean water project implementation thus far in the Lake Champlain and Lake Memphremagog basins. Estimates include the results of projects implemented through state and federal funding programs and in response to regulatory requirements. *See Report Chapters 3 and 4 for more information.*

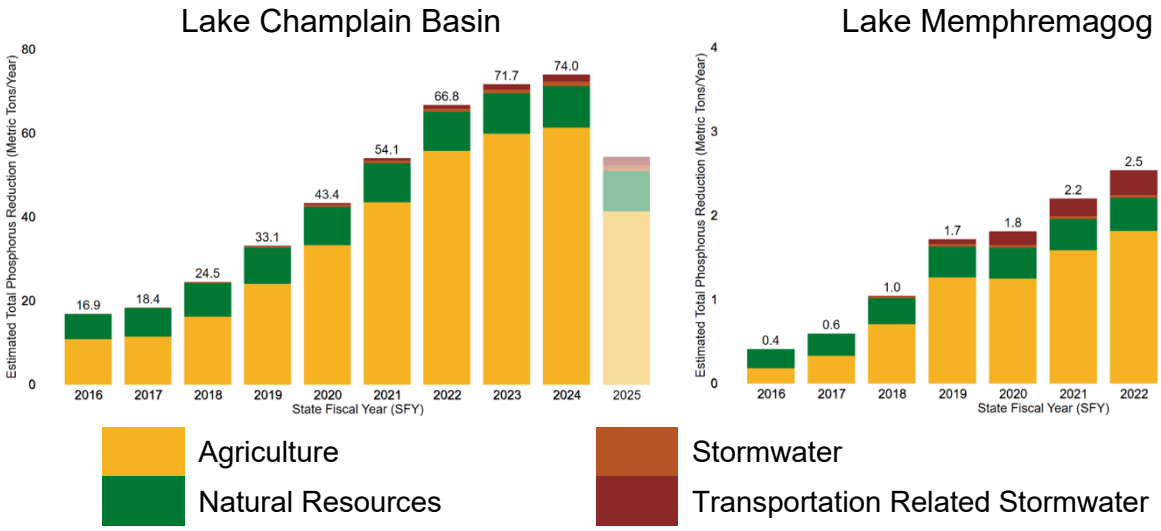


Figure ES-2: Annual estimated total phosphorus load reductions (metric tons per year) associated with reported clean water projects in the Lake Champlain (left) and Lake Memphremagog (right) basins during SFY 2016-2025 by land use sector.

Over the past ten state fiscal years, the state has made substantial progress towards reaching the water quality targets outlined in the state's large-scale phosphorus TMDLs. Best available data indicates that projects implemented to date have achieved 35% of the required reduction in the Lake Champlain basin and 25% of the required reduction achieved to date in the Lake Memphremagog basin. Achieving the water quality goals outlined in the state's phosphorus TMDLs is not a linear path — variance in the rate of progress is to be expected over the 20-year implementation period.

The magnitude and schedule of data collection for this Report necessarily introduces a lag in quantifying output and outcome metrics, resulting in annual estimated phosphorus reductions in the most recent state fiscal year being at or slightly below the penultimate year. Results of estimated phosphorus reductions for SFY 2025 are presented in Figure ES-2, with transparency indicating the data is preliminary. As additional data becomes available, it is reflected in future years of reporting, with additional gains in progress reflecting expanded data availability. This is akin to the true-ups seen in Federal economic indicator reporting and is not indicative of a shifting trend in progress. The figures below illustrate the difference in estimated phosphorus reductions across all reporting years as reported in SFY 2024, compared to SFY 2025, to demonstrate how data lags may contribute to incomplete results in the most recent few years of estimated phosphorus reduction data.

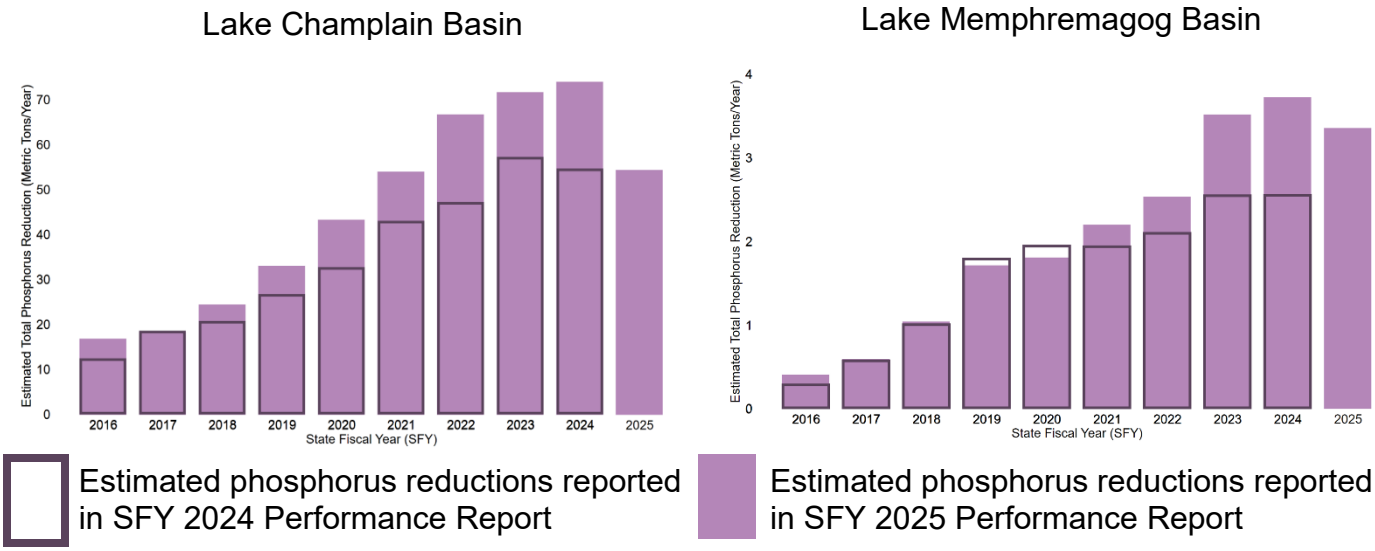
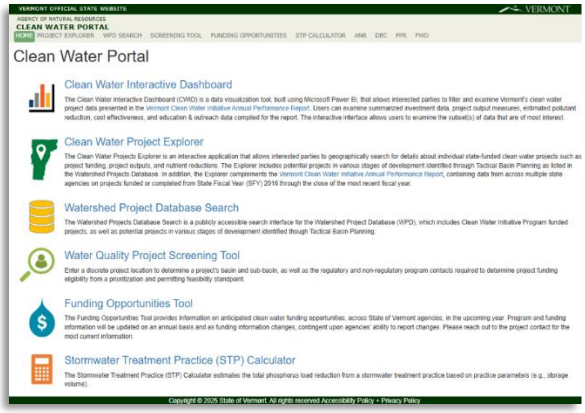
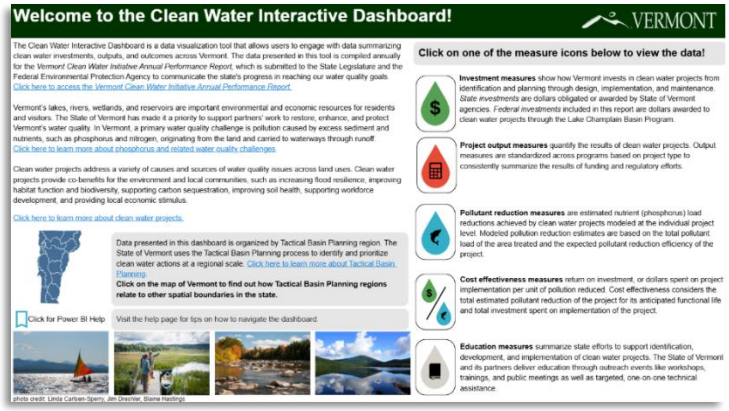


Figure ES-3: Estimated annual phosphorus reduction data in the Lake Champlain and Lake Memphremagog basins as reported in SFY 2024 compared to SFY 2025.

Continued effort, investment, and coordination are critical to the state's ability to reach its water quality goals and fulfill its commitments to EPA. The *Vermont Clean Water Initiative 2025 Performance Report* serves as a useful tool to provide accountability on the state's clean water progress and to inform adaptive management. By taking an adaptive management approach, the state will continue to learn from past implementation efforts in order to identify and prioritize its resources to support the most effective clean water projects and ensure continued progress. Clean water project implementation has strong connection with climate resilience work as clean water projects often have climate co-benefits like increased drought and flood resilience, improved carbon sequestration, better soil health, and improved habitat function and biodiversity.

Learn More and Explore Report Data





Explore the data behind the *Vermont Clean Water Initiative 2025 Performance Report*, including investments, outputs, estimated phosphorus reductions, and much more in the online Clean Water Interactive Dashboard via the Clean Water Portal: https://anrweb.vt.gov/DEC/cleanWaterDashboard/

Chapter 1: Introduction

Vermont's lakes, rivers, ponds, streams, wetlands, and reservoirs are important environmental and economic resources for residents and visitors. Vermont's waterways provide safe drinking water, recreational opportunities for thousands of people, and support local economies by fostering tourism. High-quality waterbodies also support wildlife and increase flood resilience for local communities. The State of Vermont has made it a priority to support partners' work to restore, enhance, and protect Vermont's water quality. This includes work to address priority sources of nutrient and sediment pollution. This report summarizes the efforts of the state and its partners to improve water quality across Vermont since the passage of Act 64, Vermont's Clean Water Act, in 2015.

Protecting and Restoring Clean Water in Vermont

Vermont's waterways vary in quality — some waters are of exceptional quality and require protection, and some waters suffer from excess pollution and require restoration. It is a priority of the state to restore impaired waters to mitigate adverse impacts on ecosystems, human health, and economic activity. In Vermont, a primary water quality challenge is pollution caused by "nonpoint sources" where sediment and nutrients, like phosphorus and nitrogen, from the land are transported to waterways by rainfall and snowmelt runoff traveling through agricultural fields, forests, parking lots, roads, and streambanks. Nonpoint source pollution is more difficult to manage than point source pollution, which enters waterways from an easily identified and confined place, such as a discharge pipe from a wastewater treatment facility.

Figure 1: Cyanobacteria blooms in Lake Champlain. ***Credit: Lake Champlain Committee***

Excess phosphorus loading can lead to cyanobacteria blooms in Vermont's lakes.[4] Cyanobacteria, also known as blue-green algae, are a natural component of surface waters. They provide important ecological services, such as photosynthesis and the transfer of nitrogen from the atmosphere to the aquatic environment through nitrogen fixation. However, cyanobacteria blooms can produce toxins that may be harmful to people, animals, and the environment. The Vermont Department of Health, Vermont Department of Environmental Conservation (DEC), and partners monitor cyanobacteria blooms around the

[4] To learn more about phosphorus, water pollution, and cyanobacteria, read the Phosphorus and Water Pollution Plain Language Fact Sheet: https://dec.vermont.gov/document/phosphorus-and-water-pollution

state and notify the public when cyanobacteria blooms make it unsafe to recreate at designated monitoring locations.[5]

Federally required clean water restoration plans, known as Total Maximum Daily Loads (TMDLs), estimate pollutant reductions required for an impaired waterbody to meet the State of Vermont's water quality standards. TMDLs set up long-term pollutant reduction targets that typically require both nonpoint source and point source pollution control projects. Most of the State of Vermont is covered by three large-scale TMDLs that require nutrient loading reductions, as shown in Figure 2. The Lake Champlain and Lake Memphremagog TMDLs target phosphorus pollution to address cyanobacteria blooms and other excess algae and aquatic plant growth. The five-state Long Island Sound TMDL targets nitrogen pollution, which causes low dissolved oxygen and dead zones in the Long Island Sound. The State of Vermont also has numerous small-scale TMDLs across the state.[6] Coordinated implementation of large-scale and small-scale TMDLs supports local and regional water quality restoration.

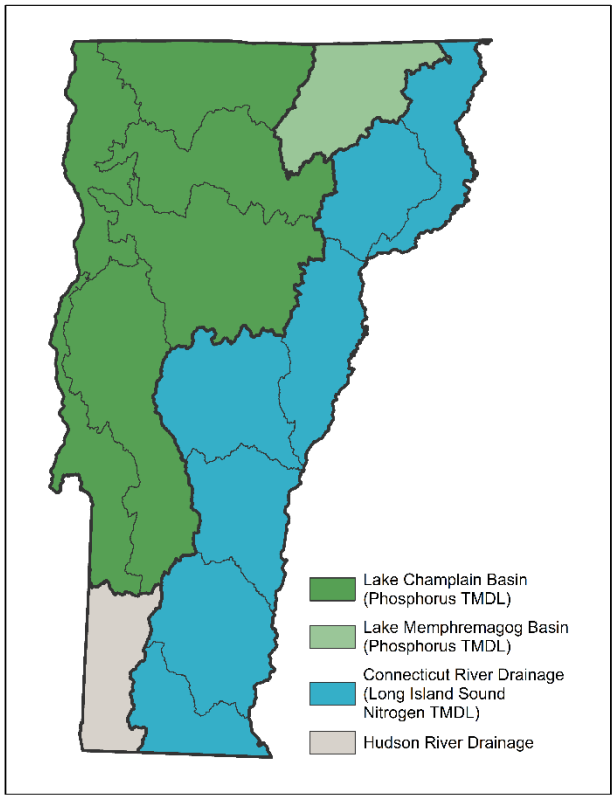


Figure 2: Vermont's large-scale TMDLs that require nutrient pollutant reductions. Tactical Planning Basins also shown.

Vermont's Clean Water Act (Act 64 of 2015)

To support the work to restore, enhance, and protect Vermont's water quality, Vermont's Clean Water Act (Act 64 of 2015) was signed into law in June 2015 to provide reasonable assurance on the state's ability to meet nonpoint source pollution reduction targets outlined by the TMDLs. The Act strengthened regulatory structures and financial assistance programs available to address sources of water pollution, with a focus on sediment and nutrients. The Act established the Clean Water Fund to provide a financial mechanism to support clean water work statewide. Act 64 also initiated accountability and transparency requirements to track and report on the resulting progress of water quality improvement efforts.

[5] Information related to public health and safety of recreating in Vermont's waterbodies is available through the Vermont Department of Health: https://www.healthvermont.gov/environment/tracking/cyanobacteria-blue-green-algae-tracker

[6] For more information on TMDLs in Vermont, visit: https://dec.vermont.gov/watershed/map/tmdl

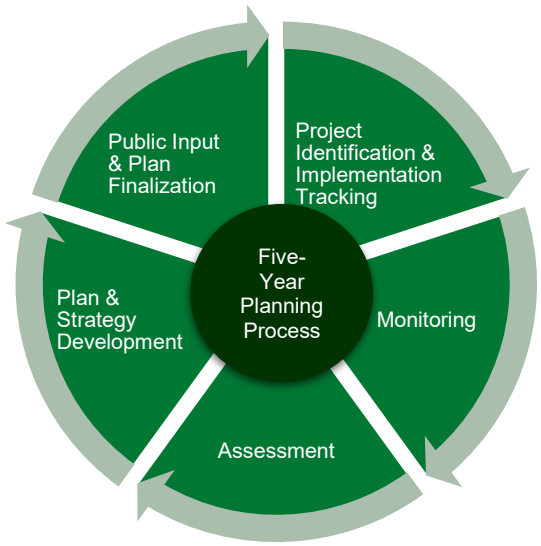


Figure 3: Five-Year Tactical Basin Planning Process.

Prioritizing Clean Water Actions

The State of Vermont uses the Tactical Basin Planning process, led by DEC's Watershed Planning Program, to identify and prioritize clean water projects across land use sectors (agriculture, natural resources, developed lands, and wastewater) based on scientific monitoring data and assessment results. These data will inform which projects provide the greatest return on investment through achievement of water quality restoration goals. Tactical Basin Plans are updated on a five-year cycle following a multi-stage process illustrated in Figure 3. The results of investments presented in this report are used to identify gaps and employ adaptive management to inform future project planning and prioritization efforts. Each Tactical Basin Plan contains a list of priority projects and strategies necessary to achieve clean water goals.[7]

Clean Water Projects

Clean water projects, described in Table 1 and throughout this report, refer to regulatory or non-regulatory practices and actions that restore, enhance, and protect Vermont's water quality while addressing priority sources of nutrient and sediment pollution.[8,9] All land use sectors contribute to Vermont's water quality challenges and all sectors have opportunities for improvement. Clean water projects are categorized into land use sectors based on the dominant function or land use surrounding the project. Clean water projects help to support compliance with the Vermont and federal Clean Water Acts and may help to leverage additional federal funds. Examples of clean water projects by land use sector are provided in the table below, along with a summary of the benefits clean water projects provide. Additionally, clean water projects often support the environment and local communities by providing co-benefits that:

- Increase climate resilience;
- Improve habitat function and biodiversity;
- Support carbon sequestration;
- Improve soil health;
- Support workforce development; and
- Provide local economic stimulus.

[7] To learn more about Tactical Basin Planning in Vermont, visit: https://dec.vermont.gov/water-investment/watershed-planning

[8] To learn more about clean water projects, read the What is a Clean Water Project? Plain Language Fact Sheet: https://dec.vermont.gov/document/what-is-a-clean-water-project

[9] Clean water project may be defined differently or more narrowly in certain contexts, such as in relation to Act 76 of 2019.

Table 1: Clean water project land use sectors, objectives, examples, and benefits.

LAND USE SECTOR	PROJECT OBJECTIVES	EXAMPLE PROJECTS	PROJECT CO-BENEFITS
AGRICULTURE	Reduce pollution by slowing and controlling rain or snowmelt runoff and soil erosion from farm production areas and farm fields	 	• Cost-effective • Supports agricultural economy • Improves soil health, reduces erosion and runoff by increasing the water holding capacity of soils • Provides drought and flood resilience
STORMWATER	Reduce pollution by slowing and controlling rain or snowmelt runoff from developed lands, such as parking lots, sidewalks, and rooftops	 	• May enhance aesthetic appeal • Publicly visible educational opportunity • Adds green space in residential and commercial areas • Mitigates flash flooding by creating space for runoff to infiltrate during heavy rainfall events
NATURAL RESOURCES	Reduce pollution by restoring functions of natural infrastructure — river channels, floodplains, lakeshores, wetlands, and forests	 	• Cost-effective • Can add or augment habitat • May enhance recreational opportunity and improve public access • Increases capacity to store and infiltrate floodwater • Improves public safety through reduced flood hazard
TRANSPORTATION RELATED STORMWATER	Reduce pollution by slowing and controlling rain or snowmelt runoff and erosion from roads	 	• Reduces future road maintenance costs • Improves public safety • Reduces incidence and severity of erosion with high intensity precipitation events
WASTEWATER	Reduce pollution by improving wastewater infrastructure	 	• Protects public health and safety • Reduces the likelihood of sewer overflows • Can increase resilience through proper facility siting and design

Report Purpose and Scope

The purpose of the *Vermont Clean Water Initiative 2025 Performance Report* is to summarize the results of the State of Vermont's clean water investments, education, and regulatory programs from state fiscal year (SFY) 2016 through 2025 (July 1, 2015-June 30, 2025). The report also summarizes how state funding programs, federal funding programs, and regulatory requirements contribute to achieving the Lake Champlain and Lake Memphremagog TMDLs.[10] Data presented in this report are representative of the most complete available data at the close of the state fiscal year. Data reported in previous years is subject to change in future annual reports as additional information becomes available.

This report fulfills state statutory and federal reporting requirements outlined on Page 2. The *Vermont Clean Water Initiative 2025 Performance Report* is divided into chapters based on geographic region. The purpose of each geographically focused chapter is to report progress in each of Vermont's major nutrient TMDL watersheds. Figure 4 shows a map of the geographic regions with large-scale nutrient TMDLs and corresponding chapter numbers.[11]

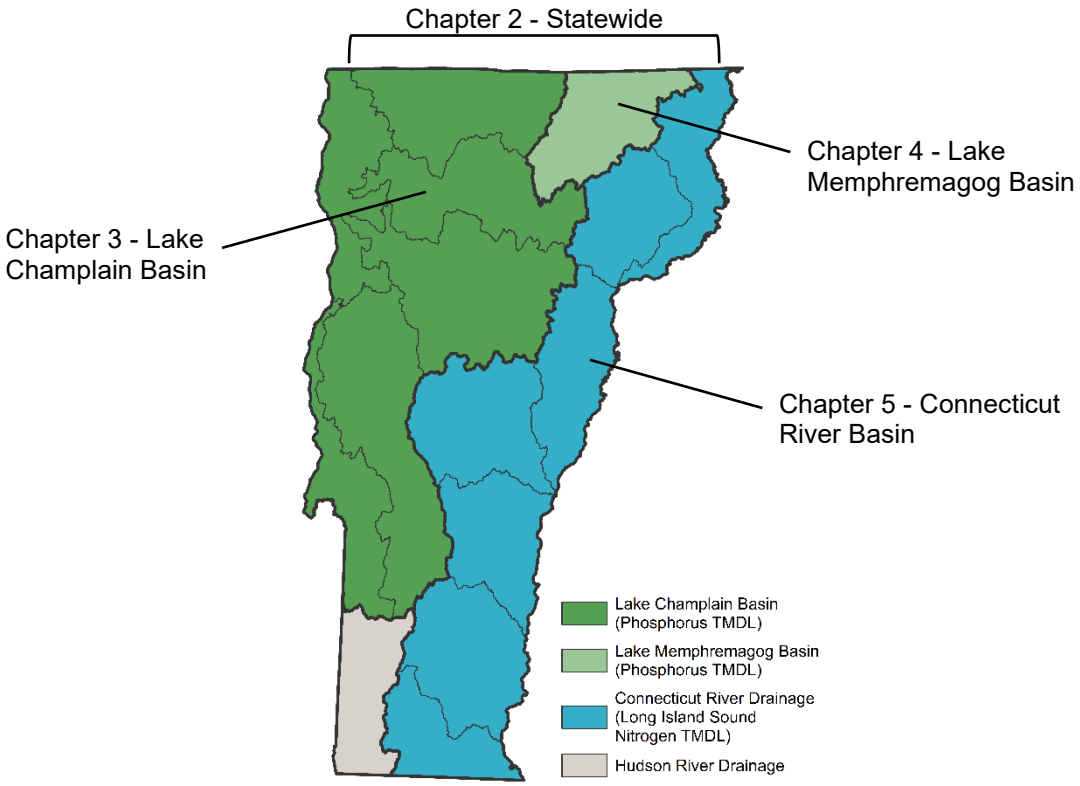


Figure 4: Geographic scope and focus of the *Vermont Clean Water Initiative 2025 Performance Report* chapters.

[10] The State of Vermont also has several small-scale TMDLs. For example, Lake Carmi in Franklin County is also impacted by cyanobacteria blooms and a Phosphorus Total Maximum Daily Load for Lake Carmi was established in 2009. Lake Carmi is located in the Lake Champlain basin, so actions to reduce phosphorus pollution in Lake Carmi support both the implementation of the Lake Carmi TMDL and Lake Champlain TMDL. Implementation of large-scale and small-scale TMDLs can support both local and regional water quality priorities.

[11] Results in the Hudson River drainage basin are included in the statewide results reported in Chapter 2 and can be viewed in the Clean Water Interactive Dashboard: https://anrweb.vt.gov/DEC/cleanWaterDashboard/

Collectively, state funding programs, federal funding programs, and regulatory requirements drive clean water efforts in Vermont by working together to achieve water quality goals. In some cases, these efforts are complemented by additional funding from private sources and local contributions. The following table summarizes clean water funding programs managed by the State of Vermont that are included in this report.

Table 2: State of Vermont funding programs reported by state agencies and affiliates.

Agency or Affiliate	Clean Water Funding Programs
Agency of Administration (AoA)	Stormwater Utility Incentive Payments
Agency of Agriculture, Food & Markets (AAFM)	Agricultural Clean Water Initiative Program (AgCWIP) Best Management Practice (BMP) Program Capital Equipment Assistance Program (CEAP) Conservation Reserve Enhancement Program (CREP) Farm Agronomic Practice (FAP) Program Pasture and Surface Water Fencing (PSWF) Program Seeding and Filter Strip (SFS) Program Vermont Farmer Ecosystem Stewardship Program (VFESP) Vermont Phosphorus Innovation Challenge (VPIC) Vermont Pay for Performance (VPFP) Program Water Quality (WQ) Grants
Agency of Commerce and Community Development (ACCD)	Better Connections Planning Grant Downtown Transportation Fund Vermont Center for Geographic Information Geospatial Support Services
Agency of Natural Resources (ANR)	Clean Water Initiative Program (CWIP) Funding Programs Clean Water State Revolving Fund (CWSRF) Loan Programs CWSRF Land Conservation Interim Financing Program Combined Sewer Overflow (CSO) Grant Program Department of Forests, Parks & Recreation Watershed Forestry Department of Forests, Parks & Recreation Urban and Community Forestry Department of Fish & Wildlife Watershed Grants Department of Fish & Wildlife Wetland Acquisition and Restoration Initiative Healthy Homes Initiative Municipal Pollution Control Grants Municipal Roads Grants-in-Aid Program Three-Acre Funding and Support Programs Village Water & Wastewater Initiative Wastewater Pretreatment Program Water Infrastructure Sponsorship Program (WISPr)
Agency of Transportation (VTrans)	Better Roads Program Municipal Highway Stormwater Mitigation Program Municipal Mitigation Assistance Program Municipal Roads Grants-in-Aid Program (MRGIA) Transportation Alternatives Program (TAP)
Vermont Housing and Conservation Board (VHCB)	Conservation Grants Farmland Protection Grants Water Quality Grants

Federal Clean Water Funding[12]

The United States Department of Agriculture Natural Resources Conservation Service (UDSA-NRCS) and the Lake Champlain Basin Program (LCBP) provide significant federal funding to support clean water projects in Vermont. The results of USDA-NRCS- and LCBP-funded clean water projects are included in this report to show TMDL progress. Funds administered directly by federal entities are not included in statewide investments as they are outside the scope of this report, which focuses on how funds directly administered by the state are being spent.[13]

Several state regulatory programs are in place to protect, maintain, and restore water quality by establishing land use and management requirements that minimize discharges and runoff to surface waters. Regulatory requirements that are in place to protect the state's natural resources but do not have a direct link to water quality improvement are outside the scope of this report.

Table 3: Clean water regulatory program results included in this report and potential future additions.

Agency	Included in this Report	Potential Future Additions
Agency of Natural Resources[14]	Municipal Roads General Permit (MRGP) Municipal Separate Storm Sewer System (MS4) General Permit Operational Stormwater Permits regulating new development, redevelopment, or three or more acres of existing impervious surfaces (General Permit 3-9050) Transportation Separate Storm Sewer System (TS4) General Permit[15] Wastewater National Pollutant Discharge Elimination System (NPDES) Permits	Wetland Permits River Corridor Permits Confined Animal Feeding Operation (CAFO) Permits
Agency of Agriculture, Food & Markets[16]	Production area compliance under Required Agricultural Practices (RAPs), Medium Farm General Permits, and Large Farm Operating Permits	Agricultural field and buffer compliance under Required Agricultural Practices (RAPs), Medium Farm General Permits, and Large Farm Operating Permits

[12] More information on federal funding is available in the Annual 2025 Report on Federal Funding Related to Water Quality Improvement Efforts in Vermont, here: https://dec.vermont.gov/water-investment/clean-water-initiative/reports

[13] Note that some LCBP funding is administered by the Vermont Department of Environmental Conservation as passthrough funding, and these dollars are included in data on statewide investments.

[14] For more information on regulatory stormwater programs, visit: https://dec.vermont.gov/watershed/stormwater. For more information on wastewater permits, visit: https://dec.vermont.gov/watershed/wastewater

[15] TS4 data included in this report is representative of completed and reported implementation through SFY 2023. More recent data will be reflected in future reports as it becomes available.

[16] For more information on agricultural water quality regulations, visit: https://agriculture.vermont.gov/water-quality/regulations

Accountability Measures

Clean water investments and results are presented throughout the report using the following four accountability measures:[17]

Investment measures show how Vermont invests in clean water projects from identification and planning through design, implementation, and maintenance.

State investments are defined as dollars obligated or awarded to clean water efforts by State of Vermont agencies through a variety of funding and financing mechanisms.

Funds are assigned to state fiscal years according to agreement execution date. When a project is completed, funding is retroactively updated to reflect the final expended amount.

Education measures summarize outreach and technical assistance to support, identify, develop, and maintain clean water projects.

The State of Vermont delivers clean water education through outreach (workshops, trainings, and public or stakeholder meetings) and technical assistance (targeted, one-on-one interactions).

Hours of education provided are assigned to state fiscal years based on the date of the event.

Project output measures quantify the results of clean water projects.

Output measures are standardized across all programs to consistently summarize results of funding and regulatory efforts.

Results are assigned to a state fiscal year based on the completion date of the project and are only reported once a project is completed.

Pollutant reduction measures are estimated nutrient load reductions achieved by clean water projects.[18]

Pollution reductions are estimated at the project level based on the modeled total pollutant load from the land being treated by a project and the average or expected pollutant reduction efficiency of the project type.[19]

Annual pollutant reductions apply throughout the expected lifespan of a project, beginning on the date the project is completed.[20]

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[17] To view available data on investment, project output, and pollution reduction measures supported by other funding and regulatory efforts, and by individual basin, please visit the Clean Water Interactive Dashboard: https://anrweb.vt.gov/DEC/cleanWaterDashboard/

[18] Current pollutant reduction accounting methodology is limited to phosphorus reductions in the Lake Champlain and Lake Memphremagog basins.

[19] Estimated pollutant reductions are presented in delivered loads, or the pollutant load reduction after accounting for estimated pollutant storage or deposition en route to the receiving waterbody. Beginning with the *Vermont Clean Water Initiative 2021 Performance Report*, reporting of total phosphorus load reduction was revised to be presented in terms of delivered load to increase the accuracy of reporting on progress compared to the TMDL. To learn more about source versus delivered phosphorus load, read the Source Versus Delivered Phosphorus Load Plain Language Fact Sheet: https://dec.vermont.gov/document/source-versus-delivered-phosphorus-load

[20] Additional information on the methods used to estimate pollutant reductions can be found on the Clean Water Tracking and Accounting webpage: https://dec.vermont.gov/water-investment/cwi/projects/tracking-accounting

Explore Clean Water Project Data with Online Tools

The State of Vermont coordinates across agencies to track clean water efforts in a centralized database known as the Clean Water Reporting Framework. The database is used to compile and summarize project data to produce this report. These data and many online tools are made available to the public through the Clean Water Portal.[21] The Portal's Clean Water Project Explorer allows people to search for and learn details about individual state-funded clean water projects (Figure 5). The Explorer also contains potential projects identified through Tactical Basin Planning. The Portal's Clean Water Interactive Dashboard allows people to view investment data, project output measures, and estimated pollutant reductions presented in this report by watershed (Figure 6).

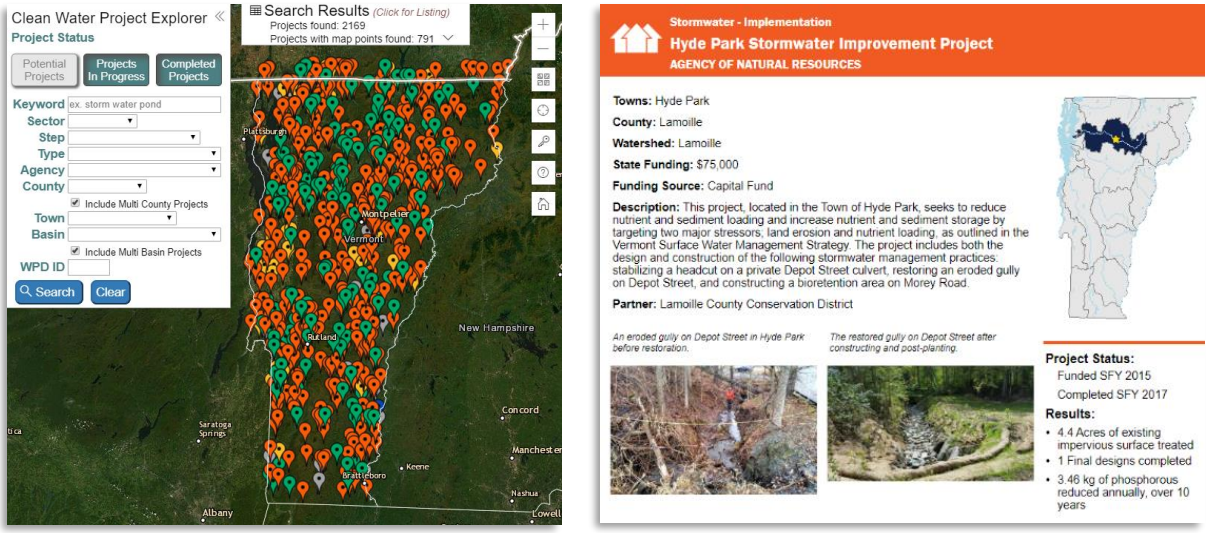


Figure 5: Sample Clean Water Project Explorer search results (left) and individual project report (right).

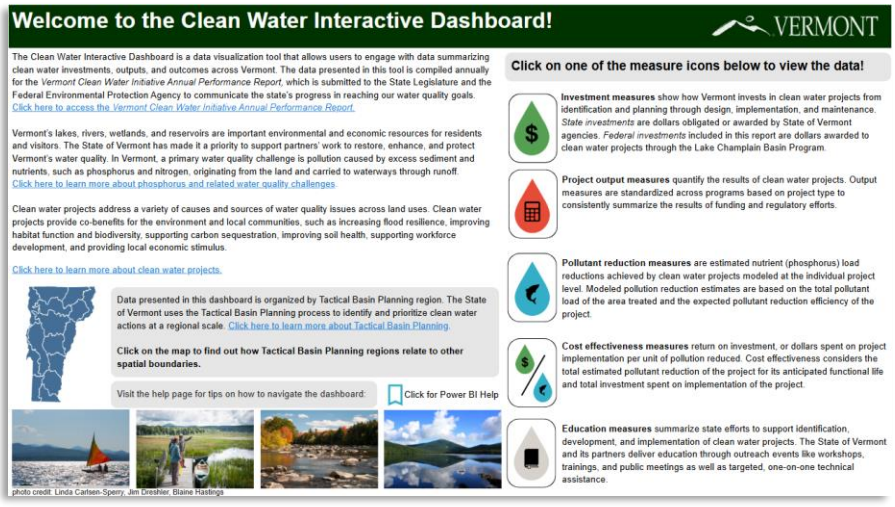


Figure 6: The Clean Water Interactive Dashboard homepage.

[21] The Project Explorer and Clean Water Interactive Dashboard can be accessed via the Clean Water Portal: https://anrweb.vt.gov/DEC/cleanWaterDashboard/

Chapter 2: Statewide Clean Water Investments and Results

The State of Vermont's clean water investments are channeled through grants, loans, contracts, and other assistance programs to strategically restore and safeguard water quality in the state's rivers, streams, lakes, ponds, and wetlands. These funds are used to help identify and prioritize clean water projects, as well as to design, implement, and in some cases, maintain projects. The State of Vermont tracks outputs of state investments to quantify the impact of clean water efforts statewide. This chapter summarizes statewide investments in clean water projects as well as project output measures achieved through development and implementation of clean water projects funded by State of Vermont agencies.

Vermont's Clean Water Funding

The State of Vermont is committed to protecting and improving water quality through financial and technical assistance and regulation. Vermont's clean water funding helps municipalities, farmers, landowners, and nonprofit organizations implement projects that will restore, enhance, and protect Vermont's water quality. Funds from state programs complement and leverage other funding sources to support clean water efforts statewide.

The Vermont Clean Water Board and Budget Process

The Clean Water Board was created as a result of Act 64 of 2015, Vermont's Clean Water Act, and is responsible for planning, coordinating, and financing the restoration, enhancement, and protection of Vermont's water quality. Composed of representatives from five state agencies and four members of the public, the Board recommends an annual Clean Water Budget to the Governor that is made up of Clean Water Fund, Capital Bill, and recently, American Rescue Plan Act (ARPA) dollars.[22] Once the budget is recommended and approved by the Legislature, the funds are awarded to multiple state agencies and affiliates that work to address water quality challenges across land use sectors.

The Clean Water Budget totals approximately $35 million per year, including about $25 million in revenues to the Clean Water Fund and $10-12 million in Capital dollars from the Clean Water Section of the Capital Bill. The Clean Water Fund is made up of revenue from the Meals and Rooms Tax, Property Transfer Tax Clean Water Surcharge, and unclaimed bottle deposits. The state has committed to "funding the Clean Water Initiative in a manner that ensures the maintenance of effort and that provides an annual appropriation for clean water programs in a range of $50 million to $60 million as adjusted for inflation over the duration of the Initiative" (10 V.S.A. § 1387). The state relies on the Clean Water Budget, including the Clean Water Fund and each of its revenue streams, to meet this commitment and provide predictable, sustained funding for financial and technical assistance programs. While the Clean Water Budget is a major source for funding clean water efforts statewide, many state agencies and affiliates pair Clean Water Budget dollars with other state or federal funds to complement and expand upon their clean water efforts.

[22] To learn more, visit the Clean Water Board webpage: https://dec.vermont.gov/water-investment/cwi/board

The American Rescue Plan Act

The American Rescue Plan Act (ARPA) is part of the federal response to address economic impacts resulting from the COVID-19 pandemic. The State of Vermont received $1.049 billion in ARPA funds to invest in broadband infrastructure, clean water, climate action, housing, and economic development. ARPA funds must be expended by the end of calendar year 2026. The Vermont Agency of Natural Resources (ANR) is responsible for distributing a portion of these ARPA funds to support water and wastewater infrastructure programs.[23] A subset of ARPA funding was assigned for budgeting through the Clean Water Board from SFY 2022 to SFY 2024 to support new and existing clean water programs across multiple state agencies.[24] Because of the scale and time sensitivity of ARPA funds, there may be cases where awarding ARPA funds was temporarily prioritized over perennial funding sources to maximize ARPA investments in Vermont. ARPA funds were appropriated in SFY 2022 through 2024 and must be spent by December 2026.

[23] Visit the ANR ARPA webpage for more information on types of water and wastewater infrastructure programs: https://anr.vermont.gov/special-topics/arpa-vermont

[24] View approved Clean Water Budget allocations for a full list of ARPA funding distributed by the Clean Water Board on the Clean Water Board's webpage: https://dec.vermont.gov/water-investment/cwi/board

Vermont's Statewide Clean Water Investments

The State of Vermont distributes funding through agencies to a wide range of organizations to support all phases of clean water work across land use sectors. The following sections summarize statewide investments in clean water projects by land use sector, funding source, and project step since state fiscal year 2016.[25]

Click symbol to view description of accountability measures.

State Investments by Land Use Sector

Reaching Vermont's water quality goals requires investments across all land use sectors. The following figure summarizes state clean water investments by land use sector statewide over the past ten state fiscal years, from SFY 2016 to 2025.

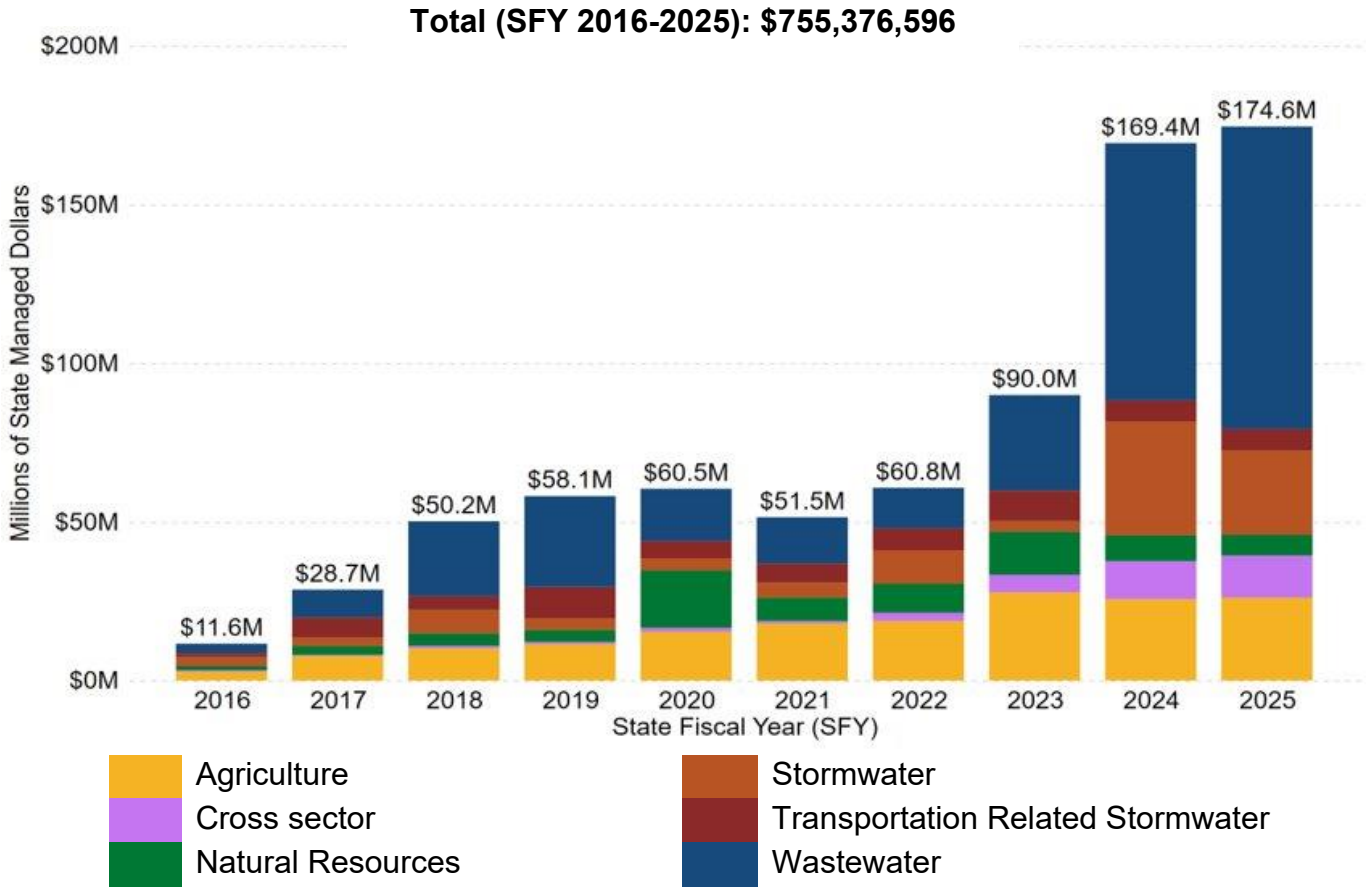


Figure 7: Total dollars awarded by State of Vermont agencies to clean water projects statewide by land use sector, SFY 2016-2025.

Explanation of Figure 7

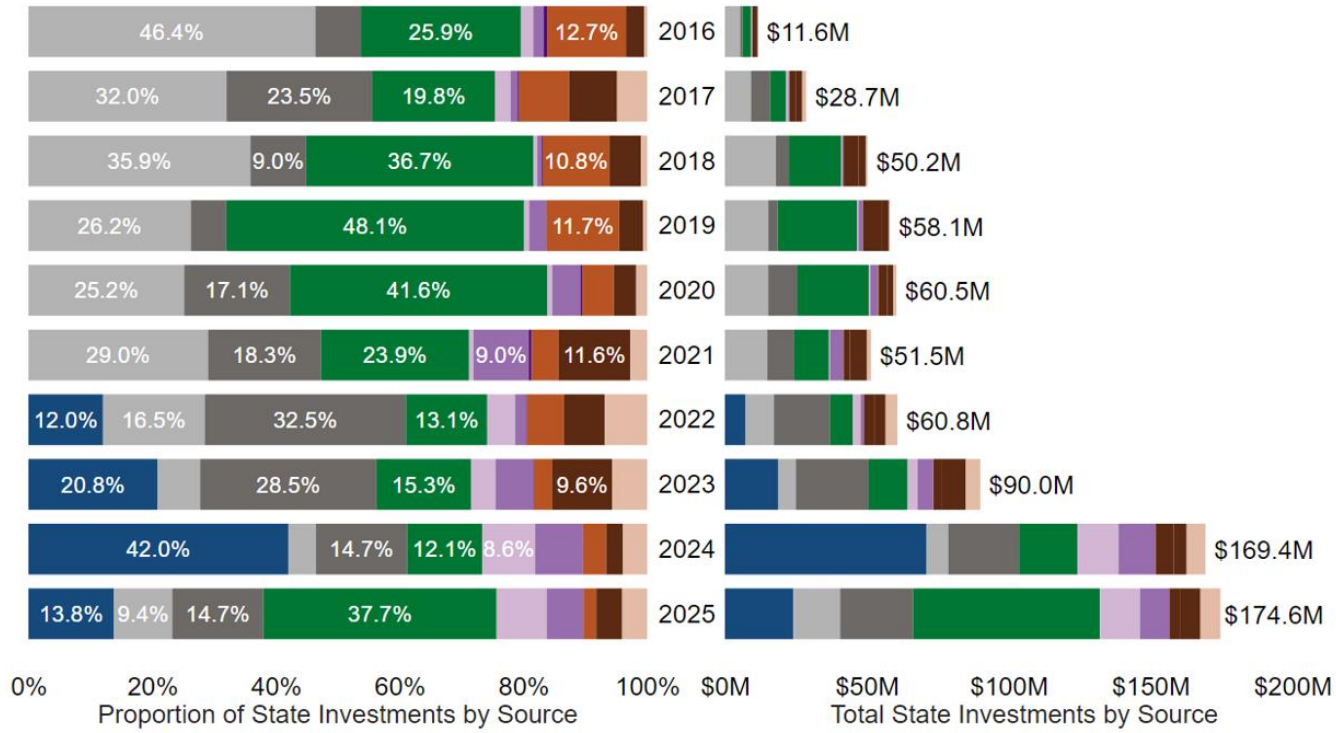
The State of Vermont has invested over $755 million in clean water projects statewide from SFY 2016 to 2025. Annual clean water investments have increased significantly since SFY 2016, but funding awarded to projects varies from year-to-year based on funding opportunities, project readiness, and the timing of awards. In the natural

[25] To view clean water investments by major river basin, visit the Clean Water Interactive Dashboard: https://anrweb.vt.gov/DEC/cleanWaterDashboard/

resources and wastewater sectors, large-scale investments in land conservation and infrastructure improvement contribute to more annual variations in funding compared to other sectors, because these project types tend to involve large capital expenditures and require multiple years of planning and preparation work to complete. In SFY 2021, COVID-19's economic impacts affected Clean Water Fund revenue sources and capacity to administer and implement projects, which led to a slight reduction in appropriation and a temporary slowdown of funding programs. The rebound in funding levels beginning in SFY 2022 has been bolstered by a short-term influx of ARPA dollars. ARPA funding programs subject to this report are primarily supporting clean water projects in the agriculture, stormwater, and wastewater sectors. Clean water funding is allocated to support work across land use sectors. Most of the cross-sector funding represents block grants awarded to Funding Program Administrators (FPAs) tasked with administering grant programs and issuing sub-grants to support clean water projects across a range of land use sectors. Once a block grant is completed, funding is recategorized to the appropriate sector based on the project types that were awarded funding.[26]

[26] To learn more about current CWIP funding programs, visit: https://dec.vermont.gov/water-investment/cwi/grants/opportunities

State Investments by Funding Source



- American Rescue Plan Act*
- Capital Bill
- Clean Water Fund
- Clean Water State Revolving Fund
- General Fund
- Lake Champlain Basin Program
- Other State Funding Programs and Administration**
- State & Federal Transportation Funds
- USDA-NRCS & RCPP
- Vermont Housing & Conservation Trust Fund and Act 250 Mitigation Fund

* Short-term funding source that must be expended by the end of calendar year 2026.

**Other state funding programs include: AAFM Special Funds, Clean Water Fund Operating, Clean Water State Revolving Fund Administration, Municipal Planning Grant Contribution, and Watershed Grant Funds.

Figure 8: Proportion of dollars awarded to clean water projects through State of Vermont agencies by funding or financing source, SFY 2016-2025.[27]

Explanation of Figure 8

State agencies' clean water investments are supported by a variety of funding sources. The proportion of state investments from each funding source varies annually based on availability of funding, identified priorities, and capacity to administer funds. The large proportion of ARPA dollars in recent years is short-term, as funding available through ARPA must be spent by December 2026. The Vermont Agency of Administration

[27] Investments reported include state and federal dollars awarded to projects by state agencies, but exclude federal funds awarded directly by federal agencies and the Lake Champlain Basin Program, as the focus of this report is state funding.

converted some awards from ARPA dollars to General Fund dollars to allow some high need projects additional time for completion. This was achieved by diverting ARPA funds to more expedient General Fund-supported projects and reallocating freed-up General Fund dollars for some ARPA-funded projects. Several federal funding sources *administered by state agencies* are considered state investments, including Clean Water State Revolving Fund (CWSRF), Federal Transportation Funds, some U.S. Department of Agriculture Natural Resources Conservation Service (USDA-NRCS) funds, and some Lake Champlain Basin Program funds. Direct investments by federal agencies or other organizations are beyond the scope of this report.[28]

[28] Reports on Federal Funding Related to Water Quality Improvement Efforts in Vermont are available here: https://dec.vermont.gov/water-investment/cwi/reports#Legislative%20Reports

State Administered Investments from State, Federal, or Local Source by Land Use Sector

Clean water projects are typically funded through a combination of state, federal, and local sources. The following illustrates the distribution of all reported investments originating from a state, federal, or local funding source from SFY 2016 to 2025 by land use sector.

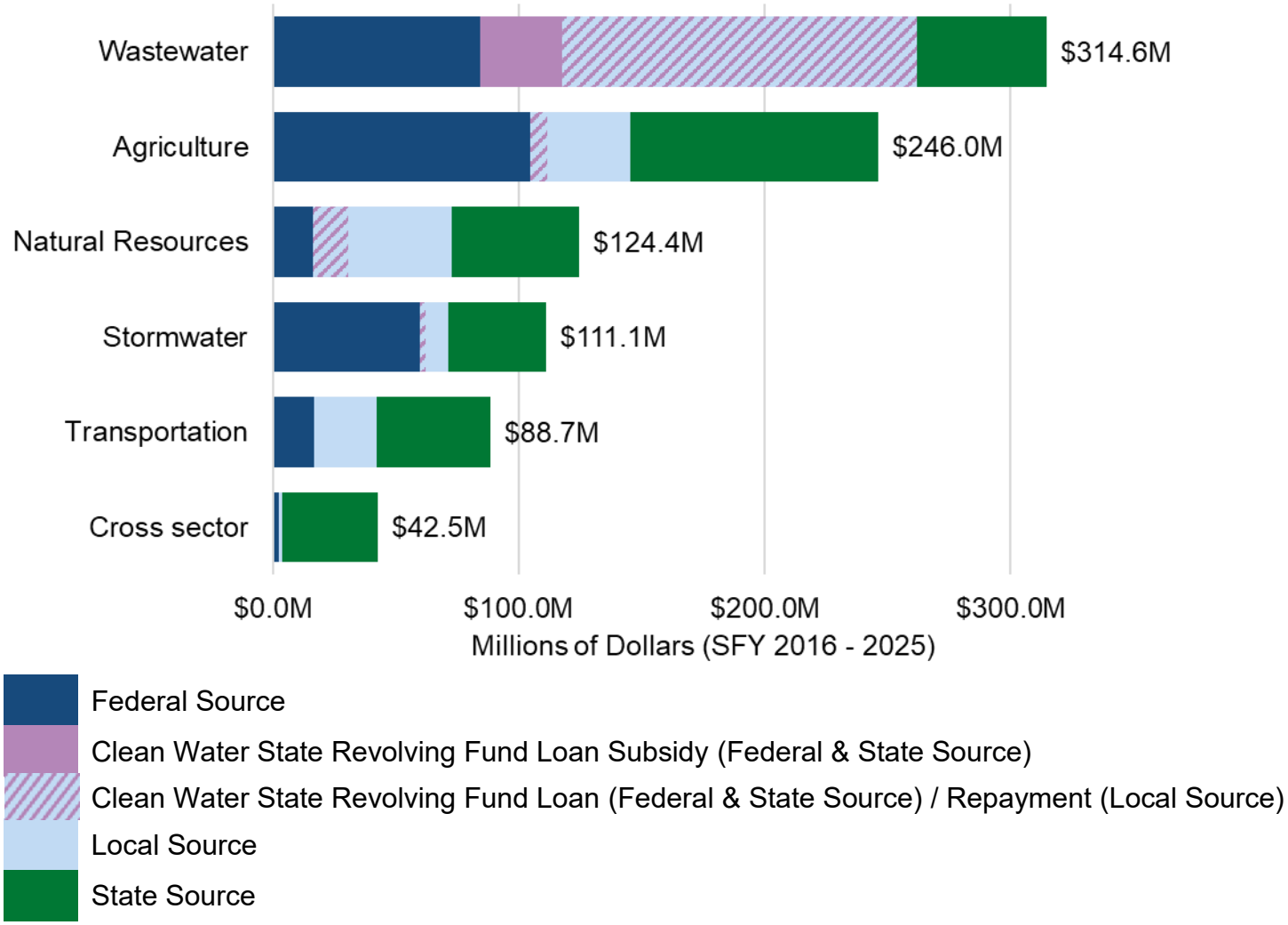


Figure 9: State, federal, and local sources of funding invested and reported through State of Vermont agencies by land use sector, SFY 2016-2025.

Explanation of Figure 9

Clean water project investments come from a variety of state, federal, and local funding sources. Since SFY 2016, total reported investments in clean water projects reported by state administered programs total over $927 million, only about 35% of which originated from a state generated source of funding. State clean water programs rely on the ability to leverage other funding sources to further the impact and outcomes of investments. Different funding programs have different local contribution match requirements, depending on the purpose and need of the program's eligible recipients.

The funding data available in this report consists of funding administered by the state, as well as any other known and reportable funding contributed to a state-funded project. Local contributions in this figure include municipal funds, private donations, in-kind services, volunteer labor, etc. State agency investments in personnel, operating, and monitoring activities are beyond the scope of this report.

A large portion of investments in the wastewater sector are made in the form of low interest loans available through the Clean Water State Revolving Fund (CWSRF). Funding for the CWSRF originates as annual federal capitalization grant awards to the state, and when loans are paid back (except for some loan subsidies), becomes state funding. The loan amount is paid back by the recipient municipality through debt service payments. Loan repayments revolve back into the CWSRF and are used along with annual federal CWSRF capitalization grants to issue new loans to continue to support priority projects. The CWSRF subsidy amounts vary by project phase, but municipalities may be eligible for as much as 50% subsidy for a loan – up to $100,000 on design and engineering, and up to $1 million for construction. Since 2016, annual federal capitalization of the CWSRF received by the state totals $106.9 million[29], and during the same period $177.4 million in loans have been issued to projects in the wastewater sector, illustrating the role of repayment dollars in the revolving fund that are reemployed as state funds.[30]

State Investments by Project Step

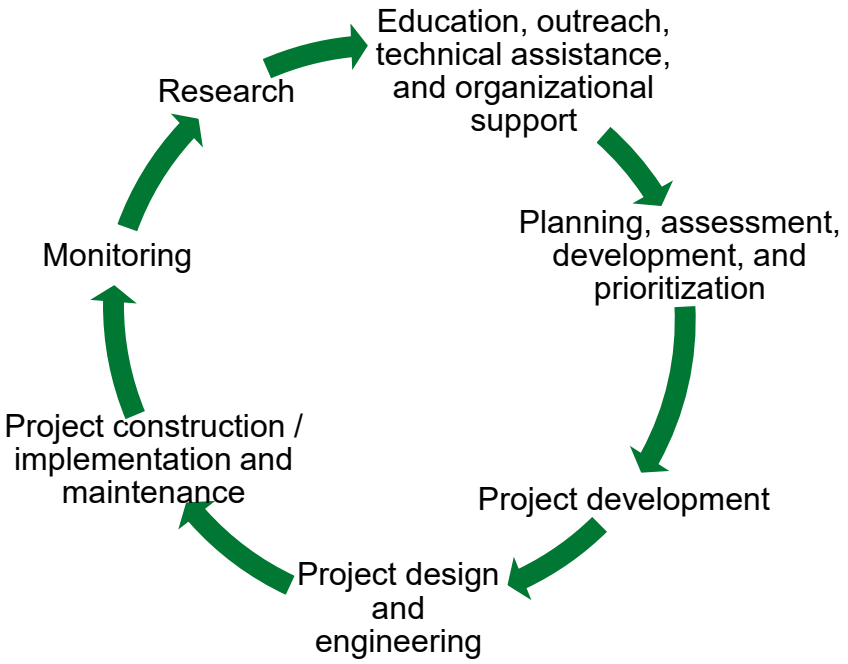


Figure 10: Project step cycle showing various phases of clean water work.

[29] Includes supplemental awards through the Bipartisan Infrastructure Law for CWSRF and CWSRF emerging contaminants.

[30] The Report on Federal Funding Related to Water Quality Improvement Efforts in Vermont contains information on annual Clean Water State Revolving Fund federal capitalization grant amounts. Reports are available here: https://dec.vermont.gov/water-investment/clean-water-initiative/reports

Making wise investments in cost-effective clean water projects requires thorough project planning, development, analysis, design, and implementation. Investing in the project development process is key to ensuring state investments will yield the greatest water quality improvement per dollar, which includes de-prioritizing lower-value or non-viable projects early in design. In addition, operation and maintenance of existing projects is important to sustain project function and clean water outcomes. State investments in project maintenance are not yet captured in this report, but will be reflected in future years of reporting. The following figure summarizes state funding awarded to various steps of the clean water project cycle during SFY 2016 to 2025.

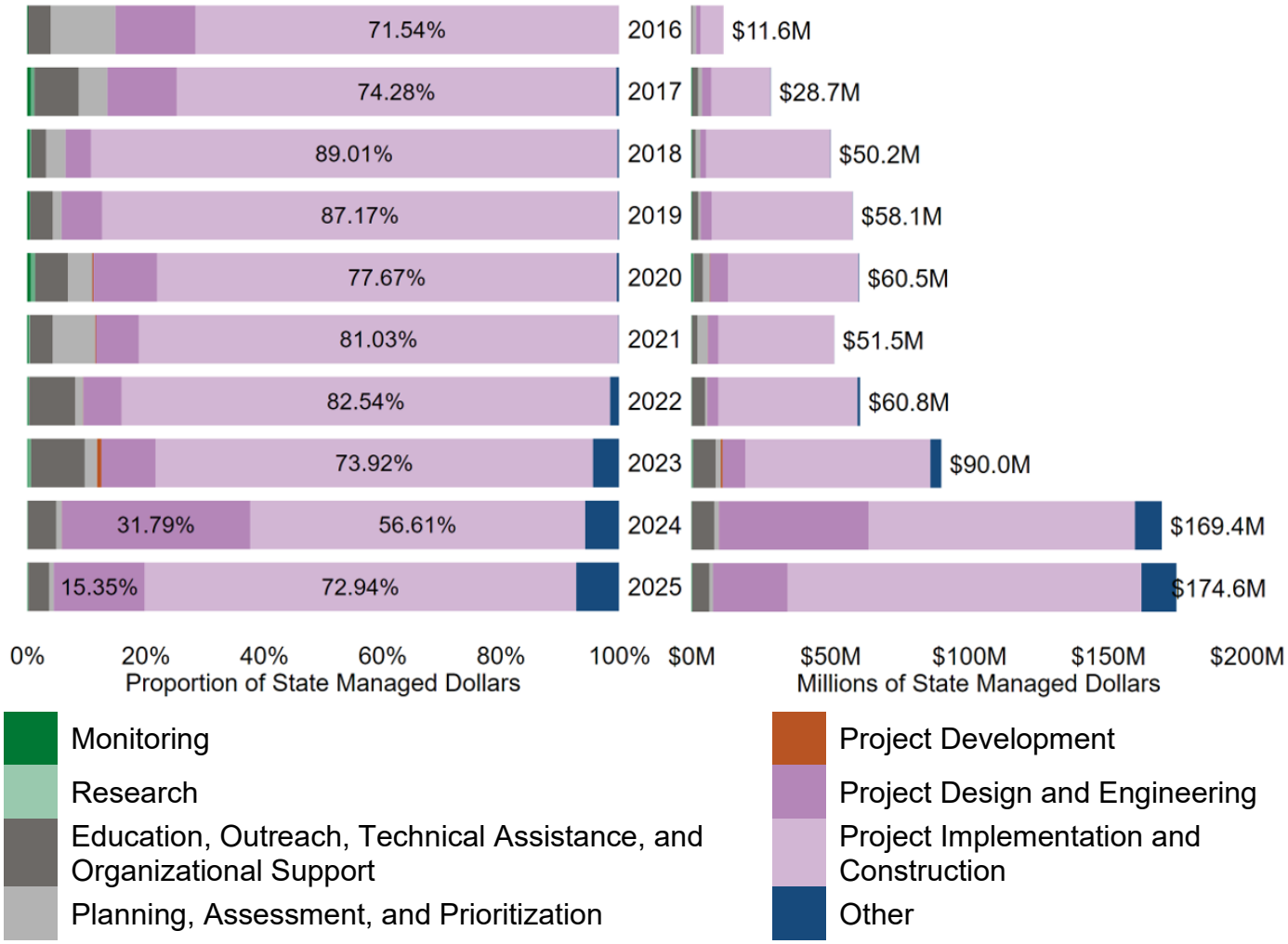


Figure 11: Dollars awarded by State of Vermont agencies to various steps of the clean water project cycle, SFY 2016-2025.

Explanation of Figure 11

While the state invests in all project steps, the majority of clean water investments each year are used to construct or implement clean water projects that restore, enhance, and protect Vermont's water quality. Approximately 20 percent of clean water investments across the last 10 state fiscal years have been used in the planning, design, and engineering phases. State-funded monitoring included in this report represents passthrough funds that are used to support focused, small watershed-scale water quality monitoring, but does not capture all water quality monitoring efforts in Vermont. The

“other” category includes agreements that do not fit squarely into one project step, including multiple block grants issued to Funding Program Administrators who will use the money to develop, design, and implement several projects. Once those projects are completed, dollars will be reallocated to the appropriate step. State-funded research is intended to align with and complement research conducted by partners like educational institutions and nonprofits. Early in the reporting period (SFY 2016-2017), the proportion of state investments directed to assessment, planning, and design was higher as project opportunities were being assessed and pursued. The middle of the reporting period illustrates a focus on implementation, with between 75-90% of state investments going to implementation between SFY 2018-2022. In recent state fiscal years, a renewed focus in the design and engineering phase is in part reflective of large-scale funding initiatives for stormwater design, permit obtainment, and regulatory compliance supported by ARPA dollars. Investments in the design and engineering phase work occurring now will translate into future investments in construction and implementation phase work in the coming years.

Vermont's Statewide Education, Outreach, and Technical Assistance

Click symbol to view description of accountability measures.

Reducing nutrient and sediment pollution requires employing sound land management practices which can necessitate changes to our cities, towns, farms, forests, and natural spaces. Education and outreach related to clean water projects and programs is critical to achieve our water quality goals. The State of Vermont delivers clean water education through outreach (workshops, trainings, and public or stakeholder meetings) and technical assistance (targeted, one-on-one interactions). Clean water education, outreach, and technical assistance aim to:

- Increase public awareness and engagement in establishing and implementing clean water priorities;
- Increase landowner acceptance of new and changing policies and willingness to adopt best management practices;
- Support regulated entities in preparing to meet new regulatory requirements in the most cost-effective manner;
- Support clean water project proponents, including regulated entities, in building expertise to develop, plan, and secure resources to implement clean water projects; and
- Increase adoption and effectiveness of best management practices to improve water quality.

Educational efforts support all land use sectors in planning and securing resources to implement clean water projects. The following section summarizes education, outreach, and technical assistance efforts by land use sector.[31]

Table 4: Hours of education provided and number of attendees by state fiscal year.

State Fiscal Year	Hours of Education Provided	Number of Attendees
2016	859	9,151
2017	1,047	10,164
2018	1,448	16,154
2019	1,659	13,185
2020	1,042	8,704
2021	578	7,045
2022	811	7,052
2023	823	9,190
2024	646	8,748
2025	916	12,615
Total	**9,829**	**102,008**

[31] The Outreach by Organization and Outreach by Target Audience sections of the reports published 2023 and earlier are not directly comparable to the 2024 and later reports. The two major changes are:

- For the respective figures, we included additional categories to better represent the data.
- The hours of education and number of attendees are characterized in a new way. For example, in the past, if a three-hour outreach event reached three target audiences, three hours would be attributed to each target audience (nine hours total); now, the total hours provided is distributed among the number of target audiences, rather than duplicating the number of hours provided.

Clean Water Outreach by Organization

Reported outreach is provided by state reporting partners, as well as partners who receive clean water funding from state agencies to conduct outreach. The following figure summarizes the proportion of hours of education provided by outreach organization from SFY 2016 to 2025.

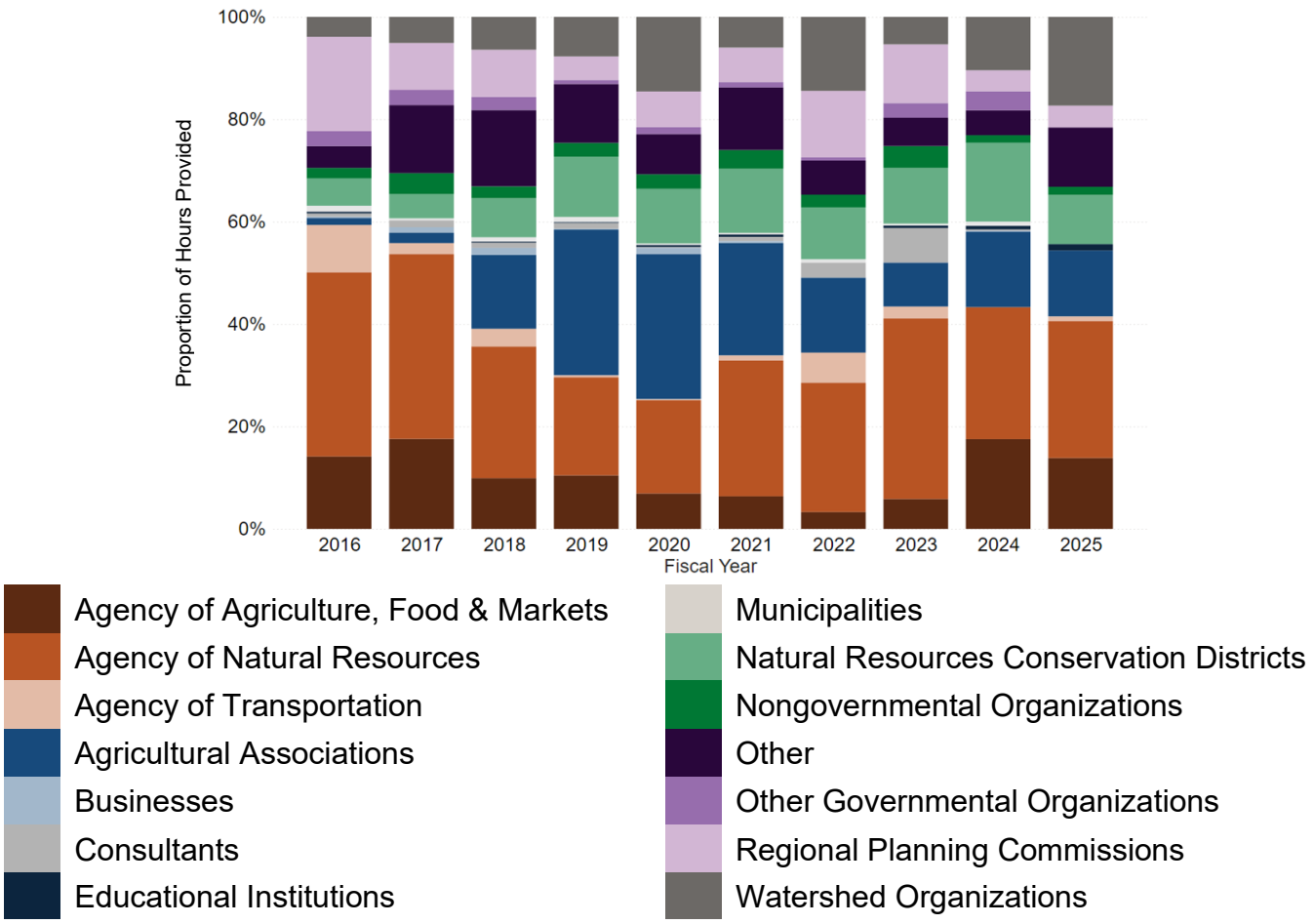


Figure 12: Outreaching organizations provided 9,829 hours of education to participants of State of Vermont-funded clean water outreach events via workshops, trainings, and public or stakeholder meetings, from SFY 2016–2025. Percentages reflect the proportion of total hours provided by each outreach organization or category.[32]

Explanation of Figure 12

In total, 3,554 outreach events have been reported, reaching 102,008 attendees, with 9,829 hours of education received by attendees since SFY 2016.[33] The need for, and the resources available to support, clean water outreach efforts fluctuate. For example, outreach efforts were critical in the development of foundational programs to drive Vermont's clean water efforts, including the initial phases of implementing the Lake

[32] "Agricultural Associations" includes both regional and statewide organizations connecting and supporting the agricultural sector. "Consultants" includes engineering, environmental, stormwater, water, and wastewater-focused entities. "Municipalities" includes Conservation Commissions, cities, towns, and municipal officials. "Nongovernmental Organizations" spans sectors, from housing and energy to conservation and recreation. "Other Governmental Organizations" includes state and federal agencies other than those included in the legend above.

[33] Refer to the explanation in footnote 31 on why numbers are different than previously reported.

Champlain TMDL and the Vermont Clean Water Act (Act 64 of 2015). More recently, outreach efforts have supported partners in the development and implementation of programs under Act 76 of 2019. As these programs move from development and launch into implementation, the need for continued education and outreach events on these topic areas may be reduced. The entities responsible for reporting outreach efforts are ANR, AAFM, VTrans, and external partners conducting outreach under the scope of a state grant or contract agreement, however many events include multiple outreaching organizations. Outreach not directly conducted by state agencies and/or supported by state funding are not included in these data.

Clean Water Outreach by Target Audience

State of Vermont outreach events reach a diverse range of audiences. The following figure summarizes the target audiences reached by State of Vermont-funded clean water outreach efforts (workshops, trainings, and public or stakeholder meetings), from SFY 2016 to 2025.

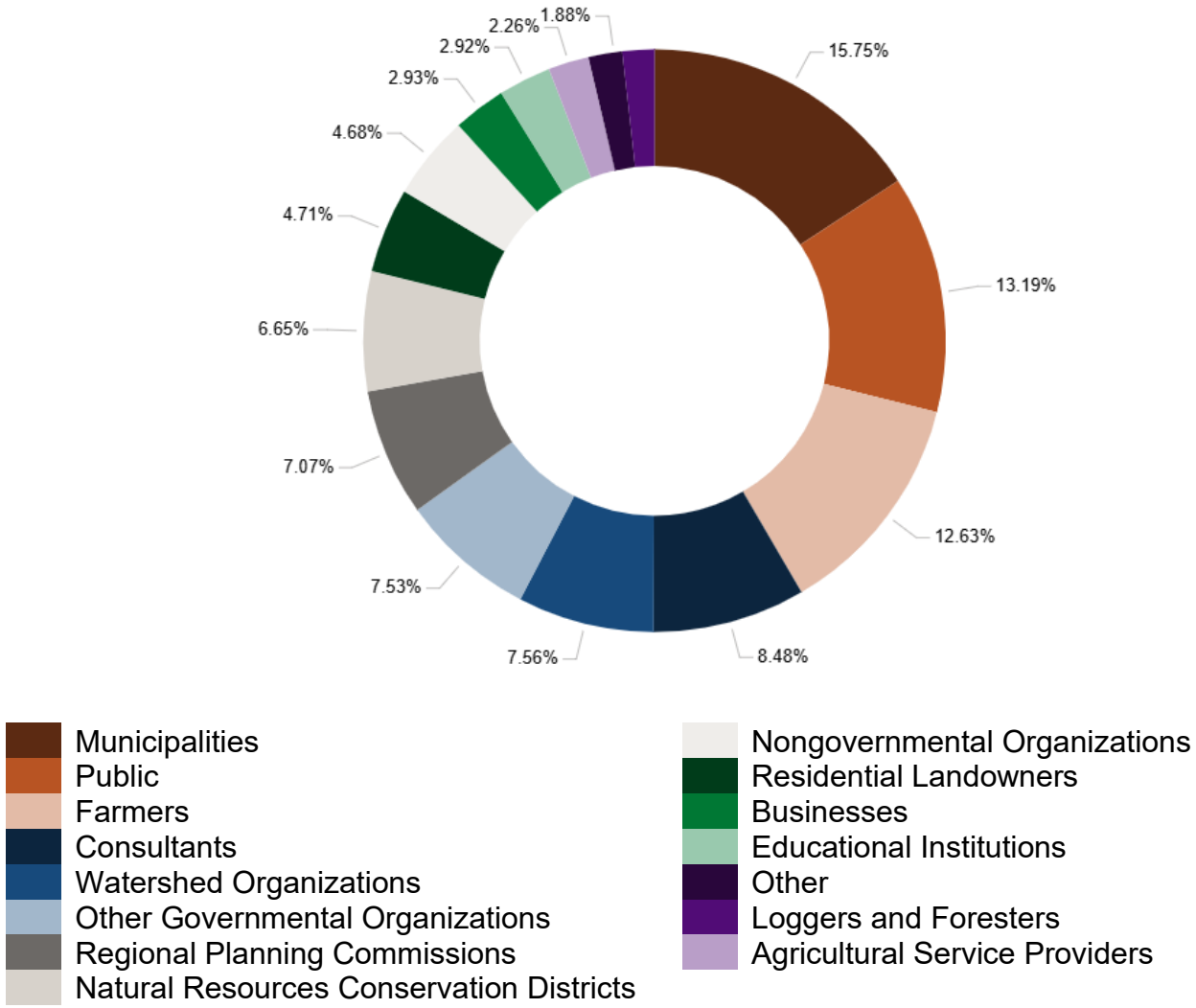


Figure 13: State of Vermont clean water outreach efforts between SFY 2016-2025 reached a total of 102,008 attendees. Percentages reflect the proportion of total attendees in each target audience.

Explanation of Figure 13

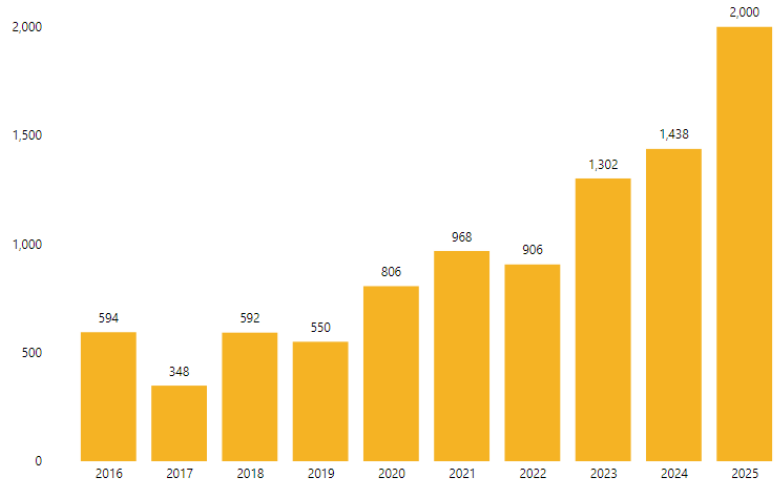
The state's outreach efforts target a wide range of sector- and organization-based audiences. One of the state's water quality priorities is to support municipalities and farmers in addressing stormwater, wastewater, and agricultural sources of nutrient pollution, which is why these audiences represent a large proportion of the pie chart above. Consultants, watershed organizations, governmental organizations, Regional Planning Commissions, Natural Resources Conservation Districts, and non-governmental organizations play an important role in implementing priority clean water projects; they also reach audiences via targeted technical assistance, which is not represented in this figure. Continued engagement with the public is crucial to maintain and broaden support of the state's clean water efforts and bolster landowner willingness to adopt and implement voluntary, non-regulatory clean water projects.

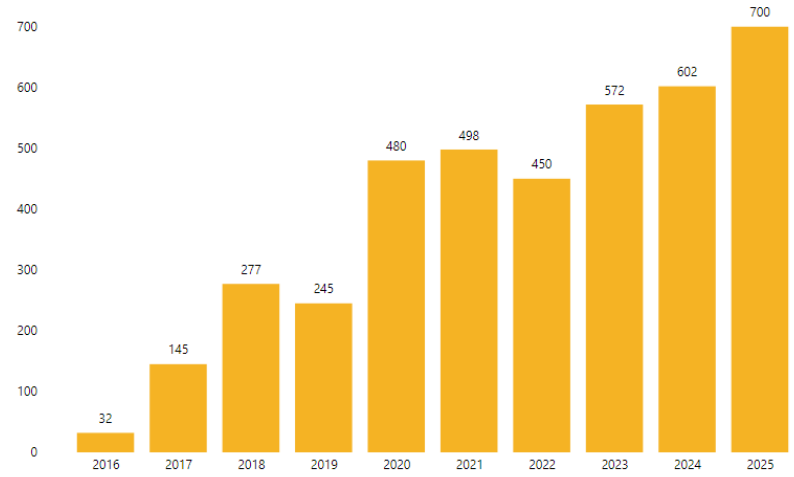
Figure 14: Photo of Bale Grazing for Success workshop at Mile Long Farm in Sheffield, VT. This workshop was hosted by the Caledonia County Natural Resources Conservation District. With a backdrop of stunning fall foliage, tips were shared on bale grazing on hayfields and pastures. Bale grazing can increase pasture organic matter, support pasture vegetation recovery, and can be a critical source of supplemental feed for grazing livestock to avoid pasture degradation and over-grazing, thereby improving water filtration, absorption capabilities, fertility, and overall soil health. This improves water quality by strategically reducing livestock impacts to pastures and reducing runoff. NRCS Soil Conservationist Hannah Wigginton was present to provide information on technical assistance options for implementing the practice.

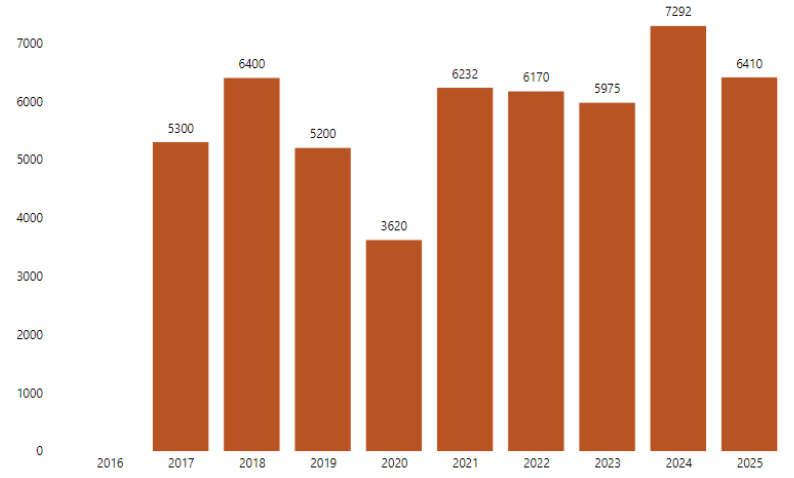
Technical Assistance by Land Use Sector

State of Vermont agencies and partners provide technical assistance to regulated and non-regulated audiences who implement clean water projects. In the natural resources sector, projects are voluntary and not driven by regulation. Education targeting the public and landowners increases the likelihood of natural resources restoration projects moving forward. While not all technical assistance provided by state agencies is tracked and reported for purposes of this report, the following table summarizes available data on technical assistance efforts by land use sector since SFY 2016.

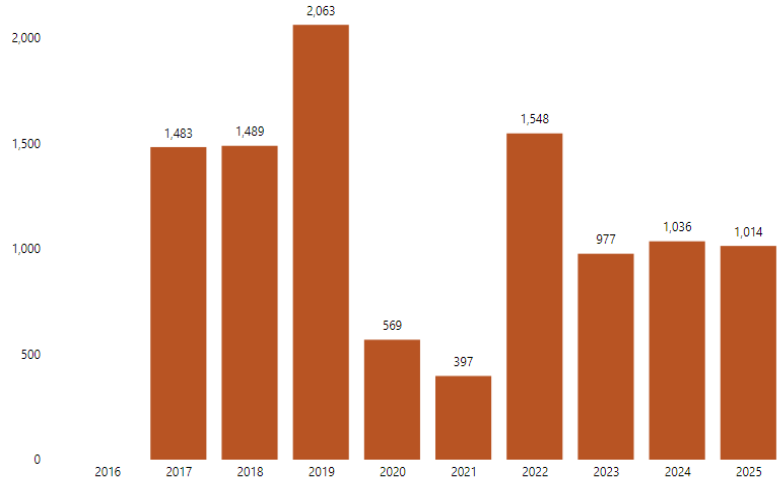
Table 5: State of Vermont technical assistance efforts by sector.

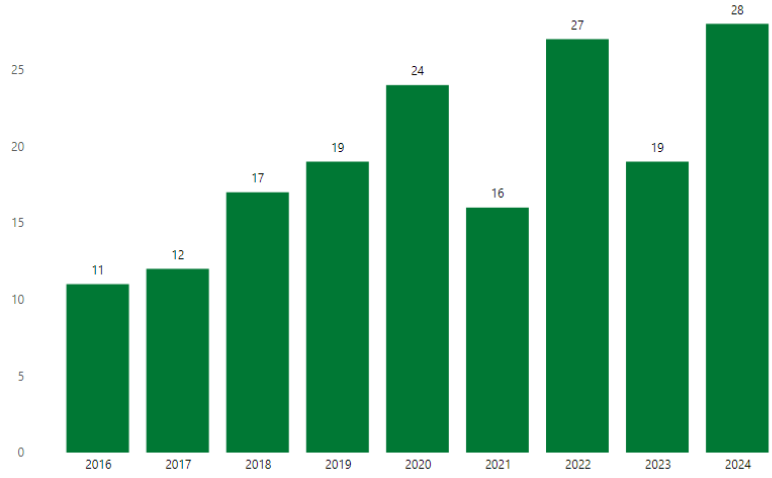
Agricultural Technical Assistance Measures	Data Notes
Number of technical assistance visits conducted by AAFM and partners to support implementation of conservation practices from SFY 2016 to 2025 = **9,504** 	Technical assistance visits are conducted to support planning, efforts to identify and secure funding, implementation, and monitoring of clean water projects on farms. Generally, 50% of visits are supported by AAFM staff, while the remaining 50% of visits are conducted by local and regional assistance providers, such as UVM Extension and Natural Resources Conservation Districts.

Agricultural Technical Assistance Measures	Data Notes
Number of farms provided technical assistance from SFY 2016 to 2025 = **4,001**[34] 	Many farm operations are supported to identify and plan projects with local and regional technical assistance providers, which are later funded, implemented, and monitored by AAFM staff. Farms are also supported to improve, adopt, and trial new best management practices to improve water quality. Data collected prior to SFY 2019 may be incomplete.

Developed Lands and Wastewater Technical Assistance Measures	Data Notes
Approximate hours of technical assistance provided by DEC's Water Investment Division engineers on municipal stormwater and wastewater projects from SFY 2016 to 2025 = **52,599** 	No data available for SFY 2016. Hours of technical assistance in SFY 2020 and 2021 were impacted by operational disruptions resulting from the COVID-19 pandemic. The decrease in technical assistance hours from 2024 to 2025 is partially due to staff vacancies in the Design, Construction, and Engineering section.

[34] This is a cumulative value that does not factor in duplicate operations from one year to the next.

Developed Lands and Wastewater Technical Assistance Measures	Data Notes
Hours of water quality municipal technical assistance provided by VTrans staff from SFY 2016 to 2025 = **10,576** 	Hours of technical assistance in SFY 2020 and 2021 were impacted by operational disruptions resulting from the COVID-19 pandemic. No technical assistance data reported in 2016.

Natural Resources Technical Assistance Measures	Data Notes
Number of logging operation site visits to provide Acceptable Management Practices (AMP) technical assistance[35] from calendar year 2016 to 2024 = **173** 	Data are reported by calendar year rather than state fiscal year. Given the timeline of this report, calendar year 2025 data are not yet available.

[35] DFPR's annual statewide summary reports are available at: https://fpr.vermont.gov/forest/managing-your-woodlands/acceptable-management-practices

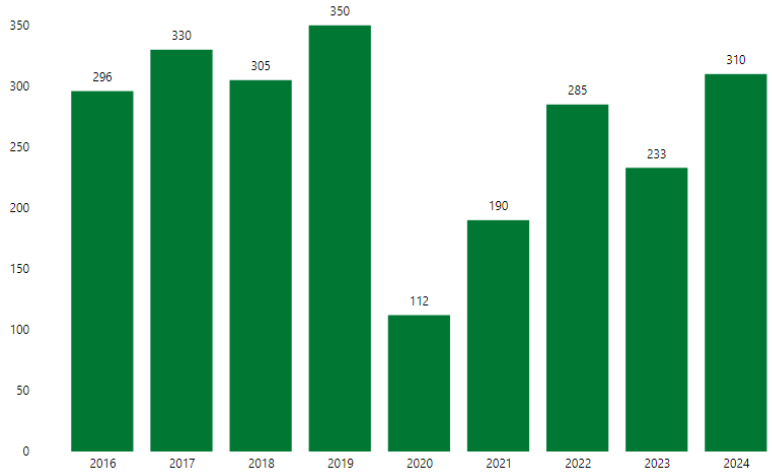
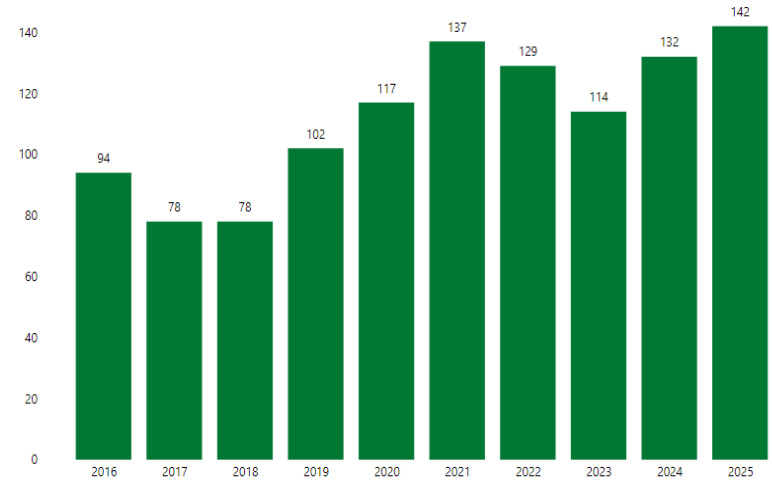
Natural Resources Technical Assistance Measures	Data Notes
Square miles of forestlands covered by Use Value Appraisal (UVA) Program site inspections from calendar year 2016 to 2024 = **2,411** 	Data are reported by calendar year rather than state fiscal year. UVA inspections in SFY 2020 and 2021 were reduced because of the COVID-19 pandemic. Given the timeline of this report, calendar year 2025 data are not yet available.
Number of communities receiving Urban and Community Forestry Program technical assistance from federal fiscal year 2016 to 2025 = **1,123** 	Data are reported by federal fiscal year (October 1-September 30), rather than state fiscal year.

Figure 15: The DEC's Clean Water Initiative Program co-hosted a Verification Field Day with Lake Champlain Sea Grant, Poultney-Mettowee NRCD, and Northwoods Stewardship Center in August 2025. Partners in attendance were: Northwest RPC, Addison County RPC, Rutland NRCD, Franklin County NRCD, FluidState Consulting, and Addison County River Watch. The purpose of the event was to train certified verifiers on the process and tools needed to verify the functionality of a clean water project. The group visited two implemented projects: a bioretention at the Poultney High School and a lakeshore restoration project in Hubbardton. In the photo, participants are learning about the implementation of the lakeshore restoration project from Meg Carter with Northwoods Stewardship Center, who was the implementer for the project. Attendees at field verification days learn about project details, routine maintenance needs, process for verification, and lessons learned from implementers and maintainers.

Statewide Results of Vermont's Clean Water Investments

Click symbol to view description of accountability measures.

Clean water projects restore, enhance, and protect water quality by addressing the sources and causes of sediment and nutrient pollution across land use sectors. The following section summarizes the results of state-funded projects and regulatory projects completed statewide to improve water quality. Data is representative of the available results from completed and reported state-funded clean water work. Reporting on the results of state investments may lag based on the terms and duration of funding agreements, and results are likely incomplete for recent years covered in this report. The duration of project results reporting lag time varies by sector and funding source. Data for all years are updated each reporting cycle to more accurately reflect total results.[36]

Statewide Results of Agricultural Pollution Prevention Projects

Agricultural pollution prevention projects involve the installation or application of conservation practices that reduce sources of nutrient and sediment pollution from farm production areas and agricultural fields. Unlike in other sectors, many clean water practices implemented in the agricultural sector have an effective lifespan of one year and require annual implementation to sustain results. Additionally, agricultural practices are inherently subject to seasonal weather and soil conditions. Fluctuating levels of voluntary implementation may be influenced by weather, farm business decisions, land management strategies, and ability to implement.

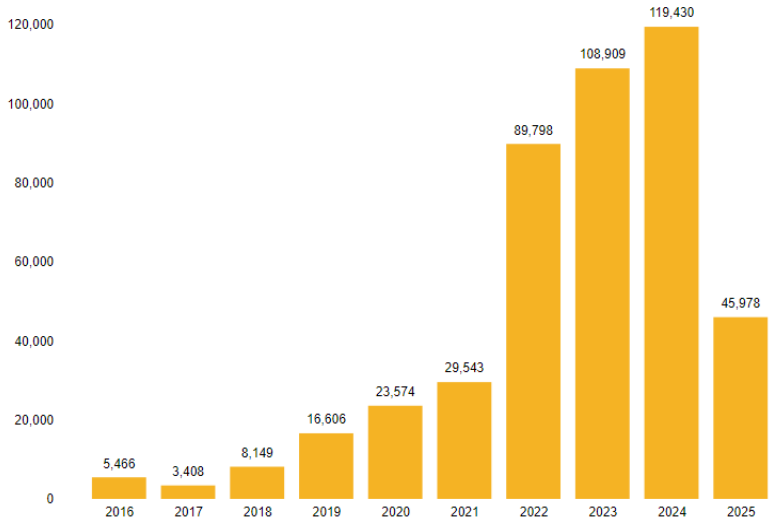
Data for this reporting are collected on a state fiscal year cycle (July-June), however July 1 is the middle of the growing season in Vermont. Many agricultural grant programs operate on a growing season cycle. Data available for the most recent state fiscal year are generally an under representation of total implementation, because of the timing of reporting cycles some results have not yet been captured. Annual implementation data are updated each year to more accurately reflect total annual implementation. For example, in the *Clean Water Initiative 2024 Performance Report*, acres of agricultural conservation practices implemented in SFY 2024 were reported as 28,964. However, once programs captured end of grant reporting from the recent field season, data for this year's report show 84,877 acres of agricultural conservation practices implemented in SFY 2024.

Agricultural project output measures can overlap if multiple practices were applied on the same field. For example, 10 acres of manure injection and 10 acres of cover crop applied on the same field will amount to 20 acres of agricultural conservation practices implemented in reported project outputs. Similarly, practices implemented on the same field over multiple years will be counted for each year implemented. For example, 10 acres of cover crop implemented on the same field in 2016, 2017, and 2018 will amount to 30 acres of agricultural conservation practices implemented in reported total project outputs. The total agricultural project outputs metric represents a cumulative level of effort of state funding programs, rather than the number of distinct agricultural acres addressed.

[36] For a full record of project output measures by state fiscal year, visit the Clean Water Interactive Dashboard here: https://anrweb.vt.gov/DEC/cleanWaterDashboard/

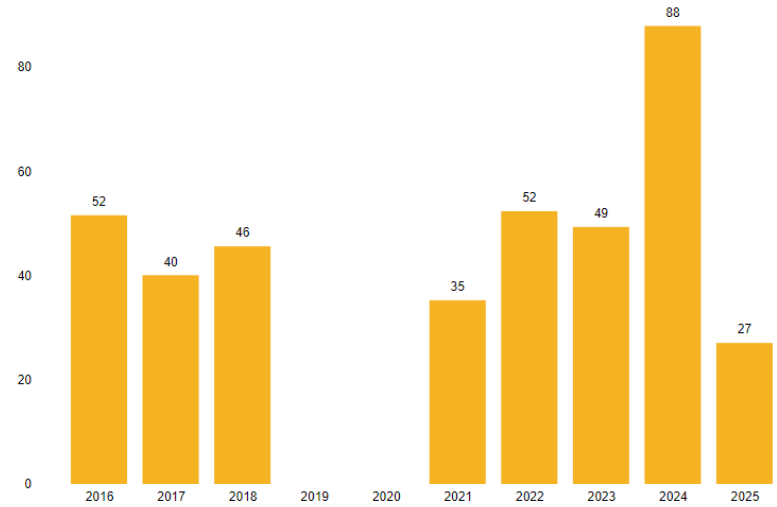
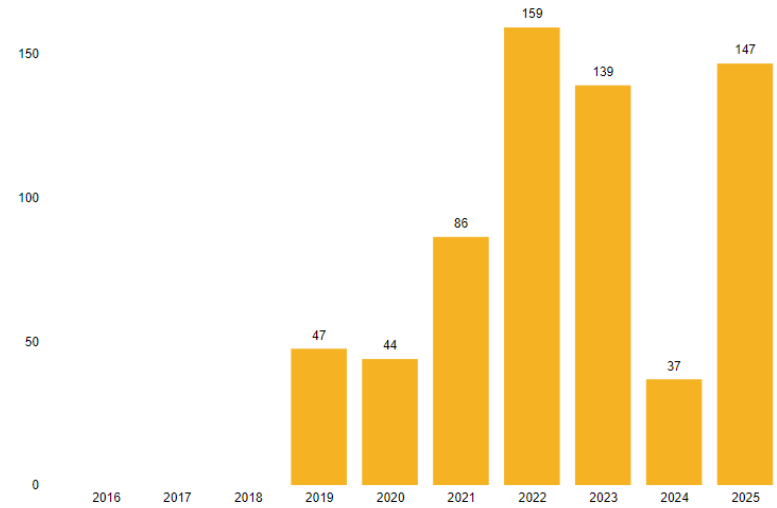
The following table summarizes project outputs associated with state-funded agricultural pollution prevention projects, technical assistance, and regulatory programs. The figures presented in the table below show outputs by SFY based on currently available data.

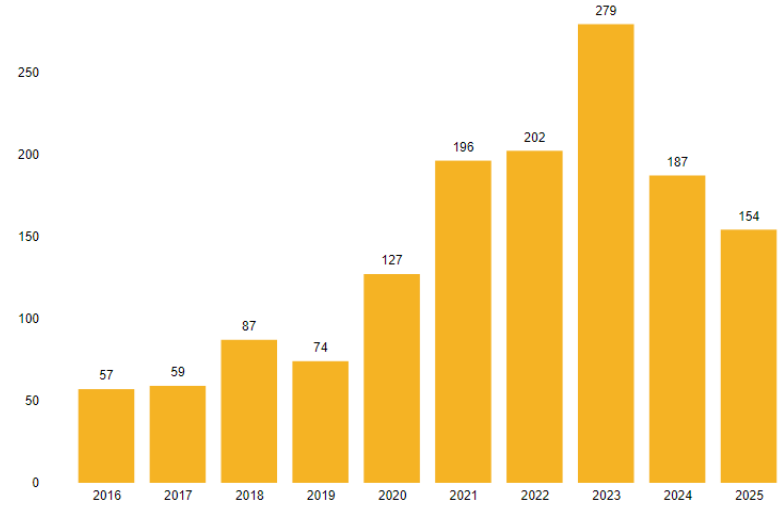
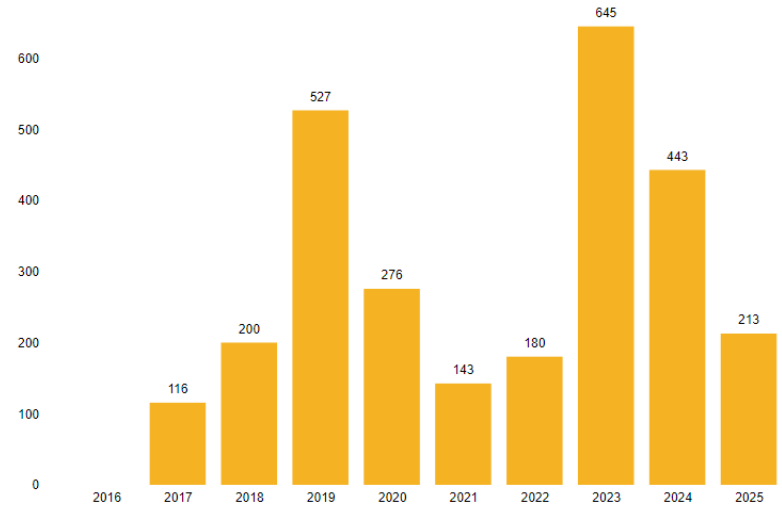
Table 6: Outputs of state-funded agricultural pollution prevention projects implemented statewide since SFY 2016.[37]

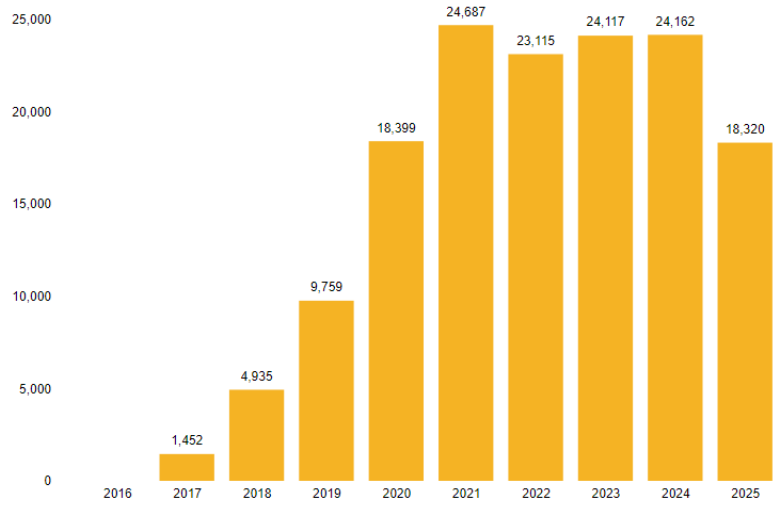
Project Output Measures	Data Notes
Acres of agricultural conservation practices implemented (excluding practice types listed below)[38] SFY 2016 to 2025 = **450,861** 	Increased acres of conservation practices in SFY 2022-2025 are the result of a new program, VPFP, which is currently funded through SFY 2026 with a federal USDA-NRCS grant. The continuation of this innovative performance-based conservation program is dependent on future funding availability. SFY 2025 data is not complete.

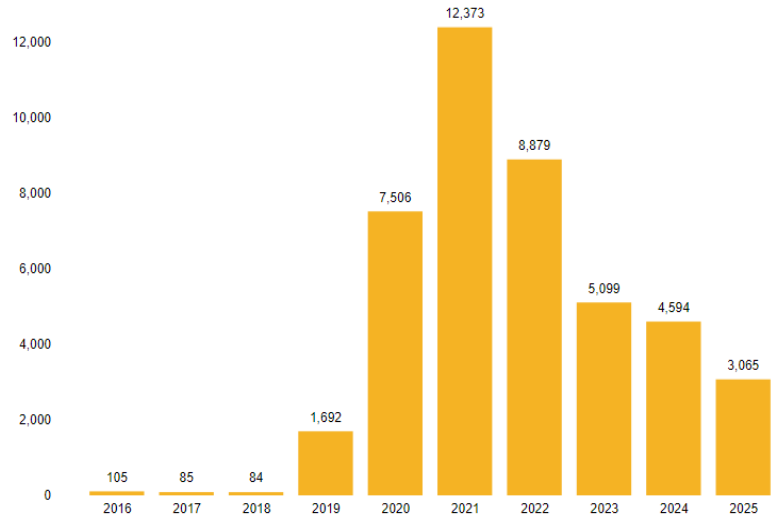
[37] Acronyms are defined in Appendix E: Glossary of Acronyms

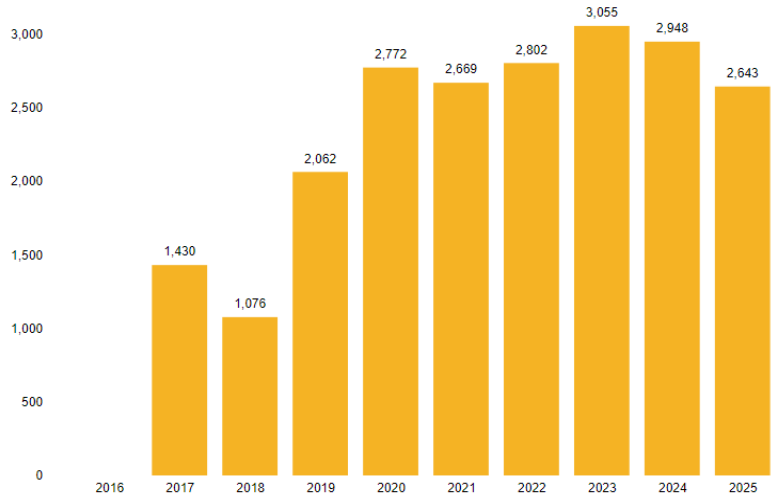
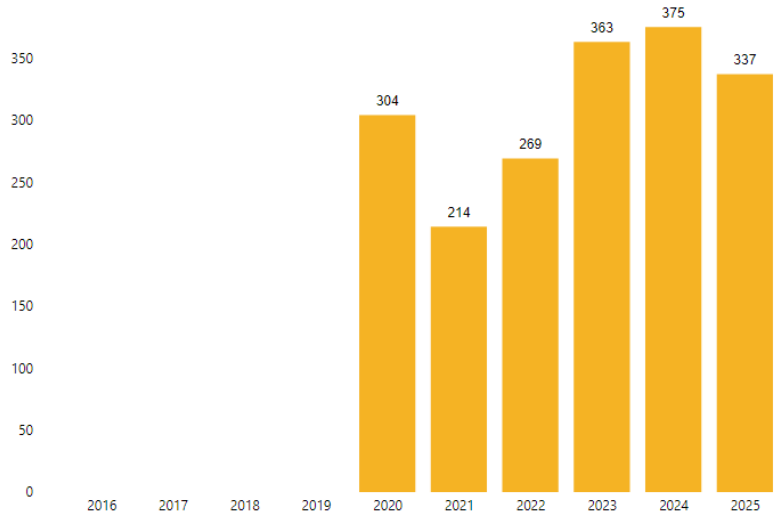
[38] Acres of agricultural conservation practices includes aeration, conservation crop rotation, cover crop, crop to hay, grassed waterways, manure injection, manure incorporation, conservation tillage, pasture and hay planting, rotational grazing, and nutrient management. Many of these practices are implemented on the same field over multiple years, therefore those same acres will be counted for each year the practice was implemented.

Project Output Measures	Data Notes
Acres of agricultural forested and grass buffers installed SFY 2016 to 2025 = **389** 	State funded riparian buffers are primarily supported through the CREP program. In SFY 2019 and SFY 2020, zero acres were enrolled in the CREP program due to federal statutes which affected Vermont agricultural land eligibility for this program. Changes in the 2018 Farm Bill resulted in an updated 2020 CREP program handbook, which once again enabled enrollment of Vermont lands in this program.
Acres of pasture with livestock excluded from surface water SFY 2016 to 2025 = **659** 	Livestock exclusion occurs when landowners install fencing to ensure livestock cannot access adjacent surface water and is often an outcome of PSWF and CREP projects. Tracking of this measure occurs after installation of fence and other associated infrastructure. Implementation rates are expected to vary annually based on interest and capacity. Data not available SFY 2016-2018.

Project Output Measures	Data Notes
Number of structural agricultural practices installed SFY 2016 to 2025 = **1,422** 	Structural agricultural practices can include waste storage and management, barnyard improvements, access roads and livestock trails, fencing, and water infrastructure.
Acres of land conserved with special water quality protections SFY 2016 to 2025 = **2,740** 	Acres of newly conserved agricultural lands vary year-to-year based on landowner willingness, readiness of agreements, and timing of execution.

Project Output Measures	Data Notes
Acres of agricultural land treated through innovative equipment SFY 2016 to 2025 = **148,945** 	Innovative equipment that aids in the reduction of surface runoff includes manure injection, conservation tillage, cover crop planting, and other innovative agricultural equipment types.

Project Output Measures <u>Supported by State Technical Assistance</u>	Data Notes
Acres of agricultural conservation practices (including livestock exclusion and filter strip buffer) implemented with support of state-funded technical assistance SFY 2016 to 2025 = **43,481** 	Agricultural conservation practices supported by technical assistance represent practice implementation without direct financial assistance to farmers for practice installation. These practices are reported through technical assistance efforts funded by state programs.

Agricultural Measures Reported Through Regulatory Programs	Data Notes
Acres of production area inspected by AAFM for compliance with Required Agricultural Practices (RAPs) SFY 2016 to 2025 = **21,456** 	Farms are inspected on a regular cycle depending on the farm size for compliance with agricultural water quality regulations. Production areas refer to the facilities and infrastructure utilized for waste storage, feed storage, animal housing and other associated infrastructure. Data not available SFY 2016.
Number of water quality compliance assurance assessments conducted by AAFM to check compliance with Required Agricultural Practices (RAPs) and Medium Farm Operation (MFO) and Large Farm Operation (LFO) Rules[39] SFY 2020 to 2025 = **1,862** 	Compliance assurance assessments include regulatory inspections, investigations, enforcement, and other regulatory reviews. Some of the assessments shown here correspond to acres of production area inspected for compliance with RAPs shown above. Data not available SFY 2016-2019.

[39] For more information on RAPs, visit: https://agriculture.vermont.gov/rap

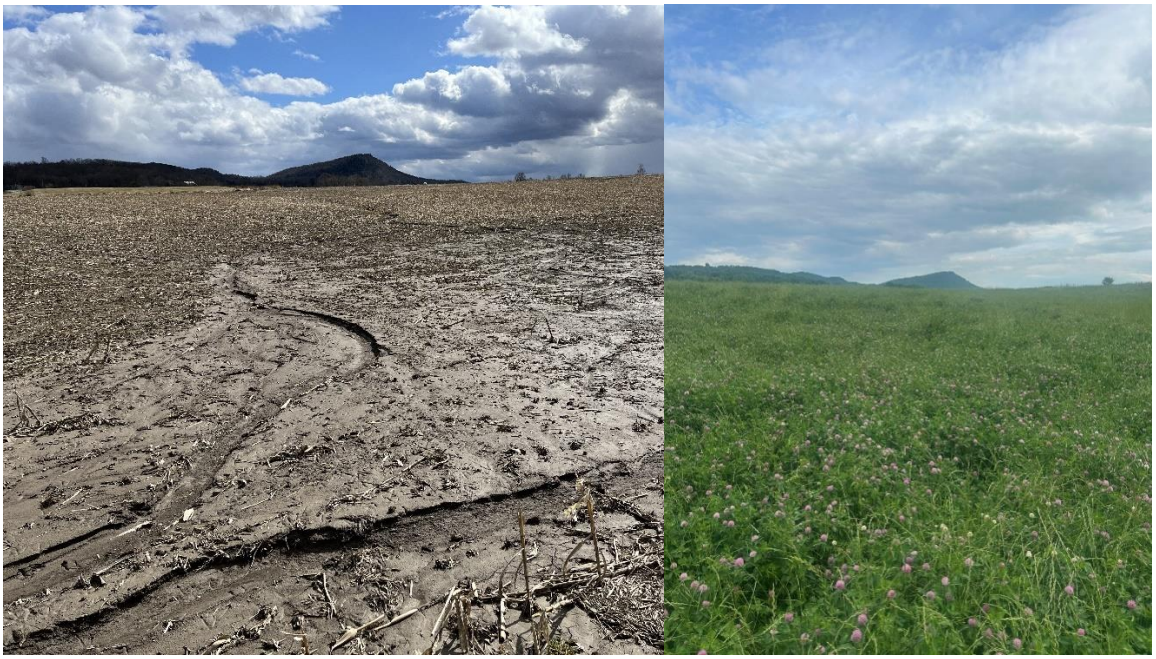


Figure 16: Before (left) and after (right) installation of pasture and hay planting adjacent to Otter Creek, completed in 2025. This field was farmed for years in a corn-hay rotation before being acquired by beginning farmers (with years of experience working for other farms). The new farm owners noticed significant erosion pathways and desired to pursue a long-term perennial forage seeding of the 11-acre field to support rotational grazing of cattle. The field was seeded into a heavy clover mix to support the farm's grazing goals while sequestering nitrogen from the atmosphere and into the soil. This perennial seeding will help to capture soil and nutrient runoff and prevent it from entering the adjacent river. This project was supported through the Agency of Agriculture's Seeding and Filter Strip (SFS) program.

Figure 17: A new greywater collection pit installed on a small dairy farm operation in the Winooski river basin. The project included a bedded pack facility for winter livestock management, heavy use area improvements, and a covered manure stacking area. This small family dairy farm previously managed their farm with an outdated liquid storage tank and uncovered manure storage areas. This project was supported through the Best Management Practices (BMP) Program in collaboration with federal partners.

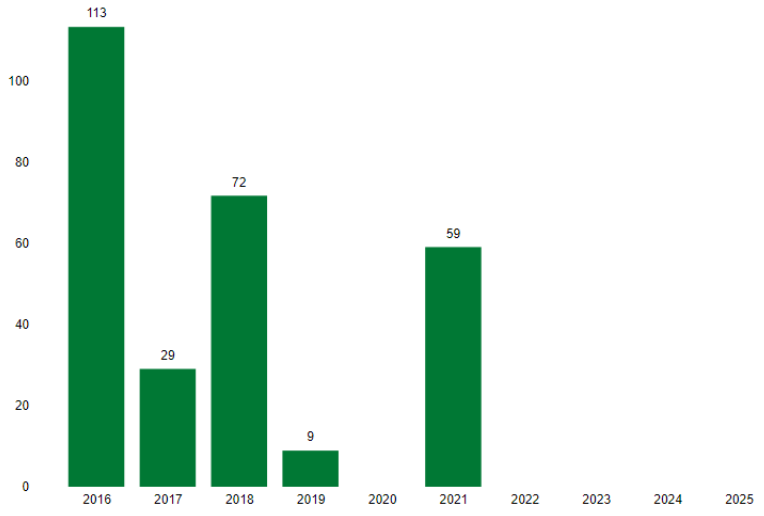
Statewide Results of Natural Resources Restoration Projects

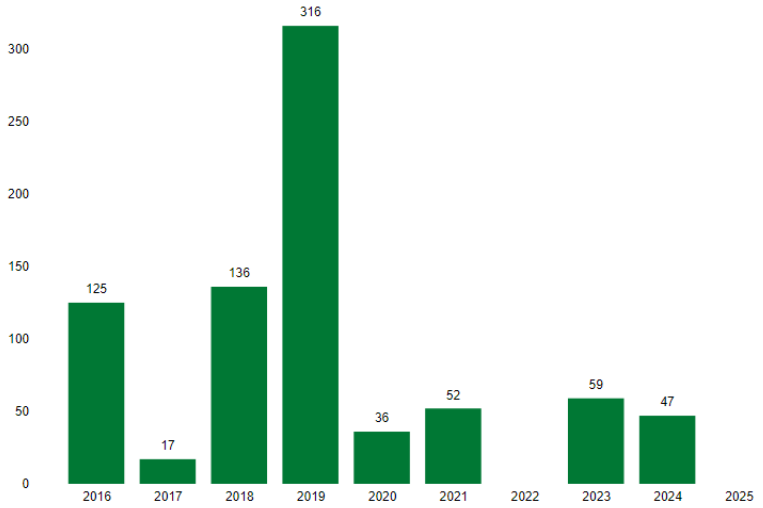
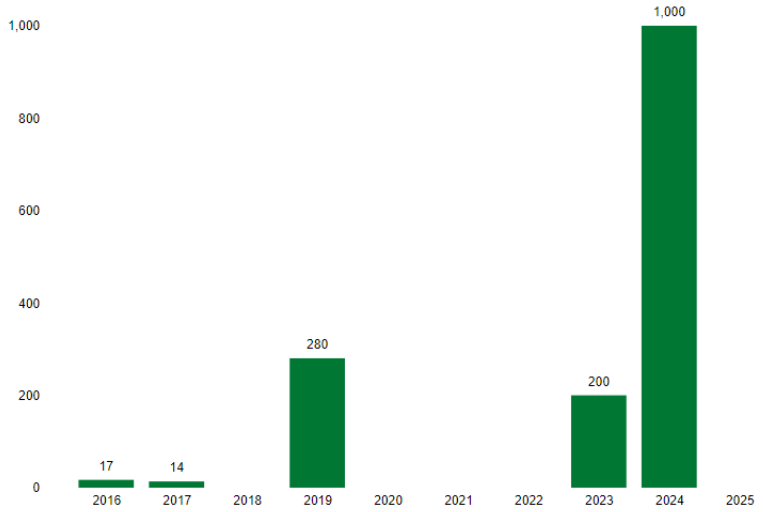
Natural resources restoration projects involve the restoration and protection of natural infrastructure functions that prevent and abate nutrient and sediment pollution. Natural infrastructure includes floodplains, river corridors, lakeshores, wetlands, and forests. Most natural resources restoration projects reflected in this report are voluntary, and results may vary year-to-year depending on landowner willingness to participate, partner capacity, the timing of reporting, and other factors. Landowner outreach and investment in partner capacity to complete these types of projects is a crucial component to continued progress in clean water work in the natural resources sector.

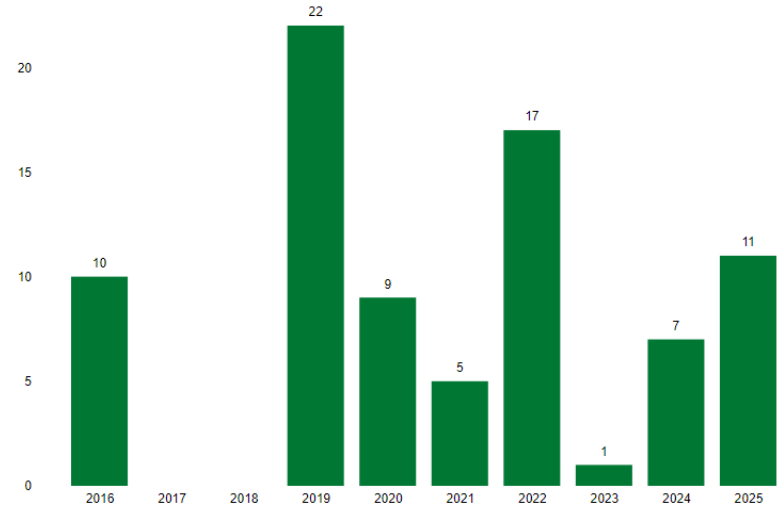
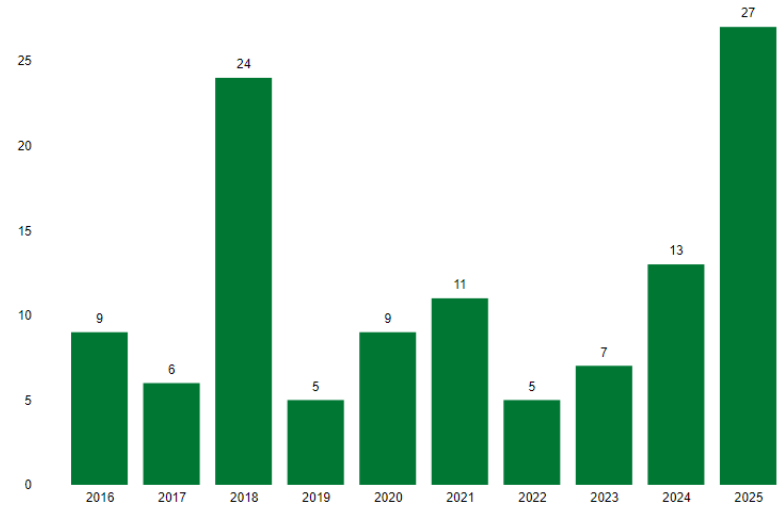
Annual variation in the level of project outputs reported for some project types in the natural resources sector is expected, particularly when projects require multi-year planning and design work, legal agreements, and partner coordination. Because projects in the natural resources sector are primarily voluntary and non-regulatory, rates of project completion may be affected by many factors, including a dearth of identified project opportunities and a need to build new relationships to increase landowner willingness to implement projects. Efforts are underway to identify, assess, and prioritize programmatic adjustments that could support additional voluntary project engagement.

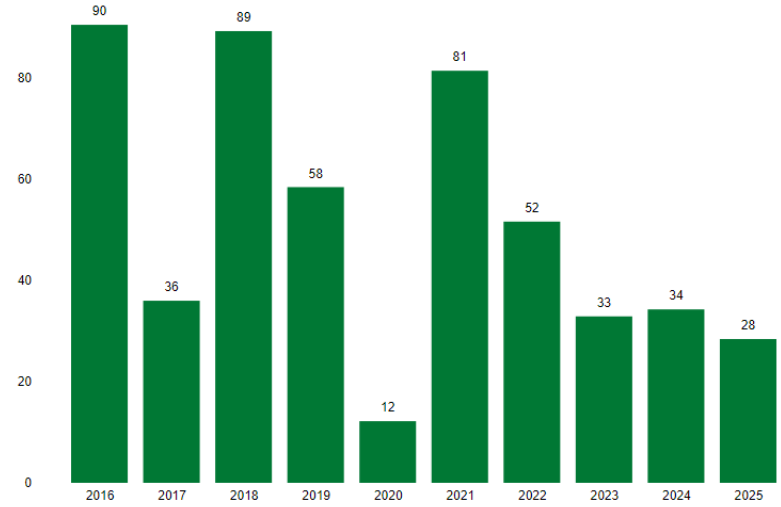
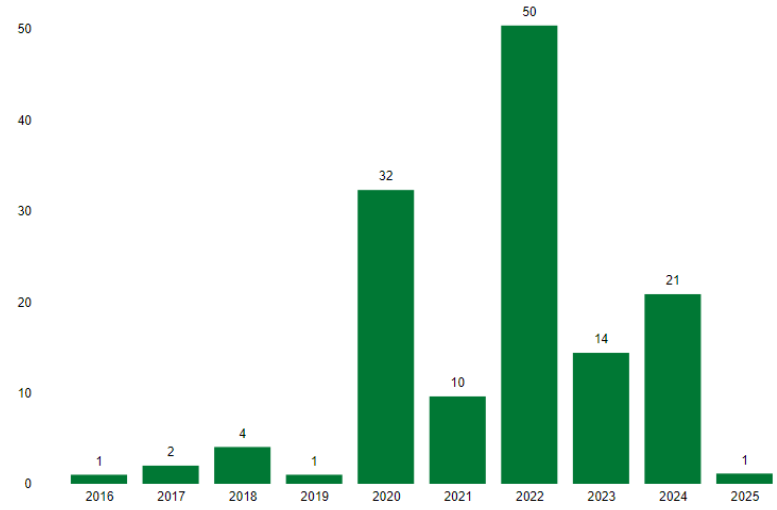
The following table summarizes project outputs associated with state-funded natural resources restoration projects. Project development measures reflect efforts in the identification, prioritization, and design of projects. Project output measures reflect the impact of project implementation or construction. The figures presented in the table below show outputs by SFY based on currently available data.

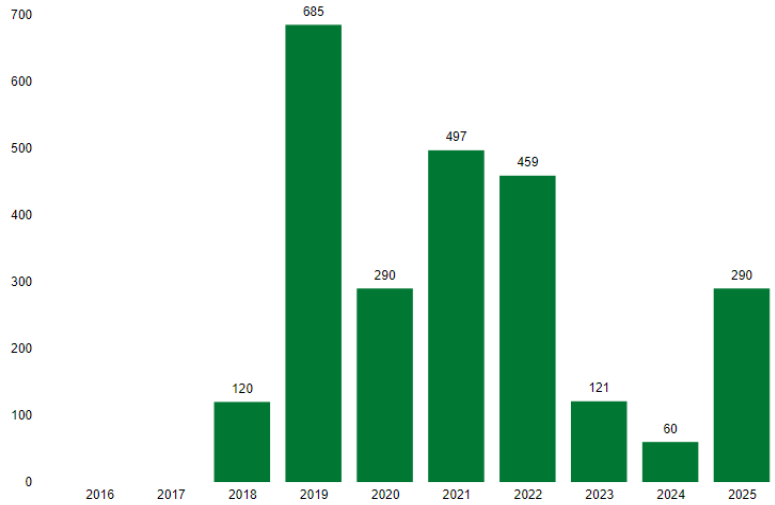
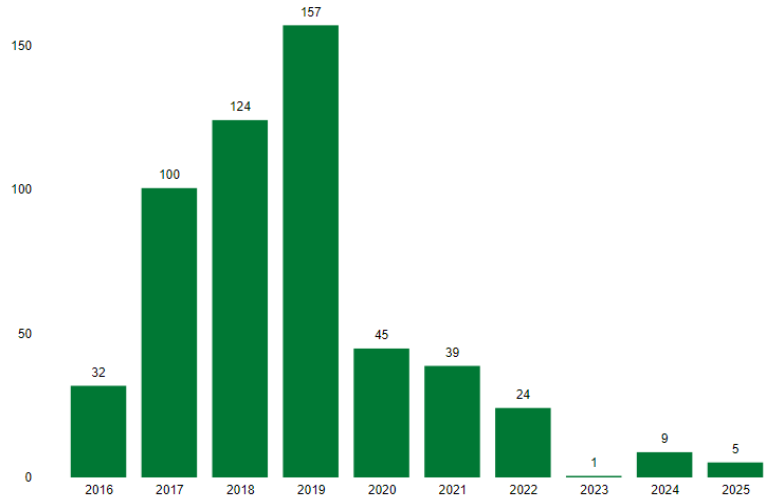
Table 7: Outputs of state-funded natural resources restoration projects implemented statewide since SFY 2016.

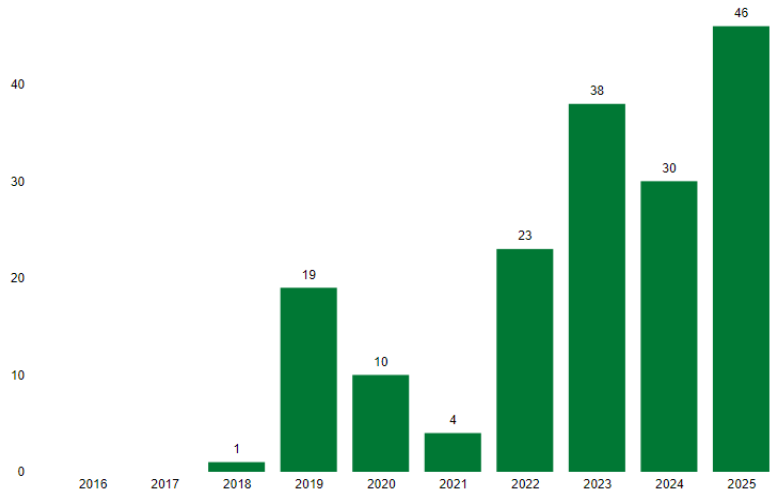
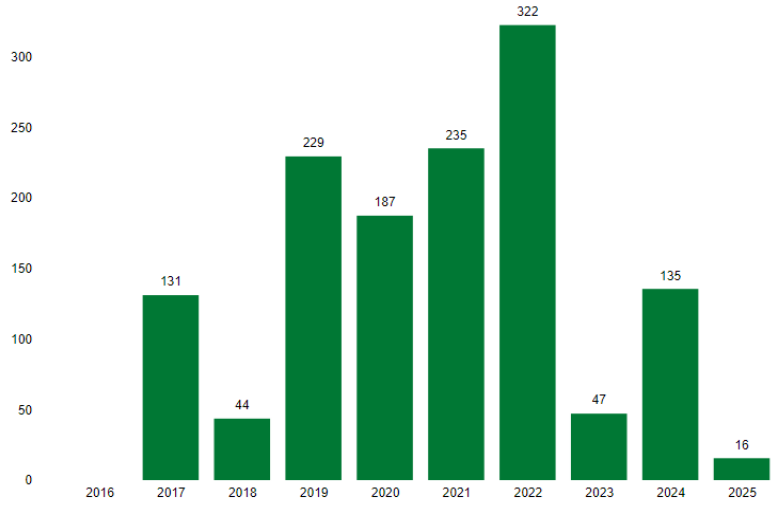
Project Development Measures	Data Notes
Stream miles assessed by Stream Geomorphic Assessment, River Corridor Plan SFY 2016 to 2025 = **282** 	Extensive work to complete Stream Geomorphic Assessments and River Corridor Plans occurred in the early 2000s, resulting in a substantial amount of data in most watersheds across the state and a limited need to complete additional assessments in recent years. Ongoing work to develop tools and resources to streamline these processes will support targeted re-assessments in priority areas of the state.

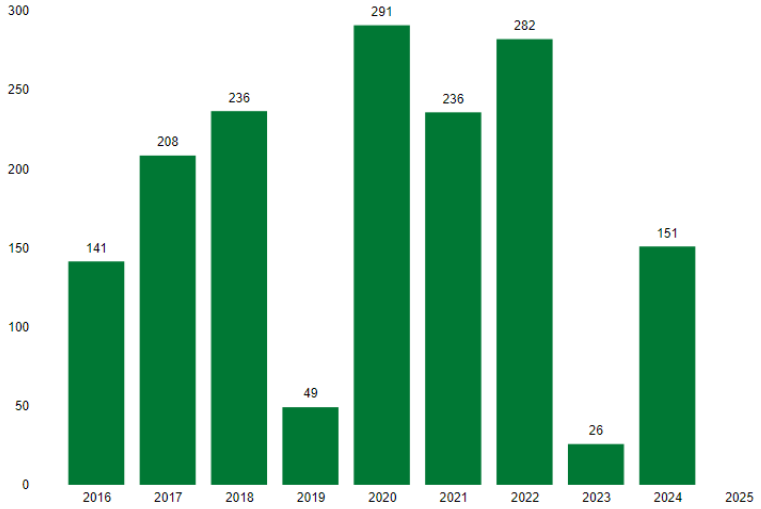
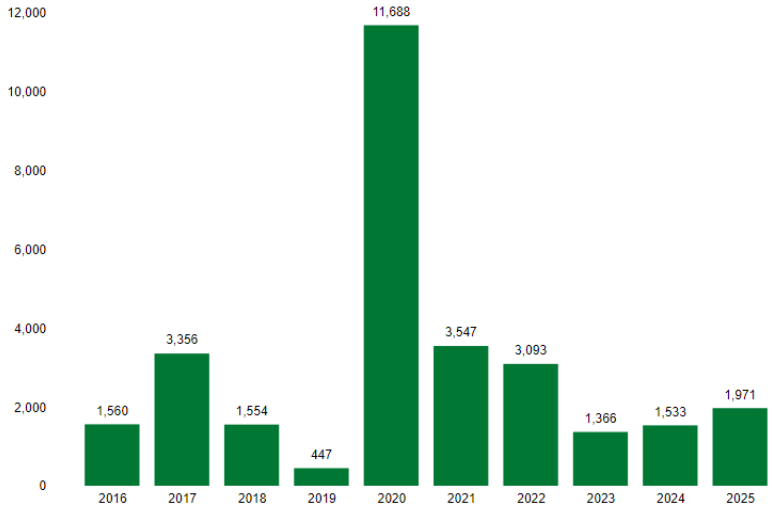
Project Development Measures	Data Notes
Number of natural resources restoration projects identified SFY 2016 to 2025 = **788** 	This metric includes projects identified through River Corridor Plans, Stream Geomorphic Assessments, and Lake Watershed Action Plans. The number of projects identified is a direct result of assessment efforts completed.
Acres of river corridor scoped for easement SFY 2016 to 2025 = **1,511** 	Initial scoping efforts may involve a single property or multiple properties, and results are expected to vary annually based on interest and capacity. In SFY 2024, a single scoping effort assessed 1,000 acres.

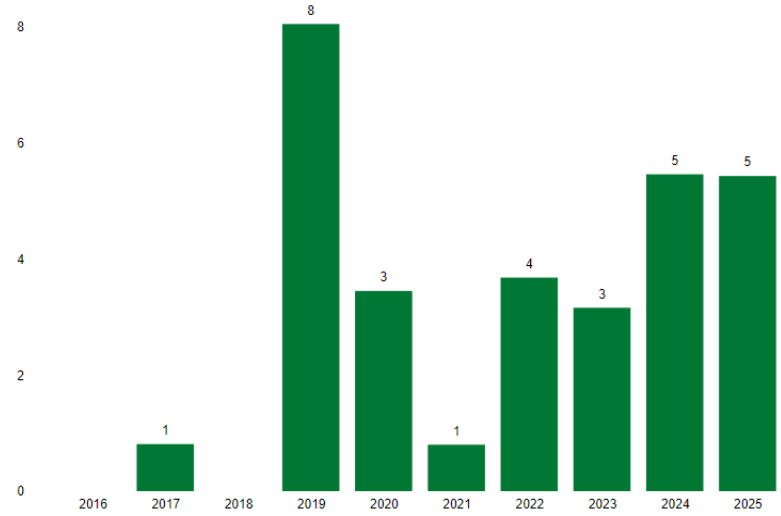
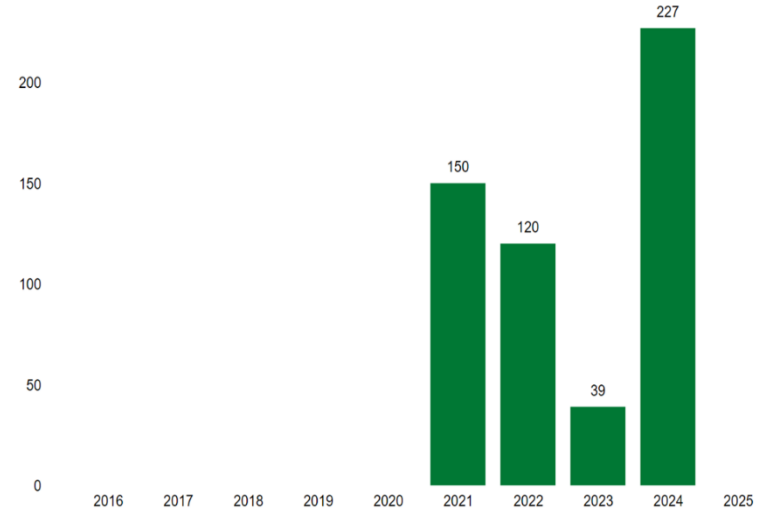
Project Development Measures	Data Notes
Number of preliminary (30%) designs completed SFY 2016 to 2025 = **82** 	Not all natural resources projects require formal design. If only one design phase is required, data are reflected in the final design phase.
Number of final (100%) designs completed SFY 2016 to 2025 = **116** 	Not all natural resources projects require formal design. For example, forested riparian buffer plantings often move straight from identification to implementation. Other projects in the natural resources sector, such as dam removals, require extensive design and engineering prior to implementation.

Project Output Measures	Data Notes
Acres of forested riparian buffer restored through buffer planting SFY 2016 to 2025 = **515** 	Metric variation may be in part a result of granting cycles. Results in recent years may be under-representative of implementation due to data reporting cycles.
Acres of floodplain restored SFY 2016 to 2025 = **137** 	Many acres may be restored by a single project. Results in recent years may be under-representative of implementation due to data reporting cycles.

Project Output Measures	Data Notes
Linear feet of lakeshore restored SFY 2016 to 2025 = **2,522** 	Many linear feet may be restored by a single project. Results in recent years may be under-representative of implementation due to data reporting cycles.
Number of stream miles reconnected to restore a river's longitudinal (up/downstream) conditions and regain fish passage SFY 2016 to 2025 = **535** 	Metric is reported for barrier removal projects, like culvert replacements and dam removals. Not all river and stream projects result in a reconnection of stream miles. Results in recent years may be under-representative of implementation due to data reporting cycles.

Project Output Measures	Data Notes
Number of stream crossings improved SFY 2016 to 2025 = **171** 	Metric is associated primarily with forest road improvement projects. Annual results vary based on identified opportunities and project needs.
Acres of wetland conserved and/or restored through easements SFY 2016 to 2025 = **1,346** 	Many acres may be conserved by a single project. Acres of wetland may be conserved with or without additional restoration implemented, depending on the site and its restoration needs.

Project Output Measures	Data Notes
Acres of riparian corridor conserved and restored through easements SFY 2016 to 2025 = **1,620** 	Many acres may be conserved by a single project. Lack of projects noted in 2025 due, in part, to updating funding and contract process with implementation partners.
Acres of land conserved with natural resources protections SFY 2016 to 2025 = **30,114** 	Spike in 2020 due to three large multi-thousand-acre conservation efforts. Typically, an individual project will conserve tens to hundreds of acres. This measure includes agricultural land conservation funded through Vermont Housing and Conservation Board's Farmland Conservation and Protection Grant Program, as well as land conservation financed through the CWSRF Land Conservation Interim Financing Program.

Project Output Measures	Data Notes
Miles of forest road and trail drainage and erosion control improvements SFY 2016 to 2025 = **31** 	Metric is primarily representative of work completed in State Parks and State Forests. In future reports, this metric will include voluntary forest road and trail projects completed on private lands.
Number of trees planted along rivers and lakeshores SFY 2021 to 2025 = **536** 	Trees are often planted as part of floodplain/ stream or lakeshore restoration projects to enhance erosion control and increase tree canopy cover. Data not available SFY 2016-2020.

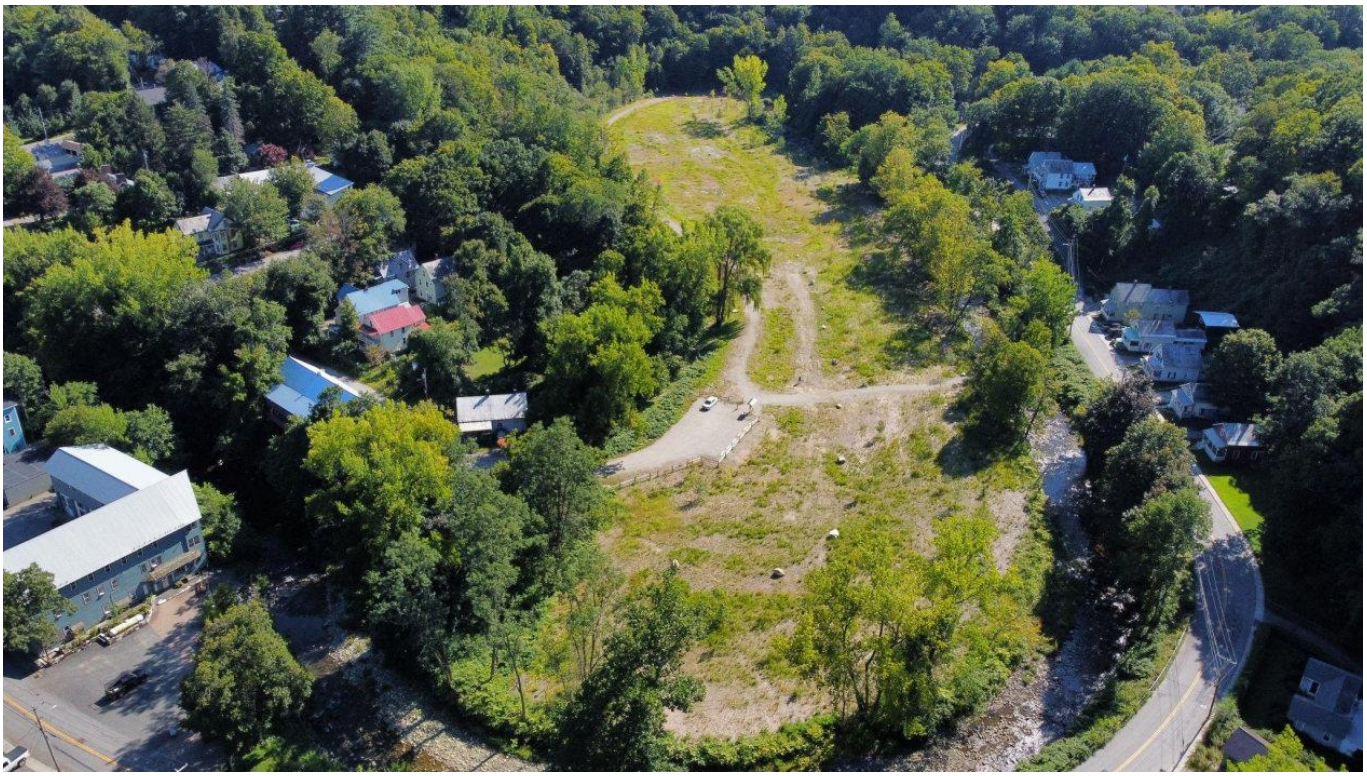


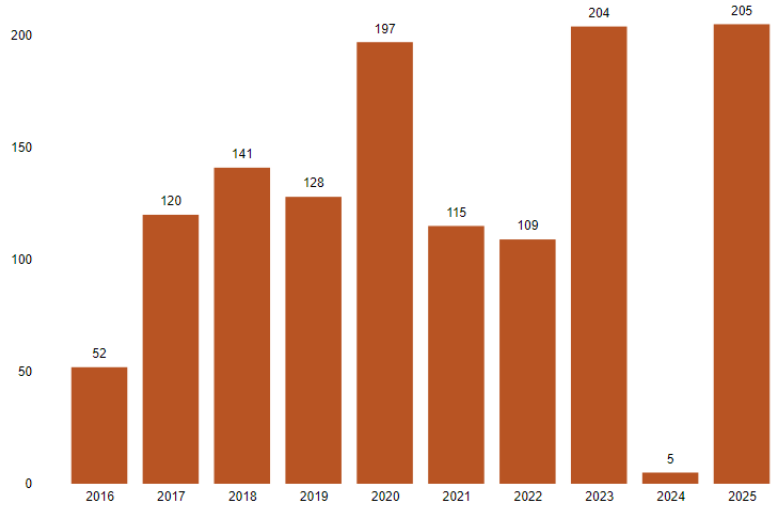
Figure 18: Post-implementation photo of the Kikitta Ahki-Whetstone Brook Conservation project in Brattleboro VT, which restored and permanently protected 12 acres along Whetstone Brook. This project was implemented by the Town of Brattleboro, the Vermont River Conservancy, the Vermont Housing and Conservation Board, and the Vermont Agency of Natural Resources Department of Environmental Conservation (DEC), and funded by the Town of Brattleboro, DEC, Vermont River Conservancy (VRC), Vermont Housing and Conservation Board (VHCB), FEMA hazard mitigation funds/ Vermont Emergency Management Flood Resilient Communities Fund, and EPA Brownfields. The project removed industrial fill, reconnected the brook to its natural floodplain, and established native riparian vegetation substantially expanding the river's capacity to store floodwaters and reduce downstream flood risk to Brattleboro's homes and critical infrastructure. In addition to improving flood resilience, the project enhances water quality, restores wetland and wildlife habitat, and provides new community access to a revitalized riverfront park. The project was completed in December 2024. Photo Credit: VRC.

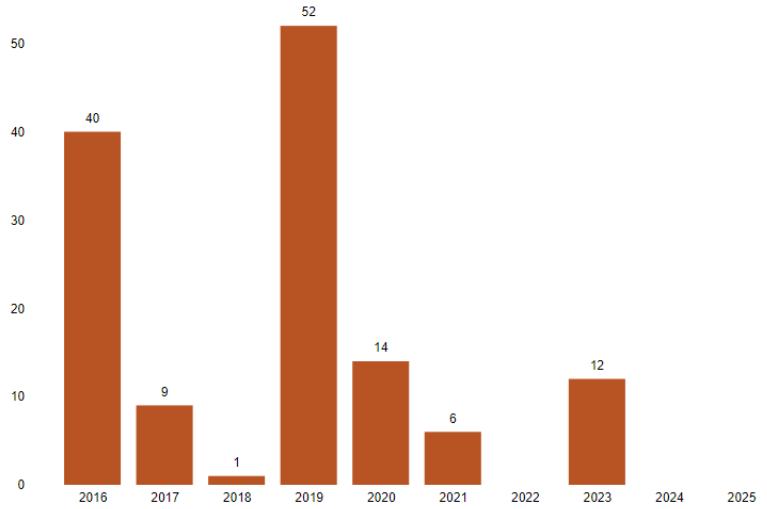
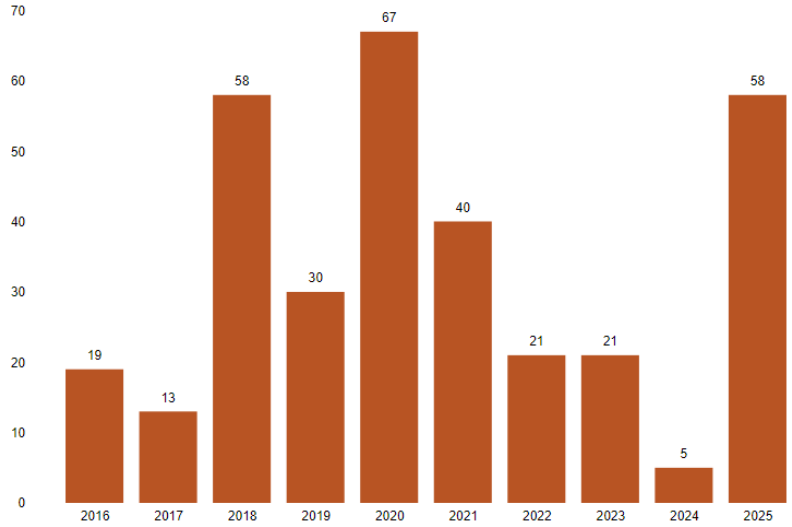
Statewide Results of Developed Lands Projects

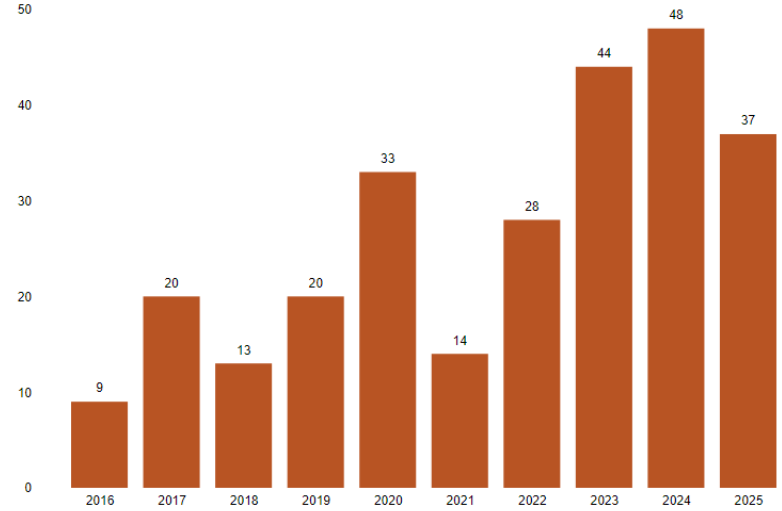
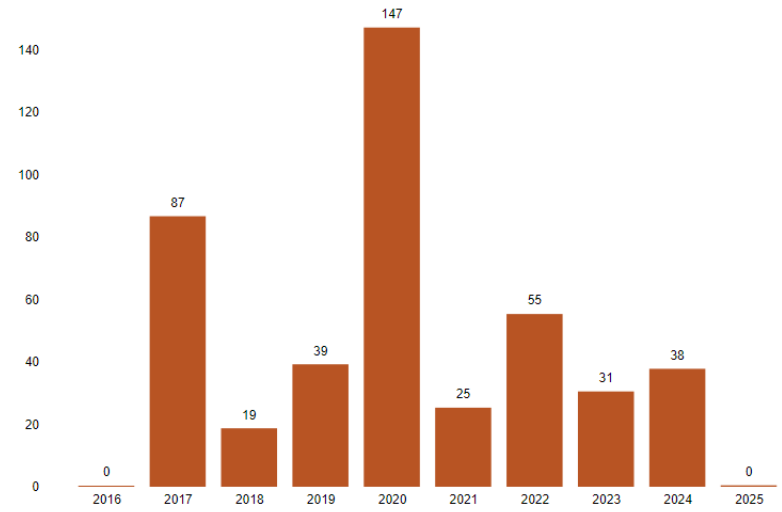
Developed lands projects mitigate erosion and treat polluted stormwater runoff containing nutrient and sediment pollution from impervious surfaces. Stormwater treatment practices capture and treat flow from parking lots, sidewalks, and rooftops, while transportation-related stormwater projects reduce erosion and mitigate pollutants from road-related sources.

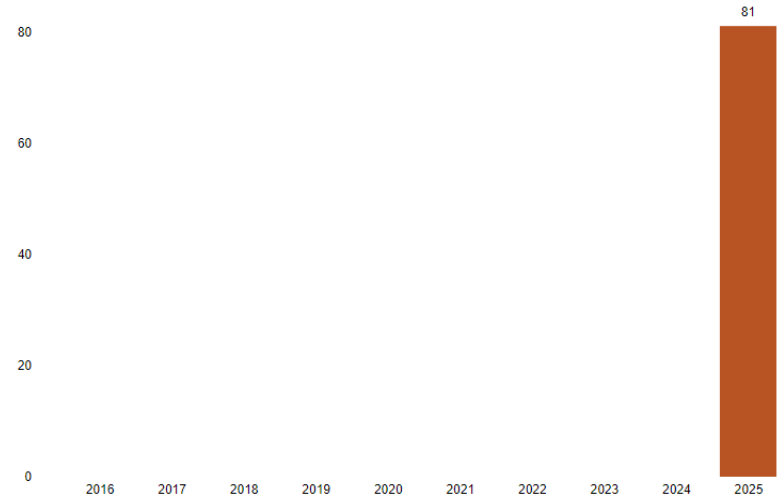
The following table summarizes project outputs reported through state funding programs and regulatory programs. State funding programs provide funding to support project design and implementation/construction for both regulatory and non-regulatory projects. The figures presented in the table below show outputs by SFY based on currently available data.

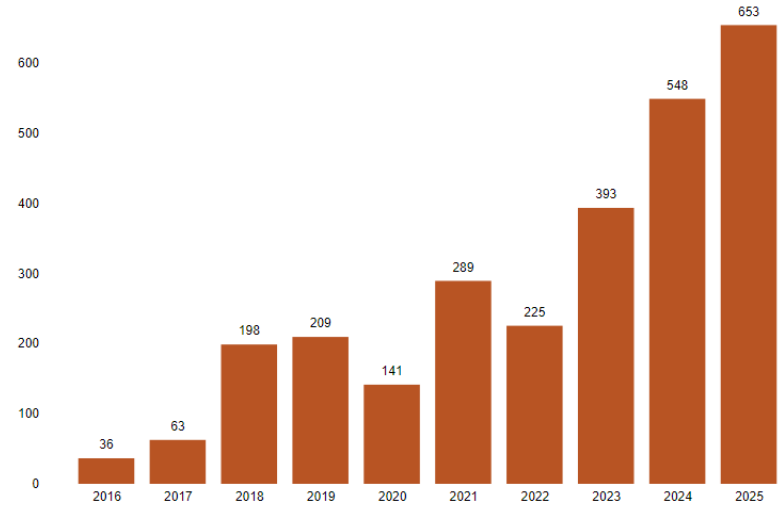
Table 8: Outputs of stormwater treatment and road erosion remediation projects implemented statewide, reported through state funding programs or regulatory programs since SFY 2016.

Non-Regulatory Project Development and Output Measures	Data Notes
Number of projects identified through Stormwater Master Plans SFY 2016 to 2025 = **1,276** 	Results of identification are variable year-to-year, depending on the timing and magnitude of assessment work. Contract restructuring in SFY 2024 contributed to limited outputs in that year.

Non-Regulatory Project Development and Output Measures	Data Notes
Number of illicit/unauthorized discharges confirmed (to be addressed by the responsible municipality or landowner) SFY 2016 to 2025 = **134** 	The program supporting this work recently transitioned to a new structure. Work in recent years has focused on data development to support upcoming field-based investigations.
Number of preliminary (30%) designs completed SFY 2016 to 2025 = **332** 	Results may vary year by year due to project need and data reporting cycles.

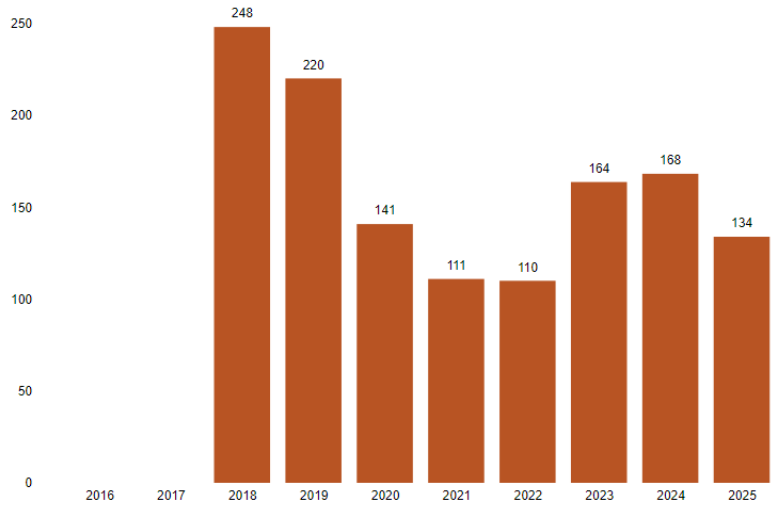
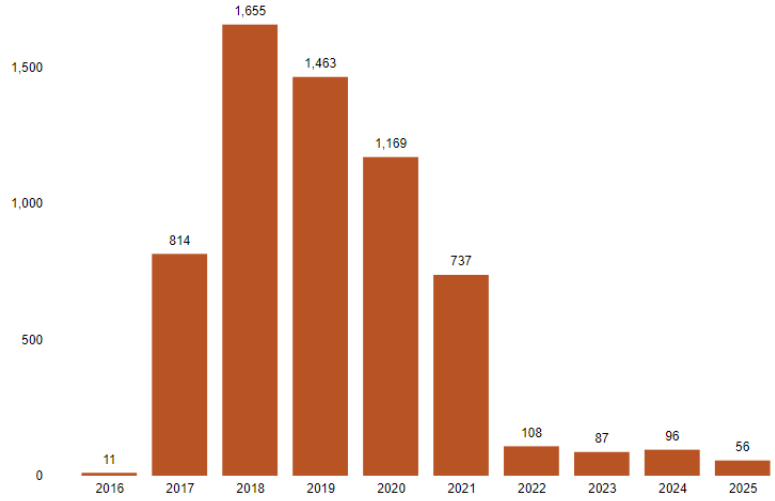
Non-Regulatory Project Development and Output Measures	Data Notes
Number of final (100%) designs completed SFY 2016 to 2025 = **266** 	Results may vary year by year due to project need and data reporting cycles. Examples of non-regulatory stormwater treatment practices designed may include bioretention basins, infiltration trenches, gravel wetlands, sand filters, or dry detention ponds.
Acres of existing impervious surface treated by non-regulatory stormwater treatment practices SFY 2016 to 2025 = **441** 	Sub jurisdictional (non-regulatory) stormwater treatment is voluntary and subject to annual variation based on project magnitude and readiness, landowner willingness, and data reporting cycles. Zeros in SFY 2016 and 2025 are a result of rounding.

Non-Regulatory Project Development and Output Measures	**Data Notes**
Number of trees planted in downtown and developed areas = **81** 	VT DEC's Forest, Parks, and Recreation's Urban and Community Forestry Program provides small grants to communities for tree planting efforts. New reporting program as of SFY 2025.

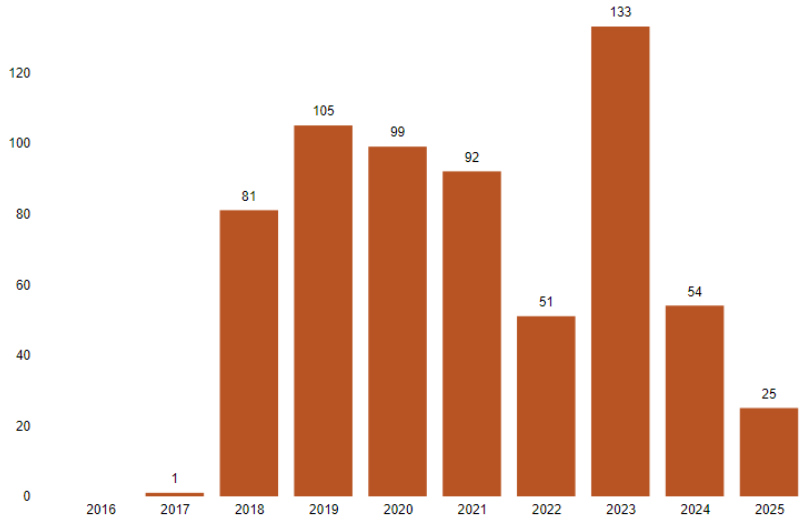
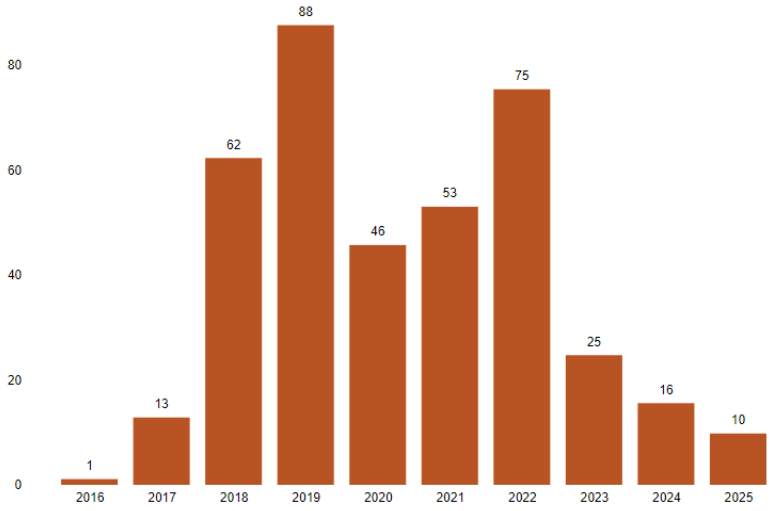
Regulatory Project Development and Output Measures	**Data Notes**
Acres of *existing* impervious surface treated by stormwater treatment practices under stormwater permits[40] SFY 2016 to 2025 = **2,756** 	Acres of existing impervious surface treated are reported at the time of permit issuance. Permittees have five years from the date of issuance to implement the required stormwater control measures. Recent increase is driven by the issuance of permits for Vermont's Three-Acre Sites.[41]

[40] For more information on stormwater permits, see Appendix C: Results of State Stormwater Regulations.

[41] For more information on three-acre sites, visit: https://dec.vermont.gov/watershed/stormwater/permit-information-applications-fees/operational-stormwater-permits-0

Regulatory Project Development and Output Measures	**Data Notes**
Acres of *new* impervious surface treated by stormwater treatment practices under stormwater permits SFY 2016 to 2025 = **1,295** 	Acres of new impervious surface treated are reported at the time of permit issuance, and permittees must implement stormwater control measures at the same time impervious surfaces are constructed. Treatment of new impervious surfaces is dependent on the pace of new development.
Hydrologically connected municipal road miles inventoried[42] SFY 2016 to 2025 = **6,194** 	Municipalities were required to submit initial Road Erosion Inventories (REIs) by the end of 2020, as illustrated in the figure with the majority of road miles inventoried between SFY 2017–2021. At this time, the measure is representative of unique road miles inventoried and does not account for the same sections of road being inventoried multiple times through the MRGP reassessment process. Future reporting will incorporate the results of reassessment inventories.

[42] State funding programs supported the completion of required Road Erosion Inventories (REIs), however this datapoint is drawn directly from the inventory results, rather than from funding program data.

Regulatory Project Development and Output Measures	Data Notes
Hydrologically connected municipal road miles with work completed[43] SFY 2016 to 2025 = **641** 	Towns complying with the MRGP are expected to make improvements to road drainage and erosion control to meet permit standards, and report segments where work has been completed. While roads that meet permit standards tend to be more resilient, severe flooding and storm events in localized areas may cause a spike in work completed to address road damage that requires improvement to continue meeting MRGP standards.
Miles of municipal road drainage and erosion control improvements supported through state funding programs SFY 2016 to 2025 = **388** 	Only a portion of all completed municipal road drainage and erosion control work is supported through state funding programs, therefore total implementation is likely higher than available data. Improvement work is expected to follow a similar trend to identification work, driven by the permit timeline.

[43] This measure is new to reporting in SFY 2025. Segments reported with work completed are assumed to have implementation completed sufficient to bring the road segment up to fully meeting MRGP standards.

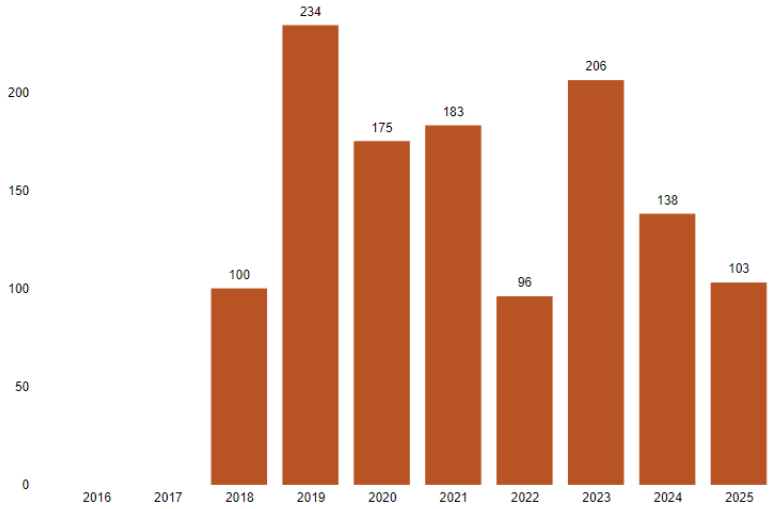
Regulatory Project Development and Output Measures	**Data Notes**
Number of municipal road drainage and stream culverts replaced supported through state funding programs SFY 2016 to 2025 = **1,235** 	Only a portion of all completed municipal road drainage and erosion control work is supported through state funding programs, therefore total implementation is likely higher than available data.

Figure 19: Stormwater erosion control improvements on Birdseye Road in Ira, VT. Best management practices (BMP) like this are implemented in accordance with the Vermont Department of Environmental Conservation's (DEC) Municipal Roads General Permit (MRGP) on eligible road segments that are not fully compliant with MRGP standards. Project work was funded by the VTrans Grants-in-Aid Program (coordinated by Dan Judkins, VTrans Grant Coordinator) and implemented by the VTrans Better Roads Program (coordinated by Ross Gouin, VTrans Better Roads Program Manager). Road improvements like these reduce sedimentation into Vermont's surface waters. This project was completed in August 2025.

Figure 20: During implementation photo of a subsurface sand filter system constructed at Bellows Free Academy in Fairfax, VT as part of the Green Schools initiative. Sand filter systems remove pollutants from stormwater runoff by allowing heavy solids to settle out, after which stormwater passes through a layer of sand and gravel, removing smaller particles. This project was funded through a DEC-program with Lake Champlain Basin Program (LCBP) and American Rescue Plan Act (ARPA) dollars, and funding was administered by Greenprint Partners. This project was completed in December 2024.

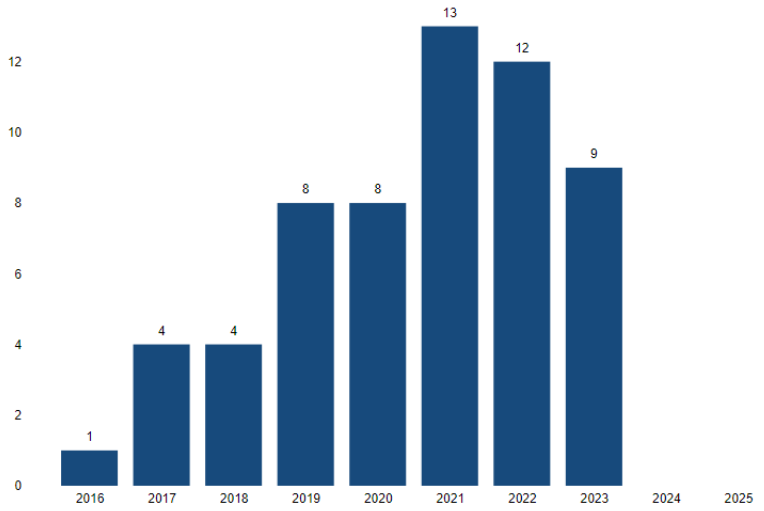
Figure 21: Post-implementation photo of a tree-planting project in Pittsfield, VT. The project was completed by the VT Department of Forests, Parks, and Recreation's Urban and Community Forestry Program in partnership with the Vermont Electric Power Company (VELCO). A total of seven trees were planted on the two town greens, which help to reduce stormwater runoff and soil erosion. Funding for this program came from a generous VELCO sponsorship. This project was completed on June 5th, 2025.

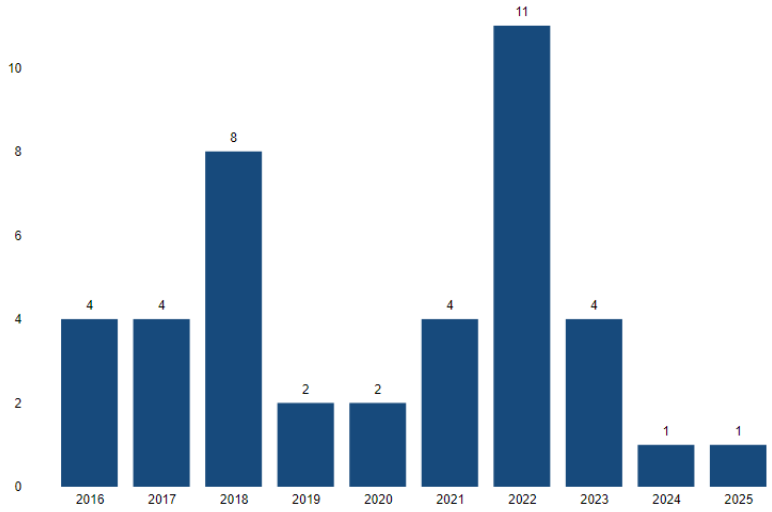
Statewide Results of Wastewater Projects

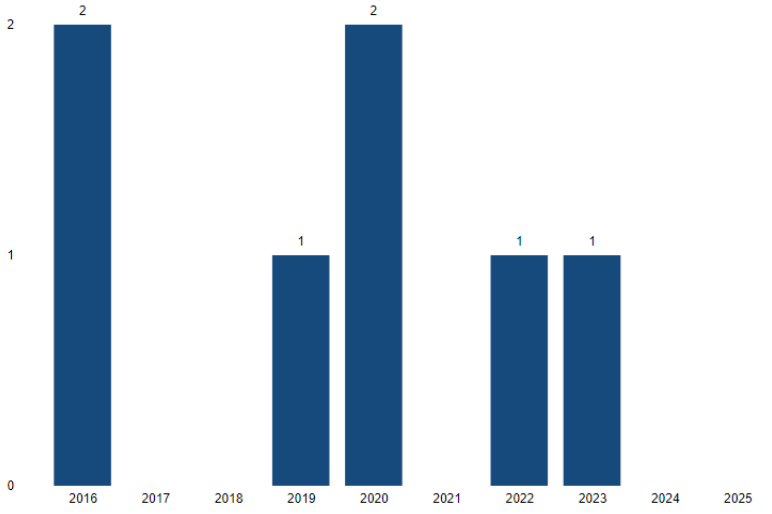
Wastewater projects decrease the amount of nutrients, like phosphorus and nitrogen, and other pollutants that reach our waterways from wastewater systems through treatment upgrades, combined sewer overflow (CSO) abatement, and refurbishment of aging infrastructure. Clean water projects completed in the wastewater sector are primarily compelled by regulations intended to address point sources of pollution, and some state funding programs provide financial assistance to support regulatory compliance. Clean water projects in the wastewater sector are engineering and capital intensive and can take many years to complete, resulting in variation in outputs from year to year.

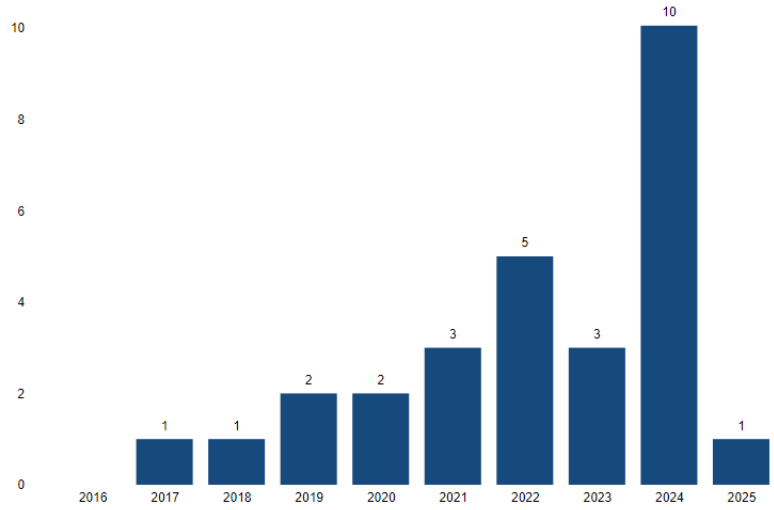
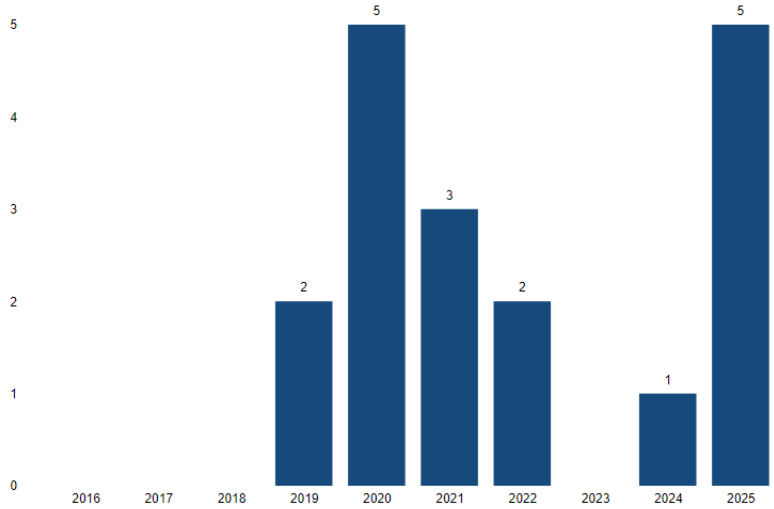
The following table summarizes project outputs associated with wastewater projects that utilized some amount of state funding. Project development measures reflect efforts in the identification, prioritization, and design of projects. Project output measures reflect the impact of project implementation and construction. The figures presented in the table below show outputs by SFY based on currently available data.

Table 9: Outputs of state-funded wastewater projects implemented statewide since SFY 2016.

Project Development Measures	Data Notes
Number of preliminary (30%) designs completed SFY 2016 to 2025 = **59** 	Significant increase in grant and loan funding driving up demand and limited engineering capacity may be affecting the pace of planning and design work in recent years.

Project Development Measures	Data Notes
Number of final (100%) designs completed SFY 2016 to 2025 = **41** 	Significant increase in grant and loan funding driving up demand and limited engineering capacity may be affecting the pace of planning and design work in recent years.

Project Output Measures	Data Notes
Number of combined sewer overflow (CSO) abatement projects completed SFY 2016 to 2025 = **7** 	There are fewer than 10 communities with combined sewer overflows (CSOs) in Vermont. CSOs may require multiple abatement projects to meet water quality standards or eliminate potential discharges. Annual results vary based on identified opportunities, project readiness, and available funding.

Project Output Measures	Data Notes
Number of wastewater collection systems refurbished SFY 2016 to 2025 = **28** 	Increase in SFY 2024 is a result of flood damage assessments focused on identifying affected collection infrastructure.
Number of wastewater treatment systems refurbished SFY 2016 to 2025 = **18** 	A refurbished wastewater treatment system refers to improvements or renovations that enable it to continue to operate efficiently. This metric captures refurbishments made to both direct discharge treatment facilities and private on-site wastewater systems.

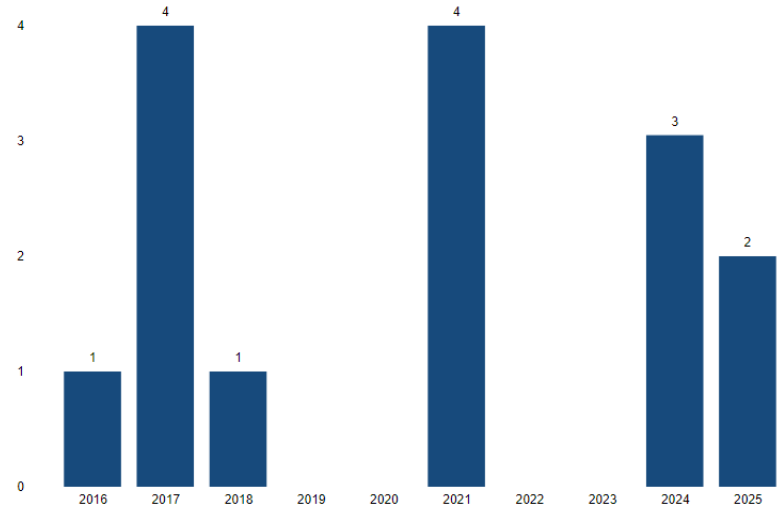
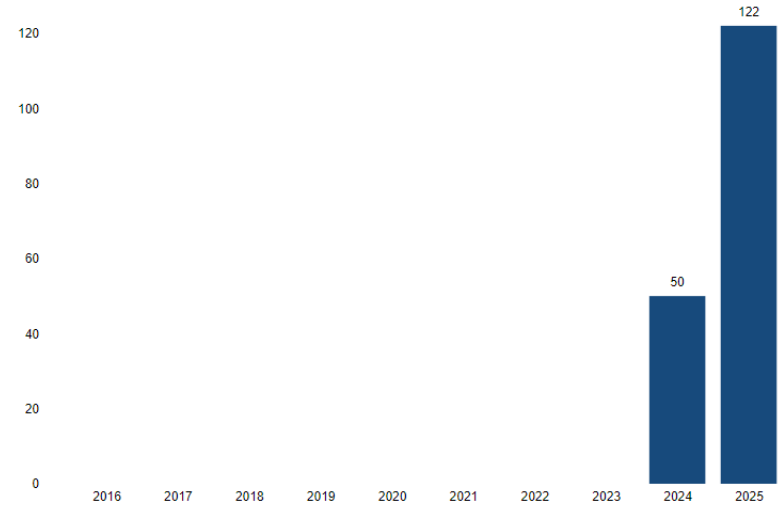
Project Output Measures	Data Notes
Number of wastewater treatment system upgrades completed SFY 2016 to 2025 = **15** 	An upgraded wastewater treatment system refers to improvements to increase treatment capacity, which can include increased treatment types, volumes, or both. This metric captures upgrades made to both municipal treatment facilities and private wastewater systems.
Number of on-site wastewater treatment systems constructed SFY 2024 and 2025 = **172** 	New measure as of SFY 2024 reporting. This metric represents investments in private on-site wastewater systems, currently supported by ARPA funding and one-time state monies provided to the Healthy Homes program.

Figure 19: Town of Hinesburg wastewater treatment facility under construction, with existing lagoon in the foreground. Hinesburg is upgrading to better treatment technology to treat for phosphorus removal as part of the Lake Champlain TMDL, nitrogen removal as part of a local ammonia water quality issue, and a small increase in hydraulic capacity to be able to add housing and new users. A future phase of the project involves floodplain restoration. The town of Hinesburg has partnered with the State of Vermont to finance this project in part by low-interest loans available through the Clean Water State Revolving Fund.

Cost-Effectiveness of State Clean Water Investments

The previous section of this report summarizes the results of state-funded clean water projects completed from SFY 2016 to SFY 2025. Given the significant costs of restoring and protecting water quality, the state must efficiently and effectively spend its resources. Cost-effectiveness is an important factor in the prioritization of actions to address water quality challenges, however statutory and regulatory frameworks are also key in directing necessary investments across sectors to meet the state's water quality goals. The cost-effectiveness of clean water projects is expressed as state dollars invested per kilogram of estimated total phosphorus load reduction over the anticipated lifespan of the project.[44] If projects are maintained beyond their anticipated lifespan, the cost-effectiveness of the project improves. Cost-effectiveness can only be calculated for project types where estimated total phosphorus load reductions and cost data are available at the project level. Leveraged local and federal funds associated with state-funded projects are not included in the calculation of cost-effectiveness of state investments.[45] Some projects are fully funded with state funding sources. Projects that leverage local and federal funding offset the costs carried by the state to complete the project, increasing the cost-effectiveness of state investments. The figure and table below summarize the cost-effectiveness of state investments in reducing phosphorus pollution by sector.[46]

[44] Cost-effectiveness and project level cost rates related to the Water Quality Restoration Formula Grants are calculated differently than cost-effectiveness presented in this report based on program-specific considerations. For more information, see the Final Water Quality Restoration Formula Grant Targets and Fund Allocation Methodology, available here: https://dec.vermont.gov/water-investment/statues-rules-policies/act-76/background-law-rule-and-guidance

[45] To view total project cost-effectiveness including all reported funding sources, visit the Clean Water Interactive Dashboard: https://anrweb.vt.gov/DEC/cleanWaterDashboard/

[46] Cost-effectiveness data are presented in real dollars, adjusted to the end of SFY 2025 for comparison purposes. Inflation adjustments were calculated based on the United States Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U).

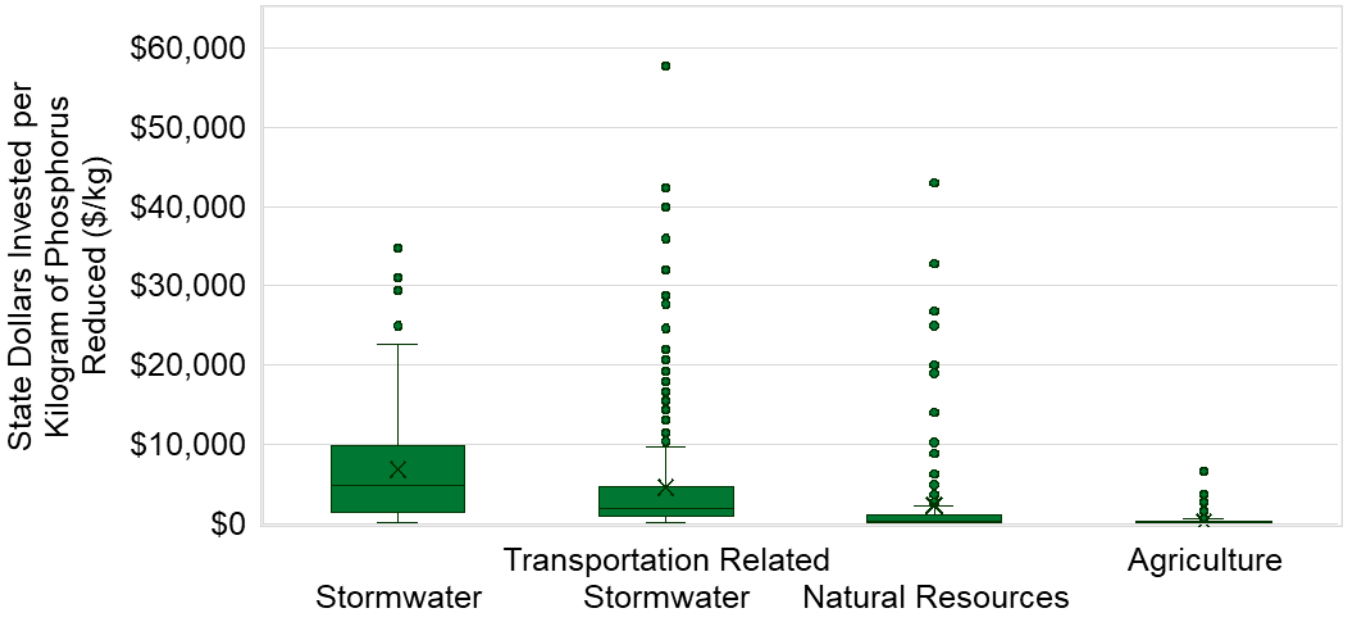


Figure 20: Dollars invested per estimated kilogram of total phosphorus load reduced over the lifespan of each project type, based on clean water projects funded through State of Vermont agencies completed in SFY 2016-2025.[47]

Table 10: Minimum, median, and maximum cost-effectiveness ($/kg of phosphorus reduced) of state investments in clean water projects by project type.

Metric	Stormwater	Transportation Related Stormwater	Natural Resources	Agriculture
Minimum	$78	$76	$29	$1
Median	$4,815	$1,948	$314	$102
Maximum	$34,801	$57,748	$42,983	$6,588
Sample size (n)	102	425	148	13,185
Practices included in analysis	Bioretention, infiltration trench, gravel wetland, surface infiltration, grass swale, porous pavement, wet pond, hydrodynamic swirl separator, sand filter, extended dry detention pond, tree canopy expansion, outlet & gully stabilization	Road erosion control on hydrologically connected municipal road segments	Forested riparian buffer, bioengineered lake shoreline stabilization, lakeshore restoration, floodplain restoration, stream restoration	Crop rotation, cover crop, conservation tillage, agricultural riparian buffer, grassed waterway, filter strip, strip cropping, nurse crop, grazing management, manure injection

[47] Some projects were removed from the analysis due to project costs including work that is not directly associated with phosphorus reductions.

Explanation of Figure 20 and Table 10

Achieving Vermont's water quality goals requires action across all land use sectors. It is expected that the range of cost-effectiveness varies by project type, but the key is to target funds to the most cost-effective projects within each land use sector to maximize the impact of investments. The State of Vermont employs science-based assessments to identify and prioritize projects and incorporates those prioritized actions in Tactical Basin Plans. The figure and table above show the distribution of cost-effectiveness across four land use sectors where project level cost and phosphorus reduction data required to calculate cost-effectiveness are available.

Clean water projects in the agricultural and natural resources sectors included in this analysis are among the most cost-effective practices in terms of dollars invested per unit of estimated phosphorus pollution reduced. In the agricultural sector, practices such as conservation tillage, cover crop, and manure injection are highly cost-effective annual practices, but must be implemented each year to sustain pollution reduction results. In the natural resources sector, project level cost-effectiveness includes more variability. Forested riparian buffers are highly cost-effective, and have a 10 to 20-year lifespan, which results in more sustained phosphorus reduction compared to annual agricultural field projects. Small-scale lake shoreland projects in the natural resources sector tend to have a low total cost to implement but may also contribute a relatively small total pollution reduction benefit, thus appearing comparatively less cost-effective. However, these projects also contribute valuable co-benefits and it is important to implement projects across a range of scales to meet the state's pollution reduction goals.

Stormwater and transportation infrastructure projects tend to be more expensive per unit of estimated phosphorus pollution reduced. Stormwater practices are generally engineered structural practices that can incur high construction costs, but these practices are necessary to achieve required reductions from developed lands and have relatively long lifespans, achieving phosphorus load reductions for 20 years or more if properly maintained. The large range in the cost-effectiveness of road practices may be a result of some municipalities remediating the highest priority, most complex road segments (and therefore most expensive road segments) first to comply with the Municipal Roads General Permit (MRGP). Now in the second term of the MRGP permit, towns are at different stages of bringing hydrologically connected road segments into compliance with permit standards. Additionally, road project cost and complexity can vary based on what practices need to be installed to bring a road segment up to MRGP standards, and whether segments have been impacted by severe storms and flooding.

Chapter 3: Clean Water Investments and TMDL Progress in the Lake Champlain Basin

Lake Champlain TMDL

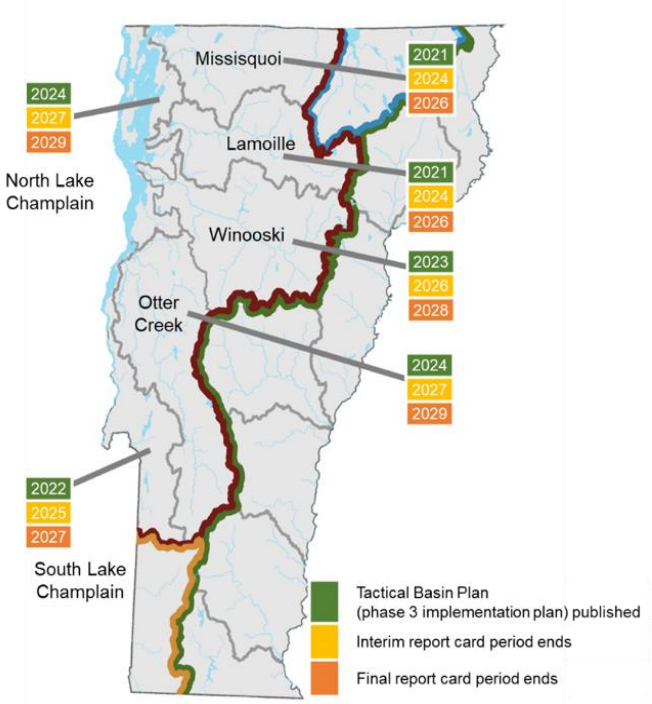


Figure 21: Lake Champlain TMDL Accountability Framework schedule by Tactical Basin Plan watershed.

Lake Champlain is one of the largest lakes in North America and its watershed drains nearly half the land area of Vermont, as well as portions of northeastern New York and southern Québec. Phosphorus levels in some portions of Lake Champlain regularly exceed Vermont's water quality standards, contributing to cyanobacteria blooms, low dissolved oxygen concentrations, impaired aquatic life, and reduced recreational use. The Lake Champlain restoration plan, *Phosphorus Total Maximum Daily Loads for Vermont Segments of Lake Champlain* (Lake Champlain TMDL), identifies phosphorus load reductions that must be achieved in each of the 12 lake segment watersheds of the Lake Champlain basin in Vermont to meet State of Vermont Water Quality Standards (VWQS).[48] Total phosphorus loading to Lake Champlain from Vermont was modeled to be 630.6 metric tons per year (MT/year) during the TMDL baseline period of 2001 to 2010. The TMDL states total phosphorus loading to the lake must be reduced to 418.1 MT/year by the end of calendar year 2036 to achieve Vermont's water quality standards, a 212.4 MT net reduction from the baseline.[49] The following figure provides a visual representation of the TMDL baseline, load allocation, and required phosphorus load reduction.

[48] Tactical Basin Plan watersheds may include more than one lake segment watershed. See Figure 28 for a map of lake segment watersheds. *Phosphorus Total Maximum Daily Loads for Vermont Segments of Lake Champlain* available at: https://dec.vermont.gov/watershed/restoring/champlain

[49] TMDL allocations in the wastewater sector allow for an increase in loading from the baseline condition so gross reductions greater than 212.4 MT are needed to offset the potential increase in loading from the wastewater sector permitted maximum.

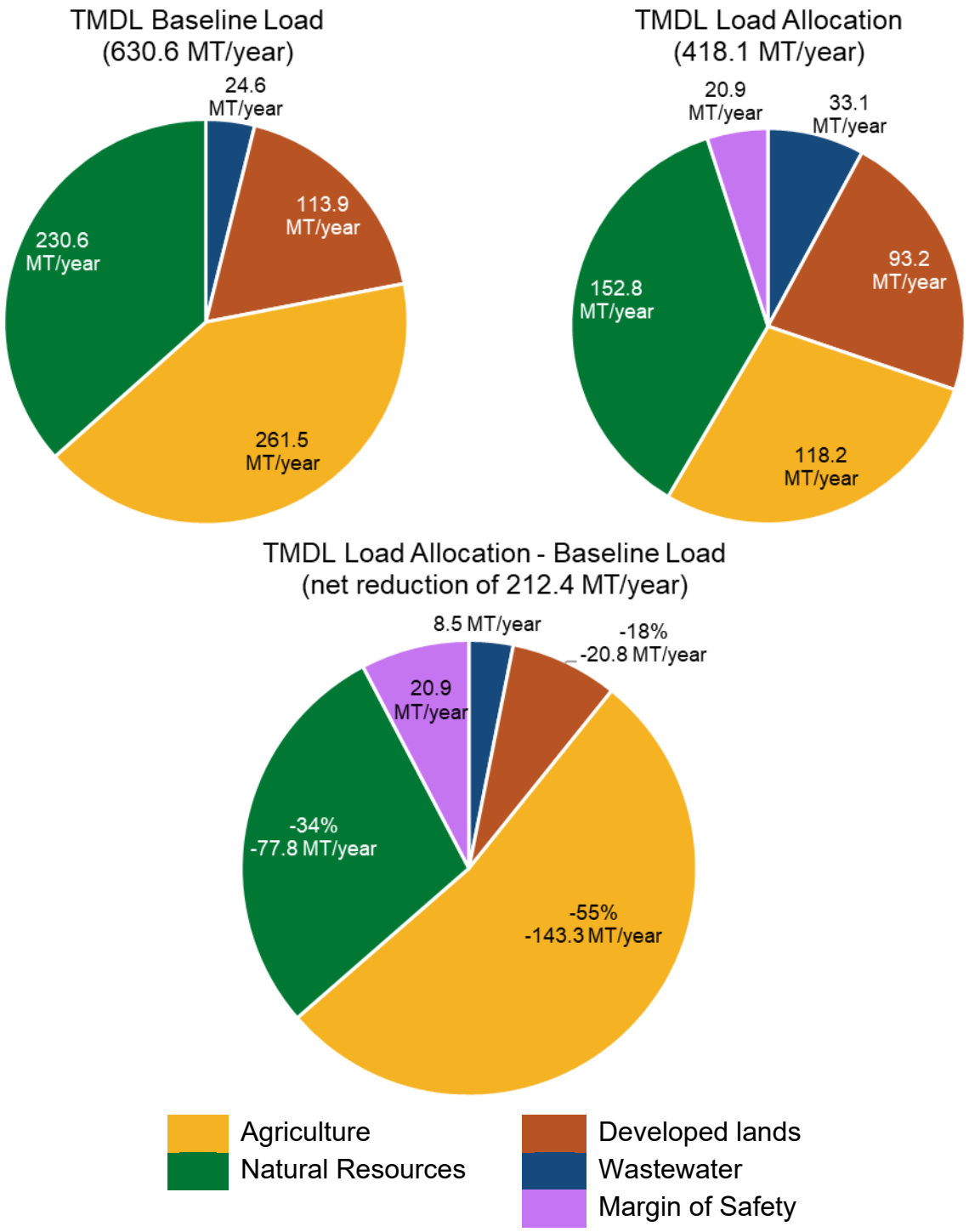


Figure 22: Lake Champlain TMDL baseline load, allocation, and modeled load increase (+) or reduction (-) by sector. Percentage indicates percent reduction from baseline for sectors with a required reduction.

Explanation of Figure 22

The Lake Champlain TMDL sets estimated phosphorus load reduction requirements for each land use sector by assessing baseline conditions and establishing TMDL load allocation. That allocation represents modeled estimates of the maximum annual phosphorus loading to the lake without in-lake phosphorus concentrations exceeding water quality standards. The TMDL requires reductions across the agricultural, developed lands, and natural resources (forests

and streams) sectors. The TMDL load allocation accounts for a potential load increase from the wastewater sector to account for future population growth and includes a Margin of Safety allocation to account for model uncertainty and future loading associated with climate change. While implementation of the TMDL does not prescribe required reductions by sector, reaching the phosphorus load allocation established by the Lake Champlain TMDL by achieving required reductions in total loading will require efforts across all sectors. The approach to water quality restoration involves both regulatory and voluntary actions. If one sector falls short of meeting its goals, there is limited opportunity for other sectors to pick up the slack. Successful implementation of the Lake Champlain TMDL is supported in large part by state and federal funding programs, however some regulations designed to support Vermont in meeting the TMDL are expected to be achieved through private funding sources.

The Lake Champlain TMDL contains an Accountability Framework intended to ensure adequate progress toward reducing phosphorus pollution to Lake Champlain. The Framework sets a schedule for the U.S. Environmental Protection Agency (EPA) to issue report cards on the State of Vermont's progress throughout the 20-year implementation timeframe (2016-2036). Tactical Basin Plans are updated on a five-year rotating basis and include Implementation Tables with priority actions to implement the Lake Champlain TMDL. The EPA issues a report card annually, summarizing their assessment of Vermont's overall progress in meeting the Lake Champlain TMDL, as well as the interim and final reporting on Tactical Basin Plan Implementation based on the basin progress reports produced by DEC (Figure 21).[50] The EPA uses this chapter of the *Clean Water Initiative Annual Performance Report* and its appendices to help determine satisfactory progress for the Lake Champlain TMDL. The progress report for the 2025 reporting cycle is included in Appendix B of this report. The following sections of the report summarize available data on state and federal funding and regulatory programs' clean water efforts in the Lake Champlain basin that are contributing to Lake Champlain TMDL progress.

[50] Additional Lake Champlain TMDL Implementation Progress Report information available at: https://www.epa.gov/tmdl/lake-champlain-phosphorus-tmdl-commitment-clean-water

Vermont's Clean Water Investments in the Lake Champlain Basin

Reaching Lake Champlain's water quality goals requires investments across all land use sectors. The following figure summarizes state and Lake Champlain Basin Program investments in the Lake Champlain basin from SFY 2016 to 2025.

Click symbol to view description of accountability measures.

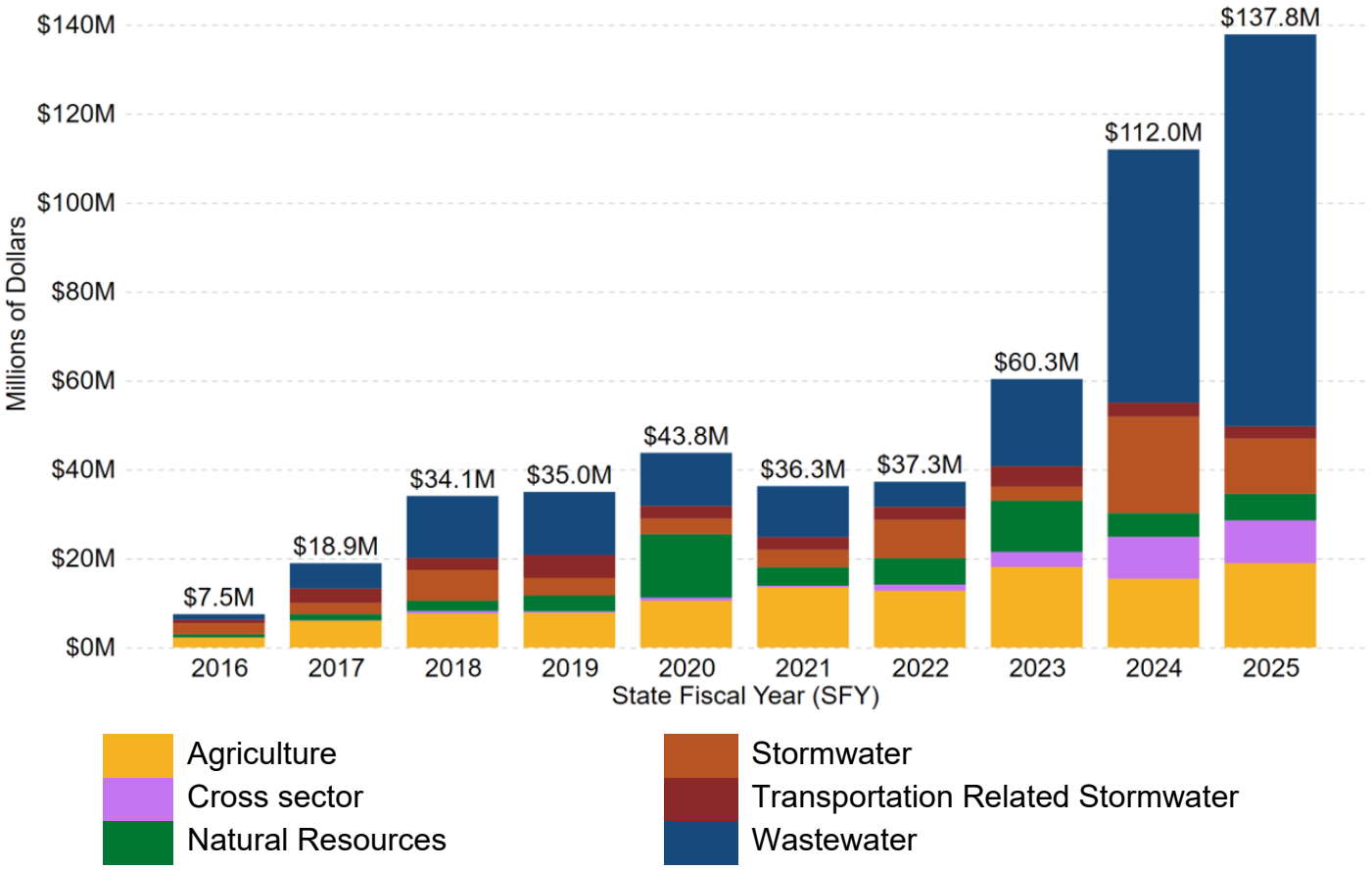


Figure 23: Total dollars awarded by State of Vermont agencies and the Lake Champlain Basin Program to clean water projects in the Lake Champlain basin by land use sector, SFY 2016-2025. ***Federal funding data administered directly by USDA-NRCS are not included in this figure.***

Explanation of Figure 23

The State of Vermont and the Lake Champlain Basin Program have invested nearly $523 million in clean water projects in the Lake Champlain basin since SFY 2016. Each year during the reporting period, approximately 55–75% of state funding for clean water has been directed to projects located within the Lake Champlain basin. The Lake Champlain TMDL sets substantial targets for pollution reduction and substantial commitment and investment at the state, federal, and local level are needed to achieve Vermont's water quality goals in the basin. Funding is reported as awards are issued, and funding results may lag behind awards as projects move towards completion, and the associated data are reported. The large increase in funding awarded to the stormwater and wastewater sectors in SFY 2023-2025 is primarily driven by the short-term availability of American Rescue Plan Act (ARPA) funding administered

by state agencies. Recent investments in the stormwater sector are largely reflective of stormwater treatment to comply with regulatory requirements, funded through the Healthy Homes Program, Permit Obtainment Assistance Program, and Green Schools Initiative. Cross-sector funding is primarily Clean Water Initiative block grant funding representing the Water Quality Enhancement Grants and Water Quality Restoration Formula Grants established under Act 76 of 2019. Block grants are awarded to Funding Program Administrators (FPAs) who are tasked with administering grant programs and issuing sub-grants to support Clean Water Projects across a range of land use sectors. Once a block grant is completed, funding is recategorized to the appropriate sector based on the project types that were awarded funding. For more information on Act 76 of 2019 funding programs, see Appendix A: Act 76 of 2019.

Estimated Total Phosphorus Load Reductions in Lake Champlain Basin

Click symbol to view description of accountability measures.

The State of Vermont estimates the pollutant load reductions associated with clean water projects to track progress towards achieving water quality goals. The following figure summarizes the estimated total phosphorus load reductions associated with projects implemented through state and federal funding and regulatory programs in the Lake Champlain basin from SFY 2016 to 2025 by sector.[51] Wastewater wasteload allocations are not accounted for in the estimated phosphorus reductions presented below, see Monitored Total Phosphorus Load from Vermont Wastewater Treatment Facilities in the Lake Champlain Basin for more on wastewater treatment facility discharges.

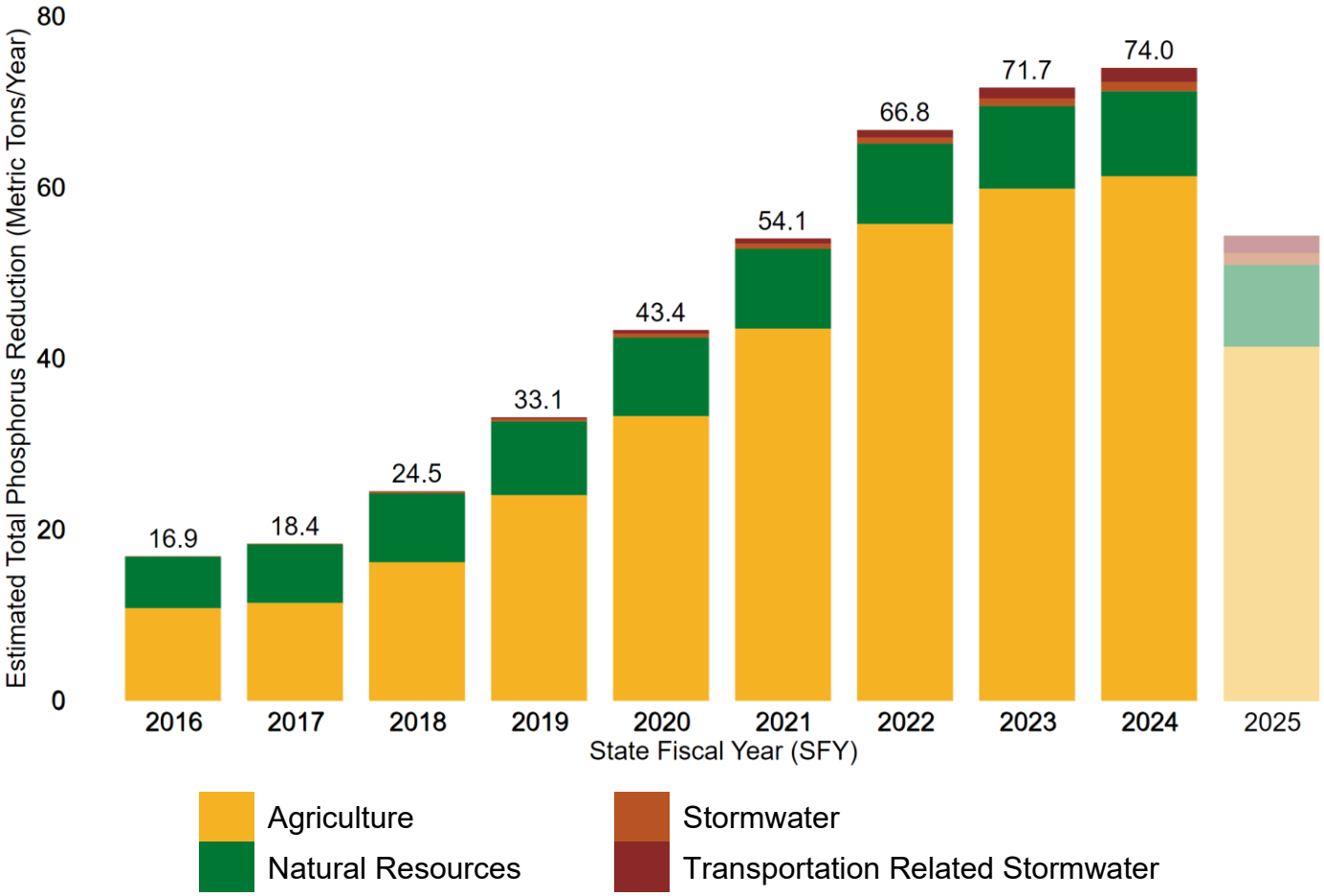


Figure 24: Annual estimated total phosphorus load reductions (MT/year) associated with projects implemented through state and federal funding and regulatory programs in the Lake Champlain basin in effect during SFY 2016-2025 by land use sector.[52]

[51] For more information on the methods used to estimate phosphorus load reductions, see documentation on Standard Operating Procedures (SOPs) for tracking and accounting of phosphorus reductions: https://dec.vermont.gov/water-investment/cwi/state-vermont-clean-water-projects/clean-water-project-tracking-accounting#SOP

[52] Annual phosphorus load reductions are cumulative for all completed/operational projects based on start date and anticipated lifespan. Results of USDA-NRCS funded projects completed since SFY 2010 that are still in effect SFY 2016–2025 are included to represent progress since the Lake Champlain TMDL baseline period.

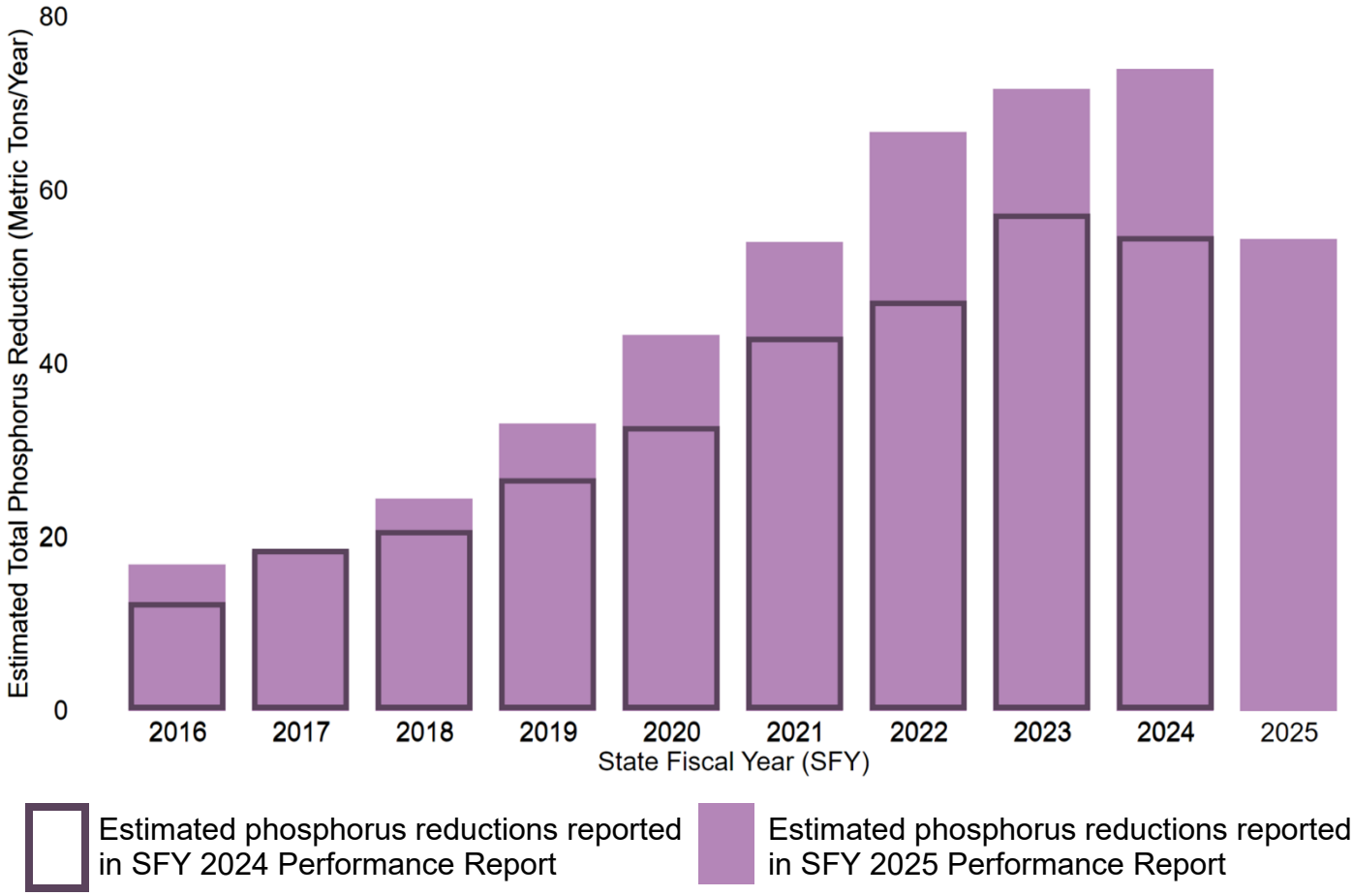


Figure 25: Estimated annual phosphorus reduction data in the Lake Champlain basin reported in SFY 2024 compared to SFY 2025.

Explanation of Figure 24 and 25

State funding programs, federal funding programs, and regulatory programs in the Lake Champlain basin have implemented projects that contribute a steady incremental annual increase in estimated annual phosphorus reductions over the reporting period.

Estimated phosphorus reductions in the most recent state fiscal year are often temporarily lower than in the penultimate year, due to data reporting lags. For example, many agricultural grant programs operate to align with the growing season, while data collection for this report is conducted on a state fiscal year cycle (July-June). Data available for the most recent state fiscal year are under representative of total implementation, because some results have not yet been captured. This is not necessarily indicative of a shifting trend in TMDL progress. As additional data become available, it is reflected in future years of reporting. Figure 25 illustrates the difference in estimated phosphorus reductions across all reporting years as reported in SFY 2024, compared to SFY 2025. This graph demonstrates how data lags contribute to incomplete results in the most recent few years of estimated phosphorus reduction data and how updates to phosphorus accounting methods can contribute to changes in previously reported estimated phosphorus reductions across all years.

The State acknowledges that implementation of the TMDL is not a linear path. Changing rates of progress over the 20-year implementation timeframe are to be expected and are associated with fluctuations in financial assistance levels, progress in implementing regulatory programs, and the capacity of agencies and partners to administer funds, implement projects, and report

outcomes. The State's ability to capture and account for program and project results is also a key factor in quantifying outcomes and progress. The results presented in this report are representative of project implementation for which methods are in place to track and account for estimated phosphorus reductions; however implementation of projects that cannot yet be tracked or quantified in estimated phosphorus reductions is occurring. The State is consistently working to expand the methodologies and systems to track and account for estimated phosphorus reductions, as well as review and revise where necessary, existing methods to better represent outcomes achieved. See Appendix D: Status of Phosphorus Accounting Implementation for more information. The following paragraphs provide some context to explain TMDL implementation progress by sector:

Agriculture

The estimated phosphorus reductions achieved to date in the agricultural sector are mostly from annual field practices, such as cover crops, reduced- or no-till, and manure injection. Most of the phosphorus reductions required in the agricultural sector are tied to croplands, meaning that annual field practices are necessary to meet the TMDL. Annual practices must be implemented every year to sustain phosphorus reductions. Implementation of annual practices is dependent on a range of factors including weather, land management, and farm business decisions. The estimated annual phosphorus reductions associated with annual agricultural practice implementation are also influenced by a variety of external factors, including:

- Some practices are only eligible for cost-share for a limited number of years. Many programs are also subject to funding caps, which may limit the reported acres of practice implementation.
- Many farms implement agricultural conservation practices without the support of cost-share programs. The State is limited in its ability to capture the water quality benefits of practices implemented outside cost-share programs, and only some of these data are presented in this report. AAFM is currently investigating opportunities to more effectively track and estimate farmer funded practice implementation using remote sensing data.
- The multi-year federal Farm Bill governs programs, funding, and assistance available to support agricultural practice implementation. The most recent Farm Bill, passed in 2018 and set to expire in 2023, has been extended multiple times to authorize programs to continue through September 2026. The extensions have not necessarily increased specific program payment limitations or acreage enrollment caps, which can restrict producer enrollment. Staffing capacity and availability to enroll and administer programs are also currently impacting water quality outcomes supported by federal programs.
- Program level funding availability is a key factor in sustained implementation. Beginning in SFY 2022, a substantial proportion (27-30% per SFY) of estimated phosphorus reductions attributed to the agricultural sector have been achieved through implementation under AAFM's Vermont Pay for Performance program, which provides performance-based payments to Vermont farmers for implementing practices to reduce phosphorus pollution from their agricultural fields. This innovative approach allows AAFM to target water quality resources towards the highest impact farms and fields with respect to reducing Vermont's phosphorus loading. This program is currently funded through a competitive USDA-NRCS grant, and continuation of this program is dependent on available funding in the future.
- The estimated phosphorus reductions attributed to the agricultural sector represent practice implementation for which the state can reliably collect data and apply

established phosphorus accounting methodologies. In the coming years, the state has prioritized revisions to agricultural phosphorus reduction accounting methodologies to better capture the water quality improvements gained through agricultural riparian buffers, livestock exclusion, re-seeding and field renovation, and livestock trails and walkways. Once established, these methodologies will be applied to available data in future reports.

Natural Resources

Natural resources projects encompass a wide range of implementation and management strategies to address non-point source nutrient loading from forests, streams, lakeshores, and wetlands. Examples of project types in the natural resources sector supported by state funding programs include: floodplain and stream restoration, dam removals, river corridor easements, bioengineered lake shoreline stabilization, forest road and trail erosion control, and wetland restoration.

Currently, the majority of estimated phosphorus reductions in the natural resources sector across reporting years are attributable to quantifying the water quality benefits associated with the State of Vermont's Use Value Appraisal (UVA) Program on forestland parcels.[53] Forestland parcels that are actively enrolled in the UVA Program and have been inspected for program compliance meet Vermont's Acceptable Management Practices (AMPs), a set of forestland management criteria designed to maintain and protect water quality.[54]

Phosphorus accounting methods have been established for river and lakeshore project types in the natural resources sector but are not yet fully reflected in reporting. Phosphorus accounting methods for wetland restoration are under development. In future years of reporting these accounting methods will be applied to newly completed projects, as well as applied to fill gaps from previously completed projects, as data availability allows. The following summarizes project outputs from already implemented natural resources sector projects in the Lake Champlain basin for which an estimated phosphorus reduction is not yet calculated, but may be reflected in future reporting:

- 41 acres of floodplain restored
- 954 acres of riparian corridor conserved through easements
- 400 acres of wetland conserved and restored through easements
- 174 stream miles reconnected
- 124 stream crossings improved
- 12 river corridor or floodplain encroachments removed

Stormwater and Transportation Related Stormwater

Estimated phosphorus reductions in the stormwater and transportation related stormwater land use sectors have been incrementally growing. This progress is associated with increased

[53] For details on phosphorus accounting for UVA parcels, please see the Standard Operating Procedures for Tracking & Accounting of Natural Resources Restoration Projects: https://dec.vermont.gov/water-investment/cwi/projects/tracking-accounting#SOP

[54] Phosphorus reductions are only accounting for forestland parcels that enrolled in the UVA Program after the TMDL baseline periods. A change in the source data storage procedure identified in 2025 has resulted in a revision to previously reported values. ANR is re-evaluating the methodology used to account for estimated phosphorus reductions assigned to UVA Program compliance, and this review may result in changes to the estimated phosphorus reductions in the natural resources sector related to UVA Program compliance in the future.

implementation of several regulatory programs designed to reduce and mitigate stormwater pollution from developed lands and roads. [55]

Operational stormwater permits regulate stormwater discharges resulting from new development, redevelopment, and three-acre sites. New development and re-development permit issuance are driven by rates of development across the state. The General Permit 3-9050, which serves as the permit for three-acre sites, is set to expire on December 1, 2025 and is in the process of being reissued by the Department of Environmental Conservation. Affected 3-acre sites must obtain permit coverage by October 1, 2028, as established by Act 37 of 2025.

Municipal Separate Storm Sewer System (MS4) permits regulate stormwater discharges in the most populous regions of the state. The Transportation Separate Storm Sewer System (TS4) permit regulates stormwater discharges from the state highway system. MS4 communities and VTrans are making progress towards reaching phosphorus reduction targets outlined in their Phosphorus Control Plans, with additional implementation expected in the coming years to further pollution reduction outcomes.

The Municipal Roads General Permit (MRGP) regulates stormwater related erosion on municipally owned roads. The MRGP is subject to recurring assessments to ensure sustained compliance with program standards. The road segment assessment scoring methodology under the MRGP was updated in 2023 as part of the permit reissuance. The results of MRGP compliance presented in this report represent updated scoring and revised phosphorus loading rates in the Lake Champlain basin to align with the current permit. The Lake Champlain TMDL total phosphorus reduction goal remains unchanged, however this change to the road segment scoring method in loading rates presents a significant change to the total potential phosphorus reductions expected to be achieved through the current MRGP. Repeated flooding in Vermont has highlighted practices that are most important for flood resiliency and reducing erosion. By applying an adaptive management approach to understand lessons learned in the first permit term and potential improvements to the program, DEC is in the process of identifying potential future changes to the MRGP that may result in improved road drainage and flood resilient infrastructure as well as additional estimated phosphorus reductions. Municipal road conditions in some regions have been impacted by severe storm events experienced in recent years, and continued coordination with towns is underway to support upkeep and maintenance of road standards to reduce and eliminate, where feasible, erosion related issues.

Regulations addressing nutrient loading from the developed lands sector are anticipated to reduce a total of 13.64 MT/year of phosphorus loading by the end of the TMDL implementation period. The figures below indicate the estimated phosphorus reductions achieved to date and expected based on permit projections.

[55] For more information on regulatory stormwater programs in Vermont, visit: https://dec.vermont.gov/watershed/stormwater

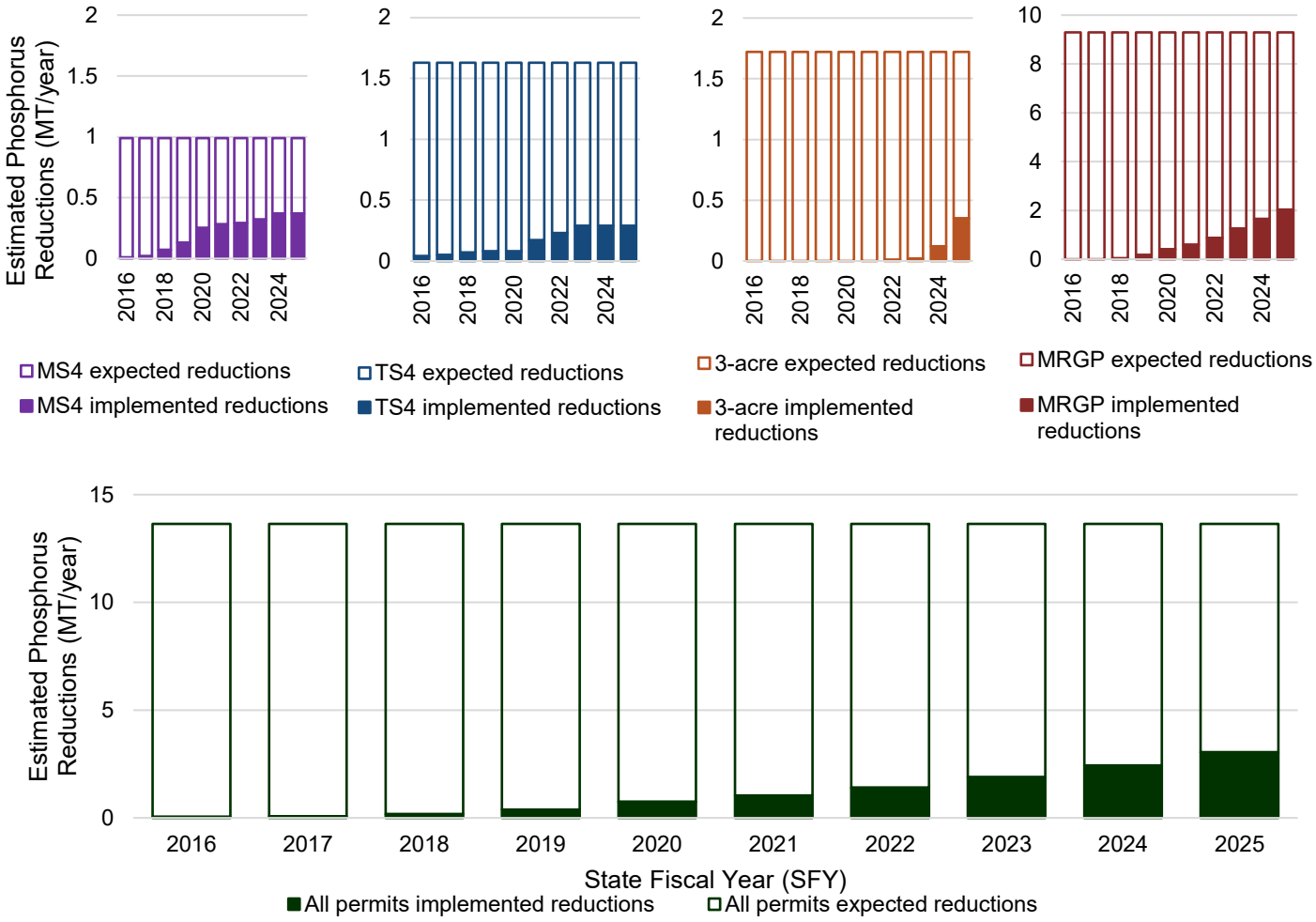


Figure 26: Estimated phosphorus reductions (MT/year) achieved to date and expected based on permit projections in stormwater and transportation related stormwater regulatory programs.

Wastewater

Currently, phosphorus loading from the wastewater sector is tracked through measured discharges from permitted wastewater treatment facilities (WWTFs) and not included in the modeled estimates of phosphorus reductions presented in this section. See the Monitored Total Phosphorus Load from Vermont Wastewater Treatment Facilities in the Lake Champlain Basin section of the report for more information.

Conclusions

Data reporting cycles vary by funding program, and some data used to estimate phosphorus reductions is subject to reporting lags. This particularly impacts the results reported for recent state fiscal years. Data for the entire reporting period is updated each year to comprehensively capture all available results and to integrate updated accounting methods where applicable. Regulatory frameworks are in place to address nutrient pollution, and full implementation to meet permit requirements and projected phosphorus reductions is expected within the TMDL implementation period. Holistic data compilation to accurately capture all state funding and regulatory programs continues to evolve to incorporate new data streams and additional programmatic results. Particularly in the natural resources sector, methods to quantify

estimated phosphorus reductions are still being developed and implemented and are anticipated to be reflected in future years of reporting, once available. In some cases, administration of funding awards may take precedence over end of award reporting and data compilation, particularly in cases of time sensitive funding opportunities like those supported by ARPA funding. Funding to support project implementation in any year is source dependent, and rates of implementation that result in estimated phosphorus reductions may be impacted by variability or uncertainty of funding opportunities. Changes in the pace of estimated annual phosphorus reduction progress may be in part a reflection of the completion of relatively easy to implement projects. Now that many of the ready-to-construct projects have been implemented, identification and implementation of projects and strategies that are in some cases more complex and involved are needed to reach Vermont's water quality goals. A key role of the clean water workforce includes engaging with landowners and the public to communicate the value of clean water projects, build relationships, and increase landowner willingness to engage in implementation of non-regulatory clean water projects, efforts which take time before being reflected in additional implementation and estimated phosphorus reductions. The variability of implementation rates across years also underscores the importance of investing in program and partner capacity to broaden the reach and impact of clean water project implementation.

Lake Champlain TMDL Progress

Click symbol to view description of accountability measures.

Total phosphorus loading from Vermont watersheds to Lake Champlain was modeled to be 630.6 MT/year during the Lake Champlain TMDL baseline period of 2001 to 2010. The TMDL states that net phosphorus loading to Lake Champlain must be reduced by 212.4 MT/year to reach a target load of 418.1 MT/year by the end of calendar year 2036 to achieve Vermont's water quality standards. The following figure summarizes progress that has been made towards achieving the Lake Champlain TMDL as of SFY 2025. Data is incomplete for the most recent SFY due to data reporting lags, so progress towards the TMDL target is best represented by the level of implementation and estimated phosphorus reductions achieved in SFY 2024.

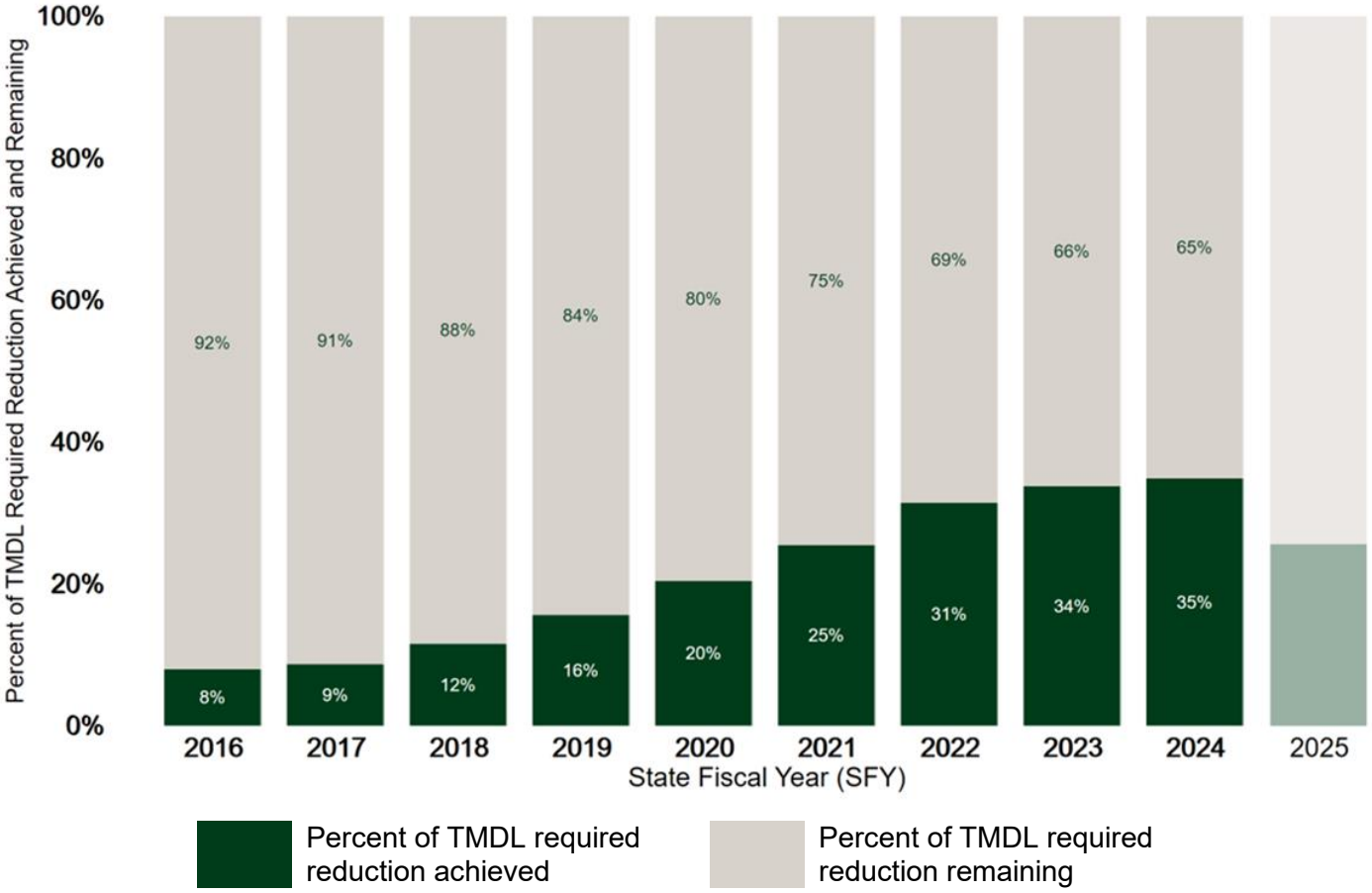


Figure 27: Percent of required Lake Champlain TMDL total estimated phosphorous load reduction (MT/year) achieved and remaining in each SFY 2016-2025.

Explanation of Figure 27

As noted in the previous section, data available for the most recent state fiscal year are generally under representative of total implementation because some results have not yet been captured. As such, estimated phosphorus reductions reported as implemented in SFY 2024 provide the best representation of progress to date. In SFY 2024, reported projects for which phosphorus accounting estimates are available contributed 35 percent of the TMDL required reduction, representing a substantial increase in progress compared to previous reports. Wastewater wasteload allocations are not accounted for in the estimated phosphorus reductions presented in the figure, see Monitored Total Phosphorus Load from Vermont

Wastewater Treatment Facilities in the Lake Champlain Basin for more on wastewater treatment facility discharges. TMDL progress is expected to continue increasing in the coming years, for at least the following reasons:

- An influx in federal funding under ARPA, the Bipartisan Infrastructure Law, and the Inflation Reduction Act, an increase in Clean Water Fund revenue enacted under Act 76 of 2019, and investment in the capacity of clean water partners will drive project implementation across sectors.[56] While much of this funding is beginning to reflect in reported state investment figures, the results of these investments will not be fully reflected in estimated phosphorus reductions until projects are completed, which may take multiple years.
- The State of Vermont has been building and expanding clean water regulatory, financial, and technical assistance programs since SFY 2016. Many regulatory programs are now at a stage of implementation that will drive additional phosphorus reductions from the agricultural and developed lands sectors. Stormwater and transportation related stormwater regulatory programs in the Lake Champlain basin are anticipated to achieve an approximate 13.64 MT/year phosphorus reduction by 2036—representing 64% of reductions required from developed lands. River Corridor regulations and stream alteration permits are a key component of the State's strategy to address erosion and nutrient loading from streams. A methodology to compile this data and quantify the impacts of this regulatory framework is under development and will be reflected in future years of reporting.
- The State has published methods for quantifying phosphorus reductions for agricultural, natural resources, and developed lands sector clean water practices.[57] Additional methods were recently established to fill gaps in capturing the phosphorus reduction benefit of several practices, particularly in the natural resources sector. These new methods are in the process of being implemented and will be reflected in future years of reporting for newly completed projects, as well as applied to fill gaps for prior completed projects.

[56] For more information on the Clean Water Budget, visit: https://dec.vermont.gov/water-investment/cwi/board

[57] Standard Operating Procedures (SOPs) for tracking and accounting of phosphorus reductions are available here: https://dec.vermont.gov/water-investment/cwi/state-vermont-clean-water-projects/clean-water-project-tracking-accounting#SOP

Lake Champlain TMDL Progress by Lake Segment Watershed

The Lake Champlain TMDL allocates total phosphorus load reduction targets by lake segment watershed, which differ slightly from the boundaries of Tactical Planning Basins.

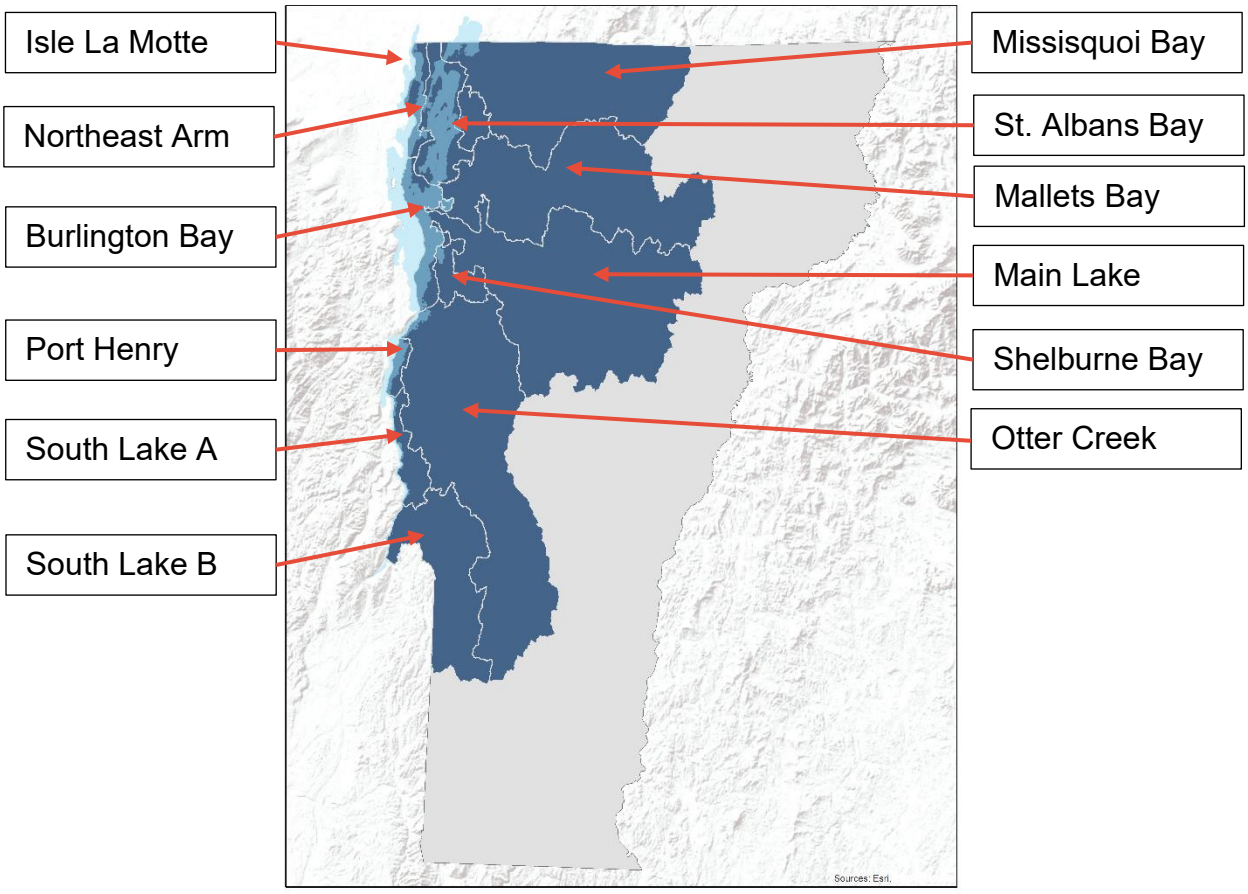


Figure 28: Lake Champlain TMDL lake segment watersheds.

The following figure represents estimated total phosphorus load reductions in effect in SFY 2024 by lake segment watershed compared to the target reduction established by the TMDL.

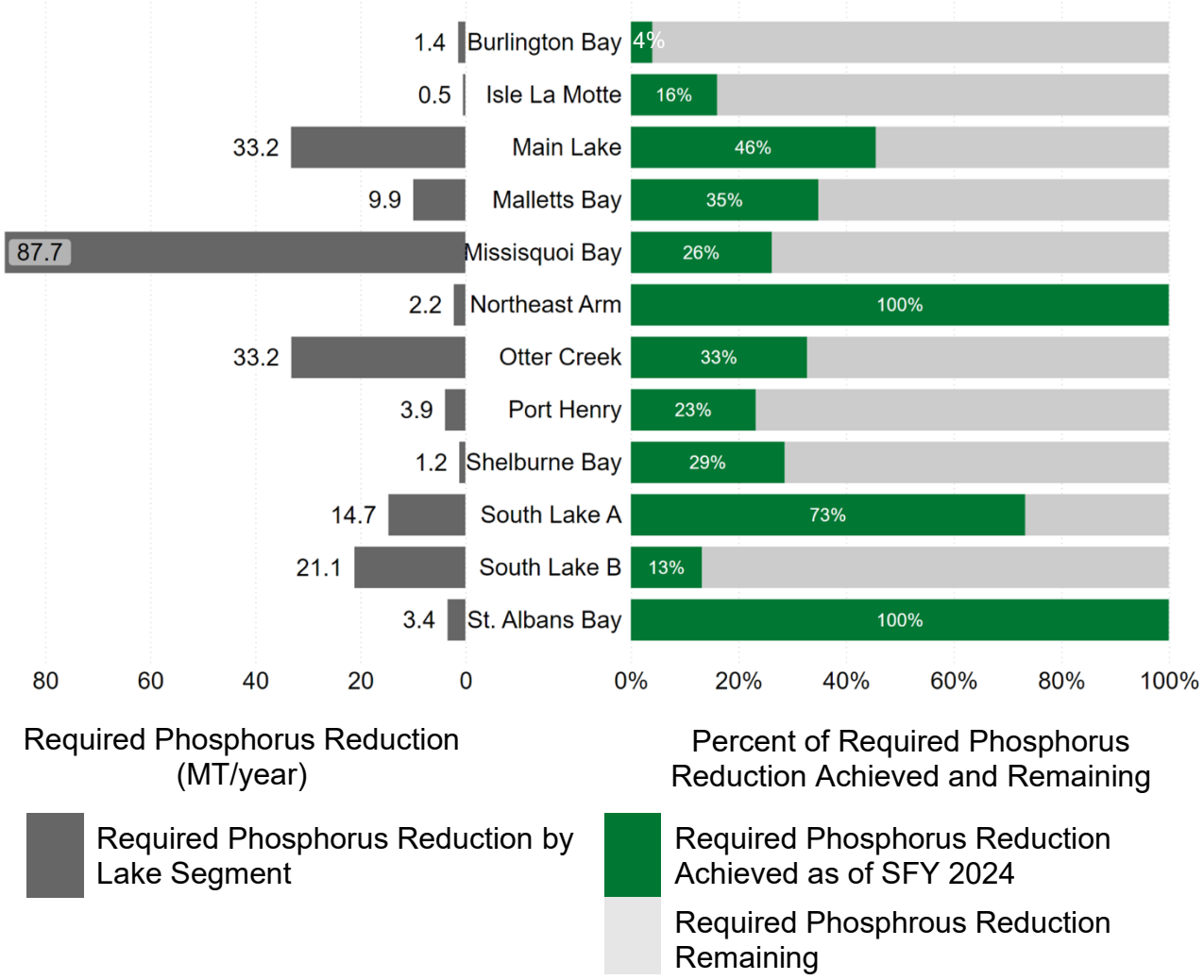


Figure 29: Estimated total phosphorus load reductions in effect during SFY 2024 by lake segment watershed (right) compared to total phosphorus load reduction targets (left) in MT/year. Percent represents the proportion of estimated total phosphorus load reductions achieved as of SFY 2024 compared to the lake segment target reduction.[58]

Explanation of Figure 29

As noted in the previous section, data available for the most recent state fiscal year are generally under representative of total implementation because some results have not yet been captured. As such, estimated phosphorus reductions by lake segment reported as implemented in SFY 2024 provide the best representation of progress to date. Wastewater wasteload allocations are not accounted for in the estimated phosphorus reductions presented, see Monitored Total Phosphorus Load from Vermont Wastewater Treatment Facilities in the Lake Champlain Basin for more on wastewater treatment facility discharges. The level of progress in phosphorus reductions relative to lake segment watershed target reductions in the Lake Champlain basin vary for the following reasons:

[58] To view a map of the lake segment watersheds, see Figure 28, or page three of the Lake Champlain TMDL, available at: https://dec.vermont.gov/watershed/restoring/champlain

- **Lake segment size and level of phosphorus reduction required varies**: The TMDL allocated phosphorus loading capacity based on each lake segment's size, land uses, and in-lake characteristics. Phosphorus reductions required to meet Vermont Water Quality Standards (VWQS) represent the difference between the baseline load and the loading capacity. The type and scale of project opportunities, the level of effort required, and the magnitude of phosphorus loading ranges by lake segment.
- **New phosphorus reduction accounting methods**: The State has published methods for quantifying phosphorus reductions for agricultural, natural resources, and developed lands sector clean water practices. Lake segments dominated by agricultural efforts show greater progress than lake segments targeting natural resources restoration because there are currently more comprehensive systems to quantify estimated reductions for agricultural projects compared to other sectors.

Monitored Total Phosphorus Load from Vermont Wastewater Treatment Facilities in the Lake Champlain Basin

The phosphorus load allocations in the Lake Champlain TMDL are separated into wastewater wasteload allocations and non-wastewater load allocations. Progress towards reaching the non-wastewater load allocation target is tracked through *modeled* results reflected in the other TMDL progress figures presented in this report. The wastewater wasteload allocation is tracked through *measured* water quality of effluent from the wastewater treatment facilities located within the Lake Champlain basin. The following figure shows the target wastewater wasteload allocation since the 2002 Lake Champlain TMDL and the measured total phosphorus from wastewater treatment facilities each year.

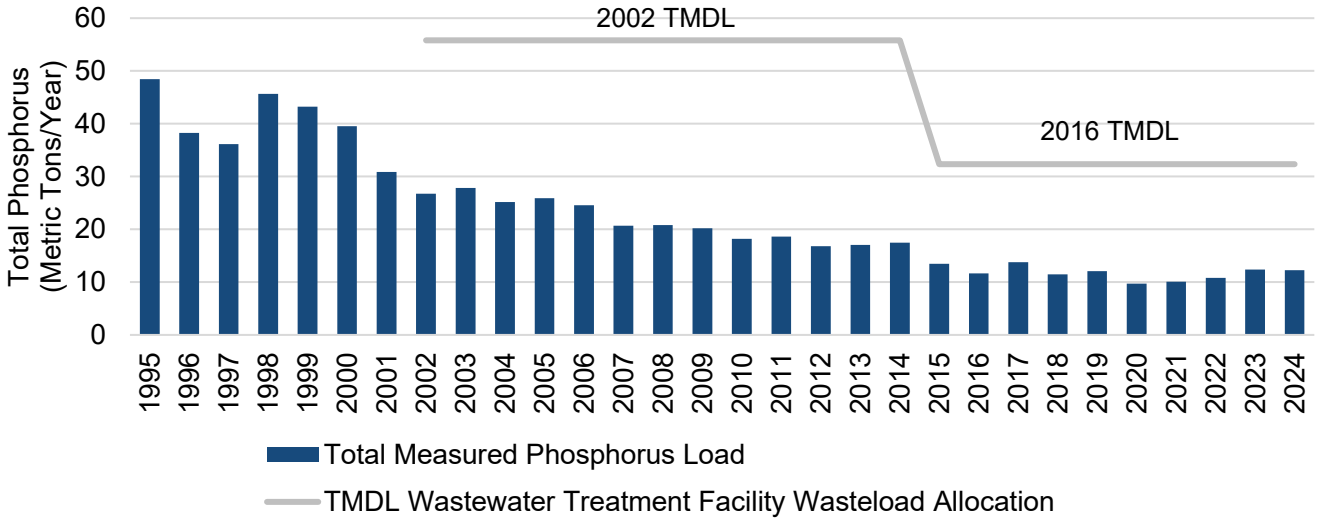


Figure 30: Measured total phosphorus load (MT/year) from Vermont wastewater treatment facilities discharging to Lake Champlain or tributaries and the Lake Champlain TMDL wastewater treatment facility wasteload allocation, calendar year 1995-2024.[59]

[59] Total measured phosphorus load does not include loading associated with combined sewer overflow (CSO) events. Untreated CSO flows contribute an extremely small proportion of total phosphorus loading to lakes in Vermont. In 2023, the Alburgh direct discharge permit was terminated and replaced with an indirect discharge permit. Discharge flows from the Alburgh treatment facility are not included in the total monitored phosphorus values for 2023.

Explanation of Figure 30

Total average annual phosphorus loading into Lake Champlain originating from Vermont wastewater treatment facilities was approximately 24.6 MT/year during the Lake Champlain TMDL baseline period of 2001–2010, representing approximately four percent of total phosphorus loading to Lake Champlain from Vermont sources. During the baseline period, measured total annual phosphorus loading from wastewater treatment facilities was well below the wasteload allocation (maximum permitted phosphorus limit) of 55.8 MT that was established under the 2002 Lake Champlain TMDL. The updated 2016 Lake Champlain TMDL for Vermont reduced the wastewater treatment facility wasteload allocation from 55.8 to 32.3 MT, which is intended to achieve the overall required phosphorus load allocation while allowing for some development and growth over the TMDL implementation timeframe. Discharge monitoring from the 56 direct discharge facilities in the Lake Champlain basin contributed approximately 12.3 MT of total phosphorus load to Lake Champlain in calendar year 2024, representing only 38 percent of the total wastewater treatment facility wasteload allocation under the current TMDL. These data demonstrate the measured total annual phosphorus load from Vermont wastewater treatment facilities is, in aggregate, consistently well below the wasteload allocation.

Chapter 4: Clean Water Investments and TMDL Progress in the Lake Memphremagog Basin

Lake Memphremagog TMDL

Figure 31: Map of Vermont with the Lake Memphremagog, Tomifobia, and Coaticook Rivers Tactical Basin Planning region (Basin 17) highlighted in green.

Lake Memphremagog is an international waterbody with the majority of its watershed area in Vermont and a small portion in Québec. The Vermont portion of the watershed covers most of Orleans County including the three major lake tributaries: the Black, Barton, and Clyde Rivers, as well as the smaller Johns River. The Lake Memphremagog watershed is part of the larger Tactical Basin Planning region (Basin 17), which also includes the Tomifobia and Coaticook River basins that drain into Québec (Figure 31). Land use within the Vermont portion of the Lake Memphremagog watershed is largely forest or shrub with about 17 percent in agriculture, and five percent in developed lands.[60]

Phosphorus levels in the Vermont portion of Lake Memphremagog are higher than the water quality standard set for the lake. Elevated levels of phosphorus contribute to intermittent cyanobacteria blooms but also support excessive plant and algae growth that limits the quality of the lake for recreational use. The Lake Memphremagog TMDL was established in 2017 to specify the maximum amount of phosphorus that the waterbody can receive and still meet applicable water quality standards and establish targets for reducing phosphorus loading to the lake from its watershed. Total phosphorus loading to Lake Memphremagog from Vermont was modeled to be 52.7 MT/year during the TMDL baseline period of 2009 to 2012. The TMDL states total phosphorus loading to Lake Memphremagog must be reduced by 29 percent to 37.4 MT/year by 2037 to achieve Vermont's water quality standards.[61]

[60] The Lake Memphremagog TMDL can be accessed here: https://dec.vermont.gov/sites/dec/files/wsm/mapp/docs/Memph%20TMDL%20Final%20EPA%20approved.pdf

[61] Table 10, Lake Memphremagog TMDL.

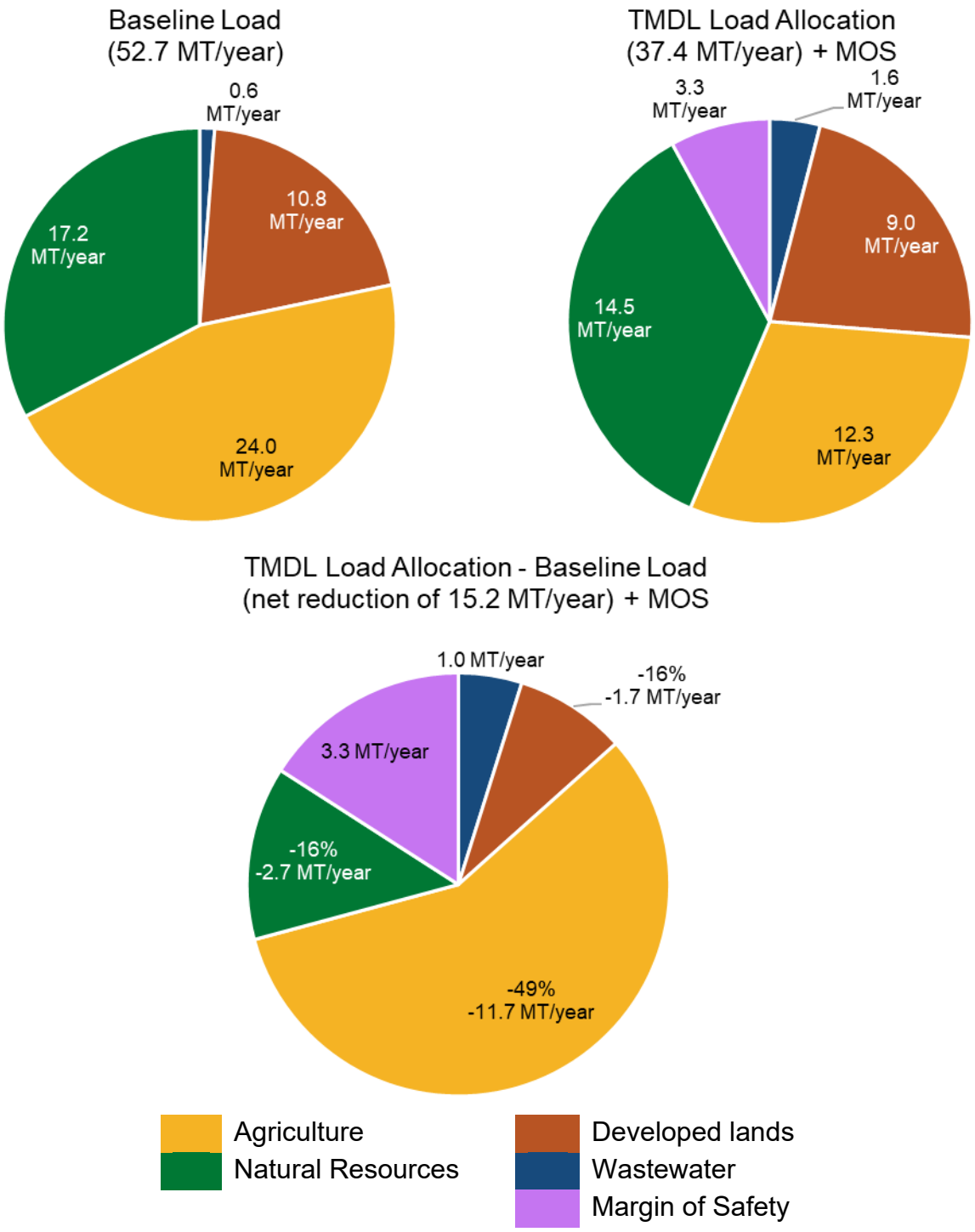


Figure 32: Lake Memphremagog TMDL baseline load, allocation, and modeled load increase (+) or reduction (-) by sector. Percentage indicates percent reduction from baseline for sectors with a required reduction.

Explanation of Figure 32

The Lake Memphremagog TMDL sets estimated phosphorus load reduction requirements for each land use sector by assessing baseline conditions and establishing TMDL load allocation representing modeled estimates of the maximum annual phosphorus loading to the lake without in-lake phosphorus concentrations exceeding water quality standards. Reductions are required across the agricultural, developed lands, and natural resources (forests and streams)

sectors. The TMDL load allocation accounts for a potential increase in loading from the wastewater sector resulting from future population growth and includes a Margin of Safety allocation to account for model uncertainty and future loading associated with climate change. While implementation of the TMDL does not prescribe required reductions by sector, reaching the phosphorus load allocation established by the Lake Memphremagog TMDL by achieving required reductions in total loading will require efforts across all sectors, and the approach to water quality restoration involves both regulatory and voluntary actions. If one sector falls short of meeting its goals, there is limited opportunity for other sectors to pick up the slack. Successful implementation of the Lake Memphremagog TMDL is supported in large part by state and federal funding programs, however some regulations designed to support Vermont in meeting the TMDL are expected to be achieved through private funding sources.

Tactical Basin Planning is integral to identifying priority projects to achieve water quality goals. The Lake Memphremagog, Tomifobia, and Coaticook Tactical Basin Plan (Basin 17) was updated in 2023. It provides an assessment of the health of the basin and defines ongoing and future strategies to address high-priority surface water stressors.[62] The purpose of the plan is to identify actions necessary to meet or exceed state water quality standards, and to achieve sustained ecological health and human use of surface waters. The plan sets priorities for meeting phosphorus load reduction targets for the Lake Memphremagog watershed as outlined in the Lake Memphremagog TMDL. The following section of the report summarizes the state investments in clean water efforts in Basin 17, which includes all the Vermont land that drains to the St. Francis River.[63]

[62] The 2023 Lake Memphremagog, Tomifobia, and Coaticook Tactical Basin Plan can be accessed here: https://dec.vermont.gov/water-investment/watershed-planning/tactical-basin-planning/basin17

[63] Funding presented in this chapter is representative of clean water project work across the entire Lake Memphremagog, Tomifobia, and Coaticook Rivers Tactical Planning Basin. Estimated phosphorus reductions presented in this chapter only include clean water project work that contributed to pollutant reductions in the Lake Memphremagog watershed covered by the TMDL.

Vermont's Clean Water Investments in the Lake Memphremagog, Tomifobia, and Coaticook Rivers Basin

Click symbol to view description of accountability measures.

Reaching Lake Memphremagog's water quality goals requires investments across all land use sectors. The following figure summarizes state clean water investments in the Lake Memphremagog, Tomifobia, and Coaticook basin from SFY 2016 to 2025. Federal funds awarded to projects directly by federal agencies are not included as they are outside the scope of this report.

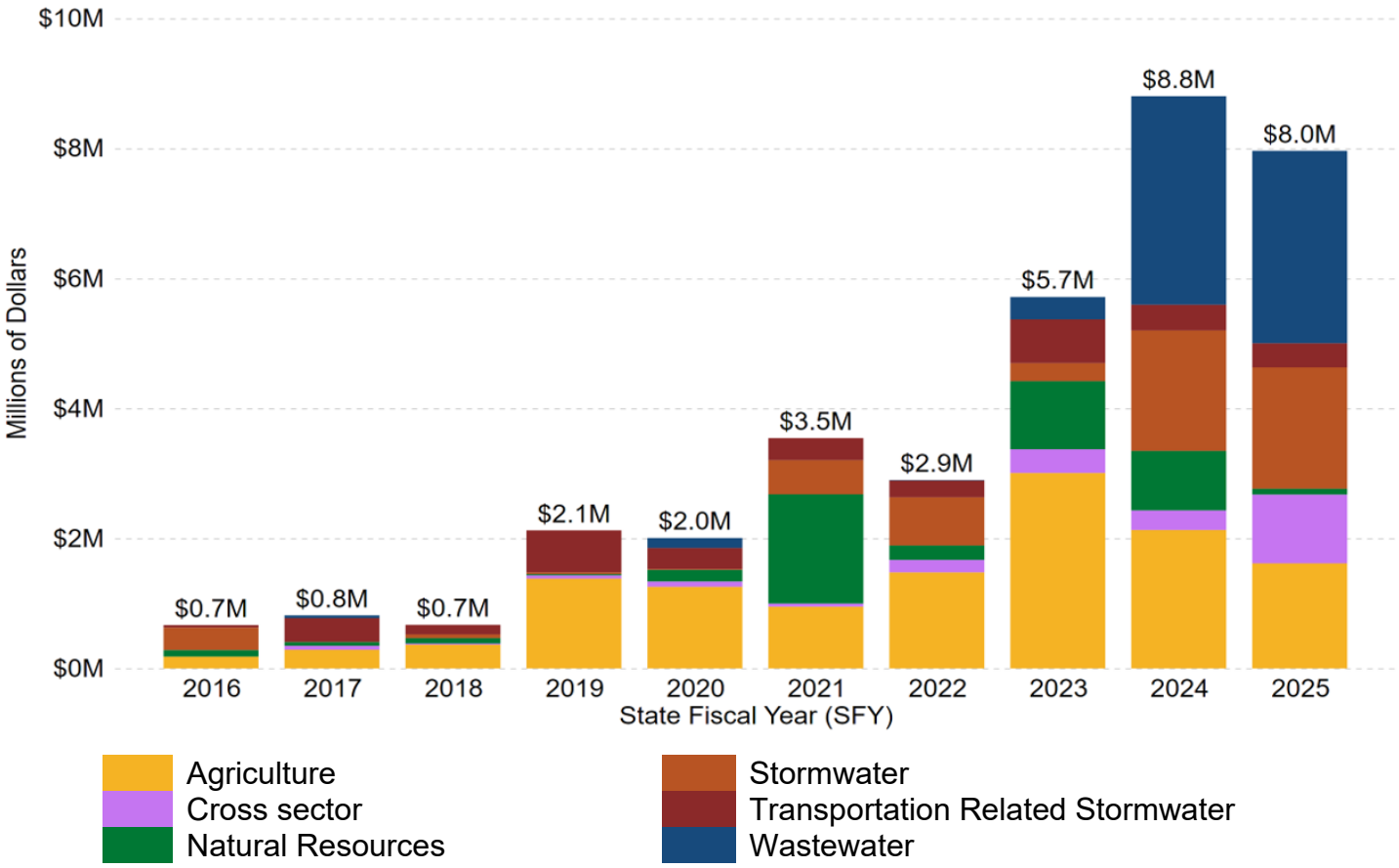


Figure 33: Total dollars awarded by State of Vermont agencies to clean water projects in the Lake Memphremagog, Tomifobia, and Coaticook Tactical Planning Basin by land use sector, SFY 2016-2025.

Explanation of Figure 33

The State of Vermont has invested $35 million in the Lake Memphremagog, Tomifobia, and Coaticook basin since SFY 2016. From SFY 2016 to 2020, the greatest investments in the basin occurred in the developed lands and agriculture sectors. Cross-sector funding awarded beginning in SFY 2022 is Clean Water Initiative block grant funding largely representing the Water Quality Enhancement Grants and Water Quality Restoration Formula Grants established under Act 76. Block grants are awarded to Funding Program Administrators (FPAs) tasked with administering grant programs and issuing sub-grants to support clean water projects across a range of land use sectors. Once a block grant is completed, funding is

recategorized to the appropriate sector based on the project types that were awarded funding. For more information on Act 76 funding programs, see Appendix A: Act 76 of 2019. Investments in SFY 2023-2025 in the stormwater and wastewater sectors have been bolstered by the short-term availability of ARPA funding administered through State of Vermont programs.

Estimated Total Phosphorus Load Reductions in Lake Memphremagog Basin

Click symbol to view description of accountability measures.

The State of Vermont estimates the pollutant load reductions associated with clean water projects to track progress towards achieving water quality goals. The following figure summarizes the estimated total phosphorus load reductions associated with projects implemented through state and federal funding and regulatory programs in the Lake Memphremagog basin from SFY 2016 to 2025 by sector.[64, 65] Wastewater wasteload allocations are not accounted for in the estimated phosphorus reductions presented below, see Monitored Total Phosphorus Load from Vermont Wastewater Treatment Facilities in the Lake Champlain Basin for more on wastewater treatment facility discharges.

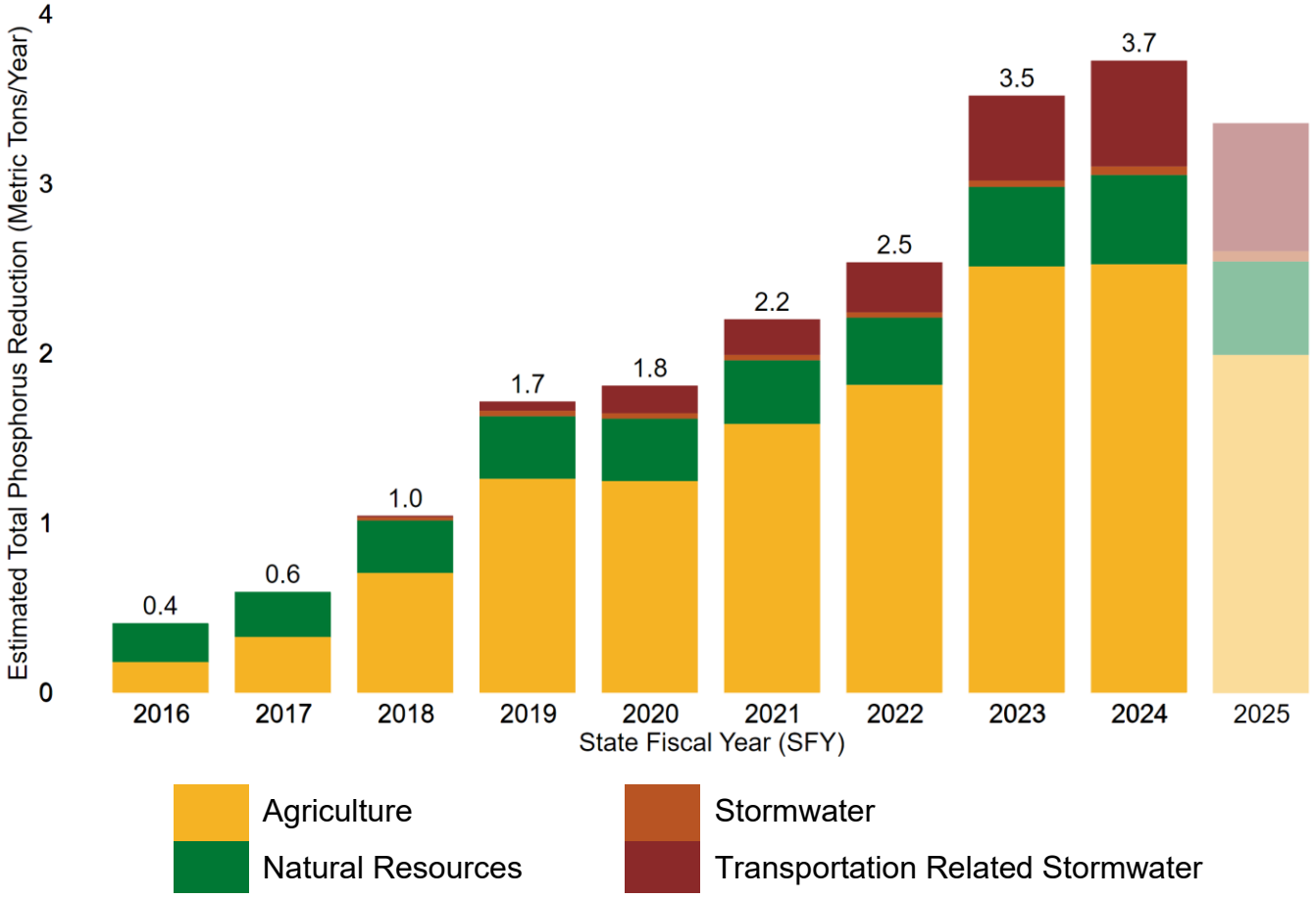


Figure 34: Annual estimated total phosphorus load reductions (MT/year) associated with projects implemented through state and federal funding and regulatory programs in the Lake Memphremagog basin in effect during SFY 2016-2025 by land use sector.[66]

[64] Phosphorus reductions can only be estimated for clean water projects that address pollution in the Lake Memphremagog basin that is covered by the Lake Memphremagog TMDL. Phosphorus reductions are not reported for clean water projects that treat pollution in the Tomifobia and Coaticook watersheds.

[65] For more information on the methods used to estimated phosphorus load reductions, see documentation on Standard Operating Procedures (SOPs) for tracking and accounting of phosphorus reductions: https://dec.vermont.gov/water-investment/cwi/state-vermont-clean-water-projects/clean-water-project-tracking-accounting#SOP

[66] Annual phosphorus load reductions are cumulative for all completed/operational projects based on start date and anticipated lifespan. Results of USDA-NRCS funded projects completed since SFY 2010 that are still in effect SFY 2016–2025 are included.

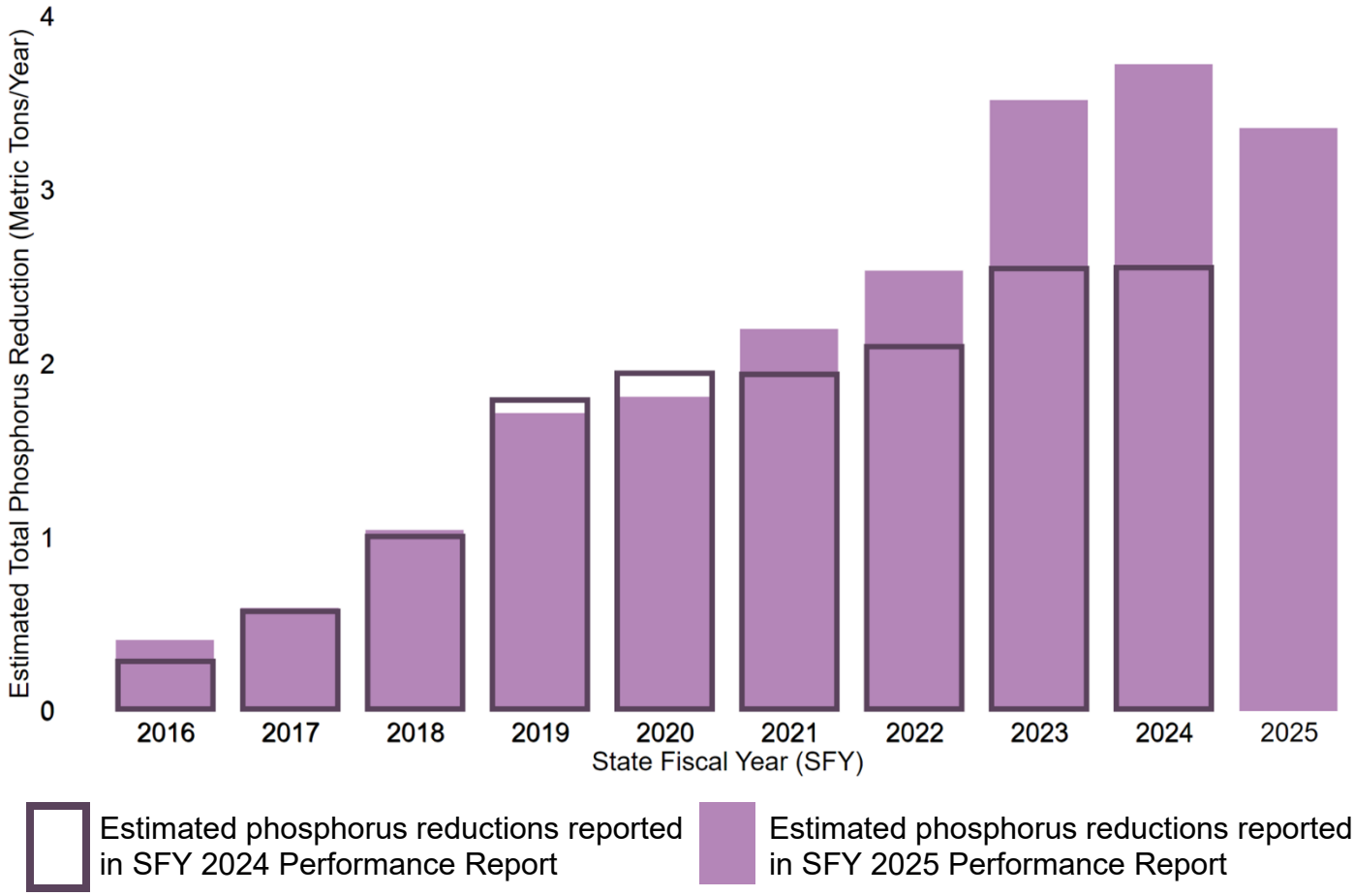


Figure 35: Estimated annual phosphorus reduction data in the Lake Memphremagog basin reported in SFY 2024 compared to SFY 2025.

Explanation of Figure 34 and 35

State funding programs, federal funding programs, and regulatory programs have implemented projects that contribute incremental annual increases in estimated annual phosphorus reductions in the Lake Memphremagog basin over the reporting period.

Estimated phosphorus reductions in the most recent state fiscal year are often temporarily lower than in the penultimate year, due to data reporting lags. For example, many agricultural grant programs operate to align with the growing season, while data collection for this report is conducted on a state fiscal year cycle (July-June). Data available for the most recent state fiscal year are under representative of total implementation, because some results have not yet been captured. This is not necessarily indicative of a shifting trend in TMDL progress. As additional data become available, it is reflected in future years of reporting. Figure 35 illustrates the difference in estimated phosphorus reductions across all reporting years as reported in SFY 2024, compared to SFY 2025. This graph demonstrates how data lags contribute to incomplete results in the most recent few years of estimated phosphorus reduction data and how updates to phosphorus accounting methods can contribute to changes in previously reported estimated phosphorus reductions across all years.

The State acknowledges that implementation of the TMDL is not a linear path. Changing rates of progress over the 20-year implementation timeframe are to be expected and are associated with swings in financial assistance levels, and the capacity of agencies and partners to administer funds, implement projects, and report outcomes. The State's ability to capture and

account for results of programs and projects is also a key factor in quantifying outcomes and progress. The results presented in this report are representative of project implementation for which methods are in place to track and account for estimated phosphorus reductions. However, implementation of projects that cannot yet be tracked or quantified in estimated phosphorus reductions is also occurring. The State is consistently working to expand the methodologies and systems to track and account for estimated phosphorus reductions, as well as reviewing and revising where necessary, existing methods to better represent outcomes achieved. See Appendix D: Status of Phosphorus Accounting Implementation for more information. The following paragraphs provide some context to explain TMDL implementation progress by sector.

Agriculture

The estimated phosphorus reductions achieved to date in the agricultural sector are mostly from annual field practices, such as cover crops, reduced, or no-till, and manure injection. Most of the phosphorus reductions required in the agricultural sector are tied to croplands, meaning that annual field practices are necessary to meet the TMDL. Annual practices must be implemented every year to sustain phosphorus reductions. Implementation of annual practices is dependent on a range of factors including weather, land management, and farm business decisions. The estimated annual phosphorus reductions associated with annual agricultural practice implementation are also influenced by a variety of external factors, including:

- Some practices are only eligible for cost-share for a limited number of years. Many programs are also subject to funding caps, which may limit the reported acres of practice implementation.
- Many farms implement agricultural conservation practices without the support of cost-share programs. The State is limited in its ability to capture the water quality benefits of practices implemented outside cost-share programs, and only some of these data are presented in this report. AAFM is currently investigating opportunities to more effectively track and estimate farmer funded practice implementation using remote sensing data.
- The multi-year federal Farm Bill governs programs, funding, and assistance available to support agricultural practice implementation. The most recent Farm Bill, passed in 2018 and set to expire in 2023, has been extended multiple times to authorize programs to continue through September 2026. The extensions have not necessarily increased specific program payment limitations or acreage enrollment caps, which can restrict producer enrollment. Staffing capacity and availability to enroll and administer programs are also currently impacting water quality outcomes supported by federal programs.
- Program level funding availability is a key factor in sustained implementation. Beginning in SFY 2022, a substantial proportion (10-20% per SFY) of estimated phosphorus reductions attributed to the agricultural sector have been achieved through implementation under AAFM's Vermont Pay for Performance program, which provides performance-based payments to Vermont farmers for implementing practices to reduce phosphorus pollution from their agricultural fields. This innovative approach allows AAFM to target water quality resources towards the highest impact farms and fields with respect to reducing Vermont's phosphorus. This program is currently funded through a competitive USDA-NRCS grant, and continuation of this program is dependent on available funding in the future.
- The estimated phosphorus reductions attributed to the agricultural sector represent practice implementation for which the state can reliably collect data and apply

established phosphorus accounting methodologies. In the coming years, the state has prioritized revisions to agricultural phosphorus reduction accounting methodologies to better capture the water quality improvements gained through agricultural riparian buffers, livestock exclusion, re-seeding and field renovation, and livestock trails and walkways. Once established, these methodologies will be applied to available data in future reports.

Natural Resources

Natural resources projects encompass a wide range of implementation and management strategies to address non-point source nutrient loading from forests, streams, lakeshores, and wetlands. Examples of project types in the natural resources sector supported by state funding programs include: floodplain and stream restoration, dam removals, river corridor easements, bioengineered lake shoreline stabilization, forest road and trail erosion control, and wetland restoration.

Currently, the majority of estimated phosphorus reductions in the natural resources sector across reporting years are attributable to quantifying the water quality benefits associated with the State of Vermont's Use Value Appraisal (UVA) Program on forestland parcels.[67] Forestland parcels that are actively enrolled in the UVA Program and have been inspected for program compliance meet Vermont's Acceptable Management Practices (AMPs), a set of forestland management criteria designed to maintain and protect water quality.[68]

Phosphorus accounting methods have been established for river and lakeshore project types in the natural resources sector but are not yet fully reflected in reporting. Phosphorus accounting methods for wetland restoration are under development. In future years of reporting these accounting methods will be applied to newly completed projects, as well as applied to fill gaps from previously completed projects, as data availability allows.

Stormwater and Transportation Related Stormwater

Estimated phosphorus reductions in the stormwater and transportation related stormwater land use sectors have been incrementally growing. This progress is associated with increased implementation of several regulatory programs designed to reduce and mitigate stormwater pollution from developed lands and roads. [69]

Operational stormwater permits regulate stormwater discharges resulting from new development, redevelopment, and three-acre sites. New development and re-development permit issuance is driven by rates of development across the state. The General Permit 3-9050, which serves as the permit for three-acre sites, is set to expire on December 1, 2025 and is in the process of being reissued by the Department. Affected 3-acre sites must obtain permit coverage by October 1, 2028, as established by Act 37 of 2025.

Municipal Separate Storm Sewer System (MS4) permits regulate stormwater discharges in the most populous regions of the state, however there are no MS4s in the Lake Memphremagog basin at this time.

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[67] For details on phosphorus accounting for UVA parcels, please see the Standard Operating Procedures for Tracking & Accounting of Natural Resources Restoration Projects: https://dec.vermont.gov/water-investment/cwi/projects/tracking-accounting#SOP

[68] Phosphorus reductions are only accounting for forestland parcels that enrolled in the UVA Program after the TMDL baseline periods. A change in the source data storage procedure identified in 2025 has resulted in a revision to previously reported values. ANR is re-evaluating the methodology used to account for estimated phosphorus reductions assigned to UVA Program compliance, and this review may result in changes to the estimated phosphorus reductions in the natural resources sector related to UVA Program compliance in the future.

[69] For more information on regulatory stormwater programs in Vermont, visit: https://dec.vermont.gov/watershed/stormwater

The Municipal Roads General Permit (MRGP) regulates stormwater-related erosion on municipally owned roads. The MRGP is subject to recurring assessments to ensure maintained compliance with program standards. The road segment scoring methodology under the Municipal Roads General Permit was updated in 2023 as part of the permit reissuance. The results of MRGP compliance presented in this report represent updated segment scoring and revised phosphorus loading rates in the Lake Memphremagog basin to align with the current permit. MRGP loading rates applied to the Memphremagog basin have been revised to align with the methodology used to calculate MRGP loading rates in the Lake Champlain basin. The revised MRGP loading rates distribute municipal road load based on factors that affect road erosion and the associated phosphorus loading. The Lake Memphremagog TMDL assigned load for municipal roads has been formulaically redistributed to more accurately reflect variations in load contribution as a factor of segment compliance, slope, road type, and hydrologic connection to surface water. The increase in reported estimated phosphorus reductions attributed to the transportation related stormwater sector is a result of these updated loading rates, and a reflection of the MRGP incentivizing road erosion control measures to bring road segments into compliance with permit standards. Repeated flooding in Vermont has highlighted practices that are most important for flood resiliency and reducing erosion. By applying an adaptive management approach to understand lessons learned in the first permit term and potential improvements to the program, DEC is in the process of identifying potential future changes to the MRGP that may result in improved road drainage and flood resilient infrastructure as well as additional estimated phosphorus reductions. Municipal road conditions in some regions have been impacted by severe storm events experienced in recent years, and continued coordination with towns is underway to support upkeep and maintenance of road standards to reduce and eliminate, where feasible, erosion related issues.

Estimates of the total anticipated phosphorus reduction to be achieved through regulations addressing nutrient loading from the developed lands sector in the Lake Memphremagog basin are not available at this time, but will be added in the future as information becomes available.

Wastewater

Currently, phosphorus loading from the wastewater sector is tracked through measured discharges from permitted WWTFs and not included in the modeled estimates of phosphorus reductions presented in this section. See the Monitored Total Phosphorus Load from Vermont Wastewater Treatment Facilities in the Lake Memphremagog Basin section of the report for more information.

Conclusions

Data reporting cycles vary by funding program, and some data used to estimate phosphorus reductions is subject to reporting lags. This particularly impacts the results reported for recent state fiscal years. Data for the entire reporting period is updated each year to comprehensively capture all available results, and to integrate updated accounting methods where applicable. Regulatory frameworks are in place to address nutrient pollution and full implementation to meet permit requirements and expected phosphorus reductions is expected within TMDL implementation period. Holistic data compilation to accurately capture all state funding and regulatory programs continues to evolve to incorporate new data streams and additional programmatic results. Particularly in the natural resources sector, methods to quantify estimated phosphorus reductions are still being developed and implemented and are anticipated to be reflected in future years of reporting once available. In some cases, administration of funding awards may take precedence over end of award reporting and data compilation, particularly in cases of time sensitive funding opportunities like those supported by

ARPA funding. Funding to support project implementation in any year is source dependent, and rates of implementation that result in estimated phosphorus reductions may be impacted by variability or uncertainty in funding opportunities. Changes in the pace of estimated annual phosphorus reduction progress may be in part a reflection of the completion of relatively easy to implement projects. Now that many of the ready-to-construct projects have been implemented, identification and implementation of projects and strategies that are in some cases more complex and involved, are needed to reach Vermont's water quality goals. A key role of the clean water workforce includes engaging with landowners and the public to communicate the value of clean water projects, build relationships, and increase landowner willingness to engage in implementation of non-regulatory clean water projects, efforts which take time before being reflected in additional implementation and estimated phosphorus reductions. The variability of implementation rates across years also underscores the importance of investing in program and partner capacity to broaden the reach and impact of clean water project implementation.

Lake Memphremagog TMDL Progress

Click symbol to view description of accountability measures.

The Lake Memphremagog TMDL states that net phosphorus loading to Lake Memphremagog must be reduced by 15.2 MT/year to achieve a reduction from 52.7 MT/year baseline load to 37.4 MT/year by the end of calendar year 2037 to meet Vermont's water quality standards. The following figure summarizes progress made towards the Lake Memphremagog TMDL as of SFY 2025. Data is incomplete for the most recent SFY due to data reporting lags, so progress towards the TMDL target is best represented by the level of implementation and estimated phosphorus reductions achieved in SFY 2024.

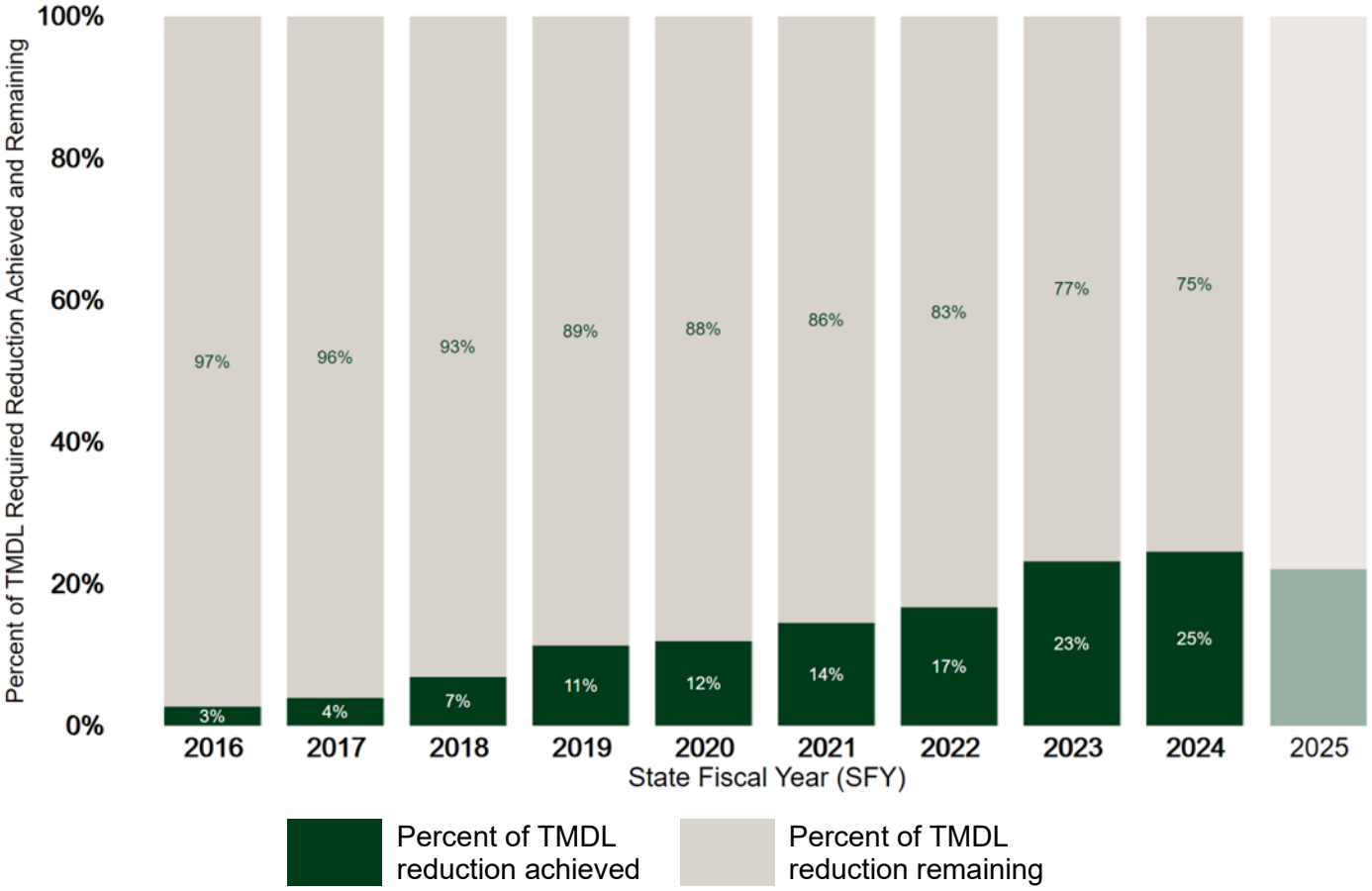

Figure 36: Percent of required Lake Memphremagog TMDL total estimated phosphorous load reduction (MT/year) achieved and remaining in each SFY 2016-2025.

Explanation of Figure 36

As noted in the previous section, data available for the most recent state fiscal year are generally under representative of total implementation because some results have not yet been captured. As such, estimated phosphorus reductions reported as implemented in SFY 2024 may give the best representation of progress to date. In SFY 2024, reported projects for which phosphorus accounting estimates are available contributed 25 percent of the TMDL required reduction, representing a substantial increase in progress compared to previous reports. Wastewater wasteload allocations are not accounted for in the estimated phosphorus reductions presented in the figure, see Monitored Total Phosphorus Load from Vermont Wastewater Treatment Facilities in the Lake Champlain Basin for more on wastewater

treatment facility discharges. TMDL progress is expected to continue increasing in the coming years, for at least the following reasons:

- An influx in federal funding under ARPA, the Bipartisan Infrastructure Law, and the Inflation Reduction Act, an increase in Clean Water Fund revenue enacted under Act 76 of 2019, and investment in the capacity of clean water partners will drive project implementation across sectors.[70] While much of this funding is beginning to reflect in reported state investment figures, the results of these investments will not be fully captured in estimated phosphorus reductions until projects are completed, which may take multiple years.
- The State of Vermont has been building and expanding clean water regulatory, financial, and technical assistance programs since SFY 2016. Many regulatory programs are now at a stage of implementation that will drive additional phosphorus reductions from agricultural and developed lands. River Corridor regulations and stream alteration permits are a key component of the State's strategy to address erosion and nutrient loading from streams. A methodology to compile this data and quantify the impacts of this regulatory framework is under development and will be reflected in future years of reporting.
- The state has published methods for quantifying phosphorus reductions for agricultural, natural resources, and developed lands sector clean water practices.[71] New methods were recently established to fill gaps in capturing the phosphorus reduction benefit of several practices, particularly in the natural resources sector. These new methods are in the process of being implemented and will be reflected in future years of reporting for newly completed projects, as well as applied to fill gaps for prior completed projects.

Monitored Total Phosphorus Load from Vermont Wastewater Treatment Facilities in the Lake Memphremagog Basin

The phosphorus load allocations in the Lake Memphremagog TMDL are separated into wastewater wasteload and non-wastewater load allocations. Progress towards reaching the non-wastewater load allocation target is tracked through *modeled* results reflected in the previous TMDL progress figures. The wastewater wasteload allocation is tracked through *measured* water quality of effluent from the wastewater treatment facilities located within the Lake Memphremagog basin. The following figure shows the target wastewater wasteload allocation for the Lake Memphremagog TMDL and the measured total phosphorus from wastewater treatment facilities each year.

[70] For more information on the Clean Water Budget, visit: https://dec.vermont.gov/water-investment/cwi/board

[71] Standard Operating Procedures (SOPs) for tracking and accounting of phosphorus reductions are available here: https://dec.vermont.gov/water-investment/cwi/state-vermont-clean-water-projects/clean-water-project-tracking-accounting#SOP

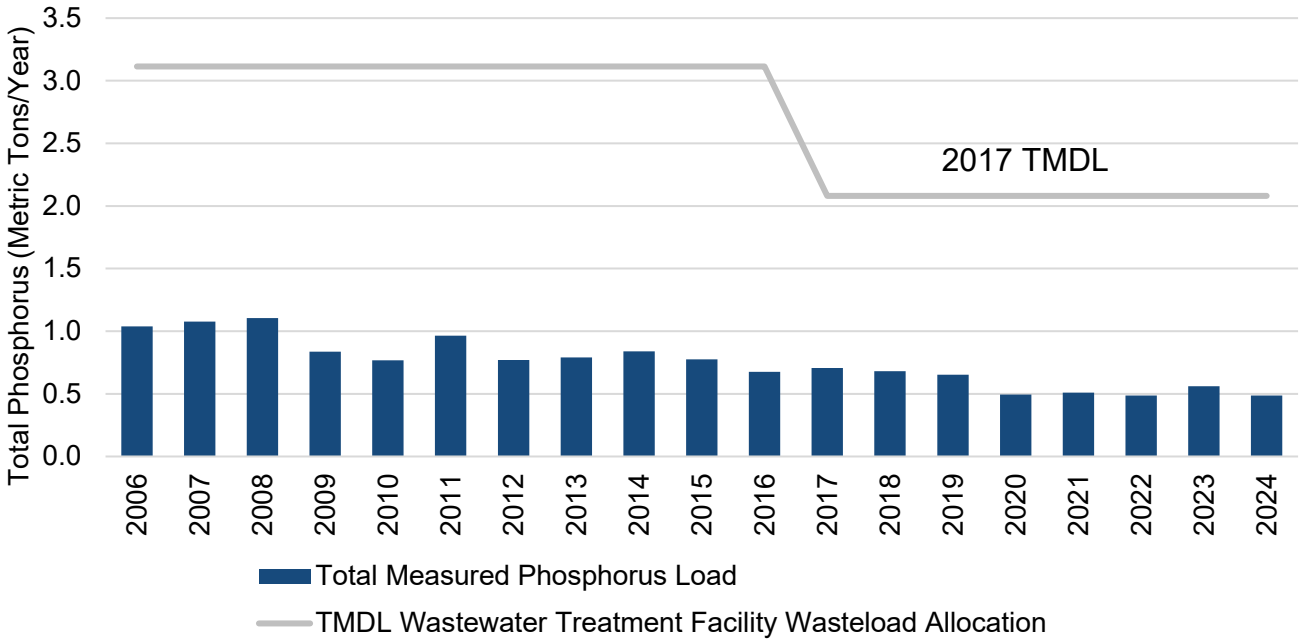

Figure 37: Measured total phosphorus load (MT/year) from Vermont wastewater treatment facilities draining to Lake Memphremagog and the permitted wasteload of wastewater treatment facilities in the Lake Memphremagog Basin, calendar year 2006-2024.

Explanation of Figure 37

The total permitted phosphorus loading into Lake Memphremagog originating from Vermont wastewater treatment facilities was approximately 3.1 MT/year during the Lake Memphremagog TMDL baseline period of 2009–2012, representing approximately four percent of total phosphorus loading to Lake Memphremagog from Vermont sources. During the baseline period, measured total annual phosphorus loading from wastewater treatment facilities was well below the permitted phosphorus limit of 3.1 MT. The 2017 Lake Memphremagog TMDL for Vermont reduced the wastewater treatment facility permitted wasteload to 2.08 MT, which is intended to achieve the overall required phosphorus load allocation while allowing for some development and growth over the TMDL implementation timeframe. Discharge monitoring from the four wastewater treatment facilities in the Lake Memphremagog basin shows approximately 0.49 MT of total phosphorus load to Lake Memphremagog in calendar year 2024, representing only 24 percent of the permitted wasteload under the current TMDL. These data demonstrate the measured total annual phosphorus load from Vermont wastewater treatment facilities, in aggregate, is consistently well below the wasteload allocation.

Chapter 5: Connecticut River Basin Clean Water Investments and Results

Long Island Sound TMDL

The Connecticut River is New England's longest river. It runs through four states: Vermont, New Hampshire, Massachusetts, and Connecticut. Seven Tactical Planning Basins in the eastern portion of the State of Vermont drain to the Connecticut River, which eventually drains to the Long Island Sound. The Long Island Sound is a large estuary that drains a total watershed of over 16,000 square miles, including the Connecticut River basin and areas of Rhode Island and New York, according to the Long Island Sound TMDL (Figure 38).[72]

Figure 38: Map of the Long Island Sound watershed.

Credit: New England Interstate Water Pollution Control Commission (NEIWPCC).

The Long Island Sound is primarily impaired by excess nitrogen, which can cause cyanobacteria blooms and hypoxia (low dissolved oxygen concentrations in the water column) leading to "dead zones" that threaten marine life. To address the excess nitrogen and resulting hypoxia, the EPA approved *A Total Maximum Daily Load Analysis to Achieve Water Quality Standards for Dissolved Oxygen in Long Island Sound* in 2001 to define the nitrogen reductions necessary to meet water quality standards in the Sound.

Vermont's clean water efforts to restore, protect, and enhance water quality in the Connecticut River basin are also contributing to water quality progress for Long Island Sound. The following section of the report summarizes state investments in clean water efforts in the Connecticut River basin. Currently, Vermont does not have methods in place to estimate total nitrogen load reductions to the Connecticut River basin, but these are planned to be established in the coming years (see Future Total Nitrogen Load Reduction Tracking).

[72] A Total Maximum Daily Load Analysis to Achieve Water Quality Standards for Dissolved Oxygen in Long Island Sound can be accessed here: http://longislandsoundstudy.net/wp-content/uploads/2010/03/Tmdl.pdf

Vermont's Clean Water Investments in the Connecticut River Basin

Click symbol to view description of accountability measures.

Reaching the Connecticut River basin's water quality goals requires investments across all land use sectors. The following figure summarizes state clean water investments in the Connecticut River basin from SFY 2016 to 2025. Federal funds awarded to projects directly by federal agencies are not included as they are outside the scope of this report.

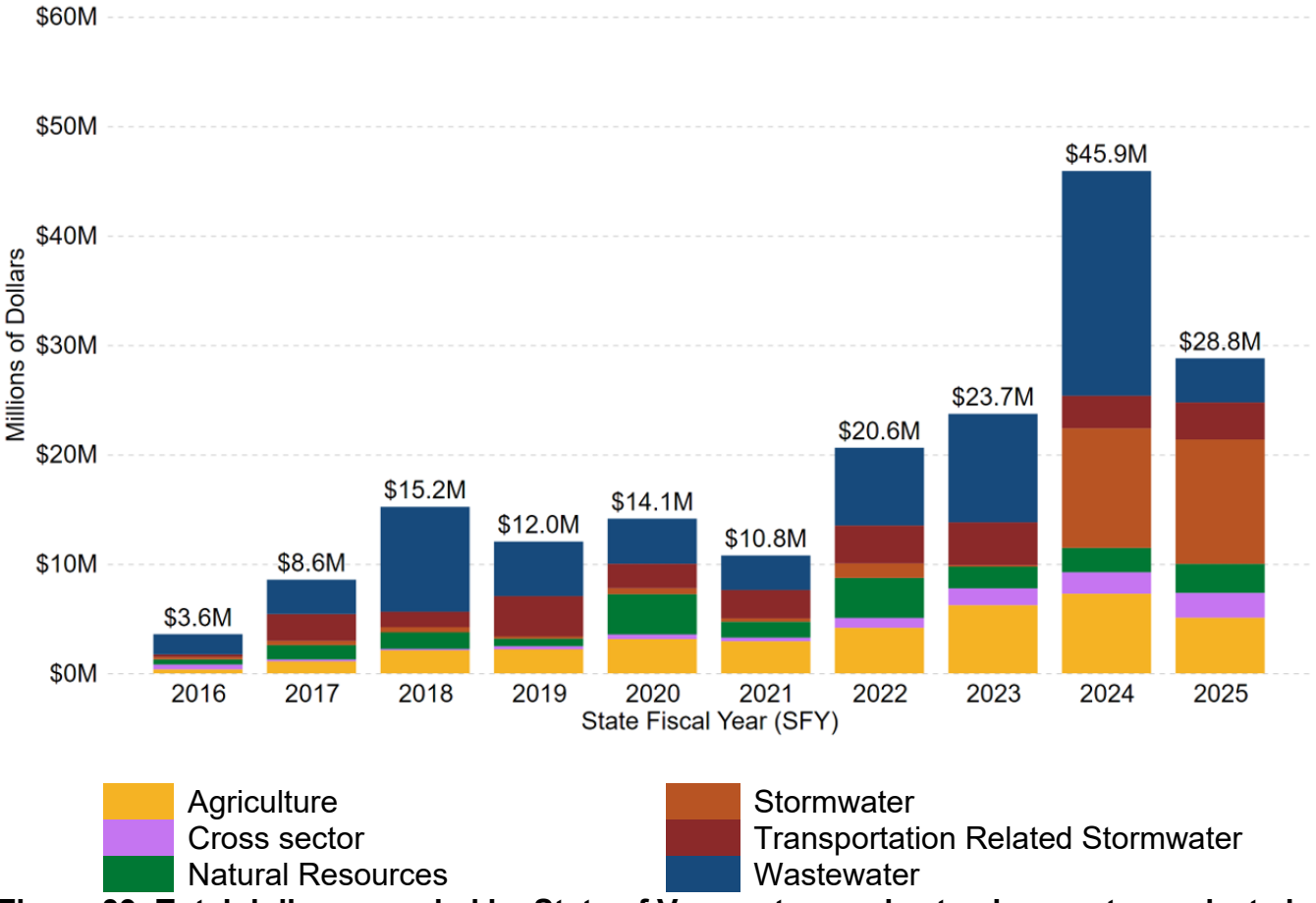

Figure 39: Total dollars awarded by State of Vermont agencies to clean water projects in the Connecticut River basin by land use sector, SFY 2016-2025.

Explanation of Figure 39

The State of Vermont has invested over $180 million in clean water projects in the Connecticut River basin since SFY 2016. Clean water funding in the Connecticut River basin varies year-to-year based on project readiness and funding award rounds. For example, the Clean Water State Revolving Fund supported over $15.5 million in wastewater investments in SFY 2024, whereas investments from the same source in SFY 2025 total $3.5 million. Investments in SFY 2023-2025 in the stormwater and wastewater sectors have been bolstered by the short-term availability of ARPA funding administered through State of Vermont programs.

Future Total Nitrogen Load Reduction Tracking

Nitrogen reduction estimates cannot be reported for the Connecticut River basin, as the State of Vermont does not yet have baseline nitrogen loading rates or nitrogen reduction efficiencies for clean water projects in the Connecticut River basin. EPA-supported efforts are underway to develop consistent methods for all five states covered under the Long Island Sound TMDL to estimate nitrogen reductions for clean water projects. Vermont will set a schedule to publish methods to account for nitrogen reductions in the Connecticut River basin to comply with Vermont's Clean Water Service Delivery Act, Act 76 of 2019 (10 V.S.A. § 923) and to align with ongoing five-state nitrogen tracking coordination efforts.

While estimated nitrogen reductions are not yet developed or included in this report, project implementation in the Connecticut River basin is ongoing. The following table summarizes the scale of project implementation in the Connecticut River basin for a selection of project output measures for which future estimated nitrogen load reductions may be available in the future.

Table 11: Outputs of implemented projects in the Connecticut River basin, for which estimated nitrogen reductions may be quantified in the future.

Project Output Measure	Total SFY 2016-2025
Acres of agricultural practices implemented (including implementation supported by state or federal technical assistance)	81,278
Acres of production area inspected by AAFM for compliance with Required Agricultural Practices (RAPs)	2,274
Acres of floodplain restored	84
Acres of forested riparian buffer restored through buffer planting (including both agricultural and non-agricultural buffers)	252
Acres of new and existing impervious surface treated by stormwater treatment practices	200
Hydrologically connected road miles inventoried	2,743
Number of wastewater treatment systems constructed, upgraded, refurbished	60

Chapter 6: Context and Takeaways

Pollutants that enter Vermont's waters, including excess nutrient and sediment, can lead to local and regional water quality issues. Excess phosphorus loading can result in potentially harmful cyanobacteria blooms in Lake Champlain, Lake Memphremagog, and inland lakes around the state. Excess nitrogen loading entering the Connecticut River drainages may contribute to low dissolved oxygen and dead zones in the Long Island Sound.

Most sources of water pollution in Vermont are from nonpoint sources where rainfall and snowmelt carry pollution from the land surface into waterways. Due to the dispersed nature of nonpoint source pollution, reaching our water quality goals requires actions of various scales across all land uses to mitigate water pollution. The distribution of pollution sources from the landscape also means that many external landscape-scale factors can affect the rate of water quality progress. The success of this work also depends on the willingness of the public and a well-supported, diverse network of partners to develop and implement projects. The following sections provide important context for interpreting results summarized in this report and the outlook for clean water progress in Vermont.

Measured vs. Modeled

The State of Vermont measures water quality concentrations through water quality sampling and estimates pollutant reductions associated with clean water projects with modeling.

Measured water quality through monitoring is the ultimate indicator of clean water progress — whether the goal is protection of high-quality waters or the restoration of impaired waters.[73] The State of Vermont monitors water quality indicators to assess the status and trends of its surface waters, posts data online, and reports the status of Vermont's waters on a biennial basis.[74] The State of Vermont also supports local monitoring initiatives through its LaRosa Partnership Program and participates in the Lake Champlain Basin Program's Long-Term Water Quality and Biological Monitoring Project to monitor the water quality conditions of Lake Champlain, including the status and trends of phosphorus loading.[75,76] Monitoring data and water quality status and trends are integrated into State of Vermont Tactical Basin Plans, which inform clean water funding and project implementation strategies. Tactical Basin Plans employ an adaptive management approach by considering measures of clean water project progress, water quality status and trends, and changes in land use conditions impacting water quality.

The State of Vermont estimates pollutant reductions associated with clean water projects. In the Lake Champlain and Lake Memphremagog basins, the state uses models to estimate phosphorus reductions from clean water projects. Modeled estimates of phosphorus reductions provide an incremental measure of progress in meeting the phosphorus TMDLs for Lakes Champlain and Memphremagog at the project level, summarized in Chapters 3 and 4 of this report.

Vermont uses monitoring data to establish and calibrate models. For example, data from the Lake Champlain Long-Term Water Quality and Biological Monitoring Project served as inputs for the

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[73] Monitoring data and results for lakes across Vermont are available here: https://dec.vermont.gov/watershed/lakes-ponds/data-maps/scorecard

[74] Visit the Department of Environmental Conservation's Monitoring and Assessment webpage for more information, available here: https://dec.vermont.gov/watershed/map

[75] Visit the LaRosa Partnership Program webpage for more information, available here: https://dec.vermont.gov/watershed/map/monitor/larosa

[76] Visit the Lake Champlain Long-Term Water Quality and Biological Monitoring Project webpage for more information, available here: https://dec.vermont.gov/watershed/lakes-ponds/monitor/lake-champlain

models that established the phosphorus TMDL for Lake Champlain. Data from the DEC-led Lake Memphremagog TMDL Tributary Monitoring Program served as primary inputs to calibrate the phosphorus TMDL modeling for Lake Memphremagog; LaRosa Partnership Program data were also used to calibrate the model. Models are a useful tool, but do not always capture on-the-ground factors that influence water quality conditions. Continuous monitoring is important to ensure that models accurately describe real-world conditions.

Modeling and measuring water quality are both key to managing Vermont's waters.[77] These tools help us understand how pollution impacts our waters, how waterbodies are responding to management efforts, and how we can further protect, enhance, and restore water quality across the state.

Factors Influencing Water Quality Progress

The state and federal funding programs and regulatory programs summarized in this report are designed to restore, enhance, and protect water quality, but there are many landscape-scale factors beyond our control that influence progress in reaching our water quality goals. Climate change and historical pollution are two primary challenges influencing water quality progress. In addition to landscape-level factors, the success of our clean water efforts depends on the capacity of Vermont's clean water workforce to develop, implement, and maintain projects. The following sections explain how these factors influence the outputs and outcomes summarized in this report.

Climate Change

Human-caused climate change is impacting temperature and precipitation patterns, which in turn affect water quality. This underscores the importance of continued assessment of water quality progress through monitoring data and consideration for external factors that may be impacting measured outcomes. Data for the past several decades show long-term shifts in temperature, precipitation, and the risks of severe weather in Vermont.[78,79] As the climate continues to change, it is important to understand the impacts on Vermont and its waters — climate change is increasing the frequency and intensity of storms and flooding events, increasing the incidence and severity of droughts, and leading to higher average air and water temperatures. Flood events can deliver large flushes of pollutant loading. Drought conditions can cause shallow water and elevated water temperatures. Both flood and drought can increase the near-term incidence and severity of cyanobacteria blooms.

Climate Change and More Variable Precipitation

Climate data indicates a statistically significant increase in frequency of intense storms and annual total precipitation in Vermont since 1940. Water quality monitoring shows that peaks in sediment and nutrient loading to lakes often correlate with storm events. Changes in precipitation patterns may increase water pollution by increasing:

[77] To learn more about modeled versus measured phosphorus, read the Modeled Versus Measured Phosphorus Plain Language Fact Sheet: https://dec.vermont.gov/document/modeled-versus-measured-phosphorus

[78] Vermont Climate Action Office (CAO) website: https://climatechange.vermont.gov/

[79] Read the Vermont State Climate Summary: https://outside.vermont.gov/agency/anr/climatecouncil/Shared%20Documents/(1)%20Vermont%20State%20Climate%20Summary.pdf

- Erosion of unstable road networks;
- Erosion and hazards of unstable river and streambanks;
- Erosion of lakeshores;
- Volume of runoff from agricultural fields; and
- Volume of stormwater runoff from impervious surfaces, such as roads, parking lots, and rooftops.

Climate data also indicates more inter-annual variability in precipitation, leading to more instances of severe drought conditions. Extreme drought conditions can exacerbate cyanobacteria blooms by creating conditions most suitable for blooms to occur, including:

- Shallow and/or slow-moving water;
- Warm water temperatures;
- Frequent and prolonged sun exposure; and
- Concentration of nutrients that can be flushed into waterways during subsequent precipitation events.

In recent years, Vermont has experienced both severe flooding and extreme drought. Climate-driven changes in precipitation patterns highlight the importance of climate adaptation and resilience. Clean water projects support climate adaptation and resilience in many ways, including projects that:

- Protect and restore natural resources, such as wetlands, floodplains, and lakeshores, to slow down, spread out, and soak up floodwaters;
- Support and improve soil health in agricultural fields in order to increase water infiltration and holding capacity, and carbon sequestration;
- Manage large forestland blocks to protect biodiversity, sequester carbon, and reduce runoff;
- Use updated road, bridge, and culvert design standards that are able to withstand higher river and stream flows and more intense storms;
- Implement Stormwater Management Manual standards to emphasize the importance of infiltrating stormwater runoff from developed lands into soils, where feasible; and
- Invest in wastewater infrastructure improvements to reduce flood related damage and limit the occurrence and duration of combined sewer overflow events.

The more clean water projects implemented, the more resilient our waterways will be to extreme weather events, which also protects Vermont's communities and built infrastructure from flood hazards and drought impacts. Realizing our water quality goals requires sustained investment and will continue to yield multiple benefits, including climate adaptation and resilience.

Climate Change and Cyanobacteria Blooms

Climate change is predicted to affect several key factors that regulate cyanobacteria growth — temperature, nutrient availability, and water column stratification. Warmer summer temperatures and shorter, warmer winters will increase the length of time that cyanobacteria can proliferate each year. The cyanobacteria monitoring program on Lake Champlain since 2003 has documented that blooms are occurring earlier in the summer and persisting later into the fall. The monitoring season now begins about two weeks earlier than it did in 2003 and recent data show blooms occurring into mid-October. Scientists in Vermont and elsewhere are noting the incidence of cyanobacteria blooms at lower-than-expected phosphorus concentrations, indicating that the factors noted above may contribute to the incidence of bloom condition. The State of Vermont will have little control over global factors that drive climate change-related weather patterns and precipitation. Therefore, Vermont will need to continue to focus on land-use management for climate resilience and water quality and control of nutrient pollution loading to surface waters to reduce the impact of cyanobacteria blooms.

Climate Change and TMDLs

It is important to consider climate change's impact on Vermont's clean water work when evaluating progress. The large-scale water quality restoration plans — TMDLs — in Vermont that guide clean water target setting and management actions consider the effects of climate change in the analysis of necessary management actions. The Lake Champlain TMDL model simulated climate change scenarios and added a five percent margin of safety within each lake segment's load allocation to account in part for uncertainty in future loading resulting from climate change. The Lake Memphremagog TMDL model includes an eight percent margin of safety.

While the TMDLs acknowledge some uncertainty in the effects that climate change will have on water quality, the state is also taking an adaptive management approach by analyzing available data and long-term trends to assess whether there are necessary changes to water quality management approaches in order to be more responsive and resilient to the impacts of climate change. The State of Vermont remains optimistic that through sustained effort and investment, we will be able to reach our water quality goals despite the added complexity of protecting and managing water quality under a changing climate.

Historical (Legacy) Pollution, Internal Loading, and Lag Time

Clean water investments primarily address external loading, which is pollution originating from the land surface, to minimize the volume of nutrients and sediment deposited into adjacent waterways. Sediments and nutrients like phosphorus tend to accumulate at the bottom of lakes. Under certain circumstances, phosphorus stored in lakebed sediments may migrate back into the water column, which is called *internal loading*.[80] Vermont's past land-use practices have resulted in a build-up of legacy phosphorus in lake systems that in certain circumstances contributes to internal loading.[81] Climate factors noted above also exacerbate the impacts of legacy pollution and internal loading.

For many nonpoint source pollution reduction approaches, there is lag time between the implementation of clean water projects and the realization of measurable water quality improvements. Lag times vary by site conditions and pollutant characteristics, but research indicates common lag times for projects that address phosphorus in soils is between years and decades.[82] This highlights the importance of sustained efforts to minimize nutrient and sediment pollution to ensure long-term health of Vermont's waters. In some cases, addressing internal loading from legacy phosphorus concentrations may be needed in combination with continued work to mitigate external loading to achieve desired water quality outcomes and reduce the occurrence of cyanobacteria blooms.

Funding and Programmatic Uncertainties

The deployment of Vermont's water quality restoration and protection work is intricately linked to federal programming and funding availability. Uncertainties and interruptions in federal funding and programming impact state administered programs and funding initiatives, resulting in potential delays

[80] James, W. (2016) "Internal P Loading: A Persistent Management Problem in Lake Recovery". North American Lake Management Society. Available at: https://www.nalms.org/wp-content/uploads/2017/01/36-1-3.pdf

[81] To learn more about legacy phosphorus, read the Legacy Phosphorus Plain Language Fact Sheet: https://dec.vermont.gov/document/legacy-phosphorus

[82] Meals, D. W., Dressing, S. A., & Davenport, T. E. (2010). Lag Time in Water Quality Response to Best Management Practices: A Review. *Journal of Environmental Quality*, *39*(1), 85–96. https://doi.org/10.2134/jeq2009.0108

or redirection of resources. Project implementers and partners with limited cashflow reserves, who often rely on multiple sources of funding to complete their work and fund their organizations, may be more cautious about incurring financial obligations for projects and staff that are partially or fully funded with federal dollars. These factors can be difficult to predict but have a substantive impact on the momentum and rate of progress that the state is able to demonstrate in reaching clean water goals.

Vermont's Clean Water Workforce

Vermont's work to improve water quality is led by, and relies upon, a network of partner organizations and project implementers who:

- Participate in clean water project planning and identification efforts;
- Host clean water projects on their property;
- Provide and/or administer clean water funding;
- Complete clean water project work, including development, design, implementation, and maintenance; and
- Report back to the state on the outcomes of projects.

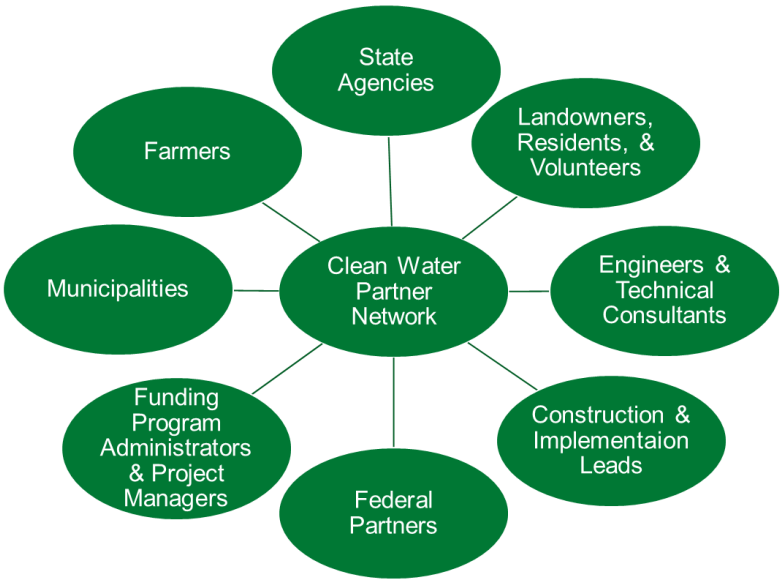


Figure 40: Vermont's Clean Water Partner Network

In addition to recent unprecedented increases in state and federal funding for clean water efforts, the most recent SFY has introduced some new uncertainty in the availability and reliability of individual funding sources. These funding dynamics, combined with a need to increase the pace of progress to meet clean water goals, necessitate growth in the capacity and resilience of Vermont's clean water workforce. The success of the Clean Water Initiative and clean water projects across land use sectors requires the network of partners to be numerous, diverse, well-trained, and well-resourced.

For many years, the Lake Champlain Basin Program and AAFM have invested in partner capacity within the clean water network, although the focus has been limited geographically. In 2023, the ANR joined this effort by launching a complementary Clean Water Workforce Capacity Development Initiative with an initial investment of $1,000,000. Funds are being allocated across a range of clean water network partners with a demonstrated need to develop or expand organizational capacity to do more, or better, clean water work. Through these investments, the state is committed to supporting the people and organizations that make impactful clean water work possible.

Outlook for Reaching Vermont's Water Quality Goals

Continued effort, investment, capacity building, and coordination are critical to the state reaching its water quality goals. The State of Vermont is making a substantial investment in clean water projects that demonstrate clear progress and yield many additional benefits, including climate change mitigation, resilience, and adaptation. Sustained clean water investment and regulation is critical to reach our water quality goals, as it will take time for impaired waterways to recover after decades of

excess pollution. Reported outputs and outcomes are expected to continue to show progress in the coming years for the following reasons:

- Some state funding programs have shifted to external funding program administrator structures that rely on regional partners to manage and administer funding of individual projects. The transition to regional administration of clean water funding is anticipated to empower community partners, reduce bottlenecks, and increase the impact of clean water investments.
- Vermont has received an influx in short-term federal funding under ARPA, the Bipartisan Infrastructure Law, and the Inflation Reduction Act. Additionally, Act 76 of 2019 added a new revenue source to the Clean Water Fund which has resulted in steady growth in the annual fund balance from $5-$10 million per year before SFY 2019, to $25-$28 million per year after SFY 2019. Program expansion supported by this funding will drive clean water project implementation across sectors. In some cases, programmatic focus in recent years has been weighted towards the successful and complete deployment of time-limited funds, and it is expected that data to support quantification of the impacts and outcomes of these investments will be more fully reflected in the coming years.
- The State of Vermont has been expanding clean water regulatory, financial, and technical assistance programs since SFY 2016. Regulatory programs are now in place that will drive measurable progress in estimated phosphorus reductions from the agriculture and developed lands sectors. The currently available results from regulatory programs in the agricultural, stormwater, and transportation related stormwater sectors are represented in the report, and work is underway to integrate the pollution reduction results of regulations addressing streams and wetlands.
- Across land use sectors, there are areas where capacity constraints are resulting in lags in clean water investments, project work, and reported results. Indirect investments in network capacity are expected to mitigate some of these lag times and increase the demonstrated rate of progress. Investments in the capacity of the clean water workforce also support the resilience of the network to continue operating strategically despite external uncertainties.
- The state continues to work on expanding the implementation of tracking and accounting systems to more fully capture the results of clean water efforts. This includes implementing new methods to account for estimated phosphorus reductions associated with regulatory and voluntary clean water projects, as well as integrating additional data streams to capture the results of additional state funding programs and regulations. Continued expansion of tracking and reporting will provide a more holistic picture of progress on the ground.

This report serves as a tool to provide accountability on the State's clean water progress and to inform adaptive management. By taking an adaptive management approach, the state will continue to identify and prioritize its resources to break down barriers to project implementation and clean water progress. Clean water project implementation is an important piece of climate resilience work and clean water projects have co-benefits like increased flood and drought resilience, improved carbon sequestration, better soil health, and enhanced habitat function and biodiversity.

Appendix A: Act 76 of 2019

Vermont's Clean Water Service Delivery Act

Act 76 of 2019 established a water quality project delivery framework to support Vermont's clean water goals and secured a new long-term funding source for the Clean Water Fund. Act 76 established four complementary grant programs, described in the following sections, intended to support implementation of the Clean Water Initiative by addressing sources of pollution through both regulatory and non-regulatory mechanisms: Water Quality Restoration Formula Grants, Water Quality Enhancement Grants, Municipal Stormwater Implementation Grants, and Developed Lands Implementation Grants.[83] Act 76 also underscores continued support for other Clean Water Fund priorities, such as Agency of Agriculture, Food & Markets (AAFM) water quality programs. The funding programs created under Act 76 began in state fiscal year (SFY) 2023 and funding associated with these programs is integrated into the state investment figures presented in Chapters 2–5 of the report.

Act 76 of 2019 established a statutory requirement (10 V.S.A. § 1389a (b)(6)) to report to the legislature "a summary of the administration of the grant programs established under sections 925–928 of this title [Act 76 of 2019], including whether these grant programs are adequately funding implementation of the Clean Water Initiative and whether the funding limits for the Water Quality Enhancement Grants under subdivision 1389(e)(1)(D) of this title should be amended to improve State implementation of the Clean Water Initiative." Appendix A fulfills this reporting requirement. The following sections summarize the administration of each grant program.

Annual funding levels for all four grant programs established under Act 76 are set by the Clean Water Board through the annual Clean Water Budget development process.[84] Adequacy of funding levels by program are summarized in the table below, with more details provided in the following sections.

Table A-1: Act 76 funding program descriptions and summary of funding level adequacy.

Program	Description	Adequacy of Funding
Water Quality Restoration Formula Grant	Awarded annually to Clean Water Service Providers (CWSPs), who are responsible for overseeing the administration of funds to meet phosphorus reduction targets. Funding allocations and reduction targets are determined based on the Water Quality Restoration Formula Grant Targets and Fund Allocation Methodology.	CWSPs, Basin Water Quality Councils (BWQCs), and watershed partners have made significant progress in developing and implementing projects. Currently the program has sufficient funding for identified projects. Program momentum is increasing with many projects under development. Sustained funding is critical to continue to move projects to completion and realize program goals.

[83] Act 76 of 2019 as enacted is available here: https://legislature.vermont.gov/bill/status/2020/S.96

[84] For more information on the Clean Water Board and Budget process, visit: https://dec.vermont.gov/water-investment/cwi/board

Program	Description	Adequacy of Funding
Water Quality Enhancement Grant	Awarded to Funding Program Administrators working statewide to administer funding to support projects that: protect high quality waters; maintain or improve water quality; restore degraded or stressed waters; create resilient watersheds and communities; and/or support the public's use and enjoyment of the state's waters	Currently, the program is adequately funded, factoring the available capacity of the clean water workforce to implement this work. No change is recommended to the Water Quality Enhancement Grants funding limit at this time.
Developed Lands Implementation Program	Provide financial support to individuals required to comply with stormwater regulatory requirements that are necessary to achieve water quality standards. The program supports Three-Acre General Permit obtainment and compliance through design and implementation.	The Clean Water Board received numerous requests for additional funding assistance under this Program. The State Fiscal Year 2026 Clean Water Budget includes a recommendation to support funding programs that lower the cost incurred by private landowners subject to the Three-Acre General Permit. Additional resources are likely needed beyond the SFY 2026 Clean Water Budget to provide the level of financial support some communities and landowners may need to comply with this permit. The state is also exploring creative financing strategies to leverage and amplify the Clean Water Fund investment. Outcomes of these efforts may inform future funding needs/changes.
Municipal Stormwater Implementation Program	Provides grants to municipalities to assist with their compliance efforts under regulatory stormwater permits. The grant program is intended to provide support to municipalities to obtain or seek coverage under the municipal roads general permit (MRGP), the municipal separate storm sewer systems (MS4) permit, a permit for impervious surface of three acres or more, or a permit required by the Secretary to reduce the adverse impacts to water quality of a discharge or stormwater runoff.	Currently, the program is adequately funded, factoring the recent influx of federal funds and availability of Clean Water State Revolving Fund (CWSRF) financing. Act 37 of 2025 directs the State to incentivize municipal adoption of Three-Acre sites, for which DEC is developing a pilot incentive program. DEC is also working with a study committee to explore options to more efficiently meet stormwater regulatory requirements at a regional scale. Outcomes of these efforts may inform future funding needs/changes.

Continued state funding is needed to implement the Clean Water Initiative. These costs have always been anticipated to include a mix of public and private costs, including not only the state but also

municipalities, farms, private residences, and businesses. Based on the state's estimates of costs and portion of the costs intended to be covered by the state, the state has committed to "funding the Clean Water Initiative in a manner that ensures the maintenance of effort and that provides an annual appropriation for clean water programs in a range of $50 million to $60 million as adjusted for inflation over the duration of the Initiative" (10 V.S.A. § 1387).[85] Between the annual Clean Water Budget and other proposed state appropriations for clean water, the state is meeting this target. The July 1, 2027 sunset of the Property Transfer Tax Clean Water Surcharge was repealed during the 2025 legislative session under Act 37. The Act also adds a requirement that beginning in January 2028 and every four years thereafter, this report will include a review of the sufficiency of the Clean Water Surcharge to the Property Transfer Tax, including an assessment of whether the revenue generated by the surcharge remains necessary to fulfill the State's clean water initiatives. The review shall include an assessment of whether the Clean Water Surcharge should be continued, whether the amount of the surcharge should be adjusted, and whether the surcharge should be repealed at a specified date. The State of Vermont will continue to assess the adequacy of funding and report an annual recommendation.

Water Quality Restoration Formula Grant Program

Act 76 established regional organizations called Clean Water Service Providers (CWSPs) for each Tactical Planning Basin in the Lake Champlain and Lake Memphremagog basins. CWSPs are responsible for partnering with Basin Water Quality Councils (BWQCs) and project implementers to oversee the identification, funding, implementation, operation, and maintenance of non-regulatory clean water projects to meet non-regulatory phosphorus reduction targets with funding provided through the Water Quality Restoration Formula Grant Program.

Water Quality Restoration Formula Grants are awarded annually to each CWSP. Formula Grant funds are allocated based on the Water Quality Restoration Formula Grant Targets and Fund Allocation Methodology. The Fund Allocation Methodology was updated and finalized in December of 2025 to include project cost data through SFY 2024, to factor in inflation and refine the project types attributed to each sector and adding weighting to reflect the likely distribution of project types to be implemented for each sector. The Fund Allocation Methodology considers the annual pollutant reduction allocation established for the CWSP, multiplied by the standard cost for pollutant reduction, with phosphorus reduction allocations and award values scaled to available funds. Formula Grants are funded under the Clean Water Initiative and administered by WPP.

Eligible non-regulatory clean water project types that can be funded under Formula Grants are described in the CWIP Funding Policy.[86] This includes projects across a range of sectors including floodplain and stream restoration, riparian buffer plantings, stormwater management improvements, road erosion control measures, and lake shoreline restoration. CWSPs and their BWQCs are responsible for determining how Formula Grant funds are awarded at the project-level, within their respective basins, using state-derived guidance. From SFY 2023 through 2025, a total of $23.7 million has been awarded to CWSPs and this level of funding is accompanied by total phosphorus reduction targets of 706.3 kilograms per year in the Lake Champlain basin and 60.0 kilograms per year in the Lake Memphremagog basin. In SFY 2025, Addison County Regional Planning

[85] State of Vermont Office of the State Treasurer (2017) Clean Water Report Required by Act 64 of 2015, available here: https://www.vermonttreasurer.gov/sites/treasurer/files/committees-and-reports/_FINAL_CleanWaterReport_2017.pdf

[86] The CWIP Funding Policy is available here: https://dec.vermont.gov/water-investment/cwi/grants

Commission (RPC) was reappointed to a second term as the CWSP for the Otter Creek Basin (Basin 3). In SFY26, Chittenden County RPC was also recently approved for reappointment to serve a second term as the CWSP for the Northern Direct to Lake Champlain Basin (Basin 5) from July 1, 2026, for five years, through June 30, 2031.

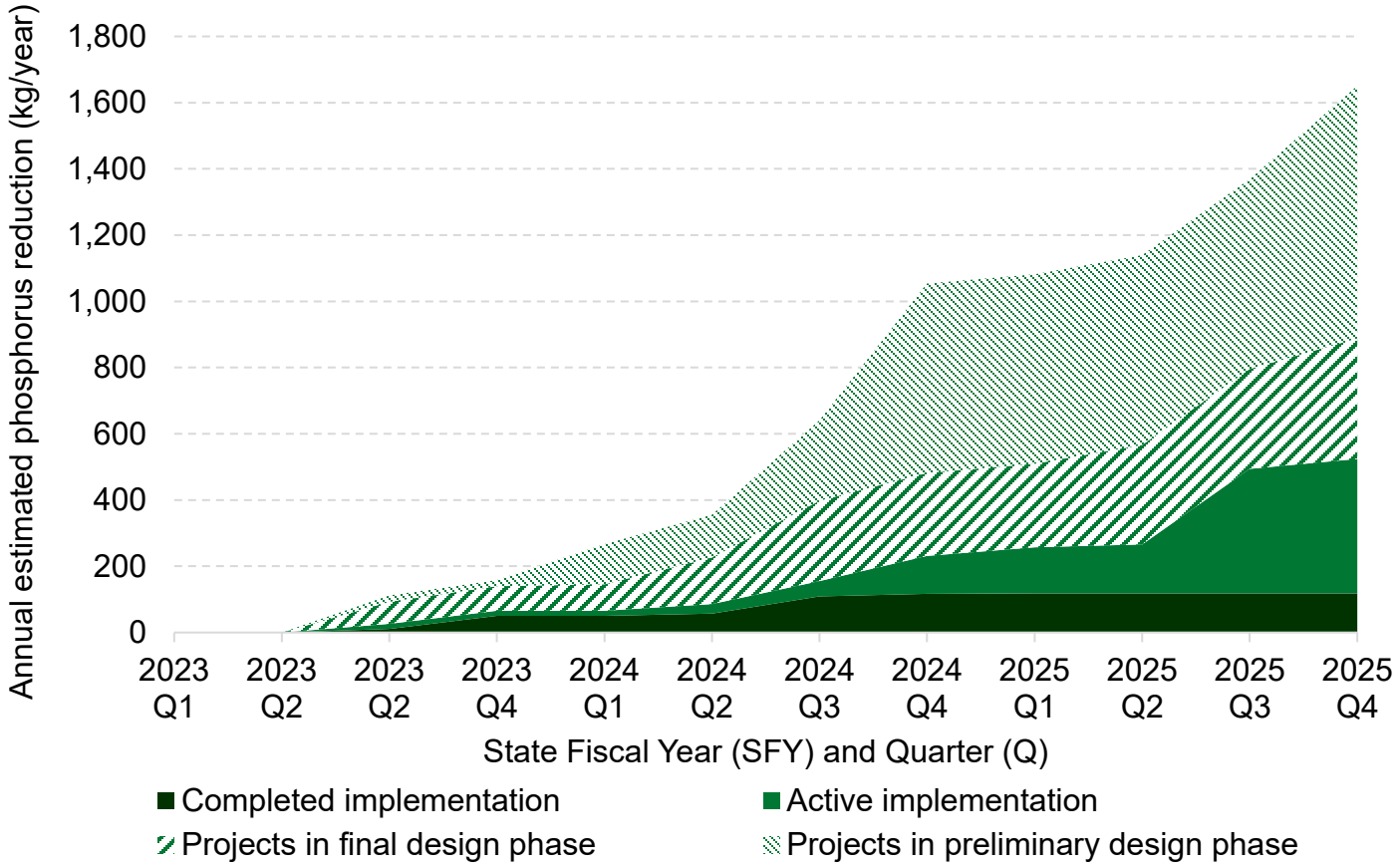


Figure A-1: Cumulative estimated annual phosphorus reduction (kg/year) of projects funded by Water Quality Restoration Formula Grants from SFY 2023-2025, including implemented projects and estimated phosphorus reductions expected from projects currently in design phases.

Progress is being made – both organizationally, as well as towards CWSP-assigned phosphorus targets, as the Formula Grant program has been underway since SFY 2023. Formula Grants have provided CWSPs with the funding to implement 140 unique projects, nearly 20 of which have been funded through multiple phases of work (i.e., design through implementation). These have included 12 different project types and have included 34 project development efforts that are expected to bring in more future projects. To date the projects that have been implemented and closed out represent 118 kg/year of phosphorus reduction achieved and CWSPs are currently implementing projects with additional estimated 406 kg/year of phosphorus reduction. Additionally, CWSPs have funded projects at the design phase that have the potential to reduce an estimated phosphorus loading by over 1,100 kg/ year of phosphorus per year once implemented (see Figure A-1). Reported data on implemented projects funded by Formula Grants indicates an average implementation cost of $8,000/kg of estimated phosphorus reduction, demonstrating that this program is performing efficiently in support of the State's water quality restoration goals.

Water Quality Restoration Formula Grants are funded under the Clean Water Initiative and administered by the Watershed Planning Program (WPP).

Water Quality Enhancement Grant Program

The statutory intent of the Water Quality Enhancement Grant Program established through Act 76 is to:

- Protect high quality waters;
- Maintain or improve water quality;
- Restore degraded or stressed waters;
- Create resilient watersheds and communities; and
- Support the public's use and enjoyment of the state's waters.

This is achieved in SFY 2025 through administration of multiple sub-initiatives, including: Dam Removal Design and Implementation Block Grant, Woody Riparian Buffer Block Grant, River Corridor Easements, Multi-Sector Assessments, Enhancement Development, Design & Implementation Block Grant, and Regional Conservation Partnership Program (RCPP) Wetland Incentives. Enhancement Grant Program sub-initiatives vary in structure between grants or contracts, depending on the scope of work; some funding is administered, allocated, and awarded at the project-level by a Funding Program Administrator through a block grant structure. The intent of the Water Quality Enhancement Grant Program suite of sub-initiatives is to support the life cycle of projects from identification to development through implementation. Eligible non-regulatory clean water project types that can be funded under Water Quality Enhancement Grants are described in the CWIP Funding Policy.[87]

The Water Quality Enhancement Grant's minimum funding level is 20 percent of the annual balance of the Clean Water Fund, provided that the maximum amount recommended shall not exceed $5,000,000. The SFY 2023–2025 budgets funded this grant category at the full $5,000,000 maximum.

Water Quality Enhancement Grants are administered by CWIP with technical project management from CWIP and the Watershed Management Division.

Developed Lands Implementation Program

The Developed Lands Implementation Program will provide financial support to individuals required to comply with stormwater regulatory requirements that are necessary to achieve water quality standards. The program will support Three-Acre General Permit obtainment and compliance through design and implementation. Approximately $14 million in state ARPA investments have been allocated to support Manufactured Housing Communities and four Agricultural Fairgrounds to achieve Three-Acre General Permit compliance. A portion (split between private and municipal sites) of $8.4 million available through DEC's Three-Acre Permit Obtainment Assistance program provides beneficiary payments to landowners to support the engineering and permitting costs associated with permit obtainment.[88] Ultimately, the statutory intent of the Developed Lands Implementation Program will be met through financial assistance approaches that deploy funds in a responsive manner across the three-acre needs and steers dollars towards state priorities. Act 37 of 2025 prioritizes support for

[87] The CWIP Funding Policy is available here: https://dec.vermont.gov/water-investment/cwi/grants

[88] For more information on Three-Acre General Permit funding programs, visit: https://anr.vermont.gov/special-topics/arpa-vermont/treating-stormwater-runoff

residential Three-Acre sites — a subset of private Three-Acre sites. Additional resources are likely needed beyond the SFY 2026 Clean Water Budget to provide the level of financial support some communities and landowners may need to comply with this permit. Implementation of Act 37 of 2025 will also inform the state's approach for supporting sites. The state is also exploring creative financing strategies to leverage and amplify the Clean Water Fund investment. Outcomes of these efforts may inform future funding needs/changes.

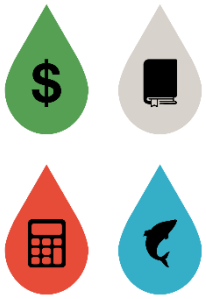
The Developed Lands Implementation Grant Program is administered and managed by CWIP.

Municipal Stormwater Implementation Program

Act 76 established the Municipal Stormwater Implementation Program to provide grants to municipalities to assist with their compliance efforts under regulatory stormwater permits. 10 V.S.A § 928 states: "The Secretary shall administer a Municipal Stormwater Implementation Program to provide grants to any municipality required under section 1264 of this title to obtain or seek coverage under [1] the municipal roads general permit (MRGP), [2] the municipal separate storm sewer systems (MS4) permit, [3] a permit for impervious surface of three acres or more, or a permit required by the Secretary to reduce the adverse impacts to water quality of a discharge or stormwater runoff." The statutory intent of the Municipal Stormwater Implementation Program is met through several complementary initiatives. The VTrans Municipal Roads Grants-in-Aid and Municipal Better Roads programs will continue to support implementation of the Municipal Roads General Permit requirements ([1]), with over $13 million of state investments allocated for SFY 2023–2025. Over $14 million has been allocated in the Clean Water Budget SFY 2023–2025 to fund DEC's Municipal Separate Storm Sewer System (MS4) Community Formula Grant program to support implementation of the MS4 stormwater requirements ([2]) and DEC's Three-Acre Public Private Partnerships (P3) to support municipalities in meeting Three-Acre General Permit stormwater requirements ([3]). DEC's Green Schools Initiative has awarded over $32 million to support Vermont schools through permit obtainment and construction to meet Three-Acre General Permit requirements ([3]). A portion (split between private and municipal sites) of $8.4 million available through DEC's Three-Acre Permit Obtainment Assistance program provides beneficiary payments to landowners to support the engineering and permitting costs associated with permit obtainment ([3]).

MRGP sub-initiatives are administered and managed by VTrans. MS4 and Three-Acre General Permit sub-initiatives are administered and managed by CWIP.

Appendix B: South Lake Champlain (Basin 2/4) TMDL Implementation 2025 Progress Report



The Accountability Framework of the 2016 *Phosphorus Total Maximum Daily Loads (TMDL) for Vermont Segments of Lake Champlain* ensures TMDL implementation moves forward at a steady rate. A key component of this framework is the Vermont Department of Environmental Conservation's (DEC) development of basin-specific Tactical Basin Plans (TBP). Each TBP is updated on a five-year cycle and includes an Implementation Table identifying priority actions to implement the TMDL. The U.S. Environmental Protection Agency (EPA) tracks progress by reviewing the table and the actions completed in the basin and issues a report card.[89] To facilitate EPA's evaluation, DEC reports on each strategy's status midway through (2.5 years) and at the end of each cycle through interim and final progress reports, respectively.

Appendix B serves as the interim progress report for the South Lake TBP. The reporting period began with the publication of the 2022 TBP and ended on June 30, 2025. Data presented here correspond to the two-year reporting window (SFY 2023-SFY 2025) available in the Clean Water Reporting Framework (CWRF).

The following sections summarize progress toward completing the 2022 Basin 2/4 Implementation Table strategies. Strategies are organized by five major sectors: agriculture, developed lands, natural resources, forestry, and wastewater. For each strategy, this report provides a status update (see Table B-1) and a summary of actions taken. These summaries describe how DEC and partners supported implementation and document resulting outcomes, including performance measures (see *Accountability Measures*).

As of SFY 2024, approximately 21% of the overall TMDL phosphorus reduction goal for the South Lake Basin has been achieved across all land use sectors. While this progress report does not present detailed annual phosphorus reduction trends, these data are available by basin and sector in the TMDL Reduction Estimates Interactive Online Report. Trends and five-year reduction targets are further discussed in the 2022 Basin 2/4 TBP's Lake Champlain TMDL Phase 3 section. The upcoming Phase 4 section, to be included in the 2027 TBP, will assess progress made under Phase 3 and set targets for the next five-year period of TMDL implementation.

[89] More information available here: https://dec.vermont.gov/watershed/restoring/lake-champlain

Basin 2/4 Update

The 2022 TBP strategies were evaluated, and their associated actions were assigned a status condition using the rationale described in Table B-1. Of the 55 strategies identified, to date, 13 have been completed, 34 are ongoing, 5 are in progress, and one has not yet been started (Figure B-1).

Table B-1: Status conditions assigned to strategies and actions in the TBP Implementation Table (Table B-2).

Strategy Status for Interim Report Card	Description	Example(s)
Complete	A discrete action identified in a strategy with a clear end point that has been implemented. A strategy identified as ongoing in the interim report card that has been pursued and implemented throughout the TBP's 5-year period.	Provided three trainings to partners to evaluate 5 properties for Lake Wise assessments. The Municipal General Permit was implemented and all or most towns are on schedule to meet permit requirements. Five priority projects were implemented that were identified in River Corridor Plans.
In Progress	A discrete action identified in a strategy with a clear end point that is in progress or in the queue.	A stormwater master plan that has been funded and is being implemented but is not yet completed.
Ongoing	A programmatic strategy that the state or partners expect to continue to support.	Provide technical assistance to support BMP adoption.
Not Started	A discrete or programmatic strategy that has not been initiated.	No funding is currently available to support the project.
Continued	A discrete or programmatic strategy that was not initiated or pursued due to lack of interest, funding, or capacity gaps.	Strategy was carried over to the Watershed Projects Database to be implemented when there is interest and capacity. Strategy is still a high priority and carried over to the next basin plan.
Discontinued	A discrete or programmatic strategy that was removed as a strategy and is no longer a priority.	The project was superseded by a project further upstream that treated the problem effectively. The project is no longer a priority for the state program.

This interim report documents significant progress toward permit compliance and voluntary implementation of water quality improvement projects within the South Lake Basin. Most actions identified in the 2022 Tactical Basin Plan (TBP) are ongoing or complete as of 2025. Most implementation has been supported through financial assistance provided by the Agency of Natural Resources (ANR) and the Agency of Agriculture, Food and Markets (AAFM) to permit holders and partners delivering education, outreach, and technical assistance (see Table 2 of the *2025 Performance Report*).

Regulatory compliance outcomes include increased implementation of Required Agricultural Practices (RAPs) and stormwater best management practices (BMPs) on developed lands, including

municipal roads. Concurrently, state investment in clean water programs has supported expanded adoption of natural resource restoration and voluntary stormwater management practices.

Coordinated funding and planning have been instrumental in advancing strategies identified in the 2022 TBP. Of all strategies, 62% are ongoing, 24% are complete, 9% are in progress, and 5% have not yet been started. Detailed descriptions of strategy status and supporting actions are provided in Table B-2.

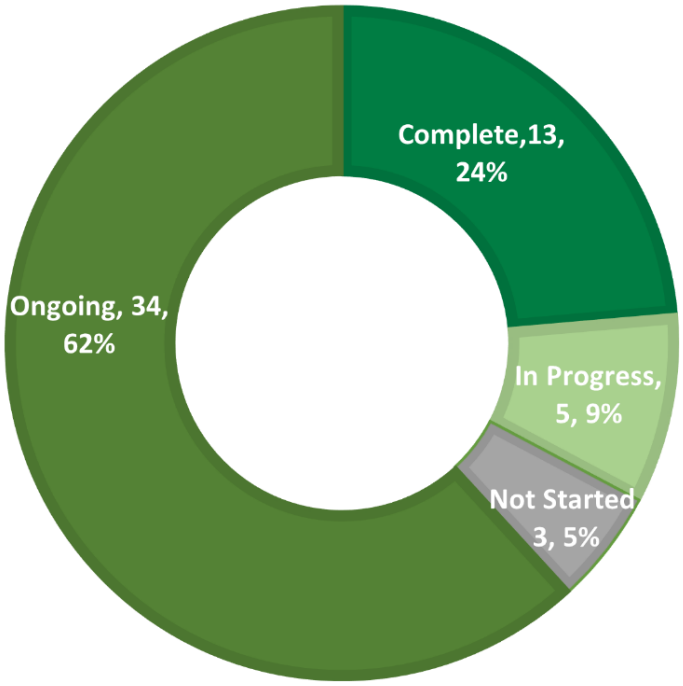


Figure B-1: Basin 2/4 Implementation Table action status of the 55 strategies in the 2022 TBP.

Beginning in SFY 2023, additional resources became available through the Clean Water Service Delivery Act (Act 76) to support non-regulatory clean water project development and implementation. The Rutland Regional Planning Commission (RRPC) and the Poultney Mettowee Natural Resources Conservation District (PMNRCD) serve as the South Lake Basin Clean Water Service Provider (CWSP) and receive annual funding allocations from DEC to meet phosphorus reduction targets, as summarized below:

State Fiscal Year	Funding Awarded	Phosphorus Reduction Target (kg/yr)
2023-2025	$3,067,447	124.5

Additional allocations and phosphorus reduction targets will be established annually through June 30, 2028, as part of the initial CWSP implementation term.

Basin 2/4 Implementation Table Status

The interim status for each strategy (Table B-2) was compiled by the Water Investment Division's Watershed Planning Program using data from the DEC, NRCDs, RPCs, and watershed partners involved in project development and implementation for the 2.5-year interim period.

The Implementation Table is not an exhaustive list of water quality strategies that lead to phosphorus reductions in the basin. A complete description of all the work that the state supports in the basin to meet water quality goals can be found in the 2021 Vermont Nonpoint Source Management Program Plan.[90] Additional information about progress associated with each sector can be found in Chapter 3 of the *Vermont Clean Water Initiative 2025 Performance Report,* which provides comprehensive reporting of estimated total phosphorus load reductions associated with state funding, federal funding, and regulatory programs in the Lake Champlain basin. These data are also available to the public through the Clean Water Portal's Clean Water Interactive Dashboard — an online tool that allows interested parties to examine and filter data on investments, project outputs, estimated pollutant load reductions, and project cost effectiveness. Individual projects in the basin that are included or supported by strategies are described in the Clean Water Explorer, also found through the Portal. [91]

[90] Vermont Nonpoint Source Management Plan 2021-2025 available here: https://dec.vermont.gov/sites/dec/files/wsm/erp/docs/Vermont%20NPS%20Management%20Plan%202021-2025.pdf

[91] Clean Water Portal can be accessed here: https://anrweb.vt.gov/DEC/cleanWaterDashboard/

Table B-2. Basin 2/4 Implementation Interim Status Report addresses strategies that result in phosphorus reductions and includes data from a) SFY 2023 to SFY 2025 and b) calendar year 2023-2025, unless otherwise noted. The target date for strategy completion is December 31, 2027, the end of the period covered by the 2022 Basin 2/4 plan.

Strategy Description	Priority Subbasin(s) or Town (s)	Sector	Status	Explanation	Likelihood of completion[92]
1. Identify and implement innovative projects supported by AAFM or CWSPs/BWQCs in consultation with AAFM to help achieve P reduction targets.	McKenzie Brook watershed (including Hospital, Stony, and Whitney Creeks, and Braisted Brook), East Creek, Hubbardton River, and Mettowee River	Agriculture	Ongoing	Since SFY 2023, 4 farms treated 1,892 acres in the basin under AAFM's Vermont Pay for Performance Program (VPFP). 528 kgs of P were reduced from these acres. The VPFP program is a new and innovative program that provides performance-based payments, rather than traditional practice-based payments, to VT farmers for reducing phosphorus. See more information here: Vermont Pay for Performance Program | Agency of Agriculture Food and Markets.	
2. Identify and implement clean water projects reviewed by AAFM (e.g., Wetland Restoration Easement, River Corridor Easement, Stream Restoration Project, Riparian Buffer Projects) to help achieve P reduction targets.	McKenzie Brook watershed (including Hospital, Stony, and Whitney Creeks, and Braisted Brook), East Creek, Hubbardton River, and Mettowee River	Agriculture	Ongoing	Twenty acres of agricultural forested buffer were installed in the basin. 998 kgs of P were reduced from these acres.	

[92] Only for strategies with *in progress* or *not started* status.

Strategy Description	Priority Subbasin(s) or Town (s)	Sector	Status	Explanation	Likelihood of completion[92]
3. Implement priority projects that address significant sources of nutrient inputs with a focus on conservation tillage, cover cropping, manure injection, and agricultural production-area BMPs to help meet phosphorus reduction targets.	McKenzie Brook watershed (including Hospital, Stony, and Whitney Creeks, and Braisted Brook), East Creek, Hubbardton River, and Mettowee River	Agriculture	Ongoing	During SFY 2023-2025, 22,205 acres of agricultural land were treated. During the same period, 21,548 kgs of P were reduced through agricultural conservation practices. A more detailed depiction of BMP adoption trends is found in the AAFM interactive data dashboard.	
4. Support farmers in developing new NMPs and maintaining and updating them over time.	Basin wide	Agriculture	Ongoing	Eight water quality educational events were hosted in the basin. Statewide, approximately 36 outreach and education events with NMP-related course topics were hosted. State and federal funds support the work of NRCDs and UVM Extension to provide NMP courses and TA to farms developing and implementing NMPs. In the basin, 35 farms have received NMP assistance since SFY 2023, including 16 through state funding. The agricultural partner covering most of the basin, PMNRCD, helped develop 12 NMPs since calendar year 2023 and has supported NMP updates for others.	
5. Implement NMP recommendations in priority sub-basins to reduce fields with excessive or high soil phosphorus levels.	McKenzie Brook watershed (including Hospital, Stony, and Whitney Creeks, and Braisted Brook), East Creek, Hubbardton River, and Mettowee River	Agriculture	Complete	During SFY 2023-2024, 4,938 acres of nutrient management occurred, and 389 kgs of P were reduced from these acres.	

Strategy Description	Priority Subbasin(s) or Town (s)	Sector	Status	Explanation	Likelihood of completion[92]
6. Convene annual meeting of the VT Ag. water quality partnership to carry out and track strategies identified in the 2022 South Lake Champlain Tactical Basin Plan.	Basin wide	Agriculture	Ongoing	Rutland NRCD is the regional coordinator for the Southwest Vermont region and hosts 2 meetings/year.	
7. Provide education, outreach, and technical assistance to agricultural communities about field BMPs and the use of innovative equipment in priority sub-basins.	McKenzie Brook watershed (including Hospital, Stony, and Whitney Creeks, and Braisted Brook), East Creek, Hubbardton River, and Mettowee River	Agriculture	Complete	AAFM's TA staff and AgCWIP-funded partner staff provide technical assistance (TA) on a variety of water quality topics and project areas. Since SFY 2023, partners have reported 254 TA site visits and supported 2,194 acres of agricultural conservation practices by state and federal TA in priority agricultural sub-watersheds across the basin. Note that AgCWIP accounts for only a portion of the TA provided and does not account for all watershed partner technical assistance efforts.	
8. Provide technical and financial assistance to farmers to acquire equipment necessary for effective implementation of BMPs such as cover cropping and no or minimal tillage.	Basin wide	Agriculture	Ongoing	Starting in SFY 2018, AAFM expanded the Conservation Equipment Assistance Program (CEAP) to provide opportunities for farmers, custom applicators, and non-profit organizations to receive grant funding for conservation equipment through a competitive process. CEAP provided funding to farmers and partners in the basin to purchase conservation equipment. Since SFY 2023, CEAP invested approximately $100,000 in funding to farmers and partners in the basin and 1,986 acres of agricultural land were treated/improved with equipment. Additional funding and acreage are anticipated to be reported in the coming years from these investments. The PMNRCD and BCCD share equipment and make it available to farmers. Equipment includes no-till seed drills, an aerator, soil probes, and heavy-duty scales.	

Strategy Description	Priority Subbasin(s) or Town (s)	Sector	Status	Explanation	Likelihood of completion[92]
9. Continue funding to support the AAFM Farm Agronomic Practices (FAP) Program and Pay For Performance (PFP) Program, Conservation Reserve Program (CRP),Grazing Technical Assistance (TA), and NRCS investments in soil-based agronomic practices to improve soil health, increase crop production, and reduce erosion and surface runoff from agricultural fields and to meet phosphorus reduction targets.	Basin wide	Agriculture	Ongoing	The AAFM and NRCS invest funds in soil-based agronomic practices to improve soil quality, increase crop production, and reduce erosion and surface runoff from agricultural fields. In support of agronomic practices, just over $1 million has been invested in on-farm projects through AAFM's FAP, PFP, CRP, PSWF (grazing), and CEAP (equipment) programs between SFY2023 – SFY2025. This does not include federal NRCS agronomic practice programs. Investments and practice outcomes from both State and Federal programs will continue to be reflected in the State's Annual Clean Water Investment Report. The NRCDs direct farmers to these funding sources. AAFM TA and FA cost-share program investments and outcomes can also be explored in the AAFM Water Quality Division Interactive Data Report.	
10. Support monitoring efforts to identify water quality issues and track results of practices implemented to address issues.	Basin wide	Agriculture	In Progress	In 2022-2023, PMNRCD was funded by RCPP to monitor sites along the Mettowee River, Beaver Brook, and Flower Brook. The average P concentrations for the Mettowee sites were above the medium stream, high gradient standard of 9 ug/l. Sites with the highest average P concentrations will be prioritized for clean water projects.	Medium

Strategy Description	Priority Subbasin(s) or Town (s)	Sector	Status	Explanation	Likelihood of completion[92]
11. Complete Stormwater Master Plans (SWMP) and identify high and medium priority projects.	Dorset	Developed Lands	Ongoing	All towns with significant development adjacent to surface waters have developed a stormwater master plan in the Basin. One hundred eighteen preliminary design projects and 20 final design projects are currently listed in the basin in VT's Watershed Project Database. To continue non-regulatory stormwater project prioritization and preliminary development, the South Lake basin Clean Water Service Provider (RRPC, PMNRCD) is tracking updates on progress for many of these proposed projects. Dorset has a Stormwater Mapping report, but no SWMP and may be considered for a SWMP in the future. Two (older) SWMP for the Castleton Headwaters and for Flower Brook are being re-opened to update the phosphorus efficiency estimates for identified projects. The results should be available by the end of 2025.	
12. Provide technical assistance, education, and outreach to encourage towns and residents to reduce stormwater runoff from private properties using initiatives such as Raise the Blade, Lawn to Meadow, Lake Wise, Rethink Runoff, or other established programs and techniques.	Basin wide	Developed Lands	Ongoing	56 lake-wise assessments resulting in 16 awards were completed in the basin. Lakes participating in the program included St. Catherine, Bomoseen, Hortonia, and Lake Champlain. Lake Wise Assessor trainings were held in this basin in conjunction with Poultney Mettowee NRCD Staff.	

Strategy Description	Priority Subbasin(s) or Town (s)	Sector	Status	Explanation	Likelihood of completion[92]
13. Provide technical assistance and funding to develop high and medium priority projects from recently completed SWMPs with a focus on priority sub-basins.	Flower Brook, Castleton River headwaters, Lake Bomoseen Watershed, Lower Castleton River Watershed, Lake St. Catherine	Developed Lands	Ongoing	The Stormwater sector received $3,699,486 in state funds during SFY 2023-2025. Preliminary designs were proposed or developed for 118 stormwater projects, and final designs for 20 projects in the Basin. Twelve implemented stormwater projects resulted in the improved treatment of 57 acres of existing impervious surface. PMNRCD and RRPC either have completed projects in or are currently working with 11 towns (Poultney, Wells, Castleton, Fair Haven, Pawlet, Danby, Middletown Springs, Dorset, Hubbardton, Benson, Rupert) to advance stormwater projects through design and implementation phases.	
14. Provide outreach and technical assistance to homeowner associations, municipalities, and private landowners with 3-acre parcels to support early design and implementation of stormwater practices to meet the 3-acre permit requirements.	Basin wide	Developed Lands	Ongoing	The Stormwater Program has identified and notified affected three-acre site owners that they will need to apply for permit coverage by October 1, 2028. During SFY 2023- 2025, 5 operational stormwater permits were obtained, and permit obtainment assistance was provided to 9 entities through ARPA funding. The Agency continues to provide funding in the form of rebates for individual landowners, while municipalities can access Clean Water funding and/or subsidized loans to obtain permit coverage. Roughly 260 sites state-wide have received financial assistance towards design/permitting; totaling slightly more than $12,800,000. Roughly 85 sites state-wide are planned to receive financial assistance towards construction/implementation: totaling more than $47,000,000.00.	
15. Implement high and medium priority stormwater projects from SWMPs and stormwater mapping reports.	Basin wide	Developed Lands	Complete	Preliminary designs were proposed or developed for 118 stormwater projects, and final designs for 20 projects in the Basin. Twelve implemented stormwater projects resulted in the improved treatment of 57 acres of existing impervious surface.	

Strategy Description	Priority Subbasin(s) or Town (s)	Sector	Status	Explanation	Likelihood of completion[92]
16. Provide education and outreach on VDEC standards and training opportunities for operations and maintenance of installed stormwater BMPs.	Basin wide	Developed Lands	Ongoing	CWIP has developed a program and guidance, supported by Clean Water Funds. See the website.	
17. Provide technical assistance and funding for the implementation of Private Public Partnership projects to achieve compliance with the three-acre rule.	Basin wide	Developed Lands	Ongoing	In 2020, DEC supported a pilot project in Washington, Chittenden, Lamoille, and Rutland counties to provide financial assistance to seven sites. The goal of this project is to financially support seven sites through the process of obtaining General Permit 3-9050 and implementing their stormwater treatment practice. Of the seven sites, one has been fully permitted and fully constructed, three are fully permitted and are pending construction, and three are pending permit authorization and have not constructed.	
18. Implement projects addressing vulnerabilities from flooding and fluvial erosion from county and municipal All-Hazards Mitigation Plans where water quality improvements are present.	Basin wide	Developed Lands	Ongoing	PMNRCD is working with RRPC to help towns implement projects called out in the Local Hazard Mitigation Plan (LHMP).	
19. Provide general support and technical assistance to towns for MRGP compliance.	Basin wide	Developed Lands - Roads	Ongoing	During SFY 2023-2025, the ANR and VTrans distributed $1,126,277 in roads sector funding in the basin. These funds paid for road erosion inventory assistance to towns, equipment purchase, and road project implementation. The ANR and VTrans support the annual Roads and River workshops for municipal staff that are not basin specific. River and Roads trainings were held multiple times during 2023-2025.	

Strategy Description	Priority Subbasin(s) or Town (s)	Sector	Status	Explanation	Likelihood of completion[92]
20. Complete REIs to identify priority road segments for restoration.	Basin wide	Developed Lands - Roads	Ongoing	The REI reassessment is ongoing and on track to be completed by October 31, 2027. Information is tracked in the online MRGP Implementation Table Portal. During SFY 2023-2025, 33 hydrologically connected road segments were inventoried and 14 hydrologically connected road segments were identified that require water quality improvements.	
21. Provide outreach and funding for MRGP equipment for towns.	Basin wide	Developed Lands - Roads	Ongoing	During SFY 2023-2025, the ANR and VTrans distributed $1,126,277 in roads sector funding in the basin. These funds paid for road erosion inventory assistance to towns, equipment purchase, and road project implementation. Road equipment was used for 1,092 hours during this time.	
22. Implement high priority road projects identified in MRGP REIs, LWAPs, and SWMPs to achieve compliance with the MRGP and meet phosphorus reduction targets.	Basin wide	Developed Lands - Roads	Ongoing	During SFY 2023-2025, 350 cubic yards of catch basin outfall erosion were remediated, 23,453 linear feet of road drainage were improved, and 13 municipal road drainage and stream culverts were replaced in the basin. 656.2 kgs of P were reduced in the roads sector in the basin during this time. Towns are using a combination of Regional Transportation Funds, VTrans Better Roads grants, DEC Grants-in-Aid funds, and their own municipal funds to implement projects to meet MRGP standards PMNRCD worked with Poultney and Wells through the LSC LWAP on improving road drainage per the MRGP.	
23. Provide outreach and support to towns and contractors to attend Road Roundtable Forums.	Basin wide	Developed Lands - Roads	Ongoing	MRGP Roundtables were continued in 2025 and will be held again in 2026.	
24. Support towns to adopt the Vermont Road and Bridge Standards to increase Emergency Relief and Assistance Fund (ERAF) rating.	Basin wide	Developed Lands - Roads	Complete	All towns have adopted the 2019 Town Road and Bridge Standards.	

Strategy Description	Priority Subbasin(s) or Town (s)	Sector	Status	Explanation	Likelihood of completion[92]
25. Replace or remove bridges and culverts identified as barriers to AOP and/or that are geomorphologically incompatible.	Basin wide	Developed Lands - Roads	In Progress	The state and towns replace culverts across the basin when funding is available. Ten drainage structures were installed or repaired and 13 road drainage and stream culverts were replaced to improve road-related stormwater management during SFY 2023-2025. PMNRCD identified 28 culverts through a project development grant from LCBP and 6 are being designed for replacement. The Rivers Program reviews all upgrade projects to ensure the structure(s) meet current standards for geomorphic compatibility.	Medium
26. Implement 6 minimum control measures (MCMs) required in the State TS4 permit.	Basin wide	Developed Lands - Roads	Complete	Per Part 6 of the TS4 Permit, VTrans is implementing and enforcing a 2018 SWMP, which includes six MCMs designed to reduce the discharge of pollutants from the TS4 to the maximum extent practicable, to protect water quality, and to satisfy the appropriate water quality requirements of the CWA. Implementation of the six MCM is ongoing. The BMPS that are being implemented by VTrans to address these six MCMs are included in Part 6.0 of the 2018 SWMP. A summary of annual reporting requirements and progress for each MCM is provided in the 2020 Annual Report Workbook.	
27. Provide information about ANR Village Wastewater Solutions to any communities that have inadequate individual onsite wastewater treatment on small, challenging sites, and funding for planning and implementation of priority projects that are identified and have community support.	Basin wide	Wastewater	Complete	Ferrisburgh received a CWSRF loan for a feasibility study for a Village Community Wastewater Disposal System.	

Strategy Description	Priority Subbasin(s) or Town (s)	Sector	Status	Explanation	Likelihood of completion[92]
28. Support relocation of onsite wastewater treatment systems and/or floodproofing of on-site wastewater treatment systems.	Flower Brook	Wastewater	Not started	None in this basin, but outreach to Pawlet may be pursued if there is interest.	Low
29. Support upgrades to public wastewater treatment facilities.	Hubbardton River Trib #7 below WWTF, Castleton River, South Fork East Creek, Indian River, Poultney River	Wastewater	In Progress	Of the 6 WWTFs in the basin, all had permits expiring in 2024. Of those, all 6 are administratively continued by Title 3 Section 814 until they are renewed. Facility-specific upgrade information for the 6 WWTFs is available in the 2022 Tactical Basin Plan, Chapter 4: Wastewater section. Poultney, Shoreham, & West Rutland are currently working on WWTF refurbishment projects with planning funds provided by CWSRF loans. Projects typically take 3-8 years to complete. See SFY 2025/2026 CWSRF Intended Use Plan for current list of prioritized municipal projects eligible for funding.	High
30. Provide support and materials to lake communities to host Wastewater Workshops (formerly Septic Socials).	Lake St. Catherine, Lake Bomoseen, Lake Hortonia	Wastewater	Not started	None occurred in the basin.	Low
31. Review existing Stream Geomorphic Assessments (SGAs) and River Corridor Plans (RCPs) and identify and develop projects with focus on segments that reduce sediments and nutrients.	Basin wide- focus on Castleton River, Mettowee River, Poultney River, East Creek	Rivers	Ongoing	This work is ongoing and is being advanced by RRPC funded through a 604b grant and PMNRCD through a LCBP technical grant.	

Strategy Description	Priority Subbasin(s) or Town (s)	Sector	Status	Explanation	Likelihood of completion[92]
32. Implement priority projects and actions identified in SGAs and RCPs and supported by the Functioning Floodplain Initiative (FFI) tool.	Basin wide- focus on Castleton River, Mettowee River, Poultney River, East Creek, Flower Brook, Indian River	Rivers	Ongoing	Five acres of floodplain have been reconnected or restored since 2023. In addition, the DEC Rivers Program and WPP staff are developing criteria to support effective Strategic Wood Additions. Both TNC and PMNRCD are currently using the tool to identify priority projects. The Basin 2/4 CWSP Formula Grants funded two river assessment projects and one river restoration project.	
33. Provide training on the use of the FFI tool for watershed partners.	Basin wide	Rivers	Complete	To support use of the tool in identifying priority stream restoration projects, in 2023, DEC coordinated consultant-developed materials and trainings. See this website.	
34. Support municipalities in updating flood hazard bylaws.	Basin wide	Rivers	Ongoing	DEC River Corridor and Floodplain Protection Program has prepared model flood hazard bylaws to assist municipalities in the development of their flood hazard regulations. RRPC has inventoried/assessed the region's flood hazard regulations for meeting or exceeding NFIP requirements in anticipation of updated FEMA flood maps. RRPC has not contracted with DEC to review flood bylaws but has done the work in-house.	
35. Provide technical assistance and outreach to towns to adopt river corridor protections or strengthen existing river protection bylaws, setbacks, and zoning as new FEMA maps become available and towns are required to update bylaws to be FEMA compliant.	Basin wide	Rivers	Ongoing	The Agency continues to encourage municipalities to meet ERAF status through outreach on the Flood Ready website and staff interactions. The towns of Castleton and Pawlet are the only towns in the basin that have adopted river corridor protections. Rupert, Orwell, West Rutland, and Dorset have interim protection under ERAF, but could lose it if they don't adopt the municipal river protections.	

Strategy Description	Priority Subbasin(s) or Town (s)	Sector	Status	Explanation	Likelihood of completion[92]
36. Identify and develop potential dam removal projects.	Basin wide with a focus on streams impaired by encroachment and channel erosion	Rivers	In Progress	In 2023, TNC developed a list of 13 priority dams for feasibility assessments for their removal. TNC hired Fitzgerald Environmental Associates to conduct preliminary dam removal feasibility screenings at 8 of the 13 dams and the following dams would be best to pursue for removal: Austin Pond, Hubbardton; Coy Brook Reservoir, Middletown Springs: The Town of Middletown Springs; Low head Dam on Castleton River, Castleton; and Parsons Mill, Benson. Approximately 35 miles of stream would be reconnected. In all, these dams represent more than a quarter of the 124 remaining in-service or partially breached dams inventoried in the Basin. Since the last basin plan, two dams were removed, and one dam is in the design phase of removal.	Medium
37. Implement dam removal projects.	Basin wide with focus on Castleton River, Mettowee River, North Breton Brook, Austin Pond, Pond Hill Brook	Rivers	Complete	From 2023-2025, the Pelletier Dam was removed on North Breton Brook in Castleton, and the Wallace Dam was removed on the Mettowee River in Dorset.	
38. Work with towns to consider joining the NFIP as part of an effort to increase ERAF rating.	Basin Wide	Rivers	Ongoing	The Agency continues to encourage municipalities to meet ERAF status through outreach on the Flood Ready website and staff interactions. State funding has also supported RRPC technical assistance to towns working to update four aspects of town planning to achieve an elevated ERAF rating: National Flood Insurance Program enrollment, Vermont Road and Bridge Standards adoption, Local Emergency Management Plan completion, Local Hazard Mitigation Plan adoption, and River Corridor protection. Two towns increased their ERAFs: Castleton (RC, 2021); Tinmouth (NFIP, 2023). Lapsed LEMPs and LHMPs are too fluid to include because plans are done even after lapsing.	
39. Continue buffer plantings along rivers in priority locations.	Basin Wide	Rivers	Complete	Since SFY 2023, 13,876 linear feet of riparian corridor buffer were planted or restored, and 22 acres of riparian corridor buffer were planted or restored. DEC data does not track most privately funded project implementation, which may support significant natural resource restoration. Thus, the estimates presented herein should be considered conservative.	

Strategy Description	Priority Subbasin(s) or Town (s)	Sector	Status	Explanation	Likelihood of completion[92]
40. Complete river corridor easement projects along priority reaches where the greatest stream equilibrium can be achieved.	Basin Wide with a focus on the Poultney River, Castleton River	Rivers	Complete	During SFY 2023-2025, 7,778 linear feet of riparian corridor were conserved, and 147 acres were conserved.	
41. Initiate stakeholder meetings to discuss lay monitoring and Lake Wise on target lakes with fair to poor shoreland scores.	Little Lake, Lily (Poultney), Lake St. Catherine, Lake Bomoseen, Coggman, Old Marsh, Pine Lake, Loves Marsh, Half Moon, Black, Mill, Breese, Austin, Roach, Beebe, Echo, Hortonia, Perch, Sunset, Sunrise, Burr, Hough	Lakes	Ongoing	53 lake wise assessments resulting in 16 awards were completed in the basin. Lakes participating in the program included St. Catherine, Bomoseen, Hortonia, and Lake Champlain. Lake Wise Assessor trainings were held in this basin in conjunction with PMNRCD Staff. PMNRCD is working with stakeholders associated with Lake St. Catherine, Bomoseen, Hortonia, and Beebe and plans to work with Sunset/sunrise in 2026.	
42. Develop Lake Watershed Action Plan (LWAP) and provide outreach to the community on the plan and proposed actions, including installation of riparian buffers on lake tributaries.	Lake Bomoseen	Lakes	Ongoing	The Lake St. Catherine LWAP was completed and generated 34 projects and 3 projects with conceptual designs. The Lake Bomoseen LWAP is ongoing.	
43. Design and implement projects identified through Lake Wise assessments, LWAPs, or Lake SWMPs.	Lake Bomoseen, Lake St. Catherine, Beebe, Lake Hortonia, Burr, Sunrise, Sunset	Lakes	Ongoing	Since SFY 2023, PMNRCD implemented multiple projects at Lake St. Catherine, Lake Bomoseen, and Hortonia with LCBP funds. LSCA will apply for one LWAP project in 2026. PMNRCD will work with local stakeholders to implement projects from the Bomoseen LWAP in the next 2.5 years.	

Strategy Description	Priority Subbasin(s) or Town (s)	Sector	Status	Explanation	Likelihood of completion[92]
44. Provide outreach and technical assistance for Class I wetland assessment, stakeholder discussions, and petition development where there is interest.	South Fork of East Creek	Wetlands	Not started	No interest has been expressed in pursuing Class I Wetland designation by petition.	Low
45. Provide support to the Wetlands Program for publicizing and promoting wetland mapping updates to improve mapping of the watershed.	Basin wide	Wetlands	Ongoing	Updated Vermont Significant Wetlands Inventory (VSWI) maps are expected in 2026. See this website.	
46. Restore previously drained and degraded wetlands identified in RCPs, Wetland Restoration Assessments, high scores on the Wetland Restoration Potential layer on the ANR Atlas and assessments, and field surveys.	Basin wide with focus on East Creek watershed	Wetlands	Complete	6 acres of wetlands were restored in the basin.	

Strategy Description	Priority Subbasin(s) or Town (s)	Sector	Status	Explanation	Likelihood of completion[92]
47. Maintain and increase UVA enrolled forestland among eligible parcels by providing outreach and technical assistance to private landowners and foresters to equip them with tools to apply, enroll and manage their land in accordance with program standards, including implementation of AMPs.	Basin wide	Forests	Ongoing	FPR county foresters assist landowners in meeting AMPs, as well as understanding benefits of UVA. Assistance is provided during sites visit, publications and presentations.	
48. Develop a workgroup for forestland collaborative efforts in priority watersheds to carry out strategies in the 2022 South Lake Champlain TBP.	Basin wide	Forests	Ongoing	Existing groups that support forestland collaboration efforts include PMNRCD, Merck Forest and Farmland Center, TU, and TNC. Discussions with partners are ongoing and landowner outreach is planned.	
49. Provide outreach through towns on information about temporary skidder bridges and forestry AMPs.	Basin wide	Forests	Ongoing	Rutland County Natural Resource Conservation District (RNRCD) currently has 1 skidder bridge to loan. It was in use during portions of 2023 and 2024. Public outreach on the skidder bridge program is planned. Current outreach includes rental information hosted on website, information provided during TA visits, and information provided upon request. RNRCD's skidder bridge program covers PMNRCD as well, effectively covering all of Rutland County. RNRCD has also offered the skidder bridge for use outside of Rutland County when there is a need, but generally a more convenient skidder bridge is available for use.	

Strategy Description	Priority Subbasin(s) or Town (s)	Sector	Status	Explanation	Likelihood of completion[92]
50. Implement AMPs and priority road projects on state lands through REI, prioritization, and implementation.	Lake St. Catherine (Lake St. Catherine State Park), Lake Bomoseen (Bomoseen State Park), Half Moon Pond (Half Moon Pond State Park)	Forests	Ongoing	The Agency supported Forestlands Critical Source Area mapping project is currently underway. The Agency has been actively conducting Road Erosion Inventories on state forest roads and released a Road and Trail Erosion Inventory application in 2025. The RTEI will allow projects to be identified and prioritized. With these new tools, the Agency will be better able to support Acceptable Management Practices compliance, as well as additional voluntary forestry BMP implementation. In SFY 2023-2025, 1 priority road project has been completed on state lands in the Fair Haven, Mud Brook - Poultney River subwatershed. It involved bringing 330 ft of access road to AMP standards and improving 1 stream crossing.	
51. Provide outreach to forestland managers on the use of the REI App in priority sub-basins.	Basin wide	Forests	Complete	South Lake RTEI Training was held May 14th, 2025, at Birdseye Wildlife Management Area, in Poultney, VT. 12 people attended the training.	
52. Complete REIs on state lands.	Basin wide	Forests	Complete	State lands REIs were completed by Fitzgerald Environmental in October 2025.	
53. Implement private forest road restoration projects in priority sub-basins.	Basin wide	Forests	In progress	PMRNCD completed REI surveys on two private properties. One of these is likely to result in a large project to be funded by the CWSP. The landowner outreach is ongoing.	High
54. Identify headwaters and sensitive surface waters in large forest blocks for protection through conservation easement and land acquisition.	Basin wide with focus on Flower Brook	Forests	Ongoing	PMNRCD and the Rivers Program conducted site visits in 2025. The cost of a conservation easement is a potential roadblock. Additional areas will be examined in the future.	

Strategy Description	Priority Subbasin(s) or Town (s)	Sector	Status	Explanation	Likelihood of completion[92]
55. Implement forestland conservation practices and land conservation projects.	Basin wide	Forests	Ongoing	During SFY 2023-2025, 147 acres of land were conserved.	

Appendix C: Results of State Stormwater Regulations

This appendix summarizes the contributions that Operational Stormwater Permits have made toward meeting Vermont's water quality goals.

Scope of Data	
Data includes:	Stormwater permit data includes new or amended operational stormwater permits issued in state fiscal year (SFY) 2018–2025. Permits authorize new, redeveloped, and existing impervious surfaces meeting regulatory thresholds. DEC tracks permit issuance, not actual construction of impervious. Actual construction and change in phosphorus load may occur one to several years behind authorization under the permit.
Data does not include:	Phosphorus load data from outside the Lake Champlain and Lake Memphremagog basins.

Table C-1. Stormwater treatment practice types installed to comply with new operational stormwater permits in SFY 2025, total of permitted practices since SFY 2018, and average estimated phosphorus removal rates.

Practice Tier	Definition and examples	Average Phosphorus Removal	Permitted in SFY 2025	Total since SFY 2018
Tier 1 practices	Infiltrating practices, impervious disconnection	>80%	148	1,267
Tier 2 practices	Gravel wetlands and bioretention with underdrains	60-80%	69	459
Tier 3 practices	Wet ponds, filters and dry swales not designed to infiltrate	50-60%	4	123
2002 VSMM[93] practices	Grass lined channels, non-structural credits	<50%	0	48
Total number of practices permitted			221	1,897
Average total phosphorus load removal of permitted practices[94]			68.4%	

[93] VSMM is defined as Vermont Stormwater Management Manual.

[94] Phosphorus removal efficiencies were assigned to each practice assuming that it was sized to meet the water quality volume. See Standard Operating Procedures for Tracking & Accounting of Developed Lands Regulatory Projects & Non-Regulatory Clean Water Projects for phosphorus removal efficiencies: https://dec.vermont.gov/water-investment/cwi/projects/tracking-accounting#SOP

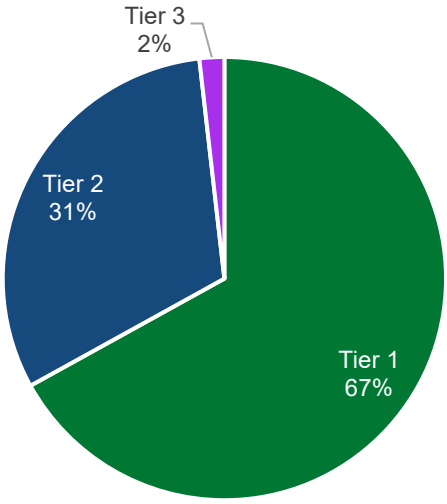


Figure C-1. Percent stormwater treatment practices by tier for new operational stormwater permits issued in SFY 2025.

Table C-2. Impervious surface area covered by operational stormwater permits issued in SFY 2025 and totals since SFY 2018, by large drainage areas.

Permitted Impervious Surface Type	SFY 2025	Total since SFY 2018
Lake Champlain		
New impervious (acres)	113.8	834.0
Redeveloped impervious (acres)	165.3	466.5
Existing impervious (acres)	425.3	904.8
Total impervious (acres)	704.4	2,169.4
Percent of impervious permitted	88%	
Lake Memphremagog		
New impervious (acres)	2.1	34.6
Redeveloped impervious (acres)	12.3	25.1
Existing impervious (acres)	13.0	35.1
Total impervious (acres)	27.3	94.7
Percent of impervious permitted	3%	
Other Drainage Areas		
New impervious (acres)	18.2	158.3
Redeveloped impervious (acres)	10.8	54.4
Existing impervious (acres)	37.9	113.3
Total impervious (acres)	66.9	285.2
Percent of impervious permitted	8%	

Figure C-2. Vermont's Large Scale Drainage Areas

Table C-3. Estimated change in total phosphorus load associated with operational stormwater permits in the Lake Champlain and Lake Memphremagog basins (kilograms/year), SFY 2019–2025.

Estimated Change in Total Phosphorus Load	SFY 2025	Total since SFY 2018
Lake Champlain		
Increase in phosphorus from operational permits, prior to treatment[95] (kilograms/year)	90.9	863.8
Phosphorus reduced by treatment practices (kilograms/year)	517.6	1,716.9
Net change in phosphorus of operational permits (kilograms/year)	-437.8	-802.0
Lake Memphremagog		
Increase in phosphorus from operational permits, prior to treatment[95] (kilograms/year)	4.4	152.1
Phosphorus reduced by treatment practices (kilograms/year)	12.3	141.6
Net change in phosphorus of operational permits (kilograms/year)	-7.8	10.6

[95] Permitted impervious and phosphorus load calculations include both new and amended permit authorizations. For amended permits, only the increased impervious acres and phosphorus load relative to the previous permit are summarized here. Phosphorus increases from new development assumed that the permitted area was forested prior to development. Redeveloped and existing impervious does not result in a phosphorus change related to change in land use.

Appendix D: Status of Phosphorus Accounting Implementation

The state is establishing and implementing pollutant tracking and accounting methodologies to estimate phosphorus reductions of regulatory and non-regulatory practice implementation. Establishment and implementation of pollutant accounting methodologies are at various stages of completion. The following table summarizes the status of methodologies and application of phosphorus accounting for projects implemented in the Lake Champlain and Lake Memphremagog basin by sector and project type. Continued development and implementation of phosphorus tracking and accounting systems to facilitate more complete reporting on TMDL progress will be reflected in future versions of this report. Despite gaps in the systems to quantify and account for estimated phosphorus reductions, implementation of projects and practices across land use sectors is ongoing. The table provides a quantitative measure of implementation completed to date for which estimated phosphorus reductions are not yet available in the report, to provide an indication of the scale of project work for which estimated phosphorus reduction is not yet reported in the context of TMDL progress. Tracking and accounting of other pollutants, like nitrogen in the Connecticut River basin, is anticipated to be developed and implemented in the future (see Chapter 5 for more information).

Table definitions

Status of Phosphorus Accounting Methodology

Implemented = accounting methodology is published and applied to available data in reporting
Established = accounting methodology is published, not yet applied to available data in reporting
Under development = accounting methodology is being developed but is not yet available to implement
Not established = accounting methodology is not available

Status of Phosphorus Accounting Implementation

☑ = estimated phosphorus reduction data is quantified in reporting.

☒ = estimated phosphorus reduction not quantified in reporting.

Table D-1: Status of phosphorus accounting by project or practice type.

Sector	Project or Practice Type	Status of Phosphorus Accounting Methodology	Status of Phosphorus Accounting Implementation[96]	Implementation Notes[97]
Agriculture	Conservation crop rotation	Implemented	☑	Farmer funded implementation without state/federal technical assistance is not captured in available data
	No-till and reduced till			
	Cover crop			
	Crop to hay planting			
	Manure injection			
	Manure incorporation			
	Grazing management			
	Grassed waterways and filter strips			
	Livestock exclusion			
	Nutrient management			
	Production area compliance	Implemented	☑	
	Agricultural riparian buffer	Implemented	☑	Dataset does not currently capture regulatory buffer inspection results
	Easements with water quality protections	Under development	☒	2,450 acres of land conserved with special water quality protections
	Livestock trails and walkways	Under development	☒	Implementation data not yet processed
Stormwater	Structural stormwater treatment	Implemented	☑	
	Non-structural stormwater treatment	Implemented	☑	
	Outlet and gully stabilization	Implemented	☑	
	Tree canopy expansion	Implemented	☑	
	Native revegetation (‘no-mow zones’)	Implemented	☑	
Transportation Related Stormwater	Public road erosion remediation (MRGP and TS4)	Implemented	☑	
	Private road erosion remediation	Under development	☒	255 drainage structures installed/repaired 27.7 miles of road drainage improved

[96] Data tracking is limited to implementation supported by state or federal funding programs, or state regulatory programs. Data on voluntary implementation outside of state and federal program support or requirements is not available.

[97] Values represent implementation in Lake Champlain and Lake Memphremagog basins only

Sector	Project or Practice Type	Status of Phosphorus Accounting Methodology	Status of Phosphorus Accounting Implementation[96]	Implementation Notes[97]
Natural Resources	Forested riparian buffer	Implemented	☑	
	Bioengineered lakeshore stabilization	Implemented	☑	
	Forest road & trail erosion remediation	Implemented	☑	
	Use Value Appraisal program enrollment	Implemented	☑	
	Floodplain and stream restoration	Established	☒	Stream and river corridor regulations not yet accounted for in estimated phosphorus reductions Non-regulatory implementation not yet accounted for in estimated phosphorus reductions: 55 acres of floodplain restored 187 stream miles reconnected/restored
	River corridor easements	Established	☒	1,038 acres of riparian corridor easement
	Wetland restoration/easement	Under development	☒	1,354 acres of wetland conserved/restored through easements
	Land conservation easements	Under development	☒	1,042 acres of land conserved with special water quality protections
Wastewater	Private (on-site) wastewater systems constructed/refurbished	Not yet established	☒	120 private wastewater systems constructed or refurbished
	Combined sewer overflow (CSO) abatement	Not yet established	☒	4 combined sewer overflow abatements

Appendix E: Glossary of Acronyms

AAFM	Agency of Agriculture, Food and Markets
ACCD	Agency of Commerce and Community Development
AgCWIP	Agricultural Clean Water Initiative Program, in the Agency of Agriculture, Food and Markets
AMP	Acceptable Management Practices
ANR	Agency of Natural Resources
AoA	Agency of Administration
AOP	Aquatic Organism Passage
ARPA	American Rescue Plan Act
BMP	Best Management Practice
BWQC	Basin Water Quality Council
CAFO	Concentrated Animal Feeding Operation
CEAP	Conservation Equipment Assistance Program
COVID-19	Coronavirus disease
CREP	Conservation Reserve Enhancement Program
CSO	Combined Sewer Overflow
CWA	Clean Water Act
CWIP	Clean Water Initiative Program, in the Water Investment Division of ANR-DEC
CWRF	Clean Water Reporting Framework
CWSP	Clean Water Service Provider
CWSRF	Clean Water State Revolving Fund
DEC	Department of Environmental Conservation, in the Agency of Natural Resources
DFPR	Department of Forests, Parks and Recreation, in the Agency of Natural Resources
EPA	United States Environmental Protection Agency
ERAF	Emergency Relief and Assistance Fund
FAP	Farm Agronomic Practice
FEMA	Federal Emergency Management Agency
FFI	Functioning Floodplain Initiative
FPA	Funding Program Administrator
LCBP	Lake Champlain Basin Program
LFO	Large Farm Operation
LHMP	Local Hazard Mitigation Plan
LWAP	Lake Watershed Action Plan
MCM	Minimum Control Measures
MFO	Medium Farm Operation
MRGIA	Municipal Roads Grants-in-Aid Program
MRGP	Municipal Roads General Permit
MS4	Municipal Separate Storm Sewer System
MT	Metric ton
NEIWPCC	New England Interstate Water Pollution Control Commission
NMP	Nutrient Management Plan
NPDES	National Pollutant Discharge Elimination System
NRCD	Natural Resources Conservation District
NRCS	Natural Resources Conservation Service
P	Phosphorus

PMNRCD	Poultney Mettowee Natural Resources Conservation District
PSWF	Pasture and Surface Water Fencing
RAP	Required Agricultural Practice
RCP	River Corridor Plan
RCPP	Regional Conservation Partnership Program
REI	Road Erosion Inventory
RNRCD	Rutland Natural Resources Conservation District
RPC	Regional Planning Commission
RRPC	Rutland Regional Planning Commission
SFS	Seeding and Filter Strip
SFY	State Fiscal Year
SGA	Stream Geomorphic Assessment
SWMP	Stormwater Master Plan
TA	Technical Assistance
TAP	Transportation Alternatives Program
TBP	Tactical Basin Plan
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
TS4	Transportation Separate Storm Sewer System
USDA	United States Department of Agriculture
USDA-NRCS	United States Department of Agriculture - Natural Resources Conservation Service
UVA	Use Value Appraisal
UVM	University of Vermont
V.S.A.	Vermont Statutes Annotated
VELCO	Vermont Electric Power Company
VFESP	Vermont Farmer Ecosystem Stewardship Program
VHCB	Vermont Housing and Conservation Board
VPFP	Vermont Pay for Performance
VPIC	Vermont Phosphorus Innovation Challenge
VRC	Vermont River Conservancy
VSMM	Vermont Stormwater Management Manual
VSWI	Vermont Significant Wetlands Inventory
VT	Vermont
VTrans	Vermont Agency of Transportation
VWQS	Vermont Water Quality Standards
WISPr	Water Infrastructure Sponsorship Program
WPP	Watershed Planning Program, in the Water Investment Division of ANR-DEC
WQ	Water Quality
WWTF	Wastewater Treatment Facility