VERMONT

Department of Environmental Conservation
Drinking Water and Groundwater Protection Division

Vermont's Public Drinking Water System Capacity Development Program Annual Report 2015

Our mission is to ensure that public drinking water systems provide safe, affordable drinking water to Vermont's citizens and guests by helping them improve their technical, managerial, and financial capabilities.

Prepared by:
Drinking Water & Groundwater Protection Division
Capacity Development Program

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Introduction

Vermont's public drinking water systems face significant challenges as they try to comply with regulations, repair and replace aging infrastructure, and achieve financial viability. To help address these challenges and to meet the requirements of the federal Safe Drinking Water Act's (SDWA) 1996 Amendments, the Drinking Water and Groundwater Protection Division (DWGPD) created a Capacity Development Program. The program's objectives are:

- To ensure that new community (CWSs) and non-transient non-community (NTNCs) systems demonstrate the technical, managerial, and financial capacity to provide a sufficient quantity of safe water in a cost-effective manner now and into the future; and
- To help existing systems become more sustainable by improving their technical, managerial, and financial capabilities.

Technical capacity *refers to a system's physical and operational abilities.*

Managerial capacity *refers to a system's administrative and organizational abilities.*

Financial capacity *refers to a system's abilities to generate or obtain enough money to maintain the system and pay for future improvements.*

There are three types of public water systems:

Community water systems serve 25 or more year-round residents or have 15 or more year-round residential connections;

Non-transient non-community water systems serve 25 or more of the same people at least six months per year. Examples include daycares, schools and office buildings; and

Transient non-community water systems serve 25 or more people per day at least 60 days per year. The persons served need not be the same people. Examples include delis, hotels, campgrounds and restaurants.

This annual report is required by the Environmental Protection Agency (EPA). It provides a summary of the Capacity Program's efforts during state fiscal year 2015 (July 1st, 2014 thru June 30th, 2015). The first section briefly describes the state's legal authority to ensure that all new CWSs and NTNCs demonstrate the capacity to comply with drinking water regulations. It also lists the compliance status of the systems that began providing water within the past three years. The next section of the report focuses on the Capacity Program's strategy to help existing systems improve their technical, managerial, and financial capabilities. It describes how the program identifies systems that need assistance and some of the tools used to help build capacity. The last part of the report describes the program's plans for the near future.

EPA will use this report to help determine whether Vermont's Capacity Development Program meets the SDWA's statutory requirements. Failure to meet the requirements would result in a 20% withholding from our Drinking Water State Revolving Fund (DWSRF) Capitalization Grant. The grant for federal fiscal year 2015 is $8,845,000, so failure to comply would result in a $1,769,000 penalty.

Capacity Development for New Public Water Systems

Section 1420(a) of the Safe Drinking Water Act requires the state to ensure that all new Community (CWSs) and Non-transient non-community (NTNCs) drinking water systems beginning operations after October 1st, 1999, demonstrate the capacity to comply with regulations. Vermont's legal authorities to implement this requirement are in statute (10 V.S.A. § 1685) and rule (Environmental Protection Rules, Chapter 21 Water Supply Rule). There were no changes to these legal authorities during the year.

Control Points

The Water Supply Rule (Environmental Protection Rules Chapter 21) prohibits a new CWS or NTNC from operating before demonstrating that it has adequate technical, managerial, and financial capacity. The rule also outlines the criteria to demonstrate capacity, and includes several control points – places where the Drinking Water and Groundwater Protection Division (DWGPD) can exercise its authority to ensure a new system will have adequate capacity (see Figure 1). Each control point marks a significant milestone in demonstrating capacity. The DWGPD makes a formal determination as to whether a system has adequate capacity at two points – before issuing the construction and operating permits.

Figure 1. Control points to ensure that new CWSs and NTNCs have adequate capacity.

- *Source Protection Plan Approval*
- *Source Permit Issuance*
- *Long Range Plan Approval*
- *Construction Permit Issuance*
- *O&M Manual Approval*
- *Sampling Plan Approvals*
- *Operator Certification*
- *Operating Permit Issuance*

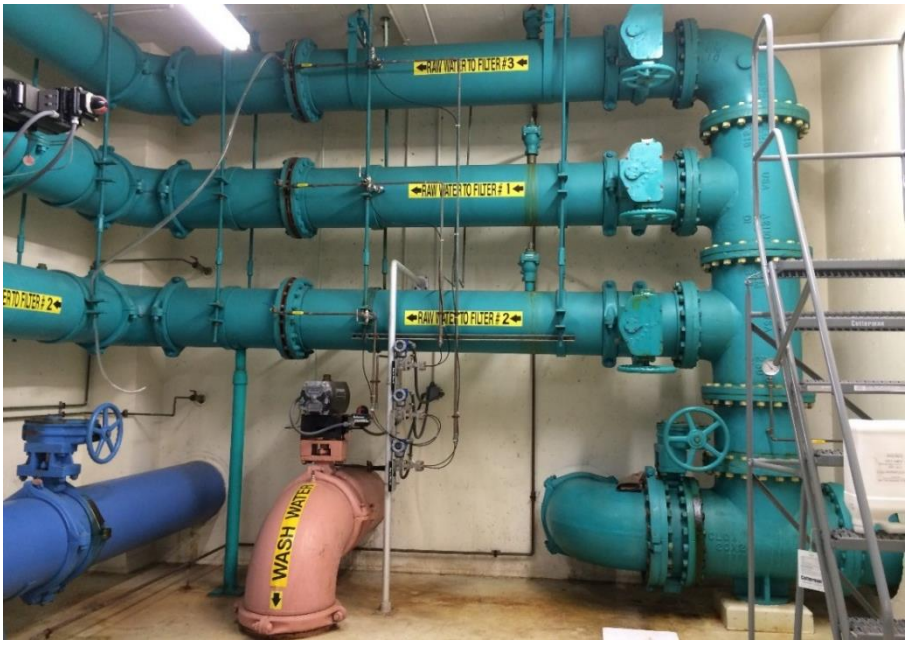
Last fiscal year, the DWGPD revised some internal procedures related to control points. Now, for new CWSs and NTNCs, Capacity Development Program staff review and approve the Long Range Plan, conduct a sanitary survey, and issue the operating permit. These changes increased the Capacity Development Program's workload. But because the Capacity Program staff members are already familiar with these systems, the new process is more efficient, increases continuity for the project, and better serves the water systems.

Capacity Determinations for New Public Water Systems

The table below lists new systems for which a capacity determination was completed during state fiscal year 2015. It also lists proposed systems for which an evaluation is underway, but not yet completed, and a note regarding their status.

Table 1. Capacity evaluation status for new CWSs and NTNCs.

WSID	Water System Name	PWS Type	Date Activated	Capacity Review Status
VT0020964	Alburgh Fire District #2	CWS	7/25/2014	Completed – Operating permit issued
VT0021202	Berlin Municipal Water System	CWS	Proposed	In-process – Construction permit issued
VT0021272	Timber Creek at Okemo	CWS	Proposed	In-process – Construction permit issued
VT0021454	Heartbeet Community Center	NTNC	Proposed	In-process – Construction permit issued
VT0021010	Valley Water System	CWS	Proposed	Source and Construction permit reissued
VT0020376	Killington Village Water System	CWS	Proposed	Construction permit issued
VT0021005	Sundance Subdivision	CWS	Proposed	Construction permit issued
VT0021460	Battenkill Valley Health Center	NTNC	Proposed	Source permit issued
VT0021345	Daniels Construction	NTNC	Proposed	Source permit application received
VT0021429	Smuggler's Notch Development	CWS	Proposed	Source permit application received
VT0021446	The Binding Site VT	NTNC	Proposed	Source permit application received
VT0021448	Westminster Public Safety Building	NTNC	Proposed	Source permit application received
VT0021490	KCOS Holdings LLC	NTNC	Proposed	Source permit application received
VT0021376	Carinthia at Mount Snow	CWS	Proposed	Source permit application received
VT0021293	Mount Snow Resort	CWS	Proposed	Source permit application received
VT0021512	Highgate Methodist Church	NTNC	Proposed	Source permit application received



New System Compliance

If a public water system does not comply with a federal or state drinking water regulation, the DWGPD notifies them of the violation. The notification requires the system to inform the public of the violation and to return to compliance. The Division also offers the system technical assistance to help them return to compliance. If the system still does not comply, the Division takes appropriate enforcement actions.

The DWGPD uses the Drinking Water Enforcement Tracking Tool (ETT) to help prioritize enforcement actions. EPA requests that the state include in this annual report the ETT status of CWSs and NTNCs activated during the past three years (see Table 2, below). Systems that exceed a score of ten become an immediate enforcement priority. Those with scores of ten or less are tracked closely. Only one system activated in the past three years - Alburgh Fire District #2 - has a score of more than ten. Alburgh Fire Distrcit #2 purchases water from a nearby surface water system, Alburgh Village (WSID VT0005136). The Fire District received several violations related to total coliform bacteria detects. The contamination is thought to be related to water age. The system has a relative long distribution main. And water use varies a lot because many of the connections are seasonal/vacation homes. So sometimes there is little or no chlorine residual in parts of their distribution network. DWGPD's compliance and operations staff are working with the Fire District to find a solution to maintain adequate chlorine residuals throughout the distribution system and provide safe drinking water to its customers.

Table 2. Compliance status of CWSs and NTNCs activated within the last three years that had capacity determinations.

WSID	Water System Name	PWS Type	Date Activated	On ETT list? Score?
VT0021493	Pad Print Machinery of VT Inc.	NTNC	4/15/2015	No
VT0020964	Alburgh Fire District #2	CWS	7/25/2014	Yes – 16
VT0021405	Gifford Medical Kingwood Building	NTNC	1/17/2014	Yes – 3
VT0021368	Burr and Burton Academy Mountain Campus	NTNC	1/17/2014	No
VT0021218	Derby Border Patrol	NTNC	6/6/2013	No
VT0021361	Foundations to Success Daycare	NTNC	5/14/2013	Yes – 3
VT0021340	Border Patrol Station Swanton	NTNC	2/28/2013	Yes – 3
VT0020355	2178 Airport Road	NTNC	2/8/2013	Yes – 3
VT0021394	Lamoille Family Center	NTNC	1/31/2013	No
VT0020997	Waitsfield Water Supply	CWS	1/17/2013	No
VT0020928	Catamount-Malone	NTNC	12/28/2012	No
VT0006624	Putney School	CWS	12/26/2012	Yes – 6
VT0021345	Advanced Illumination, Inc.	NTNC	4/20/2012	No
VT0006069	Sunny Lane Daycare	NTNC	4/13/2012	Yes- 6
VT0021079	NE Waste Services	NTNC	3/20/2012	No
VT0021127	VT Mutual	NTNC	12/8/2011	No
VT0021349	802 Toyota	NTNC	11/1/2011	Yes- 5
VT0021348	Parker Office Building	NTNC	10/25/2011	No

Capacity Development for Existing Public Water Systems

Section 1420(c) of the Safe Drinking Water Act requires the state to develop and implement a strategy to help existing public water systems acquire and maintain technical, managerial, and financial capacity. On July 28th, 2000, the DWGPD published its "Existing Public Water System Capacity Strategy". The strategy's five major components are listed in Figure 2. Over the years, the DWGPD has used some tools not listed in the strategy to help systems improve their capacity. But the strategy has not been updated since its initial publication. So the DWGPD plans to revise the strategy in fiscal year 2016.

There are 1,383 public water systems in Vermont, including:

- 419 community systems (CWSs),
- 251 non-transient non-community systems (NTNCs), and
- 713 transient non-community systems (TNCs).

Figure 3 shows a breakdown of the CWSs in Vermont by population served. Vermont is unique in that 73% of its CWSs are very small (i.e., serve 500 or fewer people). According to EPA, only about 56% of CWSs nationwide are this small (EPA Document 816-R-10-022, July 2011).

Figure 4. Number of CWSs by population served

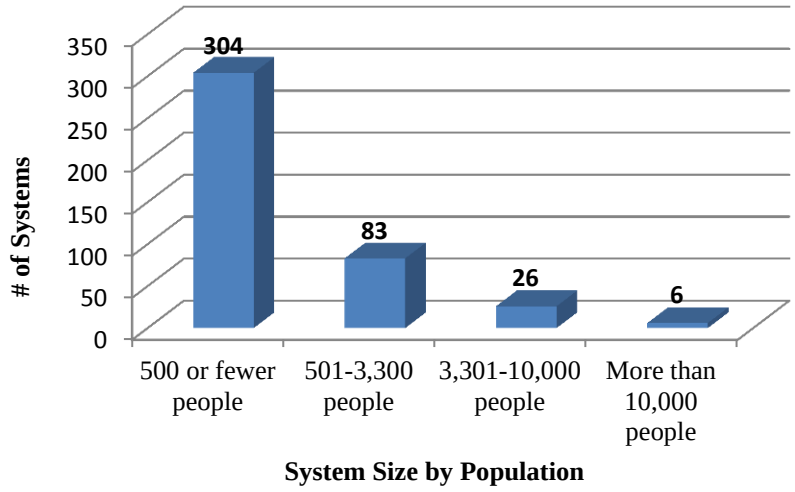


Figure 2. The *Existing Public Water System Capacity Strategy* describes:

- The methods or criteria used to identify and prioritize systems in need of capacity development assistance.
- The factors (e.g., legal, regulatory, or institutional) at the federal, state, or local level that encourage or impair capacity development.
- The ways the state uses its authorities and resources to help systems comply with regulations, encourage the development of partnerships between systems, and train and certify water system operators.
- The methods used to establish a baseline and measure improvements in capacity.
- The ways to involve interested parties in developing and implementing the capacity development strategy.

Most small systems in Vermont were created when regulatory standards were less stringent than they are today. The smallest systems are often run by part-time or volunteer staff with limited time and experience. And many do not generate enough revenues to cover the system's full costs because they have a small customer base and inadequate rates. Too often rates have been kept low by relying on volunteers or underpaid staff and deferring infrastructure maintenance, repairs and replacement.

Lacking strong capacity, these systems need the tools and training to help them operate in a more sustainable manner. They also need help identifying infrastructure needs and the resources to make improvements. So while the Capacity Development Program provides assistance to all types and sizes of public water systems, extra focus is on the smallest community systems.

"I have been the sole caretaker of this system for nearly 20 years, with little help or no help from the water customers. I am 67 and want to retire but how? My wife takes care of the finances and does a great job. She has no experience with computers or financial records keeping. We do everything by paper and filing… I try to have at least annual meetings but no one shows up. I send letters and financial updates, apart from that I am a one man operation." *– A statement from a response to the capacity questionnaire (sent our FY2014) describing the challenges facing a very small water system.*

Identifying Systems that Need Assistance

The Capacity Program uses compliance data and sanitary survey findings to help identify systems in need of assistance. DWGPD staff conducts a sanitary survey at each system every three to five years, depending on the system's type (i.e., CWS, NTNC, or TNC), treatment, and water source. In state fiscal year 2015, staff surveyed 187 CWSs, 79 NTNCs, 79 TNCs, and 4 in-state bottled water systems.

During each survey, division staff reviews the system's compliance with regulatory standards and provides them guidance on how to improve operations and management. If the system wants or needs more technical, managerial, or financial assistance, the surveyor refers them to the Capacity Development Program.

Information from capacity determinations for systems applying for Drinking Water State Revolving Fund (DWSRF) loans is also used to direct assistance. The DWSRF Program Development Specialist completes most of the capacity determinations for loan applicants. Capacity Development Program staff does the determinations related to loans that involve a change in ownership. This year, a new questionnaire was developed to help make the capacity determinations. During the capacity assessment, staff ensures that the proposed project is designed to address any technical deficiencies. For systems lacking managerial or financial capabilities, staff prepares a list of tasks that, if completed, will improve capacity. Depending on their importance, these tasks are either made as recommendations to the system, included as a compliance activity in an operating permit, or as a requirement for loan

approval or forgiveness. The DWSRF Development Specialist and/or the Capacity Development Program staff work with systems that request help completing the tasks. The state does not award DWSRF monies to systems that lack adequate capacity unless the funds will improve the system's capabilities and address any chronic non-compliance issues.

Providing Assistance to Improve Capacity

During the year, the state continued to use tools identified in the capacity development strategy to help systems improve their technical, managerial, and financial capabilities. These tools include source, construction, and operating permits; sanitary surveys; financial assistance programs, including low interest and negative interest loans; technical assistance consultations; and source water assessments. Also, three capacity development initiatives that began last year continued in 2015. These initiatives are described below.

Leak Detection Surveys

Finding and repairing leaks in a timely fashion can minimize wasteful water withdrawals, reduce treatment costs, capture lost revenue, prevent disruptions to the water system, and protect public health. So for the second consecutive year, the Capacity Development Program offered free leak detection services to CWSs.

To be considered for the services, systems had to submit a project request identifying the miles of pipe they want to be surveyed, the pipe's age and material type, and any additional information demonstrating why the system would benefit from the project (e.g., water pipe break history, or examples of system water shortages or low pressure events thought to be caused by leaks). The system also had to agree to assist with the survey (i.e., preparing maps, locating listening points, exercising valves, etc.), and fix any leaks found. This year, applicants were asked to submit the results of a water audit with their request.

In fiscal year 2014, twenty-five public community drinking water systems received leak detection services. About 155 miles of pipe were surveyed and 51 leaks were identified. An estimated 361 gallons per minute (519,840 gallons per day) of drinking water was being lost through these leaks. However, because leak detection is not an exact science, some leaks were likely not found. Capacity Development Program staff followed up with the systems to ensure that they fixed the leaks or had a plan to do so.

This year, twenty-four systems were awarded a leak detection survey. And two systems that were surveyed last year were awarded additional time for some follow up work. The surveys are being conducted in accordance with the American Water Works Association's "Water Audits and Loss Control Programs" manual (Manual of Water Supply Practices M36, 3rd Edition, 2009). They are scheduled to be completed by the end of October 2015. A final project report will be prepared once the surveys are done.

The Capacity Development Program plans to offer leak detection services again next year. But we also plan to help systems develop more comprehensive water loss programs by offering trainings and

technical assistance on conducting and validating water audits. Comprehensive water loss programs will likely be required for some systems in the future.

Flood Vulnerability Assessments

Many of Vermont's communities are susceptible to flooding because of our landscape (e.g., steep slopes) and development patterns along rivers and streams. Floods are already one of the most common hazards in Vermont. And as the intensity and frequency of storms increase due to climate change, so do the risks of significant flood damage.

During the last two years, the Facilities and Engineering Division (FED) in consultation with the DWGPD has worked on a drinking water infrastructure flood resilience project. Using funds from the DWSRF set-asides, FED hired a temporary employee to help community water systems 1) assess the vulnerability of their infrastructure to natural disasters, focusing primary on flood and erosion hazards (e.g., undersized culverts); and 2) identify mitigation measures that will improve systems' resiliency to natural disasters.

Some mitigation measures may require significant financial investment. To encourage systems to make these investments, FED plans to award additional DWSRF construction loan priority points to projects that will improve resiliency.

Asset Management Workshops and Assistance

Feeling pressure to keep user rates low, many communities have not been making the investments needed to properly maintain, repair, rehabilitate, and replace their drinking water infrastructure. So more pipes, pumps, storage tanks, and water treatment plants have exceeded their useful life, or will so soon. The Environmental Protection Agency estimates that Vermont needs to invest more than $510 million in public drinking water infrastructure in the next twenty years to ensure the health, security, and economic well-being of our communities (Drinking Water Infrastructure Needs Surveys and Assessment, Fifth Report to Congress, April, 2013). The people operating and managing public water systems face significant challenges as they try to manage and replace aging infrastructure while continuing to meet their customers' expectations.

An asset management program can help meet these challenges. An effective asset management program uses a detailed asset registry, operation and maintenance tasks, and long-range financial planning to build capacity and make systems more sustainable. It can help systems operate more efficiently, prolong asset life, plan and pay for future repairs and replacements, and make informed decisions.

In the capacity questionnaire sent out in 2014, water systems identified "creating or updating an asset management program, water system master plan, or other tool to help manage the water system" as a top priority. So the Capacity Development Program and FED are providing community water systems incentives to develop and implement asset management programs.

To help municipalities develop a program, the state's Drinking Water Capacity Program is hosting two Asset Management Workshop Series, one in Montpelier and the other in Rutland. The

series began in September and consist of four full-day workshops spread over a ten week period. Participants – which include representatives from 28 public community water systems - are creating an Asset Management Program to help solve a problem with their drinking water utility. One municipality, for example, is developing a program to reduce the impacts of breaks on distribution mains serving downtown. Between each workshop, the participants will complete portions of the Asset Management Program to help address their problem. By the end of the series they will have developed a program for part of their system, and have the knowledge and confidence to expand it to include the entire utility.

Workshop participants that create a successful asset management program will serve as a model and resource for other water systems. And the curriculum developed for the workshop series will be available so the DWGPD can host similar trainings in the future.

An up-to-date map and asset registry are the backbone of a successful asset management program. But the time and effort needed to create a registry often prevents systems from implementing a program. So next fiscal year, the Capacity Development program will be offering an asset management planning grant to help system develop and implement a program.

The DWSRF planning and construction loan funds play a crucial role in helping systems improve their capacity. Last year, the FED changed provisions in both funds to encourage systems to develop asset management programs. The changes included planning loan forgiveness for projects stemming from an approved asset management program, and awarding additional priority points to CWSs seeking a construction loan for improvements identified using an asset management program. In 2016, they plan to amend Vermont Statute to allow planning loan forgiveness for system that use funds to develop a state approved asset management program. The Capacity Development Program is currently developing the criteria for an approvable program, and guidance to help systems create a program. The state's initiatives to encourage systems to create and implement asset management programs will be described in more detail in the revised capacity strategy.

The table below describes some other on-going capacity development initiatives. And Appendix A includes a list of capacity development projects completed in previous years.

Table 3. Some on-going capacity development initiatives for existing systems.

Initiative	Target Audience	Description
Drinking Water State Revolving Fund (DWSRF) Program Changes	Potential DWSRF loan recipients	Recent changes to the program include a requirement for loan recipients to create an asset replacement reserve fund, and incentives for systems to implement asset management programs (e.g., planning loan forgiveness and additional construction loan priority points). Also, Preliminary Engineering Reports will be required to include a short-term asset replacement table. See the Intended Use Plan for details regarding the changes.
Training and Assistance	Public water system (PWS) owners and operators	Contract with Vermont Rural Water Association to provide technical assistance and conduct group and one-on-one trainings. Appendix B includes a summary of the training provided during the year. The Capacity Development Program also hosted two

		intensive Asset Management workshop series.
Legal Assistance	Community water systems (CWSs) and non-transient non-community (NTNCs) water systems receiving a DWSRF loan	Pays for legal services associated with DWSRF loan closings. Also pays for legal reviews for systems using DWSRF monies to purchase land or to acquire, merge with, or purchase another system.
User Rate Reviews and Budgeting/Assisting in the Development of Financial Capacity	CWSs	Systems have contacted the Capacity Development Coordinator for assistance in establishing an equitable user rate structure.
By-laws and Ordinance Development and Updates	CWSs	Several water systems requested help with creating or updating by-laws and ordinances.
Ownership restructuring	CWSs	Providing systems guidance while undergoing ownership changes (e.g., forming a Fire District to acquire a privately owned system, assisting with a merger between two municipal entities)
Technical Assistance and Contamination Investigations for Transient non-community (TNC) water systems.	TNCs	The DWGPD has a contractor available, on an "as-needed-basis", to conduct contamination investigations at TNCs. Assistance includes determining the possible causes of contamination, making recommendations on how to improve the system and comply with regulations, discussing disinfection options, etc. This service has helped systems protect public health and come off boil water notices more quickly.
Board Member Owner Manual	CWSs	The manual outlines the responsibilities and liabilities for PWS board members and includes information on relevant laws, regulations, and policies, and a list of resources. A draft has been prepared. Next steps will be outlined in the revised capacity strategy.

Capacity Development – Looking Forward

The Capacity Development Program's goal is to help ensure that Vermont's public water systems are sustainable. Sustainable drinking water systems have the technical, managerial, and financial capabilities to provide their customers a sufficient quantity of clean, safe water in a cost-effective manner - now and into the future.

"You cannot have a first rate community…with third rate infrastructure" *– Source unknown*

As drinking water infrastructure continues to age and degrade, public water systems will struggle to be sustainable. Many community systems have not made the investments needed to properly maintain, repair, rehabilitate, and replace their assets. EPA estimates that Vermont needs to invest more than $510 million in public drinking water infrastructure in the next twenty years to ensure the health, security, and well-being of our communities (Drinking Water Infrastructure Needs Surveys and Assessment, Fifth Report to Congress, April, 2013). This estimate does not include money for on-going operations and maintenance, complying with new regulations, or expanding systems.

Money from utility reserves and public financing will not be enough to address Vermont's drinking water infrastructure needs. This financial shortfall presents the greatest challenge for most public community water systems. So next year, the Capacity Development Program is revising its strategy to include new tools and initiatives to help systems meet this challenge. The new strategy, for example, will have several initiatives to encourage systems to create and use an Asset Management Program. Building on momentum from the Asset Management Workshops, we will continue to help systems by offering Asset Management Planning Grants, developing state standards and guidance for Asset Management Programs, and offering more training and assistance.

In April 2015, the Capacity Development Program hired a Capacity Development Specialist. This new position will allow the Program to work on projects that have been hold due to lack of time, including revising the website and encouraging system to develop comprehensive water loss control programs.

Vermont's systems need to invest more money in drinking water infrastructure. And managers need to use better financial and management practices to operate, maintain, repair, rehabilitate, and replace assets. Otherwise, we will not be able to continue to rely on our drinking water infrastructure for disease protection, fire protection, basic sanitation, economic development, and to support our quality of life.

Appendix A. Capacity Development Initiatives Completed in Previous Years

Capacity Initiative	Target Audience	Notes
Transient non-community (TNC) Water Quality Monitoring Project	TNCs	In 2002, the program developed a cost estimate for conducting quarterly compliance monitoring for all TNCs in the state. At the time, TNCs were only taking annual coliform samples. The goal of the project was to help TNCs transition to quarterly monitoring. Using the cost estimate, the TNC Program hired contractors to collect quarterly samples during 2004 and 2005, prepare a sampling plan for each system, and teach staff how to take samples properly. The samples were analyzed at the Department of Environmental Conservation's laboratory.
Engineering Technical Assistance	CWS, NTNC	DWGPD had several engineering firms under contract to provide operational troubleshooting assistance to small public water systems.
Small System Templates and Self-Assessment	CWS, NTNC	Templates for O&M manual and long range plan, and a capacity assessment form was developed. These documents form the basis for some of the individual on-site and group-training sessions provided. Capacity assessments are completed for all loan applicants and are a prerequisite for both planning and construction loan eligibility. Additionally, a customer complaint policy form and *How to Form a Fire District* guidance document were developed.
Public Service Board (PSB) Technical Assistance	Private, for-profit CWS (regulated utilities)	Beginning in early summer of 2009, DWGPD met with representatives from the PSB and DPS to discuss better coordination between the three entities. The aim is to help the very smallest of regulated public water systems with rate review, tariffs, and reporting. This coordination is still in its early stages, but just starting the conversation is a significant milestone. Additionally, a guidance manual was developed to assist small systems in the rate approval process.
Consolidation Study	CWS	Consolidation Study was replaced with a Facilitation and Mediation contract beginning in June 2008.
Communication Workgroup	All PWSs	A workgroup was formed to evaluate and develop recommendations on mass mailing procedures, newsletters, use of the Electronic Bulletin Board, electronic communication with water systems, and general publicity issues. A number of those recommendations were implemented.
Reservoir Water Quality Study	Surface water CWS	The study collected and analyzed data on changes in source water characterization during the year for two small surface water bodies used by public community water systems in Vermont. Field data collection occurred between April 2002 and May 2003 for the Town of Brattleboro and City of St. Albans Water Systems. Data was analyzed and results evaluated and communicated to the participating water systems.
Comprehensive Performance Evaluation Program	CWS	Comprehensive performance evaluations were conducted on three surface water systems.
Small System Engineering Evaluations	CWS, NTNC	An extremely successful initiative and may resume in the future for those systems that did not already receive an evaluation.
Regulation of Consecutive Water Systems and New	CWS	Successful passage of H806 to Act 156 *An Act Relating to Public Water Systems.*

Water Line Extensions		
Asset Management Pilot	CWS	The DWGWPD and Village of Waterbury, a small drinking water system, collaborated on an asset management pilot project that ended in Spring 2013. The goal of the pilot was to populate CUPSS, the EPA-developed asset management program, using ArcGIS for a more efficient way to enter many hundreds to thousands of assets. The use of GIS to spatially locate and attribute assets for use in CUPSS had never been done successfully. The Village now has the frame work for an Asset Management Program. A report describing the project is available on our website at http://drinkingwater.vt.gov/capdev/pdf/waterburypilotproject.pdf
Determination of non-profit status	Loan Applicants	The DWGWPD was given the authority to determine if a water system was not-for-profit without being a tax-exempt (through the IRS) entity. This distinction is beneficial in it reduces a potentially significant time and money delay in the DWSRF loan process
WaterSense Pilot	NTNC	The Orange Center School has a history of seasonal water outages. It appeared that the problem might be solved through water conservation efforts. So the school was awarded a grant in 2012 to purchase and install new WaterSense labeled toilets and faucet aerators, and a new dishwasher. The fixtures helped significantly reduce water use and the school was able to stop hauling water temporarily. But shortages resumed, so the system is now planning to develop another water source. A report describing the project is available on our website.
Drinking Water & Groundwater Protection Division Newsletter- *Waterline*	All PWSs, Consultants, interested organizations	This is an effective means for communicating to a broad audience interested in hearing from the state on issues affecting public water systems. We have received feedback from readers that is highly supportive of the newsletter.

Appendix B. Public Water Operator Certification Program Annual Report 2014

July 1, 2015

This Annual Report documents Vermont's program compliance with the EPA Public Water Operator Certification Guidelines for the calendar year ending December 31, 2014. The US Environmental Protection Agency published guidelines for the "Certification and Recertification of the Operators of Community and Non-transient Non-community Public Water Systems" in February 5, 1999. Vermont adopted revised rules in the Vermont Water Supply Rule on December 29, 2000 to comply with the EPA guidelines. EPA approved the State of Vermont Operator Certification Program on February 14, 2001 and awarded the Operator Certification Expense Reimbursement Grant (ERG) which was full utilized by 12/31/2009.

Operator Certification Program Overview and Enforcement Efforts

Public water systems in Vermont are classified based on indicators of potential health risk which include complexity, size, source water for treatment facilities and size for distribution systems. Specific operator certification and renewal requirements have been developed for each level of water system classification. System Classification and Operator Certification requirements are addressed Subchapter 21-12 of the Vermont Water Supply Rule. This Subchapter includes the method for five classes (Class 1, 2, 3, 4 & D) of public water systems and drinking water facilities, requirements for operator certification and operator certification renewal. Details of Subchapter 21-12 are provided in Appendix B of this report.

Vermont has a fixed three year cycle of renewals for Operator Classifications 2, 3, 4 and D. The current renewal cycle for Class 2 and 4 operators is July 1, 2014 through June 31, 2017. The current renewal cycle for Class 3 and D operators is July 1, 2013 through June 31, 2016. Operator Classification 1 also have a 3 year renewal cycle which unlike the other classification is on a rolling basis with the certification period beginning the date issued and expiring ending on June 30th of the third year.

The total number of certified operators for Community, Non-Transient Non-Community, and Transient Non-Community systems is 1185 as of May 28, 2015. Vermont has not grand parented operators since 1992 when we adopted the initial operator certification rules. The goal was to assist those operators already operating public water systems to become certified. All grand parented operators are required to maintain their renewal credits for their class each renewal cycle. We currently have 54 grand parented operators in our certification database (SWOCS).

Vermont offers Operator-in-Training and Provisional Certification to help new water systems and operators become fully certified. Our database currently lists 24 individuals with Operator-in-Training Certification and 2 operators with Provisional Certification.

The number of systems without certified operators as of May 28, 2015 is listed in the table below:

System type	Number of systems	Number of systems with no certified operator
Community	419	4
Non-Transient Non-Community	252	4
Transient Non-Community*	716	73

* TNC certification is not mandated by EPA.

The Division Operator Certification Officer continues to work closely with new and delinquent community and non-transient non-community water systems to help them obtain a certified operator. The Operator Certification Officer runs a report monthly to identify community and non-transient non-community systems without a certified operator. The Operator Certification Officer will call these systems and follow up with an initial warning letter, if necessary. The water system has thirty days to notify the Drinking Water and Groundwater Protection Division in writing of their certified operator. If the system does not obtain a certified operator, we will issue a Notice of Alleged Violation (NOAV) shortly after the thirty-day period. At this stage, most water systems comply with the NOAV. For the few remaining, the Division attorney may contact the water system and warn the system of a potential enforcement action. If the system still does not obtain a certified operator, we will refer the system to the Agency of Natural Resources Compliance and Enforcement Division (CED Division) for further action.

Most community and non-transient non-community water systems without certified operators have this status because their operator(s) fail to renew their certification on time. In calendar year 2014, no NOAV's were issued by the Division to water systems for failure to have a certified operator. Three water systems were referred to CED Division for enforcement action for failure to have a certified operator of which one has obtained an operator.

The Agency of Natural Resources has the authority to revoke or suspend an operator's certificate. Failure to comply with the regulations may require revocation or suspension. In calendar year 2014 no operator's certification was revoked or suspended.

Training and exams

The Vermont operator training program is coordinated through a contract with the Vermont Rural Water Association (VRWA). Communication between the VRWA Coordinator and Drinking Water and Groundwater Protection Division Operator Certification staff occurred frequently throughout the year. Additional courses have been coordinated with the Green Mountain Water Environment Association (GMWEA) through a training grant and with New England Water Works Association (NEWWA). We continued to hold courses in various locations throughout the state to reach small water systems. The attendance for each class ranged from 10-20 participants (depending on location).

The state amended the training contract with VRWA for operator training in the state for an addition one year period in early 2013 for the term May 1, 2013 through April 30 2014. An additional one year contract was award to VRWA for a term of May 1, 2014 through on April 30, 2015. GMWEA was awarded a 2.5 year contract for a term of May 31, 2013 through December 31, 2015. The state issued a

request for proposals for operator training in January 2015 and issued a new one year contract to VRWA for a term of May 1, 2015 through April 30, 2016.

Courses for Vermont Water Operators were publicized on our web, www.drinkingwater.vt.gov/opcerttraining.htm. This includes both in class and online training. In calendar year 2014, approximately 3690 training contact hours were awarded to 903 water professionals through classes provided throughout the state by VRWA & GMWEA. Details are listed in the table below.

Review and approval training courses occurred throughout the year with the exception of Vermont Rural Water Association (VRWA), Green Mountain Water Environment Association, New England Water Works Association and Earth Water Specialists which have "blanket approval". All other courses by training organizations and providers, including any distance learning training, must be pre-approved using a pre-approval form taking into account our pre-approval guidelines. Courses must be relevant to operations or management of water systems. We accept a wide spectrum of topic areas from basics to advanced topics. Training topic areas include a range of technical training including safety, capacity, equipment mechanics, and drinking water rules. We also provide training classes for new operators of small systems, systems with advanced treatment and system with distribution only.

Exams were again administered in the spring and fall (May 2, 2014 and November 7, 2014) at two different locations (Berlin and Rutland, VT) on the same day. There were 48 and 42 individuals who took the exam in May and November, respectively.

Stakeholder Involvement and Program Review

The Vermont Operator Certification Advisory Committee met several times regularly during the spring and fall of 2014 to discuss revisions to Subchapter 21-12 – Water System Classification and Operator Certification Recommendations for revisions have been provided to the Division. No changes to the Vermont Water Supply Rule have been proposed as of yet. The process of developing revisions to the Vermont Water Supply Rule is scheduled to begin later in 2015 with a final adoption in 2017. During this process the Division will review Subchapter 21-12 and the process will allow for an internal and external review during the rule rewrite. The Committee will continue its discussion on rule revisions later in 2015.

Our goal is to complete an internal review of the exam for each operator classification on a 5 year cycle. The exam for Class D operators was reviewed internally and updated in 2009. Our ability to stay on a 5 year cycle was initially effected initially because of the disruption to the Division as the result of the 2011 flood followed by the turnover in the Operator Certification position during 2012 and 2013. An updated schedule for review of the exams for the 2, 3, 4 & D Operator Class is listed below.

Operator Class	Last reviewed and updated	Schedule for Review and Updating
Class 2	2007	2014/2015
Class 3	Prior to 2007	2015/2016
Class 4	Prior to 2007	2015/2016
Class D	2009	2016/2017

Expenditures

The Division continues to use DWSRF money to fund operator training provided by the Vermont Rural Water Association and Green Mountain Water environment Association. The VRWA contract is funded by Technical Assistance Set-Aside Funds and the GMWEA grant is funded by Program Management Set-Aside Funds.

Water Operator Training provided January 1, 2014 – December 31, 2014

Month	Course Title Training provided January 1, 2014 – December 31, 2014	TCH	# of attendees	TCHs Awarded
Jan	Hands-on Chemical Feed Pump Repair-Rutland	4.5	16	72
	Water Meter Sizing and Installation-St. Johnsbury	3.5	8	28
	The Science of Leak Detection and Pipe location with Dig Safe-Bennington	4.5	15	67.5
	Source Protection Plans-Craftsbury Common	3	12	36
	Traffic Control Flagger Certification-Bennington	4	7	28
Feb	Asset Management-Brattleboro	5	9	45
	Traffic Control Flagger Certification-Enosburgh	4	22	88
	Water Meter Sizing and Installation-Middlebury	3.5	11	38.5
	Source Protection Plans-Write Your Own Plan-Rutland	3	10	30
Mar	Advanced Operator and Distribution Certification-Essex Jct.-Session 1	5	14	70
	Advanced Operator and Distribution Certification-Essex Jct.-Session 2	5	14	70
	Advanced Operator and Distribution Certification-Essex Jct.-Session 3	5	15	75
	Advanced Operator and Distribution Certification-Essex Jct.-Session 4	5	14	70
	Advanced Operator and Distribution Certification-Essex Jct.-Session 5	5	14	70
	Advanced Operator and Distribution Certification-Essex Jct.-Session 6	5	15	75
	Traffic Control Flagger Certification-Springfield	4	6	24
Apr	Advanced Operator and Distribution Certification-Essex Jct.-Session 7	5	8	40
	Advanced Operator and Distribution Certification-Essex Jct.-Session 8	5	7	35
	Advanced Operator and Distribution Certification-Essex Jct.-Session 9	5	6	30
	Source Protection Plans-Write Your Own Update-Woodstock	3	9	27
	National Incident Management-ICS-100-Brattleboro-Session 1	4	24	96

	National Incident Management-ICS-100-Brattleboro-Session 2	4	24	96
	Small System Class 2 Water Operator Certification-Williston-Session 1	4.5	10	45
	Small System Class 2 Water Operator Certification-Williston-Session 2	4.5	10	45
	Small System Class 2 Water Operator Certification-Williston-Session 3	4.5	10	45
	Small System Class 2 Water Operator Certification-Williston-Session 4	4.5	10	45
May	*Vermont Rural Water Association Spring Conference-Fairlee, VT*			
	Becoming More Energy Efficient in Water and Wastewater	1	46	46
	Your Aging Infrastructure: Reducing Risk	1.5	59	88.5
	Lake Champlain Phosphorus TMDL	1	20	20
	How to Have a Sustainable Water System	1	32	32
	Chemical Feed Pumps	1	29	29
	DBP Chemistry, Managing DBPs and Managing the DBP Rule Stage 2-Waterbury	3	16	48
	DBP Chemistry, Managing DBPs and Managing the DBP Rule Stage 2-Rutland	3	17	51
	NIMS-ICS-100-Waterbury Session 1	4	25	100
	NIMS-ICS-100-Waterbury Session 2	4	24	96
June	Hydraulic Tools Demonstration for Water and Wastewater-Waterbury	4	23	92
	1B TNC Recertification Class-Waterbury	3	11	33
	GPS and GIS-Montpelier	6	11	66
	VOSHA: A Culture of Safety-Springfield	3.5	13	45.5
	Protective Coatings; Knowledge and Applications-Waterbury	4	19	76
	1B TNC Recertification Class-Springfield	3	5	15
	VOSHA: A Culture of Safety-Enosburgh	3.5	17	59.5
July	Traffic Control Flagger Certification-Derby Line	4	8	28
	New VOSHA: Haz Com Globally Harmonized System (GHS)-Waterbury	3.5	6	21
Aug	Planning, Design and Construction of the Water Tower Hill South Tank Replacement	5.5	10	55
	VOSHA Confined Space Safety Training - Brattleboro	3	7	21
Sept	Tank Maintenance and Asset Management	3	3	9
	Advanced Water Op Class 3&4*	22.5	5	94.5
	Distribution Water Op Class D	22.5	3	67.5
	Asset Management for Water and Wastewater Operators	5.5	3	16.5

Oct	Hands –On Mechanical Seals	4.5	11	49.5
	Advanced Water Op Class 3&4	22.5	4	90
	Distribution Water Op Class D	7.5	3	22.5
	Small Systems Class 2 Water Operator Certification	18	9	162
	Effective Utility Management	6	12	72
	Cl Disinfection for Water/WW Operations	4.5	10	45
	True Confessions of a Water/WW Operator	4.5	14	63
	Five Common-Sense Practices of Well Run Water/WW Systems	4.5	9	40.5
	Utility Management Certification Training	10	4	40
	Effective Utility Management	6	6	36
Nov	Exam Preparation	4	10	40
Dec	Utility Management Certification (UMC) Training	10	13	120
	Effective Utility Management	6	3	18
	DWGWP Rule Update	3.5	11	38.5
	Water and Wastewater Budgets & Rates	3	5	15
	GMMWEA training Sessions calendar year 2014			
June	Sound Procedures for Drinking Water Sampling	3	15	45
Sept	Pumps & Pumping Overview	6	15	90
Oct	Hands on Valve Operations & Maintenance	6	17	102
	Totals	**358.5**	**903**	**3690**