



COMMONWEALTH of VIRGINIA

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September 29, 2017

The Honorable Terence R. McAuliffe
Governor of Virginia
Post Office Box 1475
Richmond, Virginia 23218

RE: The Efficacy of Virginia's Capacity Development Strategy Report

Dear Governor McAuliffe:

Section 1420 of the Safe Drinking Water Act (42 USC § 300g-9) requires states to develop and implement programs that will assist new and existing waterworks to possess sufficient technical, managerial and financial capacity to ensure and enhance their sustainable operations. To fulfill this requirement, the Virginia Department of Health (VDH), through its Office of Drinking Water (ODW), has devised a Capacity Development Strategy, which was originally approved by the Environmental Protection Agency in 2000. ODW revised the Capacity Development Strategy in 2014 and received approval for the revision in May 2014.

The attached report has been prepared pursuant to Section 1420(c)(3) and constitutes the sixth report on Virginia's Waterworks Capacity Development Program. Section 1420(c)(3) requires that every three years, VDH submit "to the Governor a report that shall also be available to the public on the efficacy of the strategy and progress made toward improving the technical, managerial and financial capacity of water systems in the State."

The efforts of ODW's Capacity Development Strategy are largely funded through the Virginia Drinking Water State Revolving Fund capitalization grant from the Environmental Protection Agency. This funding is critical to the continued success of this and many of other ODW programs. Please review this report to gain an understanding of the significant work that ODW is doing to protect the health of all people in the Commonwealth of Virginia who receive and use water from a waterworks.

If you, or your staff, have any questions regarding the contents of this report or ODW's Capacity Development Program, please contact Mr. Robert A.K. Payne, Acting ODW Director at (804) 864-7498 or by e-mail at Robert.Payne@vdh.virginia.gov.

Sincerely,

Marissa J. Levine, MD, MPH, FAAFP
State Health Commissioner

Report to the Governor

Efficacy of Virginia's Waterworks Capacity Development Strategy

July 1, 2014 to June 30, 2017

Virginia Department of Health
Office of Drinking Water
109 Governor Street
Richmond, Virginia 23219



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Efficacy of Virginia's Waterworks Capacity Development Strategy July 1, 2014 to June 30, 2017

The mission of the Virginia Department of Health is to protect the health and promote the well-being of all people in Virginia.

The Office of Drinking Water supports the Department of Health's mission by ensuring that all people in Virginia have access to an adequate supply of clean, safe drinking water that meets federal and state drinking water standards.

Implementation of the Capacity Development Strategy helps waterworks owners and operators across Virginia to improve the technical, managerial, and financial capacity of their waterworks so they can provide clean, safe drinking water that meets federal and state drinking water standards.

Executive Summary

The Virginia Department of Health (VDH), through its Office of Drinking Water (ODW), is the primacy agency for implementation of the Safe Drinking Water Act (SDWA) in the Commonwealth of Virginia. "Waterworks," which are defined as "a system that serves piped water for human consumption to at least 15 service connections or 25 or more individuals for at least 60 days out of the year[.]" are subject to the SDWA and Virginia's Public Water Supplies law. The following report has been prepared pursuant to Section 1420(c)(3) of the SDWA, and constitutes the sixth report to the Governor on the Efficacy of Virginia's Waterworks Capacity Development Strategy. The SDWA requires that every three years, VDH submit "to the Governor a report that shall also be available to the public on the efficacy of the strategy and progress made toward improving the technical, managerial and financial capacity of water systems in the State." VDH submitted the first report in 2002; two years after the Commonwealth adopted the Capacity Development Strategy, approved by the Environmental Protection Agency in May 2000.

The capacity to successfully operate, maintain, and sustain a waterworks over a long period of time is comprised of technical, managerial, and financial (TMF) components. These components demonstrate the waterworks' ability to reliably produce and deliver safe, affordable drinking water that meets federal and state quality standards to all people in Virginia who receive and use water from a waterworks. Assessment of these components measures a waterworks' ability to plan, achieve, and maintain compliance with the SDWA, Virginia's Public Water Supplies law, and associated federal and state regulations. Technical capacity is demonstrated through the physical infrastructure of a waterworks including its water source, and in the knowledge and skill required to properly operate the facility. Managerial capacity is evidenced by a waterworks' planning, organization, and ability to regularly achieve compliance with applicable laws and regulations. Financial capacity is documented by the waterworks' ability to balance revenues and expenditures, have acceptable loan ratios and overall healthy financial data.

The TMF components that constitute capacity are interdependent; all three are essential for ensuring the sustainability of a waterworks. Weakness in one area of capacity can in turn impair the other components. For example, waterworks that demonstrate a lack of financial capacity by setting inadequate service rates are not able to set aside resources for future maintenance.

The SDWA requires that states develop and implement a strategy that will help all new and existing community and nontransient, noncommunity waterworks gain sufficient TMF capacity to ensure and enhance their continued operation. To fulfill this requirement, ODW devised a Capacity Development Strategy and, in May 2000, received approval from the Environmental Protection Agency (EPA) to implement the Strategy. In May 2014, EPA approved ODW's revised Capacity Development Strategy.

Virginia's Capacity Development Strategy has been shown to be an effective tool to improve the TMF capacity of waterworks in Virginia, giving them the ability to reliably produce and deliver safe drinking water to consumers. The incorporation of the Capacity Development Strategy into ODW's major program activities and the daily work of all ODW staff maximize the successful deployment of capacity development in Virginia. This report will further document the efforts of ODW to provide assistance to waterworks, typically small waterworks (those serving 10,000 or fewer consumers) have the greatest need, throughout the Commonwealth.

ODW currently supports five staff positions (four full-time and one part-time) dedicated to capacity development. During the three years represented by this report (July 1, 2014 to June 30, 2017, the "reporting period"), capacity development has seen tremendous growth, renewed vitality and increased efficacy. ODW authorized two new positions in 2014 to provide direct technical assistance to the Commonwealth's waterworks. These positions quickly developed a full workload by assisting waterworks personnel with business operations plans, asset management plans, small engineering projects, planning and design funds, deployment of third party assistance, training, and numerous outreach activities. ODW added a third position in 2015 to serve waterworks in south central and southeast Virginia.

The number and complexity of federal drinking water rules that must be implemented, monitored, and enforced has and will continue to result in an increased workload for ODW. Having a dedicated staff responsible for capacity development frees up ODW engineers and inspectors so they can more effectively monitor and enforce these existing and new rules. ODW has an efficient and effective capacity development strategy, which will continue to achieve the fundamental goals of collaborating across Virginia to improve technical, managerial and financial capacity of waterworks. Adequate funding and staffing are essential to implement activities most critical to enabling waterworks achieve and maintain sufficient TMF capacity for the provision of safe, reliable supply of drinking water to all people in the Commonwealth of Virginia who receive and use water from a waterworks.

Background

There are currently 2,810 waterworks in the Commonwealth of Virginia collectively serving approximately 7,400,000 consumers (roughly 88% of the State's total population of about 8,400,000 people). The majority of people in Virginia receive water from community waterworks which are waterworks that serve at least 15 service connections used by year-round residents or regularly serve at least 25 year-round residents. Community waterworks include waterworks serving hundreds of thousands of consumers like the City of Richmond and Fairfax County Water Authority, waterworks serving small towns such as Floyd and Wakefield, and waterworks serving individual neighborhoods. Nontransient, noncommunity (NTNC) waterworks serve at least 25 of the same persons over six months out of a year. Examples include schools, hospitals, and some manufacturing facilities that operate and maintain their own water system. Transient noncommunity (TNC) waterworks serve at least 25 persons daily for at least 60 days out of the year. Examples include restaurants, campgrounds, and hotels that operate and maintain their own water systems. Figure 1 shows the composition of these waterworks classifications, and the populations served by each classification.

Note that TNC waterworks may serve duplicate persons (e.g., a family receives water from a community waterworks at their home and a TNC when they go out to a restaurant) and non-Virginians such as out-of-state visitors.

Virginia Waterworks by Type

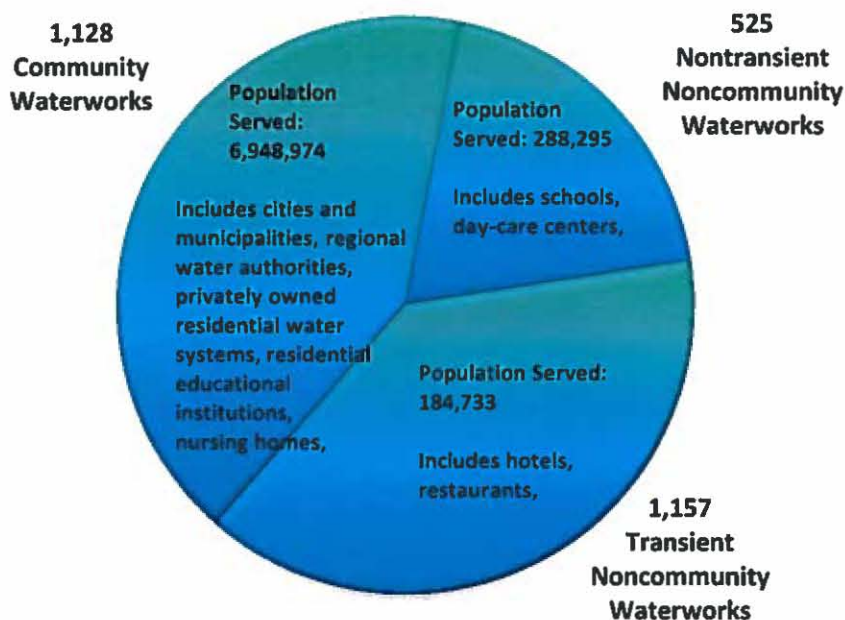


Figure 1

The distinction between the types of waterworks is important because small community systems (those serving 10,000 or fewer consumers) and many TNCs often have the most technical, managerial, and/or financial capacity issues. As a result, Virginia's approved Capacity Development Strategy has three main requirements:

- 1) ODW possess and exercise sufficient authority to prevent the creation of new waterworks if the proposed facility cannot guarantee adequate TMF capacity to comply with applicable state and federal laws and regulations. To meet this objective, ODW utilizes standard written procedures as control points for issuing waterworks construction and operation permits.
- 2) ODW ensures that waterworks which receive financial assistance through the Drinking Water State Revolving Fund (DWSRF) have, or develop, sufficient TMF capacity prior to fund disbursement.
- 3) ODW has the assessment, prioritization, and response capabilities necessary for correcting existing waterworks' TMF capacity limitations.

During development and subsequent revision of the Capacity Development Strategy, ODW recognized that TMF considerations were already significant, well-established procedures within

routine interactions with waterworks. ODW's sanitary survey program involves careful evaluation of the condition of waterworks infrastructure, operational practices, and drinking water quality indicators. All of these elements directly reflect the TMF status of the waterworks, and reveal areas of TMF strength and weakness at the facility. In addition, the goal of improving the TMF capacity of waterworks drives many activities conducted by ODW. Assistance to both new and existing waterworks is an ongoing, integral part of ODW's daily mission of service to the people in Virginia who receive and use water from waterworks.

The following sections of this report describe the efforts undertaken by ODW to implement Virginia's Capacity Development Strategy during state fiscal years 2014 through 2017. Technical, managerial, and financial activities are discussed, with emphasis on their relevance to the assessment and enhancement of capacity development. The activities described apply to all classifications waterworks in Virginia, community, NTNC, and TNC, but are focused on community and NTNC waterworks because TNCs are not included in the SDWA capacity development requirements.

TECHNICAL CAPACITY

Technical capacity encompasses the physical infrastructure of a waterworks, including its water source, the knowledge, skill, and training required for staff to operate the facility, and the permits and regulations that establish operational requirements. Specific operational areas and how ODW supports them are described below.

Construction Plans and Permit Review

ODW issued 911 Construction Permits, 584 Operation Permits and 464 Source Water Assessments during the reporting period. The approval of permit applications is especially noteworthy in regard to capacity development. ODW uses authority via the Code of Virginia §§ 32.1-169 and 32.1-172B, and §12VAC5-590-190 of the Waterworks Regulations to prohibit the establishment, construction, or operation of a waterworks without a written permit, and requires the submission of TMF capacity information in the permit application. Construction and operation permitting authority are control points to prevent creation of waterworks that lack sufficient TMF capacity to sustain operations. Permits are issued to waterworks able to demonstrate the potential for long-term TMF sustainability.

Potential waterworks must satisfactorily complete a five-step application process before a construction permit is issued. The application process includes:

- Notification of Intent (Permit Application);
- Preliminary Engineering Conference;
- Submission of a Waterworks Business Operations Plan;
- Submission of a Preliminary Engineering Report;
- Submission of Final Plans and Specifications.

After construction, the waterworks owner must submit a statement by a licensed professional engineer that certifies the construction work was completed in accordance with the approved plans and specifications, based on inspections of the waterworks during and after the construction. Upon receipt of the statement, ODW issues an Operation Permit. The permit also establishes the classification of the waterworks for the purpose of setting personnel licensure requirements.

These procedures ensure that a new waterworks starts with infrastructure that is designed and constructed to provide an adequate supply of safe drinking water, and that skilled, appropriately

licensed operators will staff the facility. These measures also compel prospective owners to plan for long term financial sustainability.

Sanitary Survey Program / On-site Inspections

ODW staff perform on-site inspections of waterworks through the sanitary survey program. Inspections include a thorough evaluation of waterworks infrastructure and water treatment processes, a review of drinking water quality monitoring records, and examination of operational practices and controls. Waterworks staff qualifications are also reviewed.

During the survey, if ODW staff identifies “Significant Deficiencies,” they develop “Corrective Action Plans” for these deficiencies. Significant Deficiencies are defects that cause, or have the potential to cause an unacceptable risk to health or that could affect the reliable delivery of safe drinking water. Corrective Action Plans are designed to resolve Significant Deficiencies by a specific time.

ODW personnel conduct special sanitary surveys of waterworks that consist of site visits to evaluate new construction, investigate consumer complaints, and respond to specific requests for assistance. Site visits are made to perform source water assessments, and to evaluate locations of proposed new wells. These site visits provide ODW with opportunities for direct, face-to-face interaction with waterworks owners and operators and allows guidance on TMF improvement initiatives.

Through the sanitary survey program, waterworks’ capacity needs are identified, prioritized, and targeted for guidance and assistance from ODW staff. The culmination of the sanitary survey is a written report that serves as an action plan for waterworks owners to follow for correcting deficiencies and improving operations.

During the reporting period, ODW staff performed 3,109 routine sanitary surveys at community and NTNC waterworks, 503 special sanitary surveys (including inspection of new construction, complaint investigations requiring field visits, and delivery of on-site assistance), and 464 well site visits and source water assessments. Figure 2 summarizes ODW field activities in the current and previous reporting periods. The number of routine sanitary surveys for the current reporting period has declined because ODW reduced the survey frequency in order to work with VDH’s food service, campground, and hotel licensing programs to identify and review over 1,000 water supplies serving these facilities. For those that met the definition of a waterworks, most commonly as a TNC, ODW staff worked with owners to issue operation permits to more than 120 waterworks. The historic reporting in Figure 2 does not include TNCs. ODW performed 1,750 sanitary surveys at TNCs during the reporting period.

Community and Non Transient Non Community

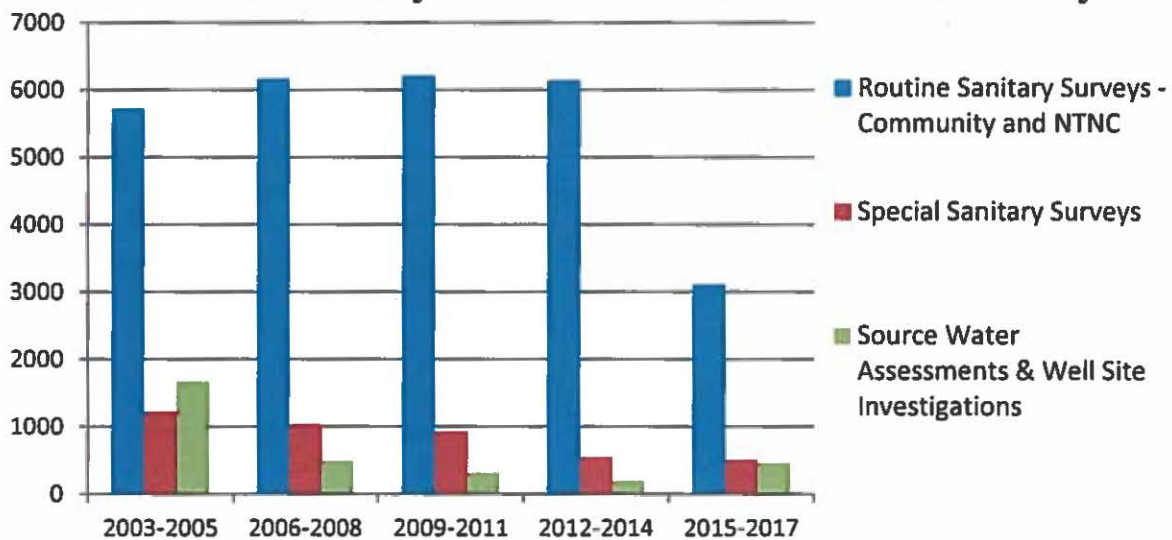


Figure 2

ODW Oversight of Transient Noncommunity Waterworks

In Virginia, the health department in the city or county where a restaurant, food service facility, campground, hotel, etc. is located (the “local health department”) issues a permit for the facility and each particular regulatory program for restaurants/food service, campgrounds, and hotels has some requirements for the water source. As a result, many of these facilities were not also regulated by the drinking water program when they were initially permitted. However, in 2002, EPA recommended Virginia regulate the water systems at restaurants/food service facilities, hotels, campgrounds, etc. that met the definition of a waterworks, typically a TNC (meaning 25 or more people daily for at least 60 days out of the year), as waterworks. That year, ODW and the local health departments began the process of transferring regulatory responsibility for the waterworks to ODW. The local health departments continued to regulate restaurant/food service, campground, hotel, etc. operations and, as a result, ODW now regulates over 1,150 active TNC waterworks. In the last two years, ODW staff, in cooperation with the local health departments, have worked to complete the process of identifying any remaining TNCs that should, but do not, have a Waterworks Operation Permit. For these businesses, the availability of a reliable source of drinking water is essential to their operations, but water production is often an ancillary, low-priority activity. Consequently, for some waterworks, compliance with the Virginia Waterworks Regulations can be very challenging due, in part, to economic conditions. ODW is providing consistency in implementing the regulations at these waterworks, but key challenges exist, especially from the standpoint of addressing the issue of owners’ TMF competencies, because of the cost in some cases to comply with drinking water standards with a limited revenue stream from a small business.

Assistance Contacts by ODW Staff

In addition to site visits, ODW staff interacts with waterworks owners and operators and provides assistance through a variety of informal contacts including meetings, telephone calls, and emails. Assistance is given that covers a full range of TMF concerns. For instance, help may be given to address drinking water quality sampling needs, to follow-up on corrective measures described in a sanitary survey report, or to review and assist with the preparation of the Consumer Confidence

Reports, which are required annually. Waterworks operators may be apprised of upcoming training opportunities or offered help with water treatment dosage calculations. Owners may be advised of impacts from, or requirements of, pending regulations for employee and consumer education. During the reporting period, ODW staff received and responded to 36,410 assistance requests from waterworks owners and operators.

On-site Assistance and Outreach to Operators and Owners

A key challenge faced by operators and owners of small waterworks has been securing the time and financial resources to attend formal classroom-style training events. ODW has developed “Hip Pocket” field guides to increase individualized training to waterworks operators. This effort can make significant improvements in TMF by tailoring training to meet specific needs. ODW staff utilize the field guides to respond to a specific need or interest. This approach provides the opportunity for immediate on-site mentoring. Success of this approach will be the continued development of additional field guides to accommodate common training needs of small waterworks.

Source Water Assessment and Source Water Protection

In April 2003, ODW completed an EPA-required effort to perform source water assessment susceptibility rankings on all active public water supplies. These assessments were designed to reveal potential vulnerabilities from manmade sources of contamination. The assessments serve as a tool for water supply resource planning, source water protection efforts, and specifically support waterworks managerial capabilities. ODW continues to perform assessments on new water supplies and to record conditions found during on-going field observations associated with sanitary surveys.

In July 2003, ODW created a Wellhead Protection Plan Program for small community groundwater waterworks in central and western Virginia to have a qualified consultant assist in planning development. The goal of the program is to interest waterworks with high rankings from the source water assessments in program participation and assist them in the development of wellhead protection plans. The program delivers technical support from a contract provider to small waterworks serving less than 10,000 persons. The resulting protection plans enable the participating waterworks to take steps to safeguard their drinking water sources, by managing and controlling activities in the vicinity of the source that could compromise water quality and quantity. The program has been expanded to include waterworks that use surface water as their source and serve less than 10,000 persons. Approximately 12 small waterworks prepare site-specific Source Water Protection Plans each year. Other annual program activities include contacting an average of 30 waterworks to determine interest, making eight program presentations, and facilitating eight local advisory committee meetings. Approximately 500 small water systems have received the offer of assistance for the protection of Commonwealth of Virginia’s water resources through the history of this program, and 35 source water protection plans have been written during this three year reporting period.

Vulnerability Assessments for Issuing Monitoring Waivers for Some Classes of Contaminants

ODW staff reviewed and assessed 2,016 applications for monitoring waivers from eligible waterworks during the reporting period. For some groups of man-made chemical contaminants, waterworks may forgo routine water quality monitoring if they can demonstrate that the source is located and constructed in a way that eliminates susceptibility to the contaminants, and that the source is not vulnerable to contamination because the chemicals are not in use in the vicinity of the source. The waiver application process involves a self-assessment of the source’s susceptibility and

vulnerability by waterworks owners; application review affords ODW an opportunity to screen waterworks for conditions that may impair water quality. The waiver process encourages TMF capacity by highlighting beneficial planning efforts that the owners can implement through programs such as source water protection.

Water Loss and Evaluation Assistance

ODW increased efforts to provide assistance to waterworks experiencing water loss and leakage in distribution systems. Staff requested water loss information from DWSRF applicants, planning grant applicants, sanitary surveys, and waterworks operation reports. This increased amount of information has led to a better understanding of the number of waterworks experiencing significant water loss and the potential assistance required by small waterworks throughout Virginia.

During 2015 through 2017, ODW partnered with the Virginia Rural Water Association (VRWA) to increase water loss assistance to waterworks. Water loss information collected during sanitary surveys and funding applications was referred to VRWA to improve prioritization of assistance to waterworks. VRWA staff are experienced and specifically trained as “circuit riders” to provide on-site assistance locating leaks in distribution systems using leak detection equipment. Refer to Appendix 1 for a list of systems assisted with leak detection and Appendix 2 for success stories related to leak detection.

In March 2013, VRWA purchased leak detection equipment utilizing funds provided by ODW through the DWSRF. This equipment is being used to directly assist waterworks with leak detection services in their distribution systems. Since July 1, 2014, ODW and VRWA have coordinated leak detection technical assistance. During the reporting period, 85 individual water systems were provided leak detection assistance through this program, and represent nearly 2,000 person-hours of in-field leak detection efforts.

MANAGERIAL CAPACITY

Managerial capacity is a waterworks’ planning, organization, and ability to routinely achieve compliance with applicable laws and regulations. This capacity is where an organization must make the decisions that affect technical and financial capacities. A strong managerial capacity will achieve results even when the other capacities may not be as strong.

Data Collection and Analysis

ODW maintains and utilizes the Safe Drinking Water Information System (SDWIS), which is an extensive electronic inventory of waterworks facilities, personnel, sampling data, and compliance status. SDWIS is the primary vehicle by which ODW reports required information to EPA. A SDWIS interface called Data Reports and Retrieval is also the principal repository of data that ODW uses to manage: contacts with waterworks, inspection schedules, and compliance sampling data. Adjunct electronic tracking tools are used to track application and plan review activities. Use of these electronic tools facilitates interaction with waterworks and provides the means to quickly assess many elements related to waterworks TMF capabilities.

In July 2001, ODW developed an electronic tool to complete a capacity baseline assessment of all community and NTNC waterworks. These baseline facilities, which served an estimated population of 6.5 million persons, were evaluated and scored based on their compliance status, infrastructure

condition, managerial and financial indicators, and their preparedness to respond to impending regulatory impacts. The baseline assessment data were used to make referrals to assist providers under contract with ODW. For instance, waterworks with low compliance and infrastructure condition scores were offered engineering planning and design assistance. Waterworks' scores were also used to set priorities for assistance contacts with waterworks by ODW staff. In early 2011, ODW reevaluated the waterworks and updated database records. The reassessment data was compared to the original baseline assessment to identify areas of continued need and revealed a continued general trend towards improvement within the TMF capacity of the waterworks assessed. A higher score indicated improvement in waterworks' capacity.

In 2016, ODW conducted a triennial capacity assessment. ODW staff answered 18 "yes" or "no" questions (six questions in each of the three TMF component areas) about each waterworks in their assigned area. When there was uncertainty about the answer to a question for a particular waterworks, staff reached out to those waterworks to get additional information for the assessment. Appendix 3 has the list of questions asked. As a result of this assessment, ODW identified 63 systems with capacity scores below 10, see Figure 3. These priority systems are concentrated in Southside Virginia more than any other geographic area of the Commonwealth. ODW staff have contacted the priority systems and offered technical assistance. Over the next two to three years, ODW will deploy resources to these systems to increase their TMF capacity.

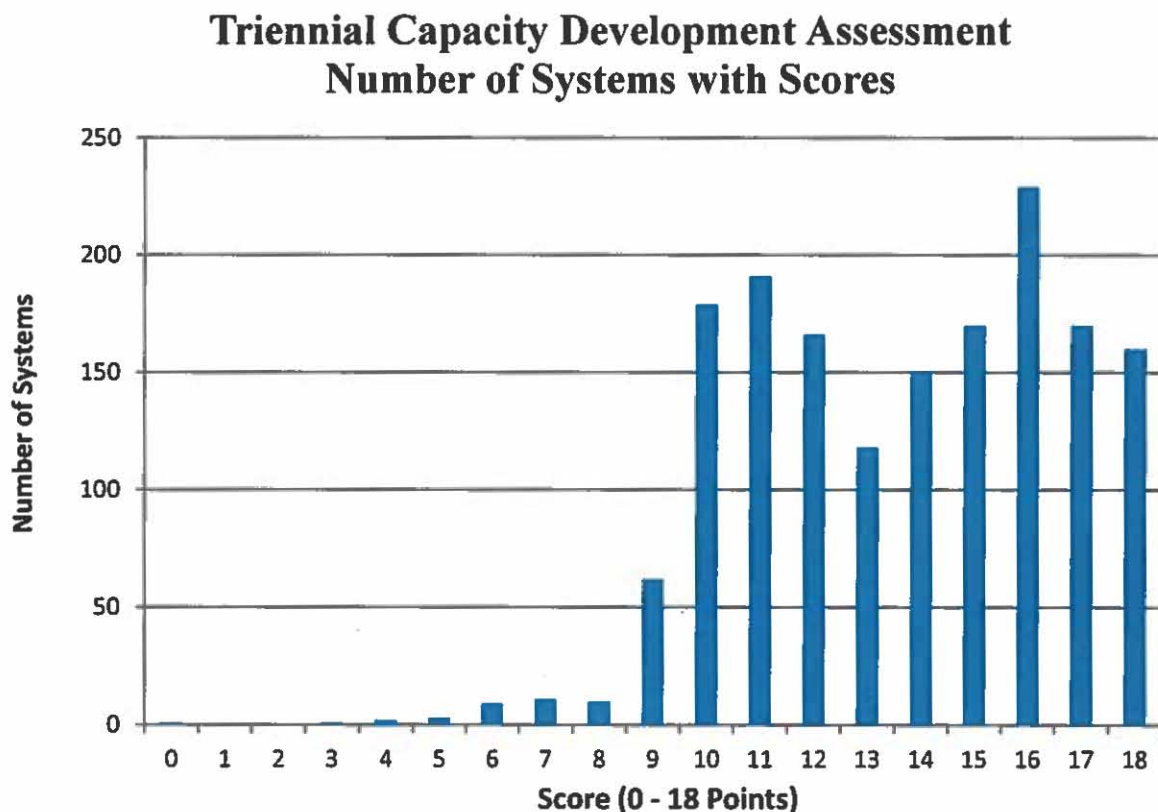


Figure 3

Compliance and Enforcement Program

ODW routinely reviews water quality data submitted by waterworks, and issues Notices of Alleged Violation (NOAVs) for sample results that do not appear to meet the standards contained in the Virginia Waterworks Regulations. ODW also issues NOAVs for conditions that do not appear to meet requirements for: monitoring, licensed operators, recordkeeping, reporting, and other conditions that deviate from standards established by the SDWA and the Virginia Waterworks Regulations. During the three-year reporting period, ODW issued approximately 4,800 NOAVs to waterworks; approximately 90% of those were for alleged monitoring violations, typically associated with a waterworks' failure to collect and analyze required water quality samples. Alleged violations are entered in the SDWIS database where they can be tracked and reported.

ODW uses EPA's Enforcement Response Policy and its associated Enforcement Targeting Tool (ETT) to identify waterworks with violations that rise to a level of significant noncompliance by focusing on those with health-based violations and those that show a history of violations across multiple rules. EPA compiles data for the ETT quarterly from the NOAVs ODW issues and records in SDWIS.

The enforcement targeting formula in the ETT identifies waterworks having the highest total noncompliance across all rules, within a designated period of time. A higher weight is placed on health-based violations (including treatment technique and maximum contaminant level violations). The formula calculates a score for each waterworks based on unresolved violations and violations that have occurred over the past five years. Scores don't include violations that have returned to compliance or are on a "path to compliance" through a specified enforceable action. ODW uses the quarterly ETT reports to prioritize staff assistance to waterworks with numerous or serious compliance failures and identify waterworks that are in danger of becoming priority systems, which are to be addressed first. Figure 4 shows the number of systems with an ETT score greater than 10 is 20 in 2017; this represents less than 1.0% of all waterworks in the Commonwealth.

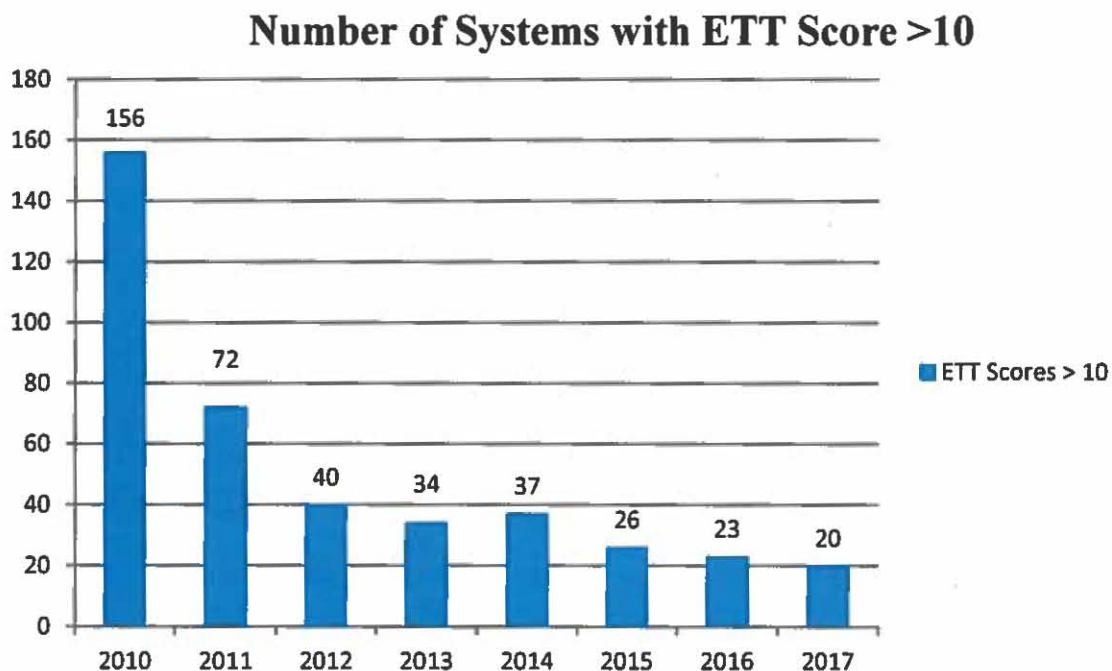


Figure 4

ODW also uses the ETT as a guide for the issuance of warning letters to encourage waterworks owners to take actions necessary to ensure compliance. Warning letters summarize the waterworks noncompliance, corrective action deadlines, and consequences of failure to take action. ODW issued 41 warning letters to noncompliant waterworks during the reporting period.

The objective of the ETT is to establish an enforceable path for a waterworks to follow to achieve compliance. Two enforcement tools that ODW uses are the consent order and special order. The State Health Commissioner has authority to issue binding bilateral consent orders and unilateral special orders to waterworks owners who have violated the Waterworks Regulations. As required by Virginia law, hearings are conducted to give parties their due process rights before issuing adverse decisions that could result in a unilateral special order. Both orders set timelines to compel corrective measures that will lead to compliance. During the reporting period, the Commissioner issued 11 orders to bring waterworks into compliance and seven waterworks satisfied the terms of consent orders, concluding the enforcement action.

ODW's enforcement approach is highly focused on identifying solutions to the underlying causes of waterworks' noncompliance with state and federal drinking water regulations. Various tools are used to direct attention and provide guidance to waterworks owners on ways to correct deficits in their TMF capabilities. For instance, during the course of an administrative enforcement hearing it may be determined that inadequate waterworks revenues are the ultimate cause of chronic monitoring failures. The waterworks may be asked to submit a Waterworks Business Operations Plan as a budgeting tool or be given assistance with rate setting to address the lack of financial capacity.

Noncompliance with the regulations has been traditionally viewed as a useful reflection of waterworks capacity, and therefore of the Capacity Development Strategy's effectiveness. Tracking and addressing compliance failures by waterworks is recognized as an important aspect of assessing and developing capacity. A key component for the future is to continue to improve and develop methods to provide assistance to priority waterworks on the ETT. The development of measurement tools will be important to assess the positive impact the Capacity Development Strategy and compliance has on the health of people in Virginia.

Waterworks Classification and Operator Licensure

Community and NTNC waterworks are classified from VI, the lowest, to I, the highest, based on the population served, source, and operational complexity. As of January 1, 2017 the Virginia Department of Professional and Occupational Regulation (DPOR) has adopted the Association of Boards of Certification national examination requirements and each waterworks in the Commonwealth is required to have a licensed operator of equal or higher classification as the system. In June 2017, the total number of community and NTNC waterworks in Virginia required to have a licensed operator was 1,620. Since 2002, the number of waterworks required to have licensed operators has decreased by approximately 225 due in part to consolidation of small waterworks. ODW continues to encourage small waterworks with TMF deficiencies to connect to a service authority or larger municipal water distribution system when those systems extend into surrounding rural areas.

Licensed operators are regulated by DPOR. Licensure is based upon operators having applicable experience and education as well as demonstrating minimum required knowledge, skills and abilities through an examination. Experience credit is limited to the operation and maintenance of water distribution systems, laboratory work, and treatment plant maintenance and varies depending on classification. The minimum education requirement for an operator's license is a high school diploma

or General Educational Development certificate. There are provisions in the Licensure Regulations for a candidate without a high school diploma to get a license by substituting more operator-in-training experience for education. As of June 2017, there were a total of 2,060 licensed operators in Virginia. To maintain licensure, operators must meet continuing professional education requirements.

During the reporting period, the number of waterworks operators decreased. However, the number of waterworks required to have operators also declined. Since the beginning of the 2011 reporting period there was an average of 1.2 waterworks operators per number of waterworks required to have operators. For the 2014 reporting period there were 1.4 waterworks operators per number of waterworks required to have operators. For the current reporting period there are approximately 1.3 operators per waterworks required to have an operator. The balance of operators to systems has shown a net decline over the last three years. With the larger systems required multiple operators, and the medium sized systems often having two or more operators; these numbers could indicate a growing problem for the small waterworks across Virginia.

Continuing Professional Education

ODW facilitates the development of TMF competencies for waterworks staff by offering and sponsoring on-going training. The curricula for these programs include technical topics such as: equipment operation and maintenance, drinking water chemistry and microbiology, water treatment technologies, and operator math. Managerial aspects of waterworks operation are addressed through course offerings on: the Virginia Waterworks Regulations, capacity development, financial planning, asset management, waterworks administration, and waterworks security.

The Waterworks Operator Short School is the preeminent water and wastewater operator training in Virginia. ODW actively participates in the Short School by providing many of the course instructors. This annual training is a week-long course held at Virginia Tech since the 1940's. There have always been three levels to the course: introductory, intermediate, and advanced. Each level provides approximately 15 classes and focuses on a variety of waterworks operations topics. The curricula for the intermediate and advanced courses build on the preceding year's course. During the reporting period, 266 operators and operators-in-training attended the short courses.

Several additional training courses are offered through ODW. These courses are held in association with Virginia Tech, Mountain Empire Community College and other service providers. Course offerings can vary yearly; however, ODW maintains a core of training courses which assist waterworks develop employees and TMF capacity. A listing and links to course offerings are found at the ODW website: www.vdh.virginia.gov/ODW/TrainingOpportunities%20.htm.

Waterworks Advisory Committee

The SDWA requires states to identify persons with interest or involvement in the creation and execution of their capacity development strategy. To meet this requirement, ODW consults with its Waterworks Advisory Committee (WAC), which is comprised of a diverse group of waterworks stakeholders throughout the state. The committee is given opportunities to provide input into the on-going development of ODW policies and procedures, and is consulted frequently regarding the implementation of specific programs, including those relating to the capacity development strategy. The WAC and ODW staff met thirteen times during the reporting period.

Emergency Preparedness

Virginia is vulnerable to many types of hazards that often have impacts to public waterworks. Waterworks owners in Virginia are faced with having to prepare for, respond to, and recover from tornados, hurricanes, winter storms, earthquakes, floods, terrorism, vandalism, and other natural and man-made hazards. ODW provides a variety of training, exercises, and planning tools to assist waterworks preparedness. ODW assists waterworks during incidents and emergencies by serving as the lead agency of Emergency Support Function 3 at the Virginia Emergency Operations Center. ODW staff also provides technical assistance during the recovery stages of incidents and emergencies.

ODW staff prepares waterworks owners for hurricanes and winter weather by offering preparedness materials to community waterworks during the Governor's proclamation of Winter Preparedness Week. Preparedness materials for hurricane season are distributed at the beginning of hurricane season (June 1 – November 30). Preparedness materials for waterworks are available on the ODW website and include: information for the issuance of boil water advisories, ODW after-hours emergency contact information, pre-incident preparedness planning, incident response planning, well disinfection procedures, information for generators, backup power needs, and contact information for other organizations and agencies that assist with incident planning and response, such as the Virginia Water/Wastewater Agency Response Network.

Extended power outages during hurricanes and winter storms are a technical and financial capacity concern. The Virginia Waterworks Regulations require that waterworks have Emergency Management Plans (EMP) for extended power outages. Currently, 72% of community waterworks are identified as having met this required EMP. Continuation of outreach and training is required in this area to bring all community waterworks into compliance.

In 2015, ODW collaborated with Virginia American Water Works Association's Water/Wastewater Agency Response Network for a statewide table-top seminar dealing with long term power outage as the central case. Approximately 105 participants, representing waterworks and first responders, attended the training. ODW partnered with EPA in 2016 to provide a "Water & Emergency Services" workshop in Richmond. This workshop had approximately 90 participants. Additionally, in the reporting period, ODW partnered with the Office of Epidemiology to perform seven water contamination table-top exercises "Water R You Thinking" throughout Virginia using Food and Drug Administration (FDA) grant funds. Approximately 160 participants discussed contamination of source water and the distribution system.

FINANCIAL CAPACITY

Drinking Water State Revolving Fund

The DWSRF administered by ODW provides financial aid in the form of loans and grants to waterworks in need of infrastructure improvement, maintenance, and development. All waterworks that qualify to receive DWSRF funds are assessed by ODW staff to determine if the waterworks has sufficient TMF capacity before loans are disbursed. If it is determined that a waterworks does not have sufficient TMF capacity, ODW, through its financial partner Virginia Resources Authority, sets requirements for waterworks restructuring as part of the funding process. Examples include: waterworks rate increases, the completion of annual audits, or the completion of compliance plans

and programs. During the reporting period, the DWSRF entered into binding commitments on low-interest or interest-free construction loans totaling \$50,609,269 to 64 waterworks.

The DWSRF program has worked diligently to fund important water infrastructure projects and guide those projects to completion. Since the 2014 Report on the Efficacy of the Capacity Development Strategy, the following objectives have been incorporated.

- To further TMF capacity development at waterworks receiving funding, additional requirements and commitments to evaluate and adjust rates have been added in order to receive principal forgiveness loans. This applies to those waterworks whose water use rates appear below the target rate of 1.0% of Median Household Income for the service area.
- A rebate program has been initiated to promote lead service line replacements. Waterworks are eligible for principal forgiveness loans with reimbursement to a maximum of \$5,000 per lead service line replaced and a maximum of \$500,000 per year for individual waterworks.
- To facilitate design build/public private partnership projects and accelerate the application process the DWSRF revised the program to allow for Preliminary Engineering Reports (PERs) to be completed and submitted for cost reimbursement as part of the construction project. Previously PERs (or a waiver by ODW) had to be submitted with the DWSRF application.

Planning and Design Grant Assistance

ODW awards planning and design funds to small, financially challenged, community waterworks, up to \$50,000 per project. The beneficiaries of this program are normally waterworks that would not have the TMF capacity to evaluate drinking water problems, identify solution alternatives, and make recommendations for correction. Eligible projects may include: preliminary engineering planning, design of plans and specifications, performance of source water quality and quantity studies, drilling and installation of test wells to determine source feasibility, or other similar technical assistance projects. During the reporting period, ODW committed \$1,327,770 to funding 36 waterworks planning and design projects.

ODW implements outreach efforts to increase awareness of the opportunities available through the planning and design fund program. Information is posted on the ODW website and in the Virginia Register. Information packages are also sent to all community and NTNC waterworks during January of each calendar year. The information packages include: eligibility information, application information and deadlines, workshop dates, contact information, as well as other useful information. Applications are accepted year round and reviewed when submitted for acute, chronic and public health points. Applications not scoring health points are further reviewed for funding in September of each year.

Eligible activities for funding include: distribution system surveys and mapping (to include type of pipe material and estimated age), water audits to estimate losses due to leakage, identification of suspected leak locations, training with leak detection equipment, and review of previous detection work. The resulting report typically includes: recommended waterline replacement priorities and schedules, leak detection and repair plans, water audit recommendations, and meter maintenance activities. This activity helps support capacity building as the waterworks are involved in the process from the beginning and benefit from the tools that are generated from the technical assistance provided once planning activities are complete.

Waterworks Business Operations Plan

Prior to issuance of an Operation Permit, ODW requires the completion of a Waterworks Business Operations Plan (WBOP) as a financial evaluation tool. The WBOP is intended for proposed new waterworks, existing waterworks under new ownership, and waterworks, which have significant compliance issues. A WBOP is also required for potential recipients of DWSRF financial assistance, and may be used as a corrective measure during enforcement proceedings. During the reporting period, ODW made a major revision of the WBOP templates, documents and overall design of the WBOP. The revision makes the development of this WBOP by the waterworks easier by providing detailed instructions for the completion of the required forms and information. Further, the new WBOP assesses the information provided and makes “Sustainability Recommendations” for how a waterworks can improve their capacity in any of the three categories; technical, managerial and financial.

In the process of preparing a WBOP, waterworks management can gain valuable insights into strengthening technical, managerial and financial capacities. The planning process gives waterworks tools for establishing effective budgets, appropriate service rates, and financial reserves to ensure long-term sustainability. Plans must include an inventory of infrastructure assets, anticipated operational and maintenance expenses, monitoring costs, and revenue sources.

CONCLUSIONS

Success Stories

This “Report to the Governor” utilizes data to describe results of the Capacity Development Strategy; however, numbers are not the whole story. For this reason, ODW provides success stories in Appendix 2 to highlight the type of projects and the impact that they have on the waterworks, communities, and people in the Commonwealth of Virginia who receive and use water from a waterworks.

Efficacy of Virginia’s Waterworks Capacity Development Strategy

The Capacity Development Strategy proves to be an effective tool to improve the technical, managerial, and financial components of a waterworks’ ability to reliably produce and deliver safe drinking water to consumers. The incorporation of capacity development into ODW’s program activities maximizes the potential for successful implementation of the strategy.

Since July 1, 2014, ODW added three full-time positions and one part-time position dedicated to capacity development in Virginia. The protection of public health and the development of TMF capacity in small waterworks will largely depend on the continued development and successes of this strategy. The complexity and number of federal drinking water rules that must be implemented, monitored, and enforced has and will continue to result in an increased workload. ODW will continue to provide technical assistance, track routine sanitary surveys, and evaluate the capability of waterworks to deliver an adequate quantity of safe drinking water and to comply with state and federal drinking water standards.

Many of the services associated with capacity development that are described in the preceding report are not paid for with state general funds. Technical Assistance Fees pay for staff positions which

offer technical assistance. ODW staff dedicated to capacity development, training and outreach, and security, are paid for from the EPA's capitalization grant 15% set-aside. The Commonwealth of Virginia could further the Capacity Development Strategy and, therefore, ODW and VDH, by dedicating state funds to programmatic initiatives which can directly benefit struggling waterworks by increasing their TMF capacity.

ODW will continue to achieve the fundamental goals of the Capacity Development Strategy with funding and staffing that are capable of implementing those activities most critical to enabling waterworks to achieve and maintain sufficient technical, managerial, and financial capacity to provide safe drinking water to people in the Commonwealth of Virginia who receive and use water from a waterworks.

APPENDIX 1

| Virginia Rural Water Association Leak Detection Program - Waterworks Assisted | | | |
|--|---------------------------|--|---|
| Hours of Leak Detection Service | Waterworks Name | Hours of Leak Detection Service | Waterworks Name |
| 1.25 | Buena Vista | 10 | Woodstock |
| 1.25 | Scott County | 11 | Blackstone |
| 1.75 | Vinton | 11.5 | Bedford Regional Water Authority |
| 2.25 | Culpeper Co | 11.75 | Campbell County |
| 2.25 | Louisa, Town of | 11.75 | Claremont |
| 2.25 | New Kent | 12.25 | Dublin |
| 2.5 | Cape Charles | 14 | Woodway Water Authority |
| 2.5 | Emporia | 14.75 | Coeburn |
| 2.5 | Kenbridge | 14.75 | Warsaw |
| 2.75 | Boydton | 15.25 | Norton |
| 3 | Lovettsville | 15.75 | Clarksville |
| 3 | Rapidan Service Authority | 17 | Port Royal |
| 3 | Surry Co | 17 | St. Charles Water Sewer Authority |
| 4 | Amherst | 18.75 | Appomattox |
| 4 | Maury Service Authority | 18.75 | Shenandoah |
| 4.5 | Mineral | 19.5 | Lake Moomaw |
| 4.5 | Rural Retreat | 19.5 | Louisa Co. |
| 4.75 | Bowling Green | 20.75 | Carroll Co. Public Service Authority |
| 5.25 | Culpeper, Town of | 20.75 | Chincoteague |
| 5.25 | Drakes Branch | 21 | Bland Co. |
| 5.25 | Luray | 21.5 | Elkton |
| 5.25 | Phenix | 22.25 | Edinburg |
| 5.5 | Isle of Wight County | 23.25 | Windsor |
| 5.5 | Keysville | 23.5 | Pulaski Hunt Housing |
| 6 | Saltville | 26.5 | Wytheville |
| 6.75 | Kiptopeke | 27.75 | Goshen |
| 6.75 | Troutdale | 28.25 | Grayson Co. |
| 7 | Stuart | 29 | Craigsville |
| 7.25 | Wakefield | 29.5 | Smyth Co. |
| 7.5 | Wise Co | 30 | Montgomery Co Public Service Authority |
| 7.75 | Floyd Co PSA | 30.5 | Cedar Bluff |
| 8 | Southampton Co SA | 31.5 | Gate City |
| 8.5 | White Tail Park./Ivor | 32.25 | New Market |
| 9.25 | King George County | 32.25 | Pulaski |
| 9.25 | Waverly | 32.5 | Pennington Gap |

APPENDIX 1

| Hours of Leak Detection Service | Waterworks Name | Hours of Leak Detection Service | Waterworks Name |
|--|----------------------------------|--|------------------------|
| 35.5 | Big Stone Gap | | |
| 36.5 | Dungannon | | |
| 39 | Stephens City | | |
| 39.5 | Montross | | |
| 40.5 | Stanley | | |
| 42.5 | Lee Co. Public Service Authority | | |
| 42.75 | Altavista | | |
| 55.5 | Nickelsville | | |
| 62.25 | Jonesville | | |
| 63.5 | Appalachia | | |
| 64.25 | Fries | | |
| 103.5 | Exmore | | |
| 118.75 | Pembroke | | |
| 144.5 | Pocahontas | | |
| 198 | Pound | | |

APPENDIX 2

Capacity Development – Success Stories

Four full-time and one part-time staff have actively supported the Capacity Development Strategy for the reporting period. The three new staff members came from backgrounds as ODW inspectors. A brief summary of accomplishments includes:

- Seven articles published in industry periodicals
- Four Hip Pocket Tools published for use by waterworks
- Initiated refinancing of infrastructure debt, saving a waterworks approximately 3.3 million dollars
- Initiated and/or coordinated several training events
- Re-developed the Waterworks Business Operation Plan Manuals
- Developed justification for an Auto-dialer to remind waterworks to collect samples
- Made numerous marketing efforts to get waterworks personnel to training events
- Collaborated with planning district commissions on sustainability initiatives
- Initiated and coordinated Emergency Management Plan training events with VRWA
- Three National Association of State Drinking Water Administration presentations on asset management

Small Engineering Projects Program

ODW created a program to assist waterworks with engineering services for small projects. Thompson and Litton serves ODW's Abingdon and Danville Field Offices, Whitman Requardt and Associates serves ODW's Lexington and Culpeper Field Offices, and Bowman Consulting serves ODW's Southeast Virginia Field Office. The purpose of these contracts is to provide small project engineering assistance to waterworks that might not be able to afford engineering services without this technical and financial assistance. Additionally, during this reporting period ODW expanded the program to include Value Engineering services. Through the first three years of this program's implementation, eleven waterworks were assisted utilizing funds totaling approximately \$150,000.00.

ODW recently received an email with an attached letter from a waterworks administrator who was provided engineering services through the Small Engineering Projects Program. Excerpts of that email follow: "...thank you for the opportunity to participate in the Virginia Department of Health, Office of Drinking Water's [Small Engineering Projects Program] in order to review our water system's corrosion control system and prepare "as-built" record drawings of this system... As the first item has been completed by [the engineers] and subsequently approved by your office, I have listed the status of the recommendations which have been completed..." – Colley W. Bell, III, Head of School, Middleburg Academy

Related to another project, an ODW engineer commented, "I want you to know that the Small [Engineering Projects] services provided to Middleburg Academy have more than met our original goal for the project of preparing as-built plans. ([ODW's Culpeper Field Office's] objectives of obtaining as-built plans and reissuing the Operation Permit have been met.) The project report also shed light on a number of system issues, and motivated the owner and contract operator to address some of them. The attached letter is a thank-you to ODW and also a status update on the various system issues and actions taken so far. In my opinion, this waterworks owner was content to do nothing and nothing special would have happened without the Small [Engineering Projects Program]."

Southeast Rural Community Assistance Project (SERCAP)

Success can be measured against numbers of waterworks or customers served. In the case of the collaboration between ODW and SERCAP, the success goes beyond the metrics. In 2014, SERCAP

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received its first ever round of federal funding to provide direct technical assistance to waterworks. By late spring 2015, SERCAP staff was a year into an 18-month contract with few leads and no deliverables achieved to that point. They had been trying to offer services to waterworks, but the waterworks were either not interested or, as was most often the case, reluctant to work with someone they did not know. After the one primary technical service staff member left SERCAP there was concern about meeting their goals. When Andy Crocker was hired to fill that role, the ODW staff reached out to him and offered assistance by providing access to and interpretation of the ETT list that, while promising, did not net any solid projects for SERCAP. However, ODW staff persisted and sent more referrals for systems that needed technical assistance and might be receptive for help. Additionally, a list of waterworks needing help completing Consumer Confidence Reports, an updated ETT priority systems' list, and various data queries was successful in assisting SERCAP. Nearing the end of the grant cycle with deliverables completed, Mr. Crocker remarked, "There was no way it would have been possible had it not been for the terrific relationship that the entire team formed in an environment that allowed us to accomplish goals that we all had." Collaborating across agencies produced measurable results (many of which are included in the SERCAP report) including:

- York Public Utilities (York County): A joint site visit with the owner, SERCAP, and ODW to discuss the Consumer Confidence Report opened the door for discussions about seeking new ownership for this small consecutive system that serves low-income residents, is plagued by leaks, and whose owner lives over 125 miles away.
- Town of Port Royal (Caroline County): A joint site visit with the Town, SERCAP, ODW, and Utilities Services Group produced an action plan in which leak detection and emergency tank repairs could be funded by SERCAP. The work was completed within 90 days of that meeting and allowed for the system to be protected from contamination while construction through the DWSRF progresses.
- Town of Pembroke (Giles County) – ODW capacity development and field office staff identified several actions that would improve the waterworks and distribution system for this small town. SERCAP was able to provide funding for a new meter system.
- Sleepy Hollow Trailer Park (Campbell County) – The owner of water system serving the trailer park learned it met the definition of a waterworks and that he would need to comply with the Waterworks Regulations and County requirements. The owner was not sure how he would accomplish the task. ODW provided clear guidance on compliance and engaged SERCAP to provide technical advice and expertise to the owner, including getting help to clarify the County's bylaws for rate and connection fee forgiveness.

Town of Brookneal

The Town of Brookneal completed upgrades to their waterworks in 2012. These upgrades were funded partially by the American Recovery and Reinvestment Act of 2009 and partially by the DWSRF program. At the same time, distribution system replacement was being completed with State and Tribal Assistance Grant funds and Rural Development funds. Improvements included a new carbon-feed room for the treatment of disinfection by-product precursors. Upon commissioning of the upgraded system, the level of Trihalomethanes (TTHMs) in water from the waterworks began to consistently exceed the primary maximum contaminant level (PMCL). Subsequently, the Town entered into a consent order to establish a plan and schedule to address the TTHM violations and return to compliance with the MCL. ODW initiated contact with the Town in an effort to coordinate a Town-sponsored training event on the proper operation of carbon feed equipment at their facility.

The training was well received by all of the attendees. This training included the carbon feed system's manufacturer representative and ODW staff knowledgeable in distribution system optimization. Several water systems representatives from around Brookneal were invited to attend based on their use of carbon

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feed systems. Operators attended this training from 10 area waterworks. All attendees appreciated the hands-on aspect of walking through the Brookneal system and learning about making system adjustments. This "On Location Training" will be used as a model for future training and a second On Location Training is being developed for Leak Detection and Water Loss.

The long-term effects that this training has had on the TTHM levels within the distribution system have reduced the disinfection by-products to less than the PMCL and Brookneal has successfully completed the requirements of the Consent Order as of April 18, 2017.

Town of Pound

ODW provided technical assistance to the Town of Pound in 2014 and 2015 with ways to increase their financial and managerial capacity. Pound is currently losing population and customers due to a decline in the coal mining industry. Pound's waterworks consists of 788 connections and serves approximately 2,258 people. The waterworks has experienced significant water leaks resulting in loss of pressure in the system and a boil water advisory. They also received multiple violations, including a Notice of Alleged Violation for reliability following a sanitary survey report. Addressing these violations to return to compliance will require a significant investment into upgrades for their water treatment plant. They have already taken advantage of the DWSRF program for several projects to upgrade their distribution system, including the replacement of their main storage tank and over half of their distribution system piping. Water rates have already increased to cover the debt payments on these previous projects and there is limited ability to raise them more to cover the needed treatment plant upgrades and additional waterline replacement projects. Additionally, the Town Manager resigned during this period and they have been unable to hire a new Town Manager. Currently, the Mayor is serving as the acting Town Manager.

ODW staff met several times with the Mayor and other stakeholders to help determine a plan of action. One stakeholder, the LENOWISCO Planning District Commission (PDC) has become a partner in the efforts to help this town. Through collaboration between ODW, LENOWISCO PDC, and the Town, a way forward has been mapped for bringing the town back into compliance. LENOWISCO PDC will pay for the PER necessary to upgrade the water treatment plant. They will also pay for a rate study to determine water rates, and if this is feasible given the financially disadvantaged population. The Town has agreed to consider other options such as consolidation with a neighboring waterworks, if it is not financially feasible for them to raise rates to pay for necessary improvements. In the meantime, ODW has collaborated with the VRWA circuit rider who has completed extensive leak detection of the Town's water piping. This resulted in the discovery of several major leaks. Repairing these leaks will not only reduce the risk of losing pressure and receiving another boil water advisory, but it will also recover a significant amount of revenue that can be redirected to debt service on the new water treatment plant upgrade. This project represents a success for ODW through capacity development.

Town of Round Hill

The Town of Round Hill requested ODW perform a security audit of its waterworks in 2014. During the audit, ODW also provided information about potential funding sources for the Town and got an understanding of the past and current expansion plans for the waterworks. ODW reached out to the Town during the open application period for construction funding from the DWSRF to determine if they had any waterworks debt that could be refinanced through the DWSRF program. The Town answered that they may have debt to refinance. The Town Manager attended a regional DWSRF meeting and was able to get the necessary information to make an application to the refinancing program. The Town of Round Hill, through the DWSRF refinancing program, was able to save an anticipated \$3.3 million over the course of the life of their existing waterworks debt by refinancing. Over the coming years the Town will

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be able to divert that money into needed projects and upgrades rather than into debt service. This represents a large positive budgetary impact for the Town.

Hills Mobile Home Park

The New Yorker Restaurant and Hills Mobile Home Park (MHP) in Caroline County had a groundwater well that could no longer keep up with demand in June 2016. The Hills MHP has 17 connections and serves low to moderate-income residents. The Town of Bowling Green agreed to allow an emergency metered connection from a nearby fire hydrant. In July 2016, a group of vested partners gathered to discuss a solution. Included were the Hills MHP owner, New Yorker Restaurant owner, Caroline County Public Utilities Director, Bowling Green Town Manager, and ODW staff. All parties expressed great interest in getting a permanent solution in-place and since the Town's water main was less than 200 feet away, connecting to the Town was the best long-term solution. During the on-site meeting, the question was not whether to make the connection but how will the project get funded. ODW staff directed the discussion of options with familiarity with various funding sources across the Commonwealth. Since this was an emergency, most of the conventional funding options (DWSRF, USDA, and HUD) were not viable. However, SERCAP was an option and interest, commitment, and willingness to work together developed during these meetings. As a result, ODW staff contacted SERCAP to determine if they would be able to provide funding assistance. By early August, the Town of Bowling Green applied for funding on behalf of Hills MHP and on August 31, 2016, SERCAP was able to award \$37,000 in grant funds to pay for the connection and master meter. The connection was made the third week of October, before temperatures began to drop with the onset of winter. This is an example of collaboration across the Commonwealth to provide long-term solutions for waterworks in crisis. All vested parties involved in this project were focused on providing safe, affordable drinking water to the residents of Hills MHP.

Town of Saltville

The Town of Saltville provides water to 3,756 people at 1,177 connections. This system has been in noncompliance with the Waterworks Regulations for exceeding design capacity consistently for more than half of every year for several years. Unaccounted for water was determined at 75% of production. Many maintenance items were not completed, as operators were constantly responding to leaks. ODW, through capacity development, awarded two planning and design grants to the Town to assess the situation and determine the best course of action going forward. A leak detection survey conducted as part of one of these grants identified several very large leaks that the town was able to correct immediately. This brought the Town's unaccounted for water from one-half million gallons per day to one quarter of a million gallons every day. While still a significant volume, the figure is considered an over-estimation. Meter testing, completed as part of this project, showed that 80% of the meters were not recording all of the water passing through them. Getting the large leaks under control has allowed the Town to focus on proactive planning to correct the problem for the long term. The leak detection survey also indicated that most of the leakage comes from multiple small leaks at service connections between the Town's water main and the customers' meters. The Town applied for and received an offer from the DWSRF to replace these service mains, all of the meters, and a short section of the water main. The Town voted in August 2017 to accept this offer, and as part of the conditions will raise rates 24% over the next three years, with a 15% increase in the first year. This rate increase will not only cover the cost of debt payments, but also provide much needed funding to complete some of the preventative maintenance required at the waterworks.

APPENDIX 3

Triennial Capacity Assessment Questions

| | | | | | | |
|-------------------|---|--|---|--|--|--|
| Technical | Is the waterworks score on the 2015 ETT \leq 10? | Does the waterworks have an operator sufficiently licensed for the waterworks classification and is sufficient operator coverage provided for sick leave and vacation? | Is the waterworks generally responsive to correcting recommendations in sanitary surveys? | Has the waterworks either not received significant deficiencies, or completed timely correction of all significant deficiencies? | Does the waterworks have a written policy for responding to customer complaints? | Are all plans and reports up to date and implemented (eg. CCR, CCCP, WBOP, Facility Maps, Sampling, etc.)? |
| Managerial | Did the waterworks operate within 80% of its permitted capacity for at least 10 months in 2015? | Does the system meet Waterworks Regulations design and construction standards and are they in good operating conditions? | Are all service connections metered? | Does the waterworks meet all established National Primary Drinking Water Standards? | Have all operators attended a technical training seminar or conference in the past year? | Does the waterworks implement new Rules, as indicated through monitoring, by the EPA implementation date? |
| Financial | Did the waterworks pay the technical assistance fee? | Does the waterworks have a reserve fund for future infrastructure needs of the system? | Is the waterworks budget independent from subsidization by general funds, sewer funds or other funding sources? | Does the waterworks have a written Capital Improvement Plan? | Have the waterworks' rates been adjusted in the past three years? | Does the waterworks have an Asset Management or a Water Accountability Program? |