

**REPORT OF THE  
WORKING GROUP ON WATER QUALITY FUNDING  
2017 ACT 73, SECTION 26**

**Submitted to the  
General Assembly**

**November 15, 2017**

## **Vermont Act 73 § 26. WORKING GROUP ON WATER QUALITY FUNDING**

(a) Establishment. There is established the Working Group on Water Quality Funding to develop recommendations for equitable and effective long-term funding methods to support clean water efforts in Vermont.

(b) Membership. The Working Group shall be composed of the following six members:

- (1) the Secretary of Natural Resources or designee (**Julie Moore**);
- (2) one member from the Vermont League of Cities and Towns, appointed by the Board of Directors of that organization (**Dominic Cloud**);
- (3) the Secretary of Agriculture, Food and Markets or designee (**Anson Tebbetts**);
- (4) a representative of the Vermont Center for Geographic Information (**John Adams**);
- (5) the Commissioner of Taxes or designee (**Kaj Samsom**);
- (6) one member representing commercial or industrial business interests in the State, to be appointed by the Governor, after consultation with other business groups in the State (**John Grenier**);

(c) Advisory Council. The Working Group shall be assisted by an Advisory Council to be made up of:

- (1) the State Treasurer or designee (**Beth Pearce**);
- (2) the Secretary of Transportation or designee (**Joe Flynn**);
- (3) one member from the Vermont Municipal Clerks and Treasurers Association appointed by the Executive Board of that organization (**Dawn Custer**);
- (4) one member from the Vermont Mayors Coalition appointed by that organization (**Jordan Redell**);
- (5) a representative of an environmental advocacy group appointed by the Speaker of the House (**Jared Carpenter**);
- (6) a representative of the agricultural community appointed by the Vermont Association of Conservation Districts (**Jill Arace**); and
- (7) a representative of University of Vermont Extension appointed by the President Pro Tempore of the Senate (**Chuck Ross**).

(d) Powers and duties. The Working Group on Water Quality Funding shall recommend to the General Assembly draft legislation to establish equitable and effective long-term funding methods to support clean water efforts in Vermont.

(e) Consultation with Advisory Council. The Working Group shall meet at least three times with the Advisory Council for input on the report to be submitted to the General Assembly under subsection (f) of this section. The Advisory Council's comments shall be included in the final report.

(f) Report. On or before November 15, 2017, the Working Group on Water Quality Funding shall submit to the General Assembly a summary of its activities, an evaluation of existing sources of funding, and draft legislation to establish equitable and effective long-term funding methods to support clean water efforts in Vermont.

(g) Meetings.

- (1) The Secretary of Natural Resources shall call the first meeting of the Working Group to occur on or before July 1, 2017.
- (2) The Secretary of Natural Resources shall be the Chair of the Working Group.
- (3) A majority of the membership shall constitute a quorum.
- (4) The Working Group shall cease to exist on March 1, 2018.
- (5) No specific state appropriations shall be used to support the working group or advisory council.

(h) Assistance. The Working Group on Water Quality Funding shall have the administrative, technical, and legal assistance of the Agency of Natural Resources and the Department of Taxes. The Working Group on Water Quality Funding shall have the technical assistance of the Vermont Center for Geographic Information or designee.

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## Executive Summary

Significant long-term investments are needed to restore and sustain the high quality of Vermont's waterways. These investments are necessary to reduce pollution washing into Vermont's rivers, streams, lakes, ponds and wetlands, ensuring Vermont's environment and economy remains strong and resilient. Investing in clean water also provides a unique opportunity to protect Vermont's environment and grow our economy by revitalizing working landscapes, school campuses, downtowns and village centers, supporting farmers and local agriculture, upgrading state and local roads, and restoring important natural resources. To this end, this report offers several recommendations:

1. Utilize existing state revenues and financial instruments to fund clean water through FY21.
2. Allow clean water priorities to guide how costs are shared across sectors.
3. Establish approaches for revenue collection and service delivery that are environmentally efficient and cost effective.
4. Pursue technological and regulatory innovation, including commoditizing phosphorus, developing flexible financing, and leveraging integrated planning and permitting models.
5. Commit to adaptive management.

In state fiscal years 2016 and 2017, the state invested roughly \$29 million a year in clean water efforts – including roughly \$10 million a year in capital dollars. The 2017 State Treasurer's Report recommended investing an additional \$25 million per year in state funding for clean water through a combination of capital dollars, transportation dollars, and the property transfer tax surcharge for state fiscal years (SFY) 2018 and 2019. Following the Treasurer's report, Governor Scott proposed investing \$53 million a year on clean water efforts, an increase of \$24 million a year over previous years. The Legislature is on track to fulfill this commitment to clean water in SFY18-19.

Looking beyond SFY 2019, there is a critical need to establish long-term clean water funding. The Act 73 Working Group recommends that the Legislature maintain a Capital Bill clean water investment of \$15 million a year through the next biennium (FY20-21). In years beyond FY21, to estimate the amount of revenue that will need to be raised, the Working Group assumed the annual capital investment would be between \$10 and \$12 million per year.

To address long-term funding need, the General Assembly passed Act 73 in the spring of 2017. Section 26 of Act 73 established a six-member working group "to develop recommendations for equitable and effective long-term funding methods to support clean water efforts in Vermont."

The Working Group met ten times, including three meetings with the advisory council. Agendas, handouts and minutes from those meetings are available online.<sup>[1]</sup>

As part of its charge, the Act 73 Working Group reviewed the most recent estimates from state agencies on the cost of compliance with clean water laws and regulations for both the long-term, as well as more detailed estimates for the next five years, surveyed existing sources of revenue, identified funding gaps, made recommendations for cost-effective regulatory and technological innovations to close this gap, and outlined a path forward for establishing new revenue sources.

The Act 73 Working Group recommends continued work on financial and technical tools that will support the most cost-effective measures to reduce water pollution. With respect to “equitable and effective long-term funding,” the Working Group recommends a series of possible service delivery models for further investigation that would provide the technical and administrative capacity needed to ensure the efficient, effective disbursement of funds. When it comes to the state’s role in cost sharing, the Working Group recommends the General Assembly develop a cost share strategy that will allow the state to distribute revenue across the range of required water quality investments. The recommendations outlined at the end of this report provide the critical decision points the General Assembly will need to craft the overall vision for revenue raising and investment; there is a need to reach consensus on these foundational questions.

In sum, the restoration and protection of Vermont’s vast water resources is not a short-term proposition – measured in months or even a handful of years. Improving water quality will require the continued and expanded support of federal, state and local government, private landowners and watershed stakeholders. It is important to have a clear set of parameters that will guide how state dollars are invested in water quality to ensure they produce improvements in the landscape and water quality in as efficient and effective a manner as possible. There is also an urgency to continue to push toward the goal of clean, healthy waterways and this report is an important step forward

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<sup>[1]</sup> <http://anr.vermont.gov/about/special-topics/act-73-clean-water-funding>

## I. Introduction

It is often tempting for Vermonter's to take our state's vast water resources for granted, after all water in Vermont is abundant and generally high quality. However, conditions during the late-summer and fall of 2017 provided a stark reminder of importance of and need for constant stewardship of our water resources.



In September 2017, Lake Carmi residents reported to the Vermont Agency of Natural Resources (ANR) that a 15-foot ribbon of teal, white, green algae hugged the shoreline, causing a horrific stench. As one person wrote, "We cannot sit outside and keep our windows closed for fear of breathing toxic spores in the air around us.... we don't dare go out on the lake in our boats, eat the fish, bring the water into our homes for showering etc. and our property values are plunging. We are afraid the lake is reaching a point whereby it will be too late to save."<sup>1</sup>

Lake Carmi is located near the Canadian border in northwest Vermont, in the Missisquoi Watershed. Throughout the summer, the Department of Health's website<sup>2</sup> reported cyanobacteria (blue-green algae) outbreaks at beaches across Vermont, with high-level alerts reported on Lake Champlain in Addison, Burlington, Ferrisburgh, Franklin, Georgia, Shelburne, St. Albans, and elsewhere. High alerts mean that water is not safe for swimming.

Like Lake Carmi and Lake Champlain, many Vermont waters are under stress and many of them are impaired. The Vermont Legislature has responded to this impending crisis with a series of legislation designed to protect water quality, including:

- [2012 Act 138](#) (Report "Water Quality Remediation, Implementation, and Funding")<sup>3</sup>,
- [2014 Act 97](#) (Report "Vermont's Clean Water Initiative")<sup>4</sup> and
- [2015 Act 64](#) (Report "Annual Clean Water Investment")<sup>5</sup>.

Act 64 of 2015 – often referred to as Vermont's Clean Water Act – laid the foundation for the protection and restoration of Vermont's waters by adopting a cross-sector "all in" approach, with a broad suite of programs regulations addressing: agricultural practices, stormwater runoff from roads and other developed lands, and natural infrastructure (river corridors, wetlands and forest management).

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<sup>1</sup> Email from Diana Larose, September 11, 2017.





<sup>2</sup> <http://www.healthvermont.gov/tracking/cyanobacteria-tracker>

<sup>3</sup> <http://dec.vermont.gov/sites/dec/files/wsm/erp/docs/Act-138-Report-Water-Quality-Funding-Report-Jan-2013.pdf>

<sup>4</sup> <http://dec.vermont.gov/sites/dec/files/wsm/erp/docs/Act-97-Report-What-Is-The-Clean-Water-Initiative-Jan-2015.pdf>

<sup>5</sup> <http://dec.vermont.gov/watershed/cwi/reports>

Act 64's water quality requirements, summarized below, are extensive.

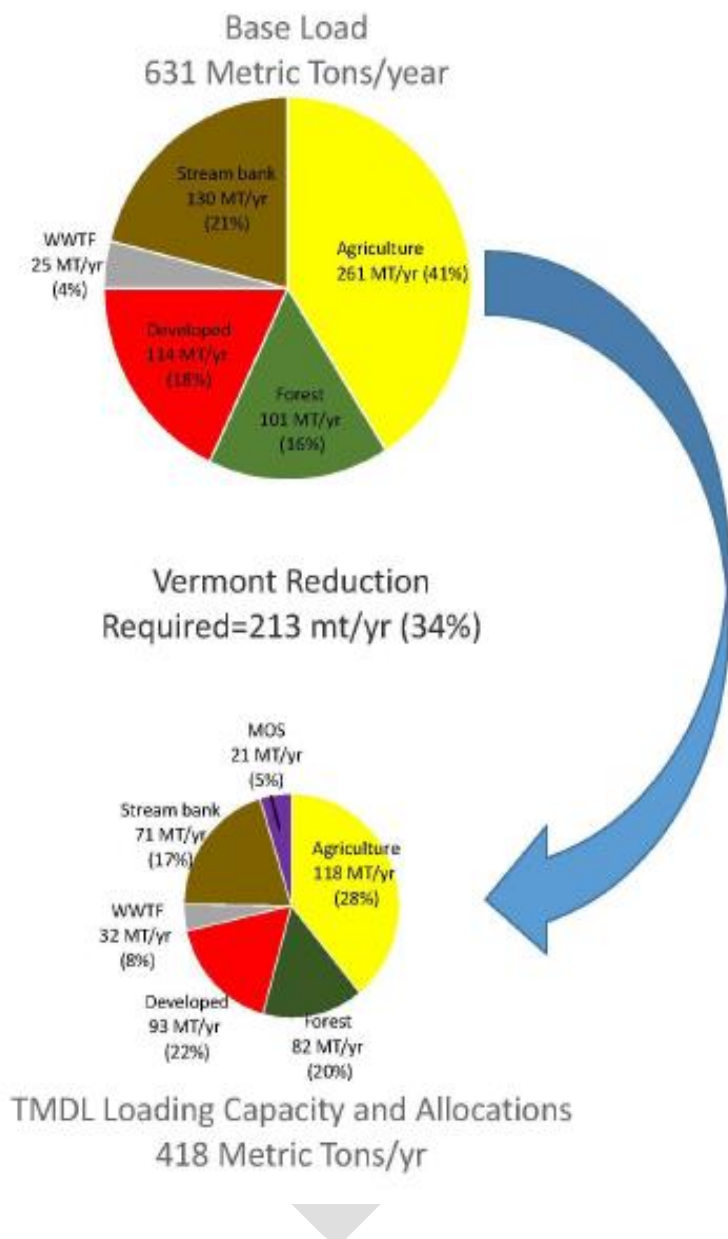
Summary of 2015 Act 64 Requirements			
Agriculture	Roads	Developed Lands	Natural Resources
 <ul style="list-style-type: none"> <li>• Required Agricultural Practices adopted by Agency of Agriculture (eff. 12/5/16)</li> <li>• Nutrient Management Plans</li> <li>• Manure and Nutrient Storage standards</li> <li>• Livestock exclusion</li> <li>• Cover cropping in critical areas</li> <li>• Extended winter spreading ban on floodplains</li> <li>• Setbacks (25 feet from surface waters, 10 feet from ditches)</li> </ul>	 <ul style="list-style-type: none"> <li>• Municipal Roads General Permit (Rule eff. 7/31/18, permits in place by 1/1/21, 10-year compliance period)</li> <li>• State Highways "Transportation Separate Storm Sewer System" (TS4) permit</li> </ul>	 <ul style="list-style-type: none"> <li>• Sites with <u>&gt;3</u> acres impervious surface will require a new permit. Sites that do not comply with 2002 or more recent standards will need to implement new practices. (Rule eff. 1/1/18, Lake Champlain parcels must implement practices 2023-2028, other parcels must implement practices 2028-2033)</li> <li>• MS4 permits must incorporate phosphorus reduction standards.</li> </ul>	 <ul style="list-style-type: none"> <li>• Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont adopted by Dept. of Forests, Parks &amp; Recreation (eff. 7/1/16)</li> <li>• Ongoing implementation of Act 138, River Corridor Planning and Protection.</li> </ul>

In addition to the state's response to need to protect waters statewide in Act 64, the U.S. Environmental Protection Agency (US EPA), in June 2016, adopted Total Maximum Daily Limits (TMDLs) for phosphorus in Lake Champlain and, in September 2017, for Lake Memphremagog. The US EPA set reduction targets for each segment of Lake Champlain, as well as Lake Memphremagog, for each broad category of phosphorus source<sup>6</sup>

In approving the TMDLs, the US EPA relied on the commitments made in Act 64 to address nonpoint sources of nutrient pollution statewide and, in addition, required phosphorus reductions at certain wastewater treatment facilities.



<sup>6</sup> <https://www.epa.gov/tmdl/lake-champlain-phosphorus-tmdl-commitment-clean-water>



The US EPA TMDLs require Vermont to significantly reduce annual phosphorus loading to both Lake Champlain (34%) and Lake Memphremagog (23%).

In both watersheds, agriculture is the largest contributing source of phosphorus, and also assigned the largest amount of responsibility for reducing phosphorus loads. Under the TMDLs, agriculture will generate the greatest reductions to phosphorus, both in tonnage and percentage. The agricultural community's percentage reduction will be well above their percentage contribution, making up for percentage reductions in other sectors that are below their percentage contribution. As recognized by the US EPA, targeting agriculture is a cost-effective investment that benefits other sectors.

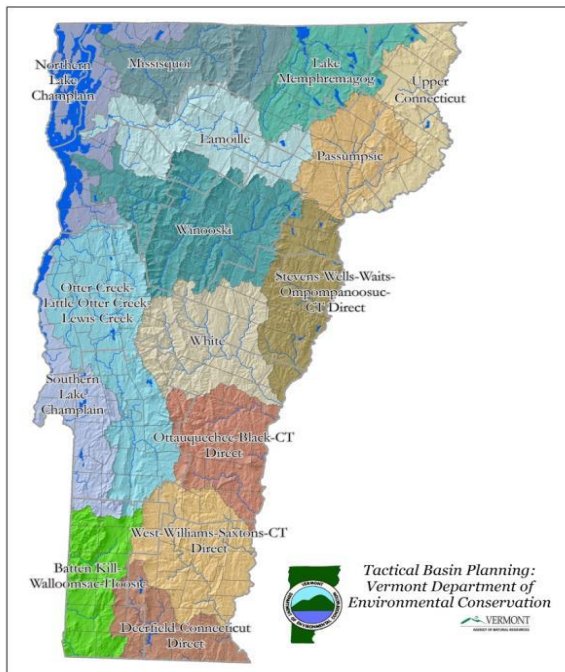
Source: Figure 7, U.S. EPA TMDLs for Lake Champlain.

The State of Vermont reports on its implementation progress in an annual Clean Water Report.<sup>7</sup> In working to implement Act 64 and the TMDLs,<sup>8</sup> Vermont identified the actions and activities needed to achieve the targets set by the US EPA, and set a series of milestones for adopting

<sup>7</sup> <http://dec.vermont.gov/sites/dec/files/wsm/erp/docs/2017-01-20%20Clean%20Water%20Initiative%20Deliverables.pdf>

<sup>8</sup> [http://dec.vermont.gov/sites/dec/files/wsm/erp/docs/160915\\_Phase\\_1\\_Implementation\\_Plan\\_Final.pdf](http://dec.vermont.gov/sites/dec/files/wsm/erp/docs/160915_Phase_1_Implementation_Plan_Final.pdf)

new permits and standards, which will drive the implementation of water quality best management practices statewide and ultimately change the way Vermonters live with both land and water.

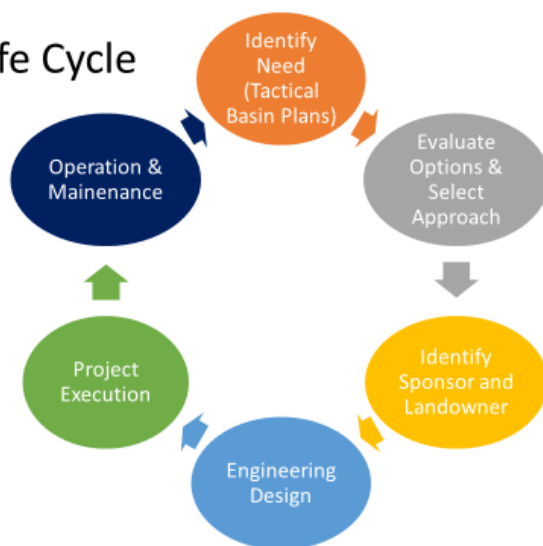


Concurrent with these implementation efforts, the Department of Environmental Conservation (DEC) is rolling out updated Tactical Basin Plans.<sup>9</sup> Each plan covers a five-year period and will identify and prioritize both regulatory and non-regulatory activities needed to meet water quality goals.

DEC is also in the process of designing a project database that will be used to track activities identified in the Basin Plans, including a project grading system that addresses project readiness, environmental benefits, funding sources, and costs. The same database will also be used to track progress as projects move through their “life cycle” – from evaluating possible solutions to engineering design to implementation and the on-going operation

and maintenance. Ultimately the database will be used to quantify phosphorus load reductions and to measure progress towards clean water.<sup>10</sup>

### Project Life Cycle



<sup>9</sup> <http://dec.vermont.gov/watershed/map/basin-planning>

<sup>10</sup> <https://anrweb.vt.gov/DEC/IWIS/ARK/ProjectSearch.aspx>

## II. Summary of Activities

Act 73, Section 26(f) requires the Working Group to provide “a summary of its activities.” The Act 73 Working Group met ten times over the summer and fall: June 28, July 14, July 28, August 11, August 25, September 8, September 22, October 18, November 3 and November 14. As required by statute, the Advisory Council joined the Working Group on three occasions: September 8, October 18, and November 14. All of the meetings were open and attended by the general public. Agendas and minutes are available on the Act 73 Working Group website.<sup>11</sup> The Working Group expresses its appreciation to all those who attended meetings and contributed to this important dialogue.

### A. Treasurer’s Report and FY18 State Budget (June 28)

At its first meeting, the Act 73 Working Group reviewed the recommendations in the Treasurer’s January 2017 Report on Clean Water Funding.<sup>12</sup> The Treasurer’s Report, which was mandated by the Legislature in 2015 Act 64, includes “a recommendation for financing water quality improvement programs in the State.”

With support from Executive Agencies, the Treasurer examined existing sources of clean water revenues and estimated the cost of achieving Vermont’s water quality goals statewide, including compliance with 2015 Act 64; the Lake Champlain Total Maximum Daily Limit (TMDL), the Lake Memphremagog, Lake Carmi, Connecticut River and Long Island Sound TMDLs; and Vermont’s 2016 Combined Sewer Overflow (CSO) Rule.

The cost estimates in the Treasurer’s Report and in this report are driven primarily by regulatory requirements. Act 64 requires the state, municipalities, farmers and private landowners to obtain permits, retrofit existing parcels with stormwater practices, implement nutrient management plans and attendant conservation measures, and upgrade gravel roads and paved highways. Even in the absence of state or federal subsidies, landowners will be expected to implement stormwater mitigation to reduce pollutant loads to Vermont’s waters.

The cost estimates in the Treasurer’s Report and in this Report do not include:

- Staffing costs at ANR, VTrans and AAFM, for administering the state’s clean water regulatory programs; or
- Operation and maintenance (O&M) costs following construction and implementation of clean water projects, which can be substantial.

Following the structure of the US EPA’s TMDLs for Lake Champlain and Lake Memphremagog, the cost estimates in the Treasurer’s Report were organized into four sectors: municipal

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<sup>11</sup> <http://anr.vermont.gov/about/special-topics/act-73-clean-water-funding>

<sup>12</sup> [http://www.vermonttreasurer.gov/sites/treasurer/files/committees-and-reports/\\_FINAL\\_CleanWaterReport\\_2017.pdf](http://www.vermonttreasurer.gov/sites/treasurer/files/committees-and-reports/_FINAL_CleanWaterReport_2017.pdf)

wastewater control (including CSOs), stormwater pollution control (including roads and developed lands), agriculture pollution control, and natural resources restoration. The cost estimates assumed a 20-year planning horizon to coincide with the Act 64 compliance schedule and the Lake Champlain TMDL implementation plan.

The Treasurer's Report distinguished between "Tier 1" and "Tier 2" costs. Tier 1 costs represent the regulatory cost of compliance with TMDLs, Act 64 of 2015, and the Combined Sewer Overflow Rule. Tier 1 costs were estimated to be \$82 million annually; revenues were \$34 million, leaving a gap of \$48 million. Tier 2 costs are not required for compliance with the TMDLs or Act 64, but may be required by other permitting programs, and represent costs that would accelerate clean up of pollution, such as capital equipment assistance. The Act 73 Working Group has included both "Tier 1" and "Tier 2" costs in its estimates.

The Treasurer recommended filling half of the "Tier 1" gap in SFY18 and SFY19 with additional capital funds (\$15 million), highway funds (\$5 million), and Clean Water Funds (\$5 million). The Governor adopted the Treasurer's funding recommendation, as did the Legislature. In SFY16 and SFY17, the state spent roughly \$29 million a year on clean water efforts. In SFY18 and SFY19, following the Treasurer's recommendation, Governor Scott proposed to invest \$53 million a year on clean water efforts, an average increase of \$24 million a year on clean water over previous years. The Legislature is on track to fulfill this commitment to clean water in SFY18 and SFY19.

Reviewing the SFY18 clean water appropriations, the Act 73 Working Group found that:

*The SFY18 budget supported early adopters of clean water projects, namely municipal infrastructure, municipal roads, and natural infrastructure.* Other sectors, like agriculture and stormwater retrofits on private property, saw lower levels of demand in SFY18, in part a reflection of somewhat later timing of key regulatory drivers and permit requirements in these sectors.

*State subsidies vary by sector and by landowner type.* Generally, municipal wastewater treatment facilities are eligible for municipal pollution control grants up to 35% of project costs, farmers who implement best management practices are eligible for federal and state grants up to 80% or 90% of project costs, municipal road projects are eligible for incentives up to 80% of project costs, while private property (non-farm) owners are eligible for 0% to 80% state match, depending on the type of project.

*Executive Agency staff costs are not included in the clean water budget.* The General Assembly will need to consider the staffing capacity of Executive Agencies to oversee and administer grants and construction activities, and the capacity of partners (municipalities, farmers, non-profit organizations) to implement projects on the ground. State agencies are actively exploring

new partnerships and new grant programs for lowering the cost of administering grant awards, but capacity will be a challenge, regardless of the granting entity.

*Many state's appropriations have restrictions on how they may be spent.* For example, federal highway pass-through funds can only be used on highway projects that meet federal funding requirements, and capital funds (as a policy choice) can only be used on municipal and agricultural projects. Likewise, capital funds are restricted to project design and construction, meaning that the need for non-restricted funds to pay for planning, scoping, and technical assistance will likely become more acute as time goes on.

*In SFY18, the Legislature targeted the annualized average budget gap, rather than the estimated budget gap for SFY18.* Going forward, it will be important to consider the effective dates of key regulatory requirements, which in turn will impact the type of funds and subsidies that are required in a given year.

#### B. Impervious Surface and Parcel Fee Options (July 14 & 28, August 11 & 25)

In the January 2017 Report, the Treasurer recommended consideration of a parcel fee or impervious surface fee to support clean water projects. If existing state resources do not provide the target level of cost share:

“[T]he General Assembly should consider adopting a parcel and/or impervious surface fees.... Given the nexus to the water quality and the ability to tie these revenues, and to incentivize best management practices, consideration should be given to incorporating a tiered impervious cover fee as a long-term revenue option.” (Page 62.)

Cognizant of this recommendation, the Act 73 Working Group discussed issues related to parcel-based and impervious surface fees over several meetings. The Act 73 Working Group considered four options for the administration of a parcel or impervious surface fee: municipal administration, state administration, parallel systems, and local or regional stormwater utility.<sup>13</sup>

1. Municipal administration. This collection approach would leverage the current property tax system with state support for municipal collection of a parcel or impervious surface fee, and would be similar to collection of current statewide education property tax system, where the State assists municipalities with tax administration. The State pays \$5 - \$6 million to municipalities for help in collecting the statewide education property tax.

The Vermont League of Cities and Towns (VLCT) provided a memo<sup>14</sup> (Appendix A) estimating that the combined cost of establishing a new stormwater billing system in each of the state's 246 municipalities would range anywhere from \$1,760,000 to \$6,775,000. In response, it was

<sup>13</sup> See Vt. Dept of Taxes Memo on “Parcel Fee Collection and Appeal Considerations” (Feb. 2017) ([legislature.vermont.gov/assets/Documents/2018/WorkGroups/House%20Natural/Committee%20Bills/17-0230%20An%20act%20relating%20to%20clean%20water%20funding/Testimony/W~Kaj%20Samsom~Parcel%20Fee%20Collection%20and%20Appeal%20Considerations~2-10-2017.pdf](http://legislature.vermont.gov/assets/Documents/2018/WorkGroups/House%20Natural/Committee%20Bills/17-0230%20An%20act%20relating%20to%20clean%20water%20funding/Testimony/W~Kaj%20Samsom~Parcel%20Fee%20Collection%20and%20Appeal%20Considerations~2-10-2017.pdf)).

<sup>14</sup> <http://anr.vermont.gov/sites/anr/files/specialtopics/Act73WorkingGroup/2017-08-11-VLCT-memo.pdf>

mentioned that placing a stormwater fee as a separate line on existing property tax bills could be a less-costly option, result in higher compliance rates, and could be paid through escrow accounts resulting in less paperwork for property owners. However, since a stormwater fee is not a tax, it was also noted that placing a stormwater fee on property tax bills may cause confusion.

2. State administration. Under this option, the State would take on both statewide property education tax and impervious parcel fee. The Working Group discussed extensively the idea of collecting both the education property tax and a stormwater fee at the state level. It was noted that statewide collection of the education tax would represent a fundamental shift in Vermont tax policy.

The Vermont Tax Department emphasized that a shift of this magnitude must be transparent and would require strong legislative support. Vermont municipalities are divided on whether the education property tax should be collected locally or by the state.

The Tax Department listed numerous issues that would need to be resolved prior to the transition to statewide collection of the education property tax and a stormwater fee. Among the many issues discussed by the Working Group were:

- How quickly could the State stand up the system? It was noted that the State would need to conduct an extensive request-for-proposal process to upgrade the information technology to support a statewide property tax.
- How would property assessments be handled? Would assessments remain local? Under the current system, property owners have the right to request an inspection of their property by the local civil board of authority. If assessments remain local, a process for communicating local appeals to the statewide billing and collection program would need to be established. If assessments were handled by the state, a possible advantage would be increased consistency in property valuation, particularly for high-value commercial properties.
- Would town clerks continue to hold land records? How would the shift impact revenue that is currently collected by town clerks?
- Would overall costs related to tax collection go up or down? There are currently 300 to 500 FTEs in the municipal property tax system. Overall administrative costs may rise unless municipalities reduce staff. Statewide administrative efficiencies and reduced software licensing costs could exert downward pressure on costs.

3. Parallel collection. This option presumes local collection of property taxes and state collection of parcel or impervious surface fee. The consensus of the Working Group was that this option would be duplicative and expensive. The Vermont Tax Department estimated (Appendix B) that a standalone, statewide impervious surface fee would require statewide billing and collection (313,000 invoices) and would be very difficult to implement, requiring upwards of 25 FTEs. The Tax Department currently spends roughly \$17.7 million to collect

	FY16 Op Expenses	Revenues	Cost/\$1 of Rev
Department Wide	\$17,700,000	\$1,670,000,000	\$0.01
Parcel Fee - Ongoing	\$4,000,000	\$18,000,000	\$0.22

\$1.67 billion in income tax revenues. To implement statewide collection of a parcel or impervious surface fee, the Vermont Tax Department would need to spend roughly \$4 million each year to collect \$18 million each year.

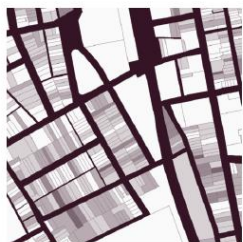
4. Local or regional water quality utility collection. Under this scenario, the Tax Department would support collection of a parcel or impervious surface fee by a regional or statewide water quality utility. This would be similar to the first scenario, except that the Tax Department would need to develop new partnerships with local and regional utilities, rather than build upon existing relationships with municipal billing systems. Additionally, these new utilities would need to establish billing and collections capacities, which would likely cost in the range of \$4 million a year, based on estimates provided for options #1 and #3.

### C. Data Requirements for Parcel and Impervious Surface Fees (July 14)

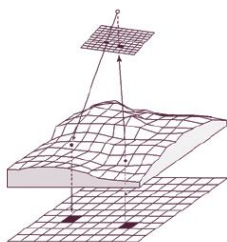
Moving on to data requirements for a parcel or impervious surface fee, the Act 73 Working Group reviewed information prepared by the Vermont Center for Geographical Information, Appendix C and “VCGI, Geospatial Data and Imagery Application, [Powerpoint](#) (Feb. 2017).”<sup>15</sup> There are four mapping efforts currently underway. Notable estimated completion dates are statewide land cover data by July 2018, which is derived from orthoimagery and LiDAR, and statewide parcel data by December 2020. The cost of maintaining and updating land cover data on an annual basis will depend, in part, on whether algorithms can leverage lower-level resolution imagery to capture changes in of impervious surface. The technology related to

<sup>15</sup> [legislature.vermont.gov/assets/Documents/2018/WorkGroups/House%20Natural/Committee%20Bills/17-0230%20An%20act%20relating%20to%20clean%20water%20funding/Testimony/W~John%20Adams~Geospatial%20Data%20and%20Imagery%20Acquisition%20relatedto%20the%20Treasurer's%20Report%20on%20Clean%20Water~2-2-2017.pdf](http://legislature.vermont.gov/assets/Documents/2018/WorkGroups/House%20Natural/Committee%20Bills/17-0230%20An%20act%20relating%20to%20clean%20water%20funding/Testimony/W~John%20Adams~Geospatial%20Data%20and%20Imagery%20Acquisition%20relatedto%20the%20Treasurer's%20Report%20on%20Clean%20Water~2-2-2017.pdf)

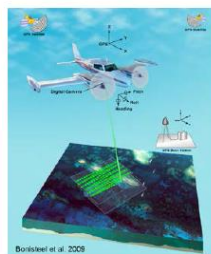
image processing and land cover is evolving rapidly – thanks in part to work being done by the UVM Spatial Analysis Lab.



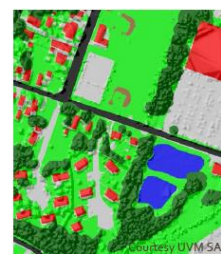
PARCELS



ORTHOIMAGERY



LIDAR



LAND COVER /  
IMPERVIOUS SURFACE

#### D. Clean Water Cost Estimates (August 11, August 25, September 8)

The Act 73 Working Group noted at its first meeting that the SFY18 clean water budget attempted to fill half of the Tier 1 clean water gap, but that the SFY18 budget had used the Treasurer’s 20-year average clean water gap rather than the SFY18 gap. In addition, the SFY18 budget did not explicitly take into account the expected cost share from municipalities and the private sector. For future budgeting purposes, the Working Group agreed that it would be more transparent to look at cost projections for each individual year, to look at funding sources by sector, and to look at expected cost share by each type of landowner.

State agencies were asked to revisit the cost projections provided to the Treasurer for the January 2017 Report, with an eye towards the cost of complying with statutory and regulatory clean water requirements over the next five years.

1. Municipal Infrastructure. The Vermont Department of Environmental Conservation (DEC) provided updated estimates of upgrades at municipal waste water treatment facilities (WWTFs) and Combined Sewer Overflows (CSOs) based on “intended use plans” submitted to the Department by municipalities. Projections for the next two years tend to be fairly accurate, while projections beyond two years need to be extrapolated.
2. Agriculture. The Vermont Agency of Agriculture, Food and Markets (AAFM) explained the process used in the Treasurer’s Report for estimating the agricultural sector’s cost of compliance with the TMDLs and Act 64. In May 2015, AAFM launched the [North Lake Farm Survey](#) (NLFS) to quantify the impacts of agriculture on Lake Champlain. AAFM surveyed over 165 farm facilities in the Missisquoi River basin and St. Albans Bay watershed to determine how much work needed to be done to comply with Act 64’s Required Agricultural Practices. Using

cost data from the U.S. Department of Agriculture (USDA), AAFM extrapolated from the North Lake Survey to estimate statewide Act 64 compliance costs.

AAFM estimated that the cost to comply with the TMDLs and Act 64 over 20 years would be \$528 million, or an average cost of \$27 million per year. This does not include AAFM staff costs. In SFY18, state and federal funds to agriculture total about \$12 million (roughly \$5 million state capital funds, \$2 million Clean Water Fund and General Fund, \$5 million USDA funding outside of the state budget). Based on average costs, the agricultural sector should be putting on the ground an additional \$14 million a year in agricultural clean water practices. The capacity does not currently exist within the agriculture sector – AAFM, USDA, and the farm community – to effectively deliver \$27 million in technical and financial assistance programming. AAFM is working on plans to increase the agency’s capacity to deliver services, including expanding the project pipeline with concerns identified during inspections that will take place over the next 7 years as the agency implements the new Certified Small Farm Operation (CSFO) program. Ultimately, over time, AAFM may require additional staff in its Water Quality Section to fully support implementation.<sup>16</sup>

### 3. Developed Lands

DEC reported that the EPA’s estimated acreage of roads in the Lake Champlain basin that will require treatment dropped significantly between the draft version of the TMDLs (available at the time of the Treasurer’s Report) and the final version. Specifically, the acreage of state paved roads from decreased from 1,400 to 750 acres; municipal paved roads from 2,700 to 1,400 acres; and municipal unpaved roads from 9,600 to 7,100. Furthermore, based on actual cost figures from the last 12 months, the estimated cost of compliance for municipal unpaved roads has been revised from \$11,900 per acre to \$6,100. While these changes may ultimately significantly reduce the total cost of compliance over the next 20 years in this sector, the Act 73 Working Group decided not to change any of the 20-year estimates in the Treasurer’s Report until further data is collected.

DEC also reported that the final EPA TMDLs estimate that 12,800 acres of non-road impervious surface will need to be treated to comply with water quality standards. Based on an average cost of \$30,000 per acre, the total cost of compliance for non-road impervious surface in the Treasurer’s Report was \$360 million over 20 years. Of the 12,800 acres, about 7,200 acres are allocated to compensate for “future growth.” It was suggested that a change in the stormwater permit threshold for new development, from 1 acre to ½ acre would reduce the need to retrofit 7,200 acres for “future growth,” and thus reduce overall 20-year costs of compliance. Again, however, no change was made to the 20-year estimates in the Treasurer’s Report.

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<sup>16</sup> <http://agriculture.vermont.gov/sites/ag/files/Org-Chart-ARMS-WQ-2017.pdf>

#### E. Advisory Group and Public Comment (September 22, October 18, November 3)

The Act 73 Working Group published a draft report on October 18, accepted comments through November 1, and discussed the comments on November 3. The Group received 26 sets of comments from 35 entities, which are available on the Act 73 Working Group website.<sup>17</sup> The Act 73 Working Group is very appreciative of the public's interest in this report. Some general themes emerged from the comments, as detailed below.

*Many of the comments urged the Working Group to make more progress towards a long-term funding source.* While acknowledging the progress made towards identifying short-term funding sources, many of the comments expressed concern that these funding sources, particularly the Capital Bill, could not meet long-term water quality needs. The Act 73 Working Group accepted this recommendation and accelerated its proposed timeframe for next steps.

*Several comments supported the creation of a clean water authority.* A coalition of environmental and business groups submitted a concept paper on September 22 supporting the creation of a clean water authority. As expressed by one member of this group, the “devil is in the details.” Those details include whether the clean water authority would have authority to set rates; whether the authority's revenue source would be a parcel fee, impervious surface fee, or some other tool; whether the authority would collect revenues, spend revenues, or both; whether the authority would co-exist with or supplant regional authorities; whether the authority would design a revenue system or implement it; and whether the authority would have a sunset date. See Appendix D.

*The comments revealed a lack of consensus over how to spend revenues, should a new funding source emerge.* While many of the commentators supported a new long-term revenue source, they lacked consensus on how to spend the revenues. Municipalities strongly urged the Act 73 Working Group to consider municipal operations & maintenance (O&M) costs and to increase municipal support accordingly. Others disagreed with investments in wastewater and developed land sectors, and asked for more emphasis on the agricultural sector and natural resources restoration projects; a few noted the burden of clean water compliance on the private sector. Furthermore, there was no consensus as to whether a new revenue source would replace existing revenue sources (state, local, private), or complement them.

*A number of people expressed disappointment by the lack of proposed legislation in the Report.* While the Act 73 Working Group acknowledges the Legislature's desire for “draft legislation,” Act 73 § 26(d), the complexity of the issues, the lack of consensus on some basic questions, and the short timeframe proved insurmountable to achieving this goal. The Act 73 Working Group nonetheless feels strongly that this report is an important step forward towards identifying long-term water quality funding solutions.

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<sup>17</sup> <http://anr.vermont.gov/about/special-topics/act-73-clean-water-funding>

### III. Existing and Potential Sources of Clean Water Funding

Act 73, Section 26(f) requires the Working Group to conduct “an evaluation of existing sources of funding.”<sup>18</sup> Vermont’s clean water efforts are supported by a myriad of federal, state, and municipal revenue sources and financing tools. This funding provides substantial support for clean water, albeit leaving gaps in certain areas, as further examined later in this report.

#### A. State

State spending on clean water is spread across the Capital Bill, the Clean Water Fund, the Transportation Bill, the General Fund, and Special Funds. The spreadsheet on the following page summarizes state spending on clean water in SFY18 and SFY19.

##### 1. Capital Bill

The Capital Bill is the vehicle used by the General Assembly to appropriate revenues from the issuance of general obligation bonds. Vermont’s Capital Debt Affordability Advisory Committee, established in 1990, determines a prudent level of new debt issuance for the State each year, and thus the ceiling on annual capital appropriations. During SFY 2016 and 2017, the Legislature appropriated on average \$10 million a year in the Capital Bill to clean water. The Treasurer’s Report (January 2017) recommended that an additional \$15 million a year in capital funds, or a total of \$25 million a year, should be dedicated each year to clean water. Governor Scott supported this recommendation, and the capital appropriations in SFY2018 is \$22 million.

The Agency of Agriculture, Food and Markets (AAFM) uses capital funds, either alone or in conjunction with federal USDA funds, to support implementation of on-farm agricultural water quality improvements including production area practices (barnyard improvements, manure pits, and waste storage facilities) and livestock exclusion fencing.

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<sup>18</sup> During the October comment period, several people opined that future federal, state and local revenues, whether generated by fees or taxes, are not “existing” because they are contingent upon congressional, legislative or local approval. To clarify, this Report treats the current set of grant programs and regulatory obligations to pay for permit compliance as “existing” revenue sources. For example, municipalities will need to comply with TMDL requirements whether or not the state provides a grant match. Therefore, municipal revenues are treated as “existing.”

# FY18-19 VERMONT CLEAN WATER APPROPRIATIONS

	A Baseline (2 year total)	B	C		D		E Filling Gap= D-A (2 year total)
			As Passed House & Senate (5/5/2017)		FY18 & FY19		
		FY18	FY19	FY18	FY19		
1 Capital Bill, H.519 Section 11: Clean Water Investments							
2 (a)(1) & (e )(1) AAFM BMP & CREP	\$ 3,800,000	\$ 3,450,000	\$ 2,000,000	\$ 5,450,000	\$ 1,650,000		
3 (a)(2) AAFM Water Quality Grants & Contracts	\$ -	\$ 600,000	\$ -	\$ 600,000	\$ 600,000		
4 (b)(1)&(f)(1) DEC Clean Water State Revolving Fund (SRF)	\$ 2,400,000	\$ 1,000,000	\$ 1,200,000	\$ 2,200,000	\$ (200,000)		
5 (b)(2)&(f)(2) DEC Ecosystem Restoration Grants	\$ 7,460,000	\$ 6,000,000	\$ 5,000,000	\$ 11,000,000	\$ 3,540,000		
6 (b)(3) DEC Municipal Pollution Control Grants (prior)	\$ 35,000	\$ 2,982,384	\$ -	\$ 2,982,384	\$ 2,947,384		
7 (b)(4)&(f)(3) DEC Municipal Pollution Control Grants (new)	\$ 3,306,500	\$ 2,704,232	\$ 1,407,268	\$ 4,111,500	\$ 805,000		
8 (c) VTrans Municipal Mitigation Program	\$ -	\$ 1,400,000	\$ -	\$ 1,400,000	\$ 1,400,000		
9 (d)(1) VHC8: water quality projects	\$ 3,750,000	\$ 2,800,000	\$ 2,750,000	\$ 5,550,000	\$ 1,800,000		
10 (d)(2) VHC8: farm grants or fee purchase water quality projects	\$ -	\$ 1,000,000	\$ -	\$ 1,000,000	\$ 1,000,000		
11 (f)(4) FY19 Statewide Clean Water Implementation	\$ -	\$ -	\$ 11,112,944	\$ 11,112,944	\$ 11,112,944		
12	\$ 20,751,500	\$ 21,936,616	\$ 23,470,212	\$ 45,406,828	\$ 24,655,328		
13							
14 Transportation Bill H.494							
15 State Highway Compliance	\$ 10,450,000	\$ 4,850,000	\$ 5,600,000	\$ 10,450,000	\$ -		
16 Section 14: Transportation Alternatives (for stormwater)	\$ 2,200,000	\$ 2,200,000	\$ 2,200,000	\$ 4,400,000	\$ 2,200,000		
17 Section 8: Municipal Mitigation (for stormwater)	\$ 2,880,000	\$ 1,240,000	\$ 1,240,000	\$ 2,480,000	\$ (400,000)		
18 Section 8: Municipal Mitigation from Federal Hgwy STBG Fund	\$ -	\$ 5,442,342	\$ 5,442,342	\$ 10,884,684	\$ 10,884,684		
19	\$ 15,530,000	\$ 13,732,342	\$ 14,482,342	\$ 28,214,684	\$ 12,684,684		
20							
21 Appropriations Bill							
22 DEC Federal match pass through for DEC Clean Water SRF	\$ 20,000,000	\$ 10,000,000	\$ 10,000,000	\$ 20,000,000	\$ -		
23 DF&W Watershed Grants Program	\$ 70,000	\$ 35,000	\$ 35,000	\$ 70,000	\$ -		
24 AAFM Farm Agronomic Practices Program	\$ 300,000	\$ 150,000	\$ 150,000	\$ 300,000	\$ -		
25 AAFM Water Quality Grants and Contracts	\$ 594,000	\$ 297,000	\$ 297,000	\$ 594,000	\$ -		
26 AAFM Operational Funds	\$ 750,000	\$ 375,000	\$ 375,000	\$ 750,000	\$ -		
27 Clean Water Fund	\$ -	\$ 4,000,000	\$ 4,000,000	\$ 8,000,000	\$ 8,000,000		
28 FY19 Capital Bill: Bond premium from sale of bonds	\$ -	\$ -	\$ 2,259,988	\$ 2,259,988	\$ 2,259,988		
29							
30 GRAND TOTAL	\$ 57,995,500	\$ 50,525,958	\$ 55,069,542	\$ 105,595,500	\$ 47,600,000		

• Rows 15-18, 22-26, 28: Appropriations for FY19 are projected

In FY18, Vermont has appropriated \$51 million for clean water projects (state and federal funds).

In FY19, Vermont is projected to spend \$55 million on clean water efforts (state and federal funds).

Over 2 years, this represents an increase of \$48 million over baseline spending, or \$24 million average annual increase (state and federal funds).

DEC uses capital funds to support several grant programs, including:

- Ecosystem restoration grants for stormwater treatment on non-road developed lands.
- Ecosystem restoration grants for natural resources restoration, including floodplains, river corridors, wetlands, and riparian areas for flood resilience, water quality, and habitat benefits.
- Ecosystem restoration block grants for direct funding of packages of stormwater treatment and natural resources restoration projects by eligible recipients.
- Municipal pollution control grants for wastewater, stormwater and combined sewer overflows, pursuant to 10 V.S.A. Chapter 55.
- Municipal roads grants-in-aid pilot project, which provides funding to municipalities, via regional planning commissions, to implement Best Management Practices (BMPs) on municipal roads, ahead of the state Municipal Road General Permit (MRGP).

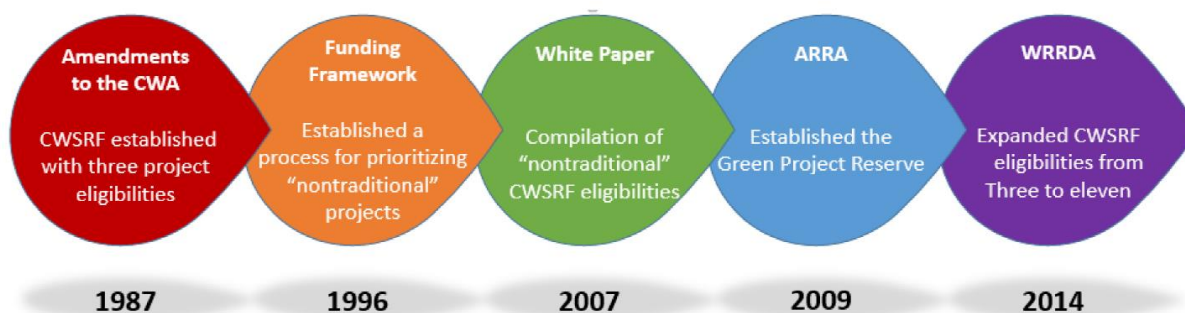
VTrans uses capital bill funds to support two grant programs, including:

- Better Roads municipal grants; in SFY18 grant funds were used to fund transportation projects related to stormwater treatment, replacement of undersized culverts and shoreland stabilization along a town highway.
- Municipal Highway and Stormwater Mitigation Program; in SFY18 capital bill funds were used with federal funds to treat comingled stormwater.

The Legislature has, for many years, supported investments in clean water through the Capital Bill, both in the form of state match for Clean Water State Revolving Fund (CWSRF), administered by DEC, and in the form of municipal pollution control grants, as authorized by 10 V.S.A. chapter 55 and 24 V.S.A. Chapter 120.

The CWSRF is a state-run program, authorized by US EPA, that provides low-cost financing for water quality infrastructure projects including municipal wastewater, stormwater, combined sewer overflow and other infrastructure projects. The fund is capitalized through federal and state funds, principal repayments, and interest (24 V.S.A. 4753(a)(1)). In 2016, the General Assembly appropriated \$1.3 million to the CWSRF to match \$6.4 million in federal funds.

DEC has traditionally lent money from the CWSRF to municipalities for wastewater treatment facility (WWTFs) projects, combined sewer overflow (CSO) abatement, and sewer related refurbishment and upgrade projects. In 2014, the federal government passed a law, the Water Resources Reform and Development Act (WRRDA), that expanded the scope of projects and types of entities that may be eligible for CWSRF loan funding. For Vermont to make loans to private entities from the CWSRF, the General Assembly would need to amend state statute to take advantage of the 2014 federal law.



Clean Water State Revolving Fund (CWSRF) Eligibility Timeline<sup>19</sup>

Federal law now allows CWSRF monies to be used for eleven different project types, including watershed and stormwater projects, 2014 WRRDA, Section 5003 (codified at 33 U.S.C. § 1383(c). Of the eleven project types eligible for CWSRF loans, the 2014 WRRDA authorized private entities to take on loans for five project types, 33 U.S.C. § 1383(c)(4), (5), (7), (9), (11), as described in more detail below:

**Nonprofits only:**

Projects providing technical assistance to small and medium publicly owned treatment works for planning, design, and pre-construction activities. 33 U.S.C. § 1383(c)(11).

**Private and public entities generally:**

**(a) Wastewater projects:**

- (1) Decentralized wastewater treatment system projects that treat municipal wastewater or domestic sewage (33 U.S.C. § 1383(c)(4)); and
- (2) Projects to reuse or recycle wastewater. 33 U.S.C. § 1383(c)(9).

**(b) Stormwater projects:**

- (1) Projects that manage, reduce, treat, or recapture stormwater (33 U.S.C. § 1383(c)(5)); and
- (2) Projects to reuse or recycle stormwater. 33 U.S.C. § 1383(c)(9).

**(c) Subsurface drainage projects:**

- (1) Projects that manage, reduce, treat, or recapture subsurface drainage water (33 U.S.C. § 1383(c)(5)); and
- (2) Projects to reuse or recycle subsurface drainage water. 33 U.S.C. § 1383(c)(9).

<sup>19</sup> Graphic from "Overview of Clean Water State Revolving Fund" Eligibilities (EPA May 2016).  
[https://www.epa.gov/sites/production/files/2016-07/documents/overview\\_of\\_cwsrf\\_eligibilities\\_may\\_2016.pdf](https://www.epa.gov/sites/production/files/2016-07/documents/overview_of_cwsrf_eligibilities_may_2016.pdf)

- (d) Pilot projects 33 U.S.C. § 1383(c)(7); *see also* 33 U.S.C. § 1274; (innovative projects to try out new technologies or approaches to managing pollutants):
- (1) Watershed management of wet weather discharge projects;
  - (2) Stormwater Best Management Practices (BMP) projects;
  - (3) Watershed partnership projects;
  - (4) Integrated water resource planning projects;
  - (5) Municipality-wide stormwater management planning projects; and
  - (6) Increased resilience of treatment works projects.

During the 2016 legislative session, in Act 103, the Vermont Legislature substantially reorganized the loan and grant provisions for the clean water and drinking water programs administered by the Department of Environmental Conservation. In the course of its deliberations, the Legislature took testimony on the Vermont Clean Water State Revolving Fund (CWSRF) program, and the possibility of expanding loans from the CWSRF from municipalities to include private entities, and mandated a report on whether and how to provide loans from the CWSRF to private entities for water pollution abatement and control facilities, and for public water supply systems.

DEC submitted a report in December 2016 recommending expanding eligibility for CWSRF loans to private entities for certain types of water quality projects.<sup>20</sup> As stated on page 9 of the Report:

Lending CWSRF monies to private entities will (1) encourage cost-effective water pollution strategies, (2) generate additional funds for the CWSRF by recouping higher interest on loans to private entities, (3) reduce the administrative burden on municipalities that otherwise are asked to sponsor loans to private entities, and (4) promote social justice by offering low-interest loans to private entities such as homeowners' associations or mobile home parks that need to upgrade sanitary facilities and are otherwise unable to obtain loans.

The Act 73 Working Group likewise recommends expansion of CWSRF eligibility to private entities for a limited scope of water pollution control projects.

## 2. Clean Water Fund

The Legislature established the Clean Water Fund in 2015 as part of Act 64. The Clean Water Fund derives its revenues from a surcharge on the property transfer tax, which was extended in

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<sup>20</sup> <http://legislature.vermont.gov/assets/Legislative-Reports/2016-12-30-DEC-CWSRF-Lending-to-Private-Entities-Report.pdf>

2017 for an additional nine years and will now sunset in 2027. Annual expected revenues are in the range of \$4 million a year.

- AAFM uses Clean Water Funds to support development of nutrient management plans, training classes for farmers, manure applicators and agricultural technical service providers, grants for agricultural assistance partners, and alternative phosphorus reduction strategies.
- ANR and DEC use Clean Water Funds to support grant programs that target delivery of: (a) technical assistance, project development and implementation of stormwater pollution abatement on developed lands including municipal roads, (b) natural resources restoration for improvements in water quality and flood resilience and (c) technical assistance, outreach and education to operators of municipal WWTFs and pretreatment facilities on strategies to optimize facility processes to reduce nitrogen and phosphorus loadings.
- VTrans uses Clean Water Funds for a variety of municipal grants through the Better Roads Program.

### 3. Transportation Bill

The Agency of Transportation (VTrans) administers and provides grants to municipalities through the Better Roads Program, which provides grants and technical assistance to municipalities to correct erosion problems and adopt road maintenance practices that protect water quality while reducing long-term highway maintenance costs. Its long-term goal is to enable and encourage municipalities to practice best management practices in road maintenance and repairs and institutionalize these practices into municipal capital budget priorities.

The Transportation Infrastructure Bond (TIB) is another source of bond revenue available for transportation-related spending on clean water, both for state-owned and municipally-owned highways. TIB revenues are used by VTrans for several types of clean water spending, including:

- Projects on state-owned highways, for which the State is able to draw down 80% federal match;
- Projects on state-owned, non-road developed lands, such as district maintenance facilities, for which the state pays 100% of the cost;
- VTrans staff who work on clean water activities; and
- Ongoing maintenance and operations activities supporting clean water..

#### 4. General Fund

The Legislature appropriates money in the General Fund in the Appropriations Bill (“the Big Bill”). General Fund revenues include the personal income tax, the sales and use tax, and other general taxes and fees. AAFM uses general funds to support the Farm Agronomic Practices (FAP) program. FAP provides money to farmers for the implementation of annual conservation measures that are not eligible for capital funds, such as cover cropping, conservation tillage, and alternative manure incorporation practices such as injection or aeration.

#### 5. Special Funds

The Department of Fish and Wildlife (DFW) uses half of the revenues derived from the sale of the Vermont Conservation License Plates to fund the Vermont Watershed Grant Program. The Program is administered by DFW with assistance from DEC. It distributes grant dollars for local and regional water-related projects that protect habitat, water quality and shorelines, reduce phosphorus and sediment loading, enhance recreational use, identify cultural and history resources, and increase education and monitoring.

### B. Federal

- U.S. Department of Agriculture, Rural Development (RD)
  - USDA RD Water and Environmental Programs (WEP) Annual Loan and Grant Appropriations makes low interest loans and grants to qualifying communities with a population under 10,000.
  - USDA RD Rural Economic Area Partnership (REAP) Zone Grant is a pilot program for rural revitalization and community development to qualifying communities in the Northeast Kingdom (Caledonia, Essex and Orleans Counties) with a population under 10,000.
- U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS)
  - USDA Environmental Quality Incentive Program (EQIP). The USDA-NRCS provides funding for agricultural best management practices and conservation measures in Vermont through its EQIP program. These funds support improvements to farm production areas (barnyard improvements, manure pits) and field practices (cover crops, reduced tillage, and controlling field gully erosion). In 2014, then USDA Secretary Vilsack committed \$45M over five years to Lake Champlain water quality improvement. This resulted in significant

increase funding from NRCS in recent years, however, these funds are expected to decrease to prior levels (approximately \$5M/year) in FY19.

- USDA Regional Conservation Partnership Program (RCPP). DEC and AAFM jointly received a \$16M grant from USDA's Regional Conservation Partnership Program (RCPP) in 2015 which provides funds for farm and forest water quality improvement practices, wetland restoration and conservation, and land conservation easements. The awarded RCPP funds are available through 2020. The RCPP grant has been used to leverage \$20 million in match from other state and private partners. In addition, the Vermont Association of Conservation Districts received an \$800,000 grant from USDA RCPP in 2015 that provides funds for increased nutrient management plan development and implementation for farmers. VACD is holding classes, in conjunction with UVM Extension, to teach farmers how to develop plans, and conducting follow-up outreach to assist with implementation. Funds are available through the spring of 2018.
- USDA NRCS Agriculture Conservation Easement Program (Wetland Reserve Easements ACEP-WRE and Agricultural Land Easements ACEP-ALE) is a voluntary conservation easement program that provides technical and financial assistance to private landowners to restore, protect and enhance wetlands in exchange for retiring eligible land from active agriculture.
- U.S. Federal Highway Administration.
  - Federal Highway Administration Transportation Alternatives Grant Program. VTrans administers the Federal Highway Administration Transportation Alternatives Grant Program for both non-traditional transportation-related projects. Eligible activities under this program include "any environmental mitigation activity, including pollution prevention and pollution abatement activities and mitigation to address stormwater management, control, and water pollution prevention or abatement related to highway construction or due to highway runoff." All available program funds are dedicated for projects eligible under this activity for SFY18 and SFY19. Per Act 38 of 2017, no funds will be set aside for these types of projects in SFY20 and SFY21. Starting in SFY22, one half of the funding will be set aside for these types of projects.
  - Municipal Highway and Stormwater Mitigation Grant Program. VTrans administers the Municipal Highway and Stormwater Mitigation Grant Program with federal funds for non-traditional transportation-related projects. Project

eligibility is the same as for Transportation Alternatives. In SFY18 and SFY19, VTrans used both capital bill funds and federal funds to support this grant program.

- Federal Highway Administration – Project Development and Construction monies are federal funds that are used by VTrans for state highway-related compliance costs under the Transportation Separate Storm Sewer System (TS4) General Permit, issued to VTrans by DEC pursuant to Act 64 (2015).
- Federal Aviation Administration funds are used by VTrans for state airport-related compliance costs under the TS4 General Permit.
- U.S. Fish and Wildlife Service, Partners for Fish & Wildlife Program. The Partners Program serves as a bridge to owners and managers of private lands to develop partnerships for the benefit of federal trust species. The Partners program focuses on restoration of wetlands, woodlands and riparian areas that provide breeding habitat and critical migratory stopovers for migratory birds and benefit fish populations.
- Lake Champlain Basin Program (LCBP) is a Congressionally-designated geographic area program tasked with working to restore and protect Lake Champlain and its surrounding watershed. LCBP works with partners in New York, Vermont and Quebec to coordinate and fund efforts to address challenges in the areas of phosphorus pollution, toxic substances, biodiversity, aquatic invasive species, and climate change. LCBP also administers the Champlain Valley National Heritage Partnership which builds appreciation and improves stewardship of the region's rich cultural resources by interpreting and promoting its history. LCBP is supported through annual appropriations from the U.S. Environmental Protection Agency, the Great Lakes Fishery Commission, and the National Park Service.

### C. Municipal

Vermont municipalities have three potential sources of revenue for clean water investments: sewer rates, stormwater utility fees, and property taxes. Cities, towns, villages and prudential committees have authority to establish rates for the operation of sewer and stormwater systems, 24 V.S.A. § 3507. Municipalities have authority to create consolidated districts composed of two or more towns for purposes of water and sewer, 24 V.S.A. chs. 91 & 105. Municipalities can use the revenue from district rates to pay back loans obtained to finance clean water investments. Four Vermont municipalities have established stormwater utilities, with per parcel and impervious surface fees as sources of revenue. And finally, all

municipalities impose local property taxes, which are a source of revenue for highway investment, including stormwater best practices.

#### D. Private

Most of the costs identified in this report are regulatory costs of compliance with Act 64 and the TMDLs. This report acknowledges that the private sector, including farmers and businesses, will share in the regulatory cost of clean water in their role as landowners. For purposes of this report, the Act 73 Working Group has assumed that current levels of cost share will be maintained. For example, farmers currently receive subsidies as high as 90%, municipalities receive subsidies ranging from 35% to 80%, while owners of private land generally receive no cost share for compliance with regulatory requirements. Adjusting the cost share will, in turn, impact the cost to the state of clean water compliance. Although not part of its statutory mandate, the Act 73 Working Group has explored below some innovations that may enhance the cost-effectiveness of clean water investments for both public and private landowners. A summary of current levels of water quality cost share by project type is presented in Section IV of this report.

#### E. Other Potential Sources of Funding

Several sources of funding may be available to support clean water work that are not currently accounted for; these sources may help to fill gaps.

1. TDI-NE Project. The Act 73 Working Group noted that additional revenues of \$5 million a year may become available if TDI-NE constructs an electric transmission line in Lake Champlain. In a stipulation with the State of Vermont, incorporated in TDI-NE's Certificate of Public Good (CPG), TDI-NE agrees to deposit into the Clean Water Fund, 10 V.S.A. § 1388: (i) \$1 million on the fiscal close of the Project; (ii) \$6 million on July 1 of the initial year of commercial operations of the Project; and (iii) \$5 million on July 1 of each year thereafter for 39 years. Compliance with the terms of the stipulation is a condition of the Vermont Public Utility Commission's approval of the TDI-NE project.
2. Competitive Federal Funding. The State of Vermont will also continue pursuing additional federal funding, including grant and contract opportunities with Lake Champlain Basin Program (LCBP), as well as USDA's Regional Conservation Partnership Program (RCPP), to support clean water efforts in Vermont.

#### IV. Matching Existing Sources of Revenue with Projected Costs, SFY20-24

This section of the Act 73 Report provides updated estimates of the project costs of clean water investments anticipated over the next five years, SFY20-24. For each sector, from wastewater and agriculture to developed lands and natural resources, the Report identifies costs and matches them with revenues, noting any restrictions on the use of funds. The Act 73 Working Group acknowledges that not all funding sources may be realized, including Capital Bill appropriations, underscoring the need to identify a new long-term funding source in the near future.

In allocating costs across federal, state, municipal and private entities, the Working Group adopted the existing match requirements in federal and state grant programs. For example:

*Private Lands.* There currently exists no grant program for regulatorily-required stormwater upgrades on private lands; the Act 73 Working Group therefore assumed that these costs would be 100% funded by private landowners.

*Municipal Developed Lands and Municipally Sponsored Projects.* Stormwater projects on private lands that are municipally sponsored may be eligible for up to 50% match if the stormwater treatment is regulatorily required, or up to 100% match if the treatment is voluntary.

*Municipal Infrastructure.* The statute governing municipal pollution control grants authorizes the state to award grants up to 35% of the cost of the project, depending on the number of points awarded in the application process; however, because not all projects will receive the maximum grant, the Working Group assumed an average grant award of 20%.

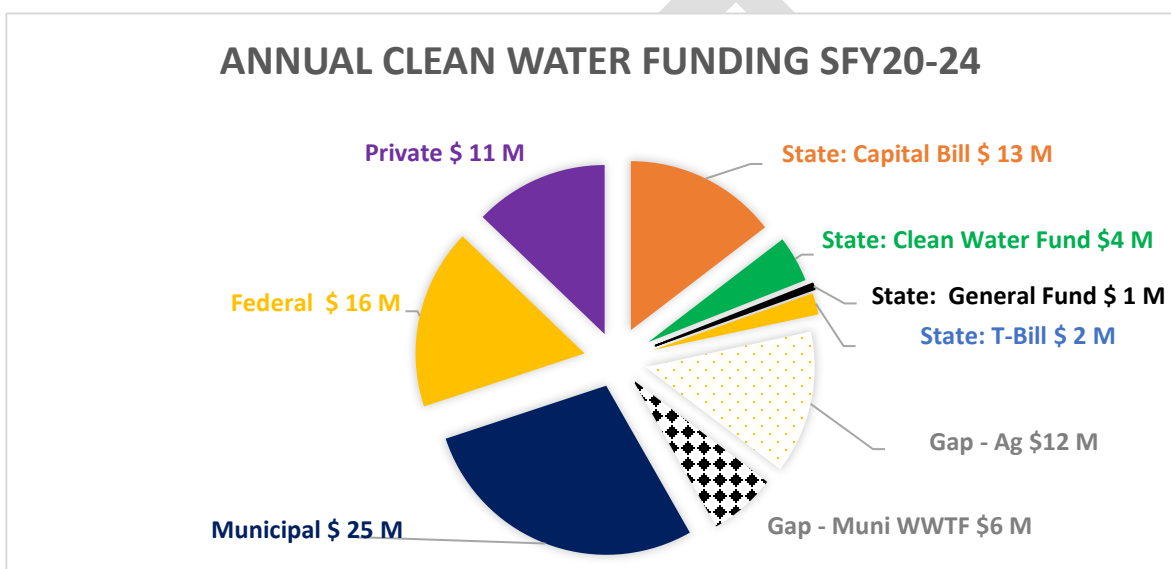
The table on the next page lists the state's existing grant programs and match amounts. The Act 73 Working Group encourages the Legislature to examine these grant programs and match amounts comprehensively since, as a package, they drive relative cost shares and are an important public policy tool for allocating the cost of water quality compliance across society.



## Overall Findings

The Act 73 Working Group estimates that Vermont's average annual cost to comply with clean water commitments for each of the next five years is \$90 million, average annual revenue sources both public (federal, state, local) and private are \$72 million.

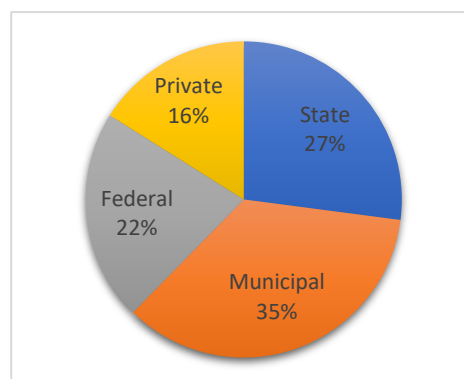
The \$72 million in existing revenues includes \$20 million in state funds, \$25 million from municipalities, \$16 million from federal sources, \$11 million in private investments. State funds comprise \$13 million from the Capital Bill, \$4 million from the Clean Water Fund; \$1 million from the General Fund; and \$2 million in state funds from the Transportation Bill.



This leaves an annual average gap over the next five years of \$18 million. There is significant variation in the estimated gap year-to-year during the next five years, with the gap becoming more significant in SFY22 and beyond. Further, it is unlikely that the indicated gap in municipal WWTF funding will materialize before SFY22 as the cost projections do not reflect delays likely to result from legal appeals of the recently issued permits.

Revenue sources in the Act 73 Report include both public and private investments. Assuming \$13 million average contribution from the Capital Bill for SFY20-24, and continuation of existing grant matches, the allocation of costs across sectors is state 27%; municipalities 35%; federal government 22%; private landowners 16%.

This assumes that the Legislature will on average allocate \$13 million each year from the Capital Bill for clean water and \$4 million from the Clean Water Fund; that

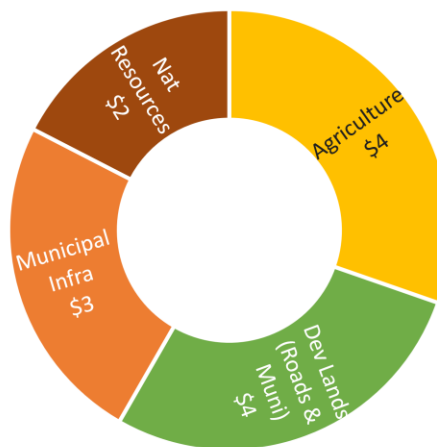


municipal voters will approve clean water bond requests; that the federal funding for clean water remain at current levels; and that private landowners will be able to access capital for their portion of costs.

The \$13 million in Capital Bill contributions are spread over each of the four sectors: municipal wastewater infrastructure and CWSRF match \$3 million, agriculture \$4 million, municipal roads and lands \$4 million, natural resources \$2 million.

The Act 73 Working Group allows that these assumptions may not bear out, and that further adjustments may be needed. The Working Group suggests that the General Assembly revisit clean water costs every two years going forward to incorporate new data from water quality monitoring and actual costs of implementation to ensure sufficient funding is available to meet the need.

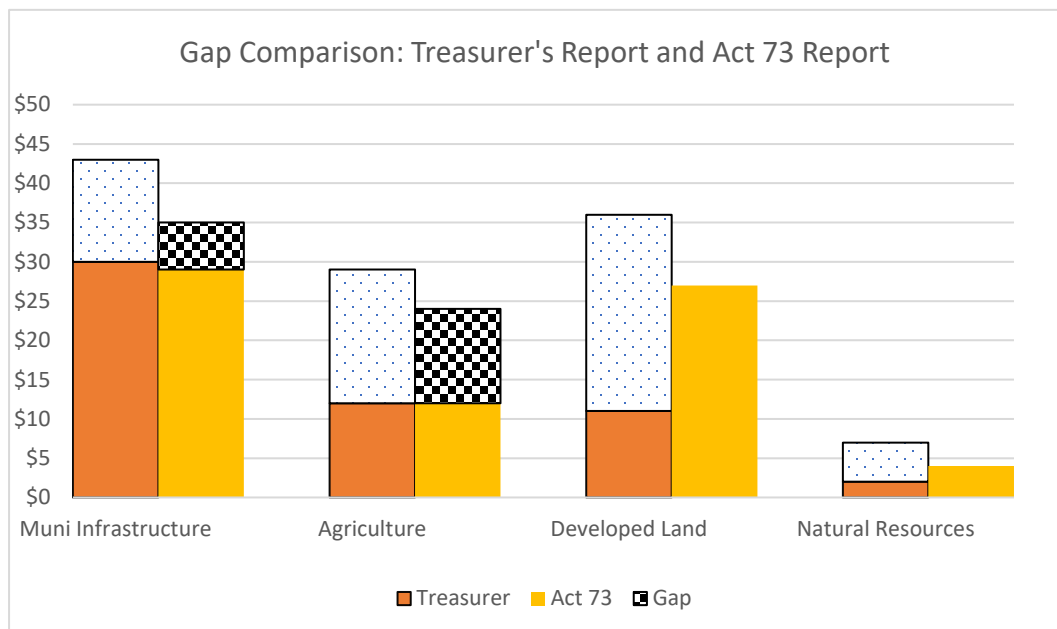
Capital Bill Investments in Clean Water  
(\$13M/year)  
(FY20-24)



As noted earlier, the cost estimates in the Treasurer's Report and in this Report do not include:

- Staffing costs at ANR, VTrans and AAFM, for administering the state's clean water regulatory programs, including costs to administer grant programs, track spending, maintain project inventories, monitor water quality, and assess cost effectiveness.
- Operation and maintenance (O&M) costs following construction and implementation of clean water projects, which can be substantial.

Comparing the Act 73 Report with the Treasurer's Report, costs differ slightly because (1) the Treasurer's Report showed an average annual estimate over 20 years, while the Act 73 Report provides an average annual estimate over 5 years, and (2) the Act 73 Report shows reduced costs in the developed land sector as explained above (section II.D).



As to revenues, the Treasurer's Report included a baseline contribution (\$10 million) from the Capital Bill. The Act 73 Report shows a modest increase in the contribution from the Capital Bill (\$13 million), as well as contributions from the municipal and private sectors.

	Municipal Infrastructure	Agriculture	Developed Lands	Natural Resources	Total
<b>Act 73 Report (5-yr avg)</b>					
Cost Estimate	35	24	27	4	90
Revenue Estimate	29	12	27	4	72
Gap Estimate	6	12	0	0	18
<b>Treasurer's Report (Tiers I &amp; 2) (20-yr avg)</b>					
Cost Estimate	43	29	36	7	115
Revenue Estimate	30	12	11	2	55
Gap Estimate	13	17	25	5	60

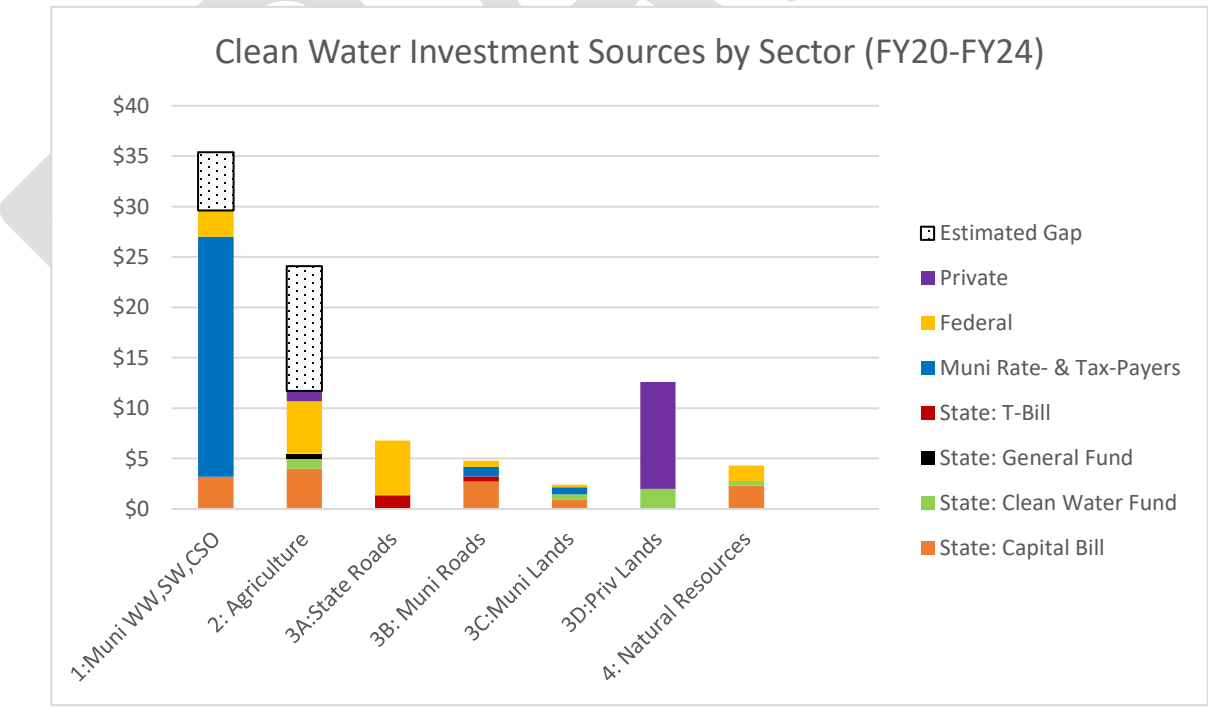
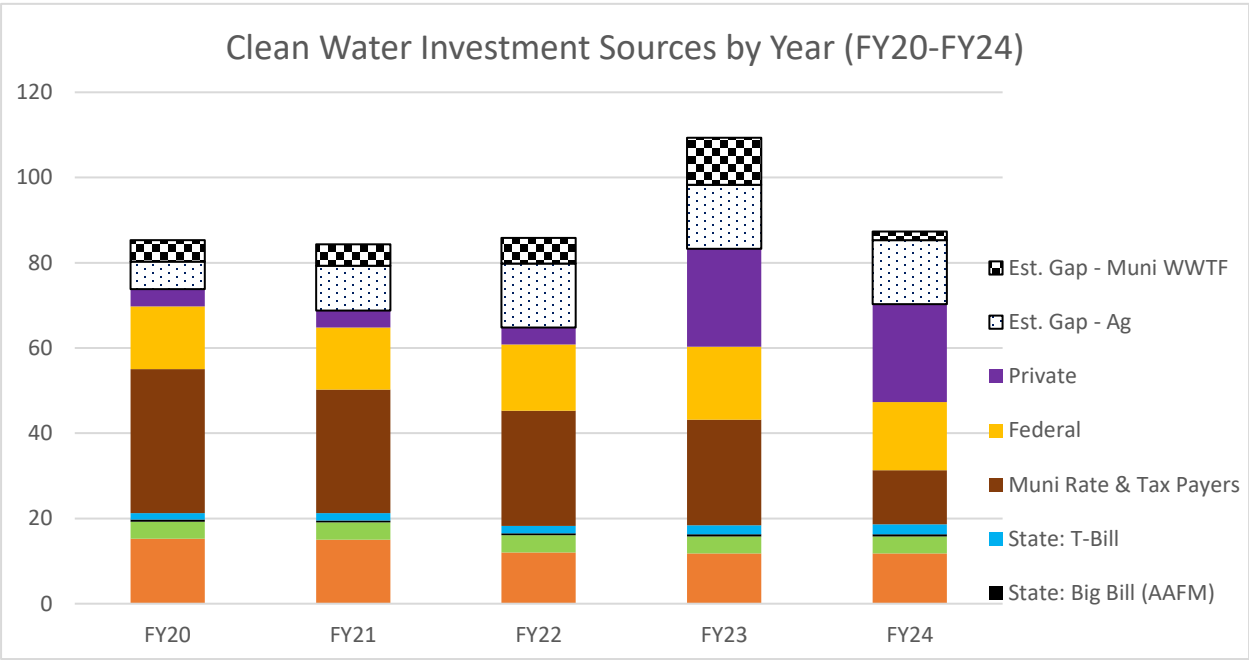
#### Act 73 Notes

Sector 1: Assumes state grants of 20% for municipal infrastructure; state grants not fully funded.

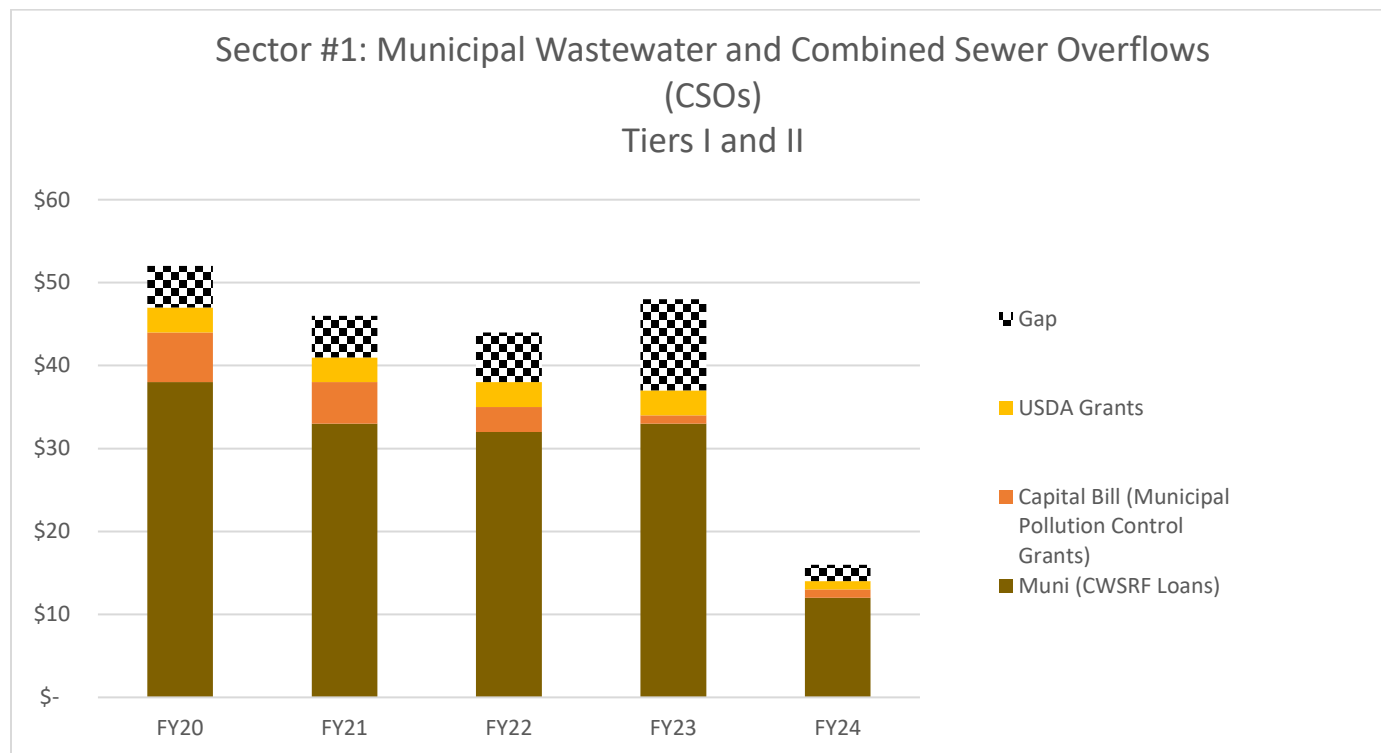
Sector 2: Assumes funding and capacity constraints will lead to a gap in agricultural sector spending.

Sector 3: Assumes private landowners will pay 100% compliance costs on private developed lands unless projects are municipally sponsored.

Summary Charts



## Sector 1: Municipal Infrastructure



- **Funding.** The Act 73 Working Group anticipates that municipal wastewater infrastructure upgrades and refurbishments can be funded through a combination of debt incurred by municipal ratepayers, municipal pollution control grants through the Capital Bill, and federal grants through USDA.

The Vermont Legislature has set a maximum award of 35% for municipal pollution control grants, and minimum grant award of 10%. These estimates use an average grant award of 20%. The municipal pollution control grant program is funded through the Capital Bill. Given average annual Capital Bill investments of \$13 million a year, spread across various sectors, the Group anticipates an annual average gap in the funding of municipal pollution control grants of \$6 million.

Recent legal challenge to the phosphorus limits for certain wastewater treatment facilities may impact municipalities' willingness to take on loans, and therefore the demand for municipal pollution control grants. Legal challenges create uncertainty regarding phosphorus targets and the infrastructure necessary to meet those targets.

The Legislature may want to consider supplemental affordability grants for municipalities where loan repayments for required phosphorus upgrades, combined with regular service

payments, may exceed 2% of median household income (MHI) – a threshold considered by EPA to have significant socio-economic impacts.

Municipal ratepayers are assumed to pay their share of project costs in the form of loan repayments, obtained either through the state's Clean Water State Revolving Fund (CWSRF) or USDA loan programs. Both programs offer loans with 0% interest and some forms of loan forgiveness. Municipalities must obtain voter approval prior to incurring bonded debt. 24 V.S.A. § 1755, 1786a.

Vermont's Clean Water State Revolving Fund carried a balance of \$76.9 million at the end of SFY17. In the unlikely event that all of the projects on the municipal intended use plans are approved by voters, the CWSRF may approach a zero balance as early as SFY20. Additional capacity may be available through the USDA loan programs and the Vermont Municipal Bond Bank (VMBB). ANR intends to collaborate with the Treasurer's Office to explore alternatives to the CWSRF should that source of lending become exhausted.

- Wastewater Treatment Facilities. The State and the federal government have invested over \$600 million since the 1970s to safeguard public health by funding the construction of and upgrades to wastewater treatment facilities (WWTFs). Over 120 municipally- and privately-owned wastewater collection and treatment facilities exist in Vermont, serving approximately half the state's population. Those investments continue to pay substantial dividends to public health and safety, local economies, and the environment.

Many municipal WWTFs are reaching the end of their design life and require refurbishment; in addition, a number of these facilities will need to implement enhanced nutrient removal technologies to meet allocations included in TMDL plans for Lake Champlain (phosphorus), Lake Memphremagog (phosphorus) and the Connecticut River and Long Island Sound (nitrogen).

Based on their intended use plans, thirty-four municipalities intend to construct sewer, wastewater treatment, or stormwater infrastructure projects, other than those required by a TMDL or the CSO rule, during the period FY20 to FY24. The aggregate project costs are \$31 million in FY20, \$17 million in FY21, \$12 million in FY22, \$9 million in FY23, and \$0.6 million in FY24. Because the municipalities' intended use plans likely underestimate activity in FY21 to FY24, an upward adjustment of \$5 million a year was made for each of these years.

- Phosphorus Upgrades at Wastewater Treatment Facilities. Collectively, the 49 wastewater treatment facilities in the Lake Champlain basin are responsible for approximately 4% of the phosphorus loading to the lake, and will need to reduce their annual phosphorus contributions by 42% over the next 20 years. The Treasurer's Report projected that providing enhanced nutrient removal at the 13 facilities identified in the TMDL as requiring upgrades would cost \$78.4 million. Several recent WWTF pilot

projects suggest that the cost of nutrient removal could be substantially less than originally estimated in 2016. More recently, DEC has estimated that the cost would be \$54 million.

Five municipalities are likely to upgrade wastewater treatment facilities between FY20 and FY24 to comply with the Lake Champlain TMDLs. The municipalities and estimated project costs are: North Troy (\$1 million), Plainfield (\$1 million), Richford (\$8 million), Swanton (\$3 million), Winooski (\$8 million). The St. Albans' WWTF upgrade should be completed by FY20.

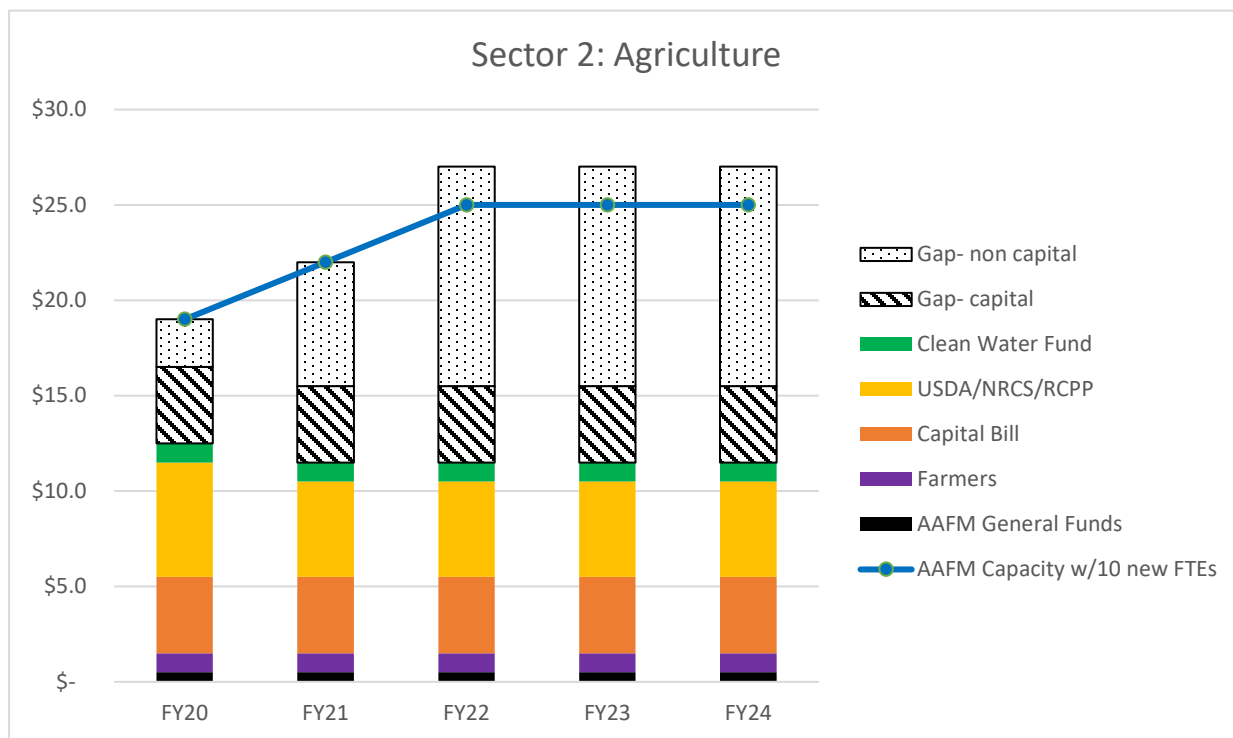
- Combined Sewer Overflows. Combined sewer systems are collection systems designed to convey both sewage and stormwater in the same pipe to a treatment facility. Storm events can cause flows to exceed the capacity of the collection system or treatment facility, resulting in discharges from CSOs of untreated wastewater, diluted with stormwater, to surface waters. ANR's 2016 Combined Sewer Overflow Rule requires municipalities to establish timeframes for addressing combined sewer overflows. The 2016 Combined Sewer Overflow (CSO) rule addresses discharges from the CSOs statewide.

Four municipalities currently have specific plans to address combined sewer overflows between FY20 and FY24. The municipalities and estimated project costs are: Northfield (\$500,000), Middlebury (\$1 million), Rutland (\$3 million), St. Albans (\$1 million). Because current plans likely underestimate future CSO activity, an average upward adjustment of \$6 million per year was made for FY21 through FY24.

Since 1990, municipalities have eliminated many CSOs, reducing the number of CSOs from 171 to 68. The remaining 68 CSOs are located in 15 Vermont municipalities.

ANR anticipates working with the 15 municipalities that are responsible for the remaining combined sewer overflows to develop comprehensive long-term control plans, including cost estimates, with results available by November 2018.

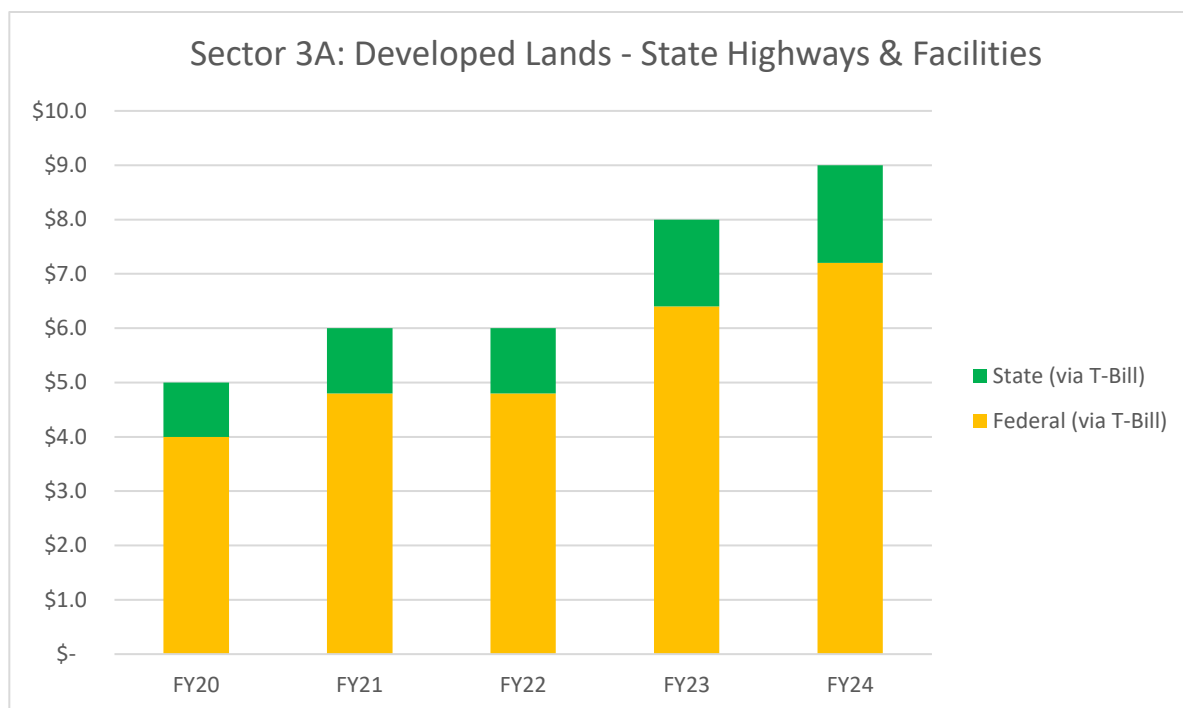
## Sector 2: Agriculture



- The Treasurer's Report (1/15/2017) estimated that the agricultural sector's Tier 1 cost of complying with the TMDLs and the Vermont Clean Water Act of 2015 averaged \$27 million a year over 20 years. Of this, \$8 million are capital costs and \$19 million are non-capital costs. Capital costs include implementation of best management practices (BMPs) for production areas and livestock exclusion infrastructure. Non-capital costs include development of nutrient management plans, deployment of agronomic practices and field-based conservation measures such as cover cropping, technical assistance and training. The graph above shows a gap for both capital and non-capital costs in the agricultural sector.
- The Agency of Agriculture, Food and Markets (AAFM) is currently delivering approximately \$6 million in technical and financial assistance programming to farmers each year. USDA's Natural Resource Conservation Service (NRCS) delivers another \$5 million in technical and financial assistance. Farmers are expected to contribute \$1 million each year in cost share. The delivery mechanism for AAFM's technical assistance is nearly completely outsourced through grants or contracts to organizations in Vermont who work directly with farmers to develop projects and oversee the implementation. The financial assistance is mostly through direct grant agreements between AAFM and farms.

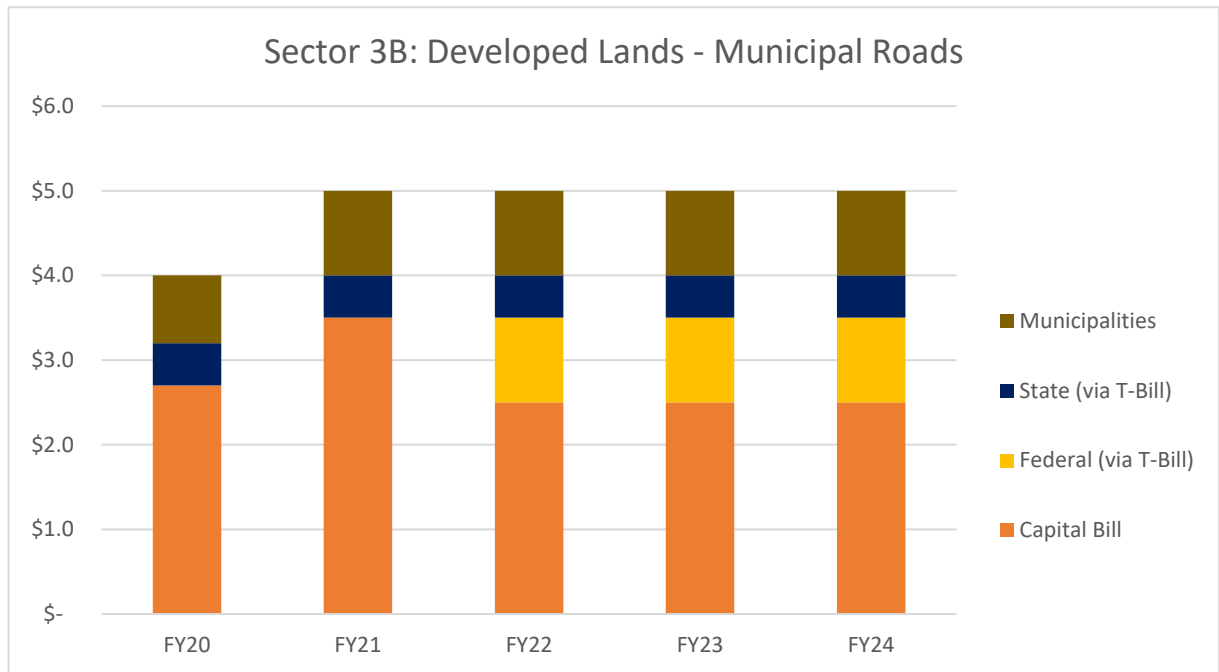
- The capacity does not currently exist within the agriculture sector – AAFM, NRCS and farm partners – to deliver \$27 million in technical and financial assistance programming. AAFM is working on plans to increase the agency’s capacity to deliver services to farmers. Specifically, AAFM continues to implement the new Certified Small Farm Operation (CSFO) inspection program, which results in roughly 100 farm inspections annually, along with increased numbers of inspections on the medium and large farms due to changes in statutory requirements. These inspections will increase the demand for capital improvement projects on farms over time as farmers work to resolve the concerns identified during these inspections. AAFM envisions that the demand to address non-point source pollution challenges identified through inspection will ramp up and exceed the current resource allocations of state and federal agencies by SFY2022, as at that point there will be 300 completed CSFO inspections in addition to the medium and large farm inspections. To meet the projected need, AAFM envisions that additional staffing and financial assistance will be required beginning in SFY2022.

### Sector 3A: Developed Lands – State Highways and Facilities



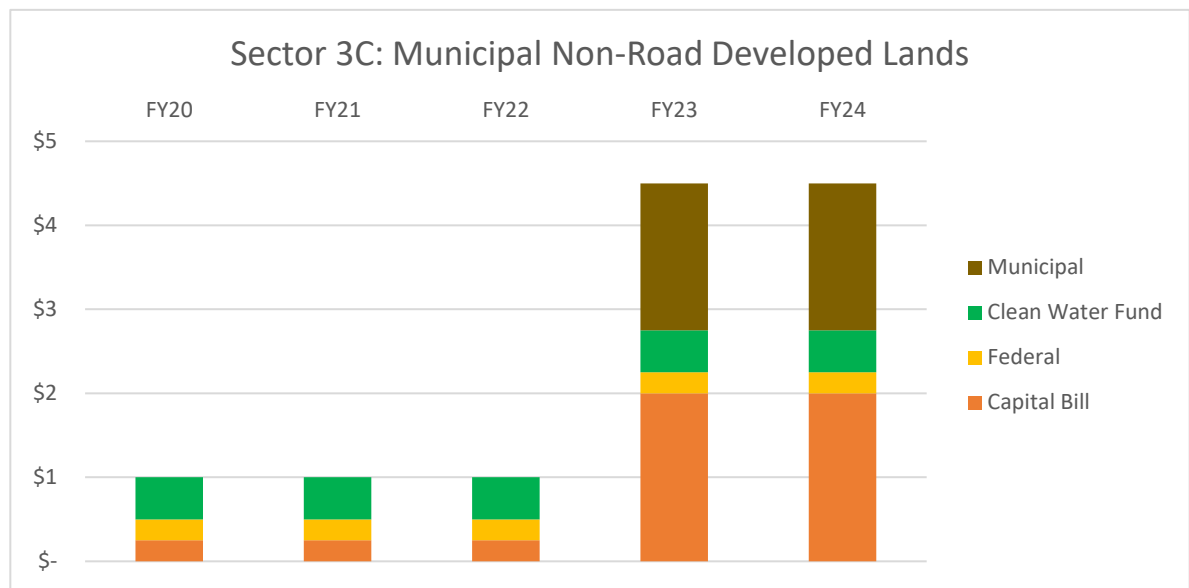
- The Act 73 Working Group anticipates that the costs of implementing stormwater practices on state highways and facilities to comply with Act 64’s TS4 (“Transportation Separate Storm Sewer System”) permit will be fully covered by the Transportation Bill, and that the state’s revenues will be matched by federal funds on an average 20% State/80% Federal ratio. The actual match varies on a project by project basis. Planning for and implementing stormwater treatment practices and retrofits on VTrans non-road developed land (facilities) will be 100% state funded.
- The Act 73 Working Group noted that the cost of the state highway compliance with the TMDLs and Act 64 over 20 years is likely to decrease from the estimate in the Treasurer’s Report. This is because the estimates in the Treasurer’s Report relied on draft modeling by US EPA to determine the number of acres of highway roads that must be treated to comply with the Lake Champlain TMDLs. The Act 73 Report relies on US EPA’s final modeling. However, given the uncertainty in estimating costs over a 20-year period, the Act 73 Working Group has not revised any of the 20-year estimates. Instead, the Act 73 Working Group recommends revisiting these estimates every two to four years.
- VTrans’ cost estimates to comply with the TS4 General Permit include the cost of retrofitting state highway facilities, including garages, park & rides, welcome centers, and state airports. VTrans staff costs are also included in the TS4 cost estimates.

### Sector 3B: Developed Lands – Municipal Roads



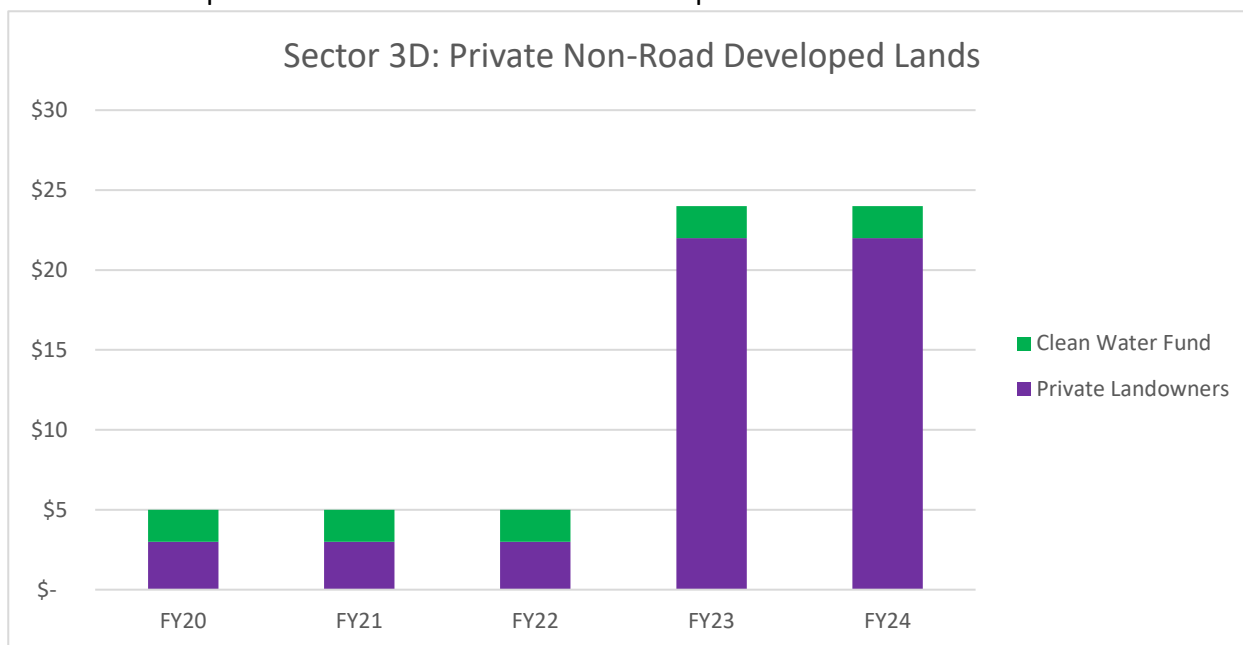
- The Act 73 Working Group anticipates that funding for compliance with Act 64's Municipal Roads General Permit (MRGP) will be shared by federal funds in the Transportation Bill (\$1.5 million); state funds in the Transportation Bill (\$0.5 million); state funds in the Capital Bill (\$2.0 million); and municipalities (\$1 million).
- As with state highways, the Act 73 Working Group noted that the cost of municipal road compliance with the TMDLs and Act 64 over 20 years is likely to be less than the estimate in the Treasurer's Report. However, given the uncertainty in estimating costs over a 20-year period, the Act 73 Working Group has not revised any of the 20-year estimates. Instead, the Act 73 Working Group recommends revisiting these estimates at least every two to four years.

### Sector 3C: Developed Lands – Municipal Non-Road Lands



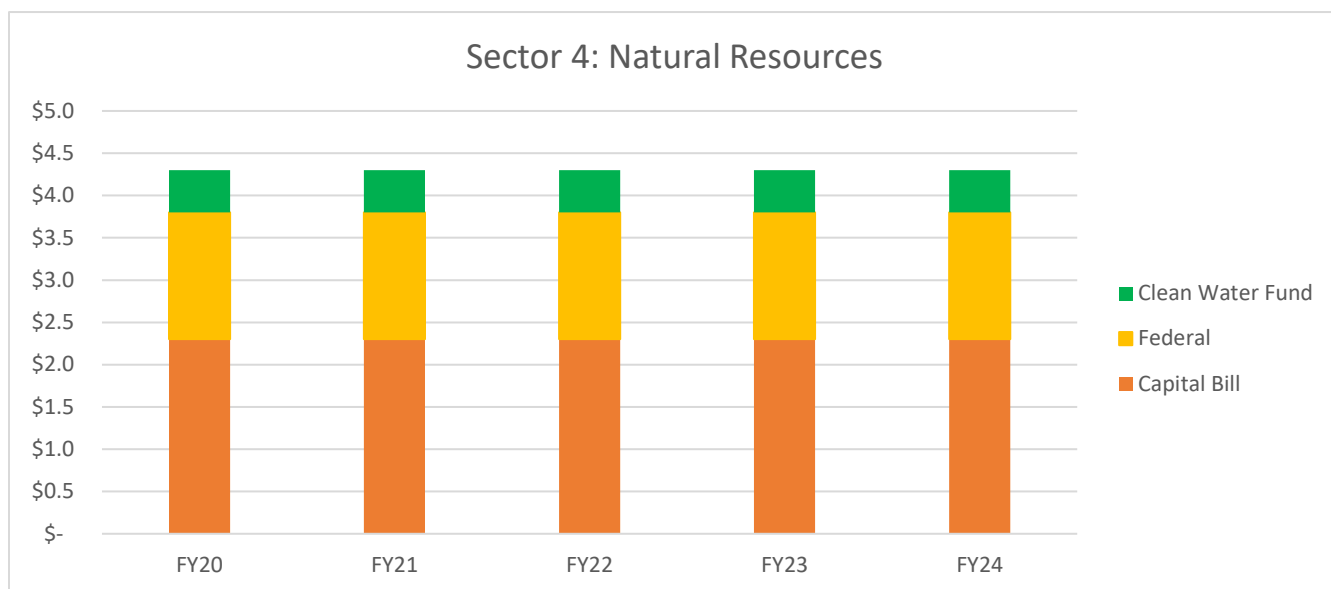
- The Act 73 Working Group anticipates that the cost of implementing stormwater practices on parcels owned by municipalities with greater than 3 acres of impervious surface will be fully reimbursed in SFY20, SFY21 and SFY22 through grants from the Capital Bill, Lake Champlain Basin Program and the Clean Water Fund. Starting in SFY23, when compliance with Act 64's 3-acre permit becomes mandatory, municipalities will need to provide a 50% match.
- Starting in SFY23, it is assumed that the Capital Bill will provide 50% match for municipal projects through DEC's Ecosystem Restoration Grants, while federal sources and the Clean Water Fund will provide fixed amounts of \$250,000 and \$500,000 respectively.

### Sector 3D: Developed Lands – Private Non-Road Developed Lands



- The Act 73 Working Group assumed that private landowners would bear the cost of implementing stormwater practices on existing parcels of land that have 3-acres or more of impervious surface, as required by Act 64, codified at 10 V.S.A. § 1264(c)(7).
- Current cost estimates assume that private landowners will not have to access state grants to support the implementation of projects required by the Lake Champlain TMDLs or Act 64; however, private owners may become eligible for grant funding by entering into public-private partnerships with municipalities. Private projects that are municipally-sponsored may be eligible for up to 50% grant funding through DEC's Ecosystem Restoration Program.
- Under existing programs, stormwater improvements that are not required by statute are eligible for ecosystem restoration grants up to 100%, funded through the Clean Water Fund. Stormwater improvements that are sponsored by municipalities are eligible for ecosystem restoration grants up to 50%, funded through the Clean Water Fund and the Capital Bill.
- The Legislature may want to consider expanding eligibility for loans from the Clean Water State Revolving Funds (CWSRF) to private entities that are constructing stormwater improvements required by the Lake Champlain TMDLs or the Act 64, including the up to 35% municipal pollution control grants available through DEC's Facilities and Engineering Division.

## Sector 4: Natural Resources



- DEC estimates that the phosphorus target assigned to the natural resources sector can be met through annual completion of 10-12 river corridor easements, 6-8 wetland easements, 4-6 floodplain restoration projects, and up to 20 wetland restoration projects. The average total cost of these projects was estimated at approximately \$4 million per year.
- The Act 73 Working Group anticipates that implementation costs related to natural resources will be fully funded through state and federal grants. Funding will allow partners to acquire river corridor easements to secure permanent channel management rights, passive restoration of floodplains, and the restoration and maintenance of undisturbed riparian buffers.
- Well-functioning rivers, wetlands, shorelands and vegetated buffers are natural infrastructures reduce the amount of pollution that enters our lakes and waters. Rivers and streams in their equilibrium condition provide floodplain protection and promote high quality aquatic habitats. Wetlands filter pollutants, reduce erosion, and minimize flood hazards. Shorelands resist erosion that otherwise occurs from high water levels and wave action. Vegetated buffers and wetlands absorb nutrients in runoff; support erosion-resistant stream banks; support fish habitat function, and provide habitat and movement corridors for wildlife. Forested areas, particularly headwaters, protect water quality and can be managed to prevent discharges into waterways.

## V. Technological and Regulatory Innovations

While not part of its statutory mandate, the Act 73 Working Group recognized that technological and regulatory innovations could increase the cost-effectiveness of pollution reduction activities, while accelerating the clean-up of Vermont's waters. This section highlights some of those opportunities.

### A. Watershed Phosphorus "Mass Balance"

The concept of phosphorus mass balance may help guide future policy in selected watersheds. Mass balance is an accounting of the total importation and exportation of phosphorus in a watershed. Historically in Vermont's watersheds, the importation of phosphorus has exceeded exportation, resulting in accumulation of excess phosphorus in soils – especially in the agricultural sector. For context, in the agricultural sector phosphorus *exports* include: milk and meat production and sales, crop harvest, manure production and application, fertilizer application, and surface water and soil loss. Phosphorus *imports* include feed and manure from out of watershed, fertilizers, bedding, and other smaller sources. Under current practices, producers most often import more phosphorus than is exported.

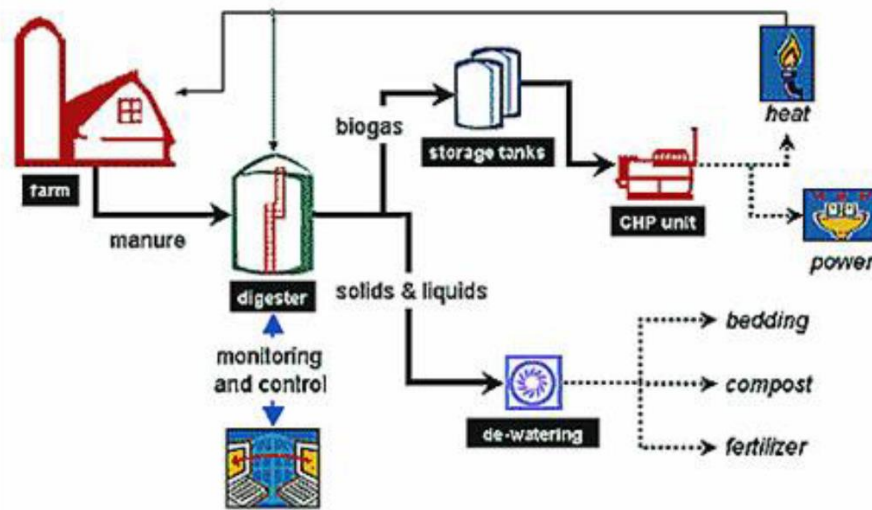
The Executive Agencies are therefore contemplating programs where one or more key subwatersheds may be targeted for interventions designed to achieve a phosphorus mass balance. Several approaches are under consideration, including sequestering phosphorus from manure for export (see section below on digesters), and limitations on importation of fertilizer.

### B. Anaerobic Digesters and Enhanced Nutrient Removal

Anaerobic digesters hold the promise of helping to address several environmental and economic challenges facing Vermont, especially when paired with enhanced phosphorus removal technologies and air emissions controls. There are currently fifteen anaerobic digesters on Vermont farms ranging in size from 45 to 2500 cows. As shown in the figure below, anaerobic digesters break down raw dairy manure, producing biogas in the form of methane, which can be used for hot water and space heating on the farm or transformed into electricity. The solid and liquid byproducts are separated upon completion of the digestion process. The solids are commonly separated using a screw press, and the separated solids, also known as fibers, can be used as fertilizer, compost, animal bedding, or separated nutrients, most notably phosphorus.<sup>21</sup>

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<sup>21</sup> A. Babcock et al., "The Viability of Biomethane Digesters in Vermont," (Middlebury College 2016), page 12.



Source: A. Babcock et al., "The Viability of Biomethane Digesters in Vermont," (Middlebury College 2016), citing <http://www.pluginflowdigester.com>.

Internal combustion engines, regardless of the fuel burned, emit nitrogen oxides, carbon monoxide and hydrocarbons, all sources of air pollution. Agricultural digesters that utilize manure as the primary feedstock also produce significant amounts of  $\text{H}_2\text{S}$  due to the high sulfur levels in the manure.  $\text{H}_2\text{S}$  is a hazardous air contaminant (HAC) and when combusted forms the criteria pollutant sulfur dioxide ( $\text{SO}_2$ ).

Sulfur dioxide emissions can be controlled by scrubbing hydrogen sulfide ( $\text{H}_2\text{S}$ ) from the digester gas before it is burned in the engine. The scrubbing of hydrogen sulfide is expected to also reduce maintenance and damage to biomethane engines caused by the formation of acids when the hydrogen sulfide is burned.

Due to the high initial capital costs, the installation of new digesters has stagnated since funding from an initial series of federal grants ended in 2011. In order to make anaerobic digesters economically viable, a variety of revenue streams will be necessary. Vermont's 2009 Standard Offer Program incentivized the kilowatt-hour rate for biodigesters, as did the 2015 Renewable Energy Standard. Finding a market for phosphorus products, which are more easily recovered from digested manure, could further compensate farmers as well as address Vermont's phosphorus imbalance.

### C. Engineered Ecosystems

Executive Agencies are partnering with the Lake Champlain Basin Program and the Army Corps of Engineers to evaluate a pair of engineering-based phosphorus reduction projects targeting St. Albans Bay. The intent of these engineered phosphorus reduction projects is to provide a measure of relief to the unacceptable late-summer cyanobacteria blooms in the Bay more rapidly than would be expected were watershed reductions alone to be pursued.

The first project, currently supported by the Lake Champlain Basin Program, is evaluating the feasibility of constructing a phosphorus “treatment train” in the Jewett Brook portion of the St. Albans Bay watershed. Treatment trains divert a portion of stream flow from a polluted stream, pass it thru a series of engineered treatment cells or constructed wetlands, before returning the water to the stream or a natural wetland. This type of approach has been applied in Ohio, and demonstrated to be effective at treating a portion of the total phosphorus load from a similarly polluted stream.

The second project is being conducted by the Army Corps of Engineers with DEC, and will evaluate the cost and feasibility of removing historical phosphorus buildup in the sediments of the Black Creek Wetland, at the confluence of Jewett and Stevens Brooks. All of the phosphorus delivered from the Jewett and Stevens Brook subwatersheds to St. Albans Bay flows through this wetland. For over one hundred years, this wetland has acted to slow and settle sediment, and its associated phosphorus load. An analysis done in the early 2000’s indicated that the capacity for the wetland to retain this sediment-bound phosphorus is likely exhausted, and thus the wetland is now acting as a phosphorus source during the critical summer and fall months. The current work of the Army Corps of Engineers is to evaluate the costs, efficacy, and range of technical options available to reduce or eliminate the legacy phosphorus loading to the Bay from the wetland complex.

### D. Integrated Planning and Permitting

Burlington is one of five cities across the United States chosen by the U.S. EPA to test an integrated planning process. As explained by the U.S. EPA:

“An integrated planning approach offers a voluntary opportunity for a municipality to propose to meet multiple CWA [Clean Water Act] requirements by identifying efficiencies from separate wastewater and stormwater programs and sequencing investments so that the highest priority projects come first. This approach can also lead to more sustainable and comprehensive solutions, such as [green infrastructure](#), that improve water quality and provide multiple benefits that enhance community vitality.”<sup>22</sup>

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<sup>22</sup> <https://www.epa.gov/npdes/integrated-planning-municipal-stormwater-and-wastewater>

The Act 73 Working Group is supportive of integrated planning and permitting as a way of achieving water quality goals while reducing and staging overall costs. DEC is actively promoting integrated planning through asset management grants that encourage municipalities to plan for and schedule clean water infrastructure improvements in the most cost-effective way possible. Increased funding for asset management planning could reduce overall costs of compliance with stormwater mandates.

#### E. Public-Private Partnerships

Public Private Partnerships (P3) are innovative strategies that can help municipalities optimize their limited resources to address infrastructure needs. P3s involve municipalities and private entities entering into agreements to design, build, finance and/or maintain public infrastructure.<sup>23</sup> This approach has been used to support improvements to roads (using revenues from tolls), wastewater and water supply facilities and energy efficiency investments. States across the country are now evaluating the merits of P3s to help install lower cost stormwater treatment systems.

The fundamental benefit of a P3 approach is to gain efficiencies at the operational level. For example, a municipality may need to implement stormwater treatment practice. However, site-specific conditions (e.g., soils, slope conditions, land uses, and natural or existing infrastructure constraints) may make the installation of stormwater treatment on municipal lands inside its right-of-way more expensive. Lands outside the municipal right-of-way may be more suitable, thus becoming a lower cost option to site the stormwater treatment. P3s can help support the implementation of the more relatively lower cost options.

Philadelphia's Greened Arce Retrofit Program (GARP) uses this model. Philadelphia operates a stormwater utility that uses parcel-based fees and credits to incentivize landowners to adopt stormwater treatment practices. Philadelphia also offers grants to private companies or contractors who can install stormwater practices on private property below a defined cost-efficiency threshold. The project benefits the city because it is installing cost-effective practices and benefits the private landowner who receives a credit on its parcel fee.

#### F. State Grant Incentives for Municipal Adoption of Stormwater Zoning Standards

The State of Vermont currently provides to municipalities up to 35% municipal pollution control grants for wastewater and stormwater infrastructure; 50% ecosystem restoration program

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<sup>23</sup> U.S. EPA Region 3, "Community Based Public-Private Partnerships (CBP3s) and Alternative Market-Based Tools for Integrated Green Stormwater Infrastructure," April 2015. [https://www.epa.gov/sites/production/files/2015-12/documents/gi\\_cb\\_p3\\_guide\\_epa\\_r3\\_final\\_042115\\_508.pdf](https://www.epa.gov/sites/production/files/2015-12/documents/gi_cb_p3_guide_epa_r3_final_042115_508.pdf)

grants for required stormwater practices on developed lands; 80% grants for stormwater practices on roads, whether regulatorily required or not; and 100% grants for practices on developed lands that are not regulatorily required. Many of these municipalities do not have local zoning for stormwater.<sup>24</sup> The Act 73 Working Group encourages adoption of a tiered grant structure to incentivize municipalities to adopt a local stormwater ordinance.<sup>25</sup>

#### G. Market-Based Solutions

DEC has an existing offset program that allows regulated entities to meet “net zero” requirements for discharges to impaired waters without a TMDL. An “offset” typically refers to a program that allows a landowner to satisfy regulatory requirements by implementing a practice on a site owned by a different landowner, or on a project owned by the state. The action or project is designed to mitigate the impacts associated with an existing or proposed discharge that the permitted source has or is expected to have on the impaired water body.

Impact fees have broader applicability than offsets. This approach allows projects that are unable to meet full permit requirements due to site constraints a means of equitably contributing to overall pollution reduction solutions. ANR’s draft stormwater rule proposes a relatively simple impact fee system where dischargers are assessed fees based on the level of pollutant reduction achieved, and those fees are directed to other pollutant reduction efforts in the watershed.

Phosphorus credit trading, or “banking,” allows permit holders to buy or sell quantifiable pollutant load reduction credits in order to meet permit requirements. Credits are generated from actions that extend beyond the minimum threshold baseline requirements. To establish a phosphorus banking system, the state would need to develop a legal, policy, technical and administrative trading framework to ensure that there is a net benefit to water quality; and ensure that verification, accountability and enforceability measures are in place to guarantee that phosphorus reductions take place over time. North Carolina has several different types of water quality banking programs; more information about these banking programs is available on North Carolina’s website.<sup>26</sup> The Act 73 Working Group supports further research into the establishment of a phosphorus banking system managed by a third-party administrator.

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<sup>24</sup> VLCT Water Resources: <http://www.vpic.info/Publications/Reports/Implementation/GreenInfrastructure.pdf>

<sup>25</sup> VLCT Model Stormwater Bylaw: <http://dec.vermont.gov/sites/dec/files/wsm/erp/docs/2015-LID-GSI-VLCT%20model-bylaw.11-2015.pdf>

<sup>26</sup> <https://deq.nc.gov/about/divisions/water-resources/water-resources-permits/wastewater-branch/401-wetlands-buffer-permits/401-stream-wetland-mitigation-program>.

## H. Treasurer's Report: Innovative Uses of Lending Programs

The January 2017 Treasurer's Report recommended several innovative ways to expand existing lending programs to support clean water investments. The Act 73 Working Group agrees with and supports the Treasurer's recommendations, which include:

*The Vermont Agricultural Credit Corporation (VACC), a program of the Vermont Economic Development Authority (VEDA), could provide capital to buy down the interest payments on loans for best management practices on farms.* VACC is a nonprofit corporation which provides credit to Vermont farmers, agricultural facilities, forestry and forest product-based businesses. Farm loans are available to strengthen existing farm operations, including promoting soil and water conservation and protection. Through a buy-down program, farmers would be responsible for their share of the project cost, after federal and state grant funding, through an interest reduced or interest free loan. The farmer's debt would be amortized over five years and begin after the payment of all grant funding. The capital required for such a program would vary based on negotiations with VAAC on origination costs, servicing, and loan loss reserve requirements.

*The Clean Water State Revolving Fund (CWSRF) could offer debt forgiveness on natural resource projects paired with traditional infrastructure projects.* Vermont's CWSRF provides low interest construction loans for clean water projects to municipalities with terms of 20 to 30 years, a 0% loan rate, and a 2% administrative fee. The CWSRF could, instead, offer loans with a 1% loan rate and a 1% administrative fee, and then advance the 1% interest payments for natural resources projects. As explained in the Treasurer's Report, using the 1% pairing support, a \$5 million infrastructure project with a 20-year term rate would generate about \$541,531 for a "paired project" or, over a 30-year borrowing, up to \$812,217. Since these monies would be advanced, the restoration project could take place immediately rather than waiting to recoup the funds over the course of the loan period. Given capital funding, all or part of the interest due for the restoration project could be waived, providing additional incentive.

*The Municipal Equipment Loan Fund (MELF), 29 V.S.A. Chapter 61, could be used for municipal equipment purchases that have a clean water benefit.* The MELF was created to provide loans on favorable terms to municipalities for the purchase of construction, fire, emergency or heavy equipment or vehicles. By statute, the amount loaned shall be no more than 75% of the purchase price of the equipment, up to the maximum of \$110,000, and shall be repaid in no more than five years. For loans to a single municipality the interest rate is 2%. For loans to two or more municipalities jointly purchasing equipment, there shall be no interest assessed. A committee, consisting of the State Treasurer, Secretary of Transportation, Commissioner of Public Safety and Commissioner of Motor Vehicles, reviews and approves applications.

## VI. Conclusions and Recommendations

The Act 73 Working Group first convened on June 28, 2017 and spent four months advancing the effort to ensure long-term, sustainable funding for clean water work in Vermont. The constructive dialogue and input provided by Working Group members, aided by the Advisory Council, municipal officials, and other groups and organizations, helped identify areas of broad agreement when it comes to funding clean water investments for the long-term. This team also identified areas where additional work is needed to achieve consensus regarding how costs will be shared across sectors.

Vermont faces an urgent need to address statewide water pollution. Existing resources available from state, municipal and private sectors to meet their portion of the required clean water investment are stressed and unlikely to be adequate. The Working Group's recommendations reflect the need for action and propose a path forward to fund long-term clean water investments. These recommendations also include specific actions for the Legislature to consider in its upcoming session.

1. Utilitize existing state revenues and financial instruments to fund clean water through FY21.

Vermont dramatically increased its investment of capital dollars in clean water work in FY18 (\$22 million) and FY19 (\$23 million), from \$10 million in FY16 and FY17. The Act 73 Working Group recognizes that capital dollars will be scarce and that bonding level authorizations will likely continue to decline, meaning that capital dollars cannot viably be viewed as the primary long-term funding source to support clean water work.

The Act 73 Working Group recommends that the Legislature maintain a Capital Bill clean water investment of \$15 million a year through the next biennium (FY20-21). In years beyond FY21, to estimate the amount of revenue that will need to be raised, the Working Group assumed the annual capital investment would be between \$10 and \$12 million per year.

The Act 73 Working Group also recommends that the Legislature maintain its Clean Water Fund spending at a minimum level of \$4 million a year. These investments are funded by the property transfer tax surcharge which is slated to expire in 2027. The Clean Water Fund is an important source of flexible money that can be used for scoping, creating inventories, and for construction projects on private lands.

The combination of these two funding sources may fall somewhat short of the total clean water investment needs anticipated in FY20 and 21, depending on the resolution of several potential funding opportunities. In addition to awaiting a final decision on the construction of the TDI Clean Powerlink before the end of the 2017 calendar year, Executive Agencies are aggressively pursuing other sources of funding for water quality work, including but not limited to grants

offered by the Lake Champlain Basin Program and USDA's Regional Conservation Partnership Program. In recent these sources have provided between \$5 and \$8 million per year in support of clean water work in Vermont. These types of funding sources could help provide sufficient time for the Legislature, working with Executive Agencies and other stakeholders, to fully implement a long-term revenue source and service delivery model.

2. Let clean water priorities guide how costs are shared across sectors.

The total amount of state funding required is based on a set of important public policy decisions relative to the cost-share provided for different types of projects including wastewater treatment facility upgrades, stormwater retrofits on public and private property, and agricultural stewardship practices.

To date, cost-share decisions have largely been sector-specific and stand-alone. While statute and agency practice have established a framework for cost-sharing that determines the level of state funding required to support water quality, it is critical that the Legislature review the collective weight of these decisions during the upcoming session.

3. Establish approaches for revenue collection and service delivery that are environmentally efficient and cost effective.

New revenues will likely be needed to support clean water work. The most equitable and effective long-term funding method is likely to be a fee based in part on the amount of runoff from a parcel. There are two main issues that must be resolved in order to fully evaluate and, ultimately, implement such a fee. The first is revenue collection and the second is service delivery.

*Revenue Collection*

The Working Group found that administering a water quality fee outside of existing collection and billing structures would be inefficient for the State and municipalities. The Working Group asked the Tax Department and the Vermont League of Cities and Towns (Appendices A and B) to look at how much it would cost for their organizations to collect a parcel fee in support of clean water using a new billing structure. Their analyses concluded that the administrative costs to bill and collect a parcel fee with a new structure would cost roughly 20% of the total revenue raised. Other options that are more cost-effective must be evaluated.

We believe that, with more time, a smaller committee could continue the work needed to find an efficient revenue collection method. The Working Group recommends forming a small committee comprised of individuals with relevant expertise to further investigate potential revenue collection mechanisms. This committee should contain representative from Tax, VLCT,

existing utilities, municipal clerks and treasurers, and other entities with direct knowledge and experience raising revenue in Vermont. This group should consider whether enlisting a third-party, such as a Clean Water Authority, would be an efficient tool for collecting revenue. The Legislature must also specify the amount of revenue needed and what the revenue is intended to fund. Specific guidance is needed for several issues (see Appendix C).

### *Service Delivery*

Distinct from reviewing revenue-raising mechanisms, there needs to be a complete evaluation of possible service delivery models (Appendix D), with an eye toward approaches that will expand technical innovation and capacity. One approach would be to conduct engineering projects through a centralized entity with the ability to design, construct, operate and maintain larger practices, thereby leveraging efficiencies and implementing more cost-effective strategies.

This evaluation should consider and recommend whether ongoing implementation is best accomplished by an entity within or outside state government such as a Clean Water Authority. There could also be a hybrid model whereby a state-level “corps of engineers” is formed from different agencies to support implementation. As a clear next step, the Working Group advises the state to hire a contractor to investigate and recommend a service delivery model.

#### 4. Pursue technological and regulatory innovation.

The Working Group recommends that the Legislature and Executive Agencies continue to pursue technological and regulatory innovations to reduce costs and accelerate results. Specific opportunities include (1) investigating options for commoditizing excess phosphorus in Vermont, (2) supporting municipal clean water implementation through integrated planning and permitting, and (3) flexible financing.

### *Commoditizing Phosphorus*

Several existing and emerging technologies can facilitate phosphorus (P) recovery from various waste streams including agricultural manure, municipal wastewater, and food waste. Phosphorus recovered from these waste streams can be beneficially reused. Incentives need to be paired with existing regulations to help promote P recovery and reuse in Vermont. Establishing markets for recovered P will create economic drivers to minimize P loss to the environment, generating revenue that can be reinvested in clean water and other desirable outcomes. Two opportunities that Executive Agencies have initiated investigation of are:

- Compost products like Foster Brothers “Moo-Doo” operation in Middlebury that creates bagged composted cow manure for sale at garden centers.

- Renewable Phosphorus Standard (RPS): Vermont is not actively recycling its phosphorus. More than 2,000 tons of fertilizer containing artificial phosphorus were imported into Vermont in 2011. Creating an RPS target, similar to a renewable energy goal, for recycling phosphorus in Vermont would create an immediate market for recovered phosphorus. Many European countries like Finland, Germany, and Sweden lacking in-country mined phosphorus have introduced renewable phosphorus standards.

### *Integrated Planning & Permitting*

Vermont municipalities have numerous clean water obligations: to upgrade wastewater facilities; implement stormwater management requirements; and, to reduce the frequency of combined sewer overflows. Municipalities also have aging wastewater and stormwater infrastructure. Integrated planning is mechanism EPA promotes. It allows communities with numerous clean water obligations to examine them holistically and prioritize repairs with the highest cost benefit first. The City of Burlington is currently piloting this approach. Executive Agencies and the Legislature should be prepared to evaluate possible regulatory changes needed to support successful implementation of this approach on a broader scale.

### *Flexible Financing*

The Legislature and the Executive Agencies currently use a number of tools to support clean water and there are opportunities to expand the ways these tools are used to meet clean water priorities. The Working Group recommends the following actions to provide the maximum flexibility in implementing clean water programs:

- Explore opportunities to support the creation of local or regional “stormwater districts” as a mechanism for managing the financing, construction and on-going operation of stormwater management projects;
- Expand eligibility for Clean Water State Revolving Fund loans to private entities to the extent authorized by federal law;
- Allow capital dollars to be spent on private lands and equipment;
- Authorize DEC’s Ecosystem Restoration Protection (ERP) program to fund private projects that are regulatorily required;
- Explore the possibility of a private activity bond to increase access to capital by private landowners who are implementing clean water practices to comply with Act 64 and the TMDLs.

## 5. Commit to adaptive management.

The ability to routinely revisit and adapt the implementation plan is essential. Adaptive management is a structured “plan, do, check, repeat” iterative process that supports action and

implementation in the face of uncertainty. The aim is to reduce uncertainty over time by informing future decisions on past outcomes through assessment and monitoring. Best practices will be developed over time through data-driven decision making informed by growing knowledge and changing technology. As mechanisms are developed to raise revenue and deliver services, progress must be regularly evaluated, and methods adapted to reach shared water quality goals.

The Executive Agencies currently provide an annual investment report, detailing the state's investments in clean water work across Vermont including the estimated environmental benefits of each measure. The information contained in this report must be coupled with the targeted monitoring and assessment initiatives ANR and other agencies conduct as part of the Tactical Basin Planning process. This information would determine if the work completed produces water quality improvements.

### Conclusion

In conclusion, the Act 73 Working Group found that existing revenues are generally adequate to address clean water needs through FY21. There are critical public policy decisions that need to be made including the level of cost-share the state is willing to provide each sector for clean water projects. These decisions need to be informed by potential approaches for both raising and disbursing revenue in FY22 and beyond, including the evaluation of service delivery models described above. The primary goal of Vermont's clean water initiative is not simply to raise and spend money, rather it is to reach water quality standards. It is essential that any approach to raising revenue is efficient with administrative costs proportionate to the revenue raised.

We complete this report encouraged by what has been accomplished so far, and bouyed by the hard work and effort of many people dedicated to seeing this effort through to the end.

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## VLCT MEMO

**TO:** ACT 73 WORKING GROUP**FROM:** GWYNN ZAKOV, VERMONT LEAGUE OF CITIES AND TOWNS**DATE:** AUGUST 11, 2017**RE:** APPROXIMATE COST ESTIMATES TO MUNICIPALITIES TO ADMINISTER A NEW UTILITY FEE BILLING SYSTEM

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Determining the costs to municipalities to administer billing and collections of a new utility or “clean water fee” is very hard to determine with great accuracy. We looked at the current costs to larger municipalities with similar utility billing capabilities. We conducted informal inquiries of smaller communities regarding the cost of collecting property taxes now – including NEMRC, billing, mailing, adjustments to bills, tracking payments, notices, etc. – and the estimates below are the best numbers we’ve been able to come up with.

With the exact structure and requirements of a newly mandated fee or utility unknown, the potential cost range is understandably quite large. Municipalities and the State will greatly benefit from more detailed specifics of exactly what a new mandate will look like, to more adequately estimate the actual costs to municipalities.

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CURRENT EXAMPLES OF UTILITY BILLING:Populations:

Colchester: 17,067

South Burlington: 18,971

Williston: 8,698

Cost of billing for utilities

Colchester: \$24,000

South Burlington: \$43,000

Williston: \$20,000 - \$29,000

Yearly ERU (stormwater) fees per municipality

Colchester: \$52.39

South Burlington: \$78.48

Williston: \$51.00

Approximate yearly costs for billing ONLY by population:

1 – 5,000 (220 municipalities) – between \$5,000 - \$25,000 per municipality (\$1,100,000 – \$5,500,000)

5,001 – 10,000 (19 municipalities) – between \$20,000 - \$45,000 per municipality (\$380,000 - \$855,000)

10,001 – 20,000 (7 municipalities) – between \$40,000 - \$60,000 per municipality (\$280,000 - \$420,000)

20,001 – 45,000 (1 municipality, Burlington) – ? ? ?

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ESTIMATED YEARLY COSTS (excluding cost to Burlington): between \$1,760,000 - \$6,775,000

\*\*\* The low estimate is too low, and the high is too high. The low estimate is assuming all municipalities will fall on the lowest end of the cost spectrum, which is not realistic; the same is true for the high end estimates.

In all likelihood the number will fall somewhere closer to the middle - around \$4,000,000 (+/-). Again, these estimates are based on a small, random sampling of smaller communities, and current costs to larger communities with utility billing. These numbers will change depending on the actual structure of a newly mandated fee. \*\*\*

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## Parcel Fee Collection and Appeal Considerations (2/10/2017)

This memo provides a general overview of the Department of Taxes' administrative concerns for collecting and fielding appeals of a parcel fee at the State level. It is in response to a draft bill that the House Natural Resources, Fish, and Wildlife Committee is considering. The following information is based on the general concept of collecting and fielding appeals for this type of fee.

### Why it is cost-effective to collect and appeal at the local level:

1. The administrative capacity already essentially exists at the local level to collect and field appeals for property taxes, and – for some towns – water and sewer services. The same collections and appeals systems could be leveraged for a parcel and/or impervious surface fee. The State could assist with data organization, administrative oversight, and billing assistance, as it currently does with property taxes.
2. Creating a second property-based collection system at the State level would be costly, redundant, and inefficient because it parallels a system that already exists at the local level.
3. It is not cost-effective and can result in a net loss for the Tax Department to collect smaller bills, and the Department anticipates poor compliance with a property-based fee collected at the State level.

### State Compensation to Municipalities for Property-Based Collections

The State compensates municipalities for property tax-related administration, which can be leveraged to collect another property-based fee. The following table is a breakout of that compensation.

Description	Statute	Payment Calculation	FY 2016 Amount
<b>Timely Remittance</b>	32 V.S.A. § 5402.(c)	0.225% of total education tax collected	\$2,398,143
<b>Reappraisal and Grand List Maintenance</b>	32 V.S.A. § 4041a.(a)	\$8.50 per grand list parcel per year	\$2,837,000
<b>Lister Education</b>	32 V.S.A. § 4041a.(c)	A sum not to exceed \$100,000	\$99,000
<b>Equalization Study Assistance</b>			\$334,000
<b>Total</b>			<b>\$5,668,143</b>

### To put the proposed parcel fees into perspective:

Currently, the largest tax type the Department administers is Personal Income, with 375,000 filers. The next largest tax is Sales and Use, with 30,000 filers. The State collects more than \$700M in Personal Income Tax revenues and roughly \$370M in Sales and Use Tax revenues. The vast majority of these taxes are remitted voluntarily without the generation of a bill.

The proposed parcel-based fees would require the State to bill out to roughly 333,000 parcels to collect roughly \$18M. The cost-effectiveness, or bang for the buck, of this proposal is extremely poor for the State of Vermont and its taxpayers.

This proposal would require a collections effort similar – and in some cases more onerous – than Personal Income Tax, to raise revenue similar to the Health Care Claims Tax, which has only 140 filers. The below table compares the average revenue per filer of these assessments.

Assessment	Revenues	Filers	Avg. Rev/Filer
Personal Income	\$747,000,000	375,000	\$1,992
Sales and Use	\$371,000,000	30,000	\$12,367
Health Care Claims	\$17,100,000	140	\$122,143
Proposed Parcel	\$18,000,000	333,000	\$54

Another element that would affect the cost of administration is the frequency of filing or billing. Roughly 30,000 Sales and Use filers submit 153,000 returns based on monthly, quarterly, and annual cycles. If a parcel fee were assessed on nearly 333,000 parcels quarterly, that would require more than 1.2M bills or returns.

#### Cost Estimate of Collections and Appeals

This cost estimate is based solely on the State collecting and fielding appeals of the proposed parcel fees and does not consider other elements of this fee's administration, such as mapping, data organization, and other costs. It is based on draft proposals of the fee that are not fully developed. This value should not be considered a final estimate for administering a parcel fee. Once a more formulated proposal is on the table, the Department can better estimate the total cost of a proposal.

Estimated Collection & Appeals Costs	
VTAX Implementation	\$1.5M-\$2M
Ongoing Billing & Collections	\$2.8M
Ongoing Appeals	\$1.2M
Total First Year Costs	\$5.5M-\$6M
Total Ongoing Costs	\$4M

The cost to implement a parcel fee is based on the Department's experience with tax types of similar complexity and volume. The ongoing collections costs are based on the 25 FTEs the Department has previously estimated it would require to collect property taxes at the State level. The ongoing cost of appeals is based on property tax grievance data compiled by municipalities and the State. This appeals structure, and the additional seven FTEs it would require, would combine the appeals responsibility with that of district advisors for property tax administration. It would put an appeals officer/advisor in each county.

### Cost-Effectiveness Comparison

The table below compares the Department-wide costs of collecting all revenues with the estimated cost to administer the proposed parcel fee. Administering the parcel fee would be 22 times more expensive than the average cost of administering all other tax types.

	FY16 Op Expenses	Revenues	Cost/\$1 of Rev
<b>Department Wide</b>	\$17,700,000	\$1,670,000,000	\$0.01
<b>Parcel Fee - Ongoing</b>	\$4,000,000	\$18,000,000	\$0.22

DRAFT

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## Memo

**To:** Clean Water Fund Working Group  
**From:** John E. Adams, VCGI Director  
**Date:** 8/25/2017  
**Re:** Data needs for an impervious surface stormwater fee

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This memorandum outlines the status of statewide impervious surface data and statewide parcel data. I've included some notes related to ongoing maintenance needs as well as several other issues to consider.

### **Statewide Impervious Surface Data.** (Target Completion: Summer 2018)

VCGI has begun the process of acquiring impervious surface data (1-meter resolution) that could be used in administering an impervious surface stormwater fee. The dataset will be derived from 4 band orthophotography and lidar data used to generate high resolution land cover data.

Status: Draft RFP under review by Buildings and General Services and the Agency of Digital Services.

Ongoing maintenance needs: The frequency and extent of necessary updates to the data needed to successfully administer an impervious surface fee is currently unknown. Updates to the data will be needed to capture changes in impervious surface cover due to development and redevelopment of areas, as well as to correct any identified inaccuracies in the data. Costs associated with updating the dataset are dependent on a several variables related to program specifics and advancements in technology. The source for updates from the data could either come from imagery, or from documentation submitted as part of a permitting process. Given that most development in Vermont is not subject to any State permit/review, updates would likely need to come from orthophotography (as opposed to any application requirements submissions.) It may be possible to capture areas undergoing higher levels of change by incorporating application submission materials for projects that are subject to State review – such as Act 250 or stormwater permits. Additionally, municipalities could also potentially update data based on information collected via local review processes. Updates using orthophotography depend on access to updated imagery and technical capabilities to update the data given the resolution and conditions at the time of collection (leaf-on vs. leaf off.) Both access to updated imagery and our abilities to process imagery to identify change is changing rapidly.

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Considerations:

- The definition of what qualifies as impervious surface could have significant impact on data needs. If the definition differs from mapped land cover classifications, it may be challenging if not impossible in any economical way to update the data.
- A process for updating and/or appealing any measurements must be clearly defined.

**Statewide Parcel Data.** (Target Completion: January 1, 2020)

The creation of a statewide GIS database of parcel boundaries that is joined to the grand list is a significant multiagency initiative underway that will produce a dataset that could potentially be utilized to administer an impervious surface stormwater fee. Acquisition of the data is broken up into 3 phases, with 1/3 of municipalities to be completed in each phase. The project is managed by VTrans in collaboration with VCGI.

Status: Phase 1 contracts in process of being finalized by VTrans.

Ongoing maintenance needs: VCGI is currently working with the State Parcel Advisory board to develop a maintenance program that would keep parcel data up to date. It is assumed that parcel data would need to be maintained regularly to capture changes and to be able to measure impervious surface and assign a corresponding fee to a parcel. Many municipalities currently do not update their parcel data on a regular basis and VCGI is evaluating options for how to most cost effectively keep the data maintained without adding to the workload of municipalities. There are a variety of significant challenges with keeping parcel data up to date in Vermont. While most subdivisions and boundary line adjustments are surveyed, surveys are typically only available in a paper format in the municipal land records.

Considerations:

- Parcel data will vary in quality and the boundaries represented are approximate.
- Initial calculations show that approximately 5% of land area in Vermont is unaccounted for when comparing the listed acreage in the grand list with the physical area of Vermont. Municipalities would potentially need to update parcel maps to identify mapped areas that do not join with the grand list.
- Differences in how municipalities maintain their grand lists may create challenges in consistently assigning an impervious surface value to certain kinds of properties, such as 'unlanded parcels' and common lands.
- The definition of a parcel, "all contiguous land in the same ownership, together with all improvements thereon," is problematic when certain span numbers become 'inactive' and not reflected on the grand list.

**Next Steps:** Preliminary assessment of the processes for measuring impervious surface and assigning values to parcel.

[Letter Regarding Concept for Clean Water Authority](#) (9/22/2017)

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## Service Delivery Models for Supporting Clean Water Implementation

### 1. Type of Fee

- a. Parcel - flat
- b. Parcel – tiered
- c. Impervious – flat
- d. Impervious – tiered
- e. Impervious – based on actual acreage
- f. Combination of above

### 2. Type of collection

- a. Municipal collection
- b. State collection
- c. State collection of both stormwater fee and statewide education property tax
- d. Local, regional, agricultural or statewide district
- e. Combination of above

### 3. Appeals process

- a. Decision of local board is appealed to the Environmental Court
- b. Decision of local board (BCA) is appealed to Tax Dept (PVR), which is appealed to Superior Court

### 4. Use of revenues

- a. Developed lands (3 acres impervious)
- b. Roads (municipal)
- c. Agriculture
- d. Stormwater systems (MS4, non-MS4)
- e. Combination of above

### 5. Delivery of services

- a. Governmental or non-profit
- b. Geography (local, regional or statewide)
- c. Sector based (agriculture, developed lands, natural resources)

### 6. Possible glidepaths

- a. Start with parcel fees, move to impervious surface fees
- b. Start with voluntary local option, move to statewide fees
- c. Wait until impervious surface fee based on actual acreage is feasible
- d. Combination of above