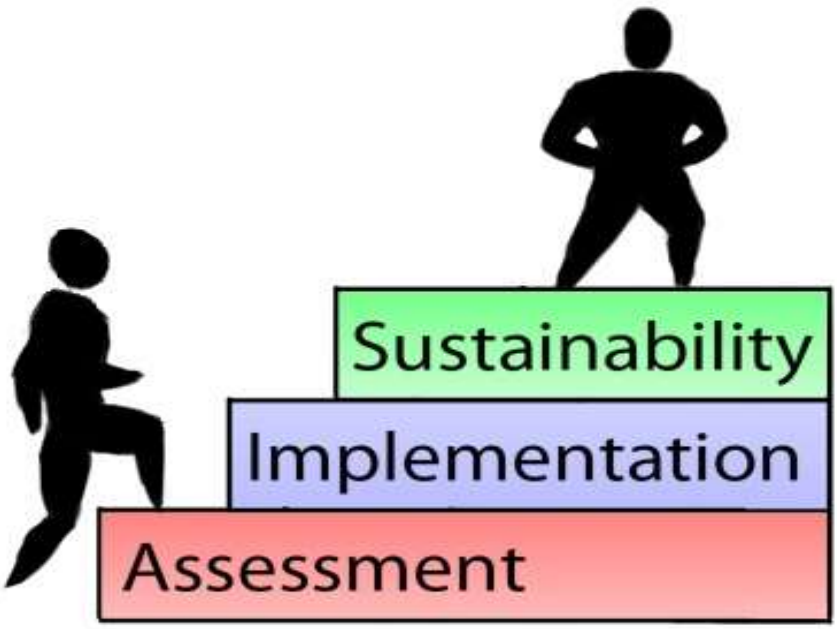
Report to the Governor

Efficacy of Virginia's Waterworks Capacity Development Strategy

July 1, 2011 to June 30, 2014



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Safe Drinking Water for a Healthy Virginia

VDH VIRGINIA DEPARTMENT OF HEALTH
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July 1, 2011 to June 30, 2014

Water is the driving force of all nature – Leonardo da Vinci

The mission of the Virginia Department of Health is to promote and protect the health of all Virginians.

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

The Capacity Development program supports the Office of Drinking Water with its mission "to collaborate with our internal and external partners to improve technical, managerial and financial capacity at Virginia waterworks."

Executive Summary

The Virginia Department of Health (VDH) Office of Drinking Water (ODW) is the primacy agency for implementation of the Federal Safe Drinking Water Act (SDWA) in the Commonwealth of Virginia. The following report has been prepared pursuant to Section 1420(c)(3) of the SDWA, and constitutes the fifth report to the Governor on Virginia's Capacity Development Strategy for public waterworks. This Section requires that the primacy agency *"shall submit a report to the Governor 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 first report was submitted to the Governor two years after the Commonwealth adopted the Capacity Development Strategy which was subsequently approved by the Environmental Protection Agency in May, 2000, and subsequent reports are required every three years.

The capacity of a public waterworks is comprised of technical, managerial, and financial (TMF) components. These components demonstrate the waterworks ability to reliably produce and deliver safe, affordable drinking water to citizens of Virginia. Assessment of these components measures a waterworks ability to plan, achieve, and maintain compliance with the SDWA. 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 implementation of compliance with the SDWA. Financial capacity is documented by the waterworks' reports on its revenues, expenses, loan ratios, and related financial data.

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

The SDWA requires that states develop and implement programs that will help all new and existing public waterworks gain sufficient TMF capacity to ensure and enhance their continued operation. To fulfill this requirement, VDH – ODW has devised a Capacity Development Strategy, which was originally approved by the Environmental Protection Agency (EPA) in May, 2000 and was revised and submitted to EPA in February, 2014. The EPA Drinking Water Branch Chief, Mr. William Arguto, approved the revised plan by letter dated May 29, 2014.

The Capacity Development Strategy is an effective tool to improve the TMF capacity of Virginia's public waterworks ability to reliably produce and deliver safe drinking water to consumers. The incorporation of the strategy into ODW's major program activities and the daily work of staff maximize the potential for successful capacity development.

Since July 1, 2014; ODW has staffed four positions dedicated to capacity development in Virginia. An increase in 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 achieve the fundamental goals of the Capacity Development program with funding and staffing capable of implementing activities most critical to enabling waterworks to achieve and maintain sufficient TMF capacity for the provision of safe drinking water to the citizens of the Commonwealth of Virginia.

Background

Virginia's approved Capacity Development Strategy has three main objectives; the strategy requires that:

1) ODW possess and exercise sufficient authority to prevent the creation of new waterworks if the proposed facility cannot guarantee adequate TMF to comply with SDWA. 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 prior to fund disbursement.

3) ODW has the assessment, prioritization, and response capabilities necessary for correcting existing waterworks' TMF 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. The sanitary survey program administered by ODW 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.

The goal of improving the TMF capacity of waterworks energizes 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 citizens of Virginia.

The following sections of this report describe the efforts undertaken by ODW to implement Virginia's Capacity Development Strategy during state fiscal years 2011 through 2014. This is a

change from reporting on federal fiscal years, so that deadlines for submittal to the EPA can be met. Program activities are discussed, with emphasis on their relevance to the assessment and enhancement of capacity development. The program activities described apply to all classifications of the 2,752 public waterworks in Virginia: community, non-transient non-community, and transient non-community. The population served by this technical assistance program to waterworks is 7,705,094 citizens of Virginia; representing 97% of the state populace. This population does not include the Transient Noncommunity Waterworks, as these systems may serve non-Virginians. Figure 1 shows the composition of these waterworks classifications, and the populations served by each classification.

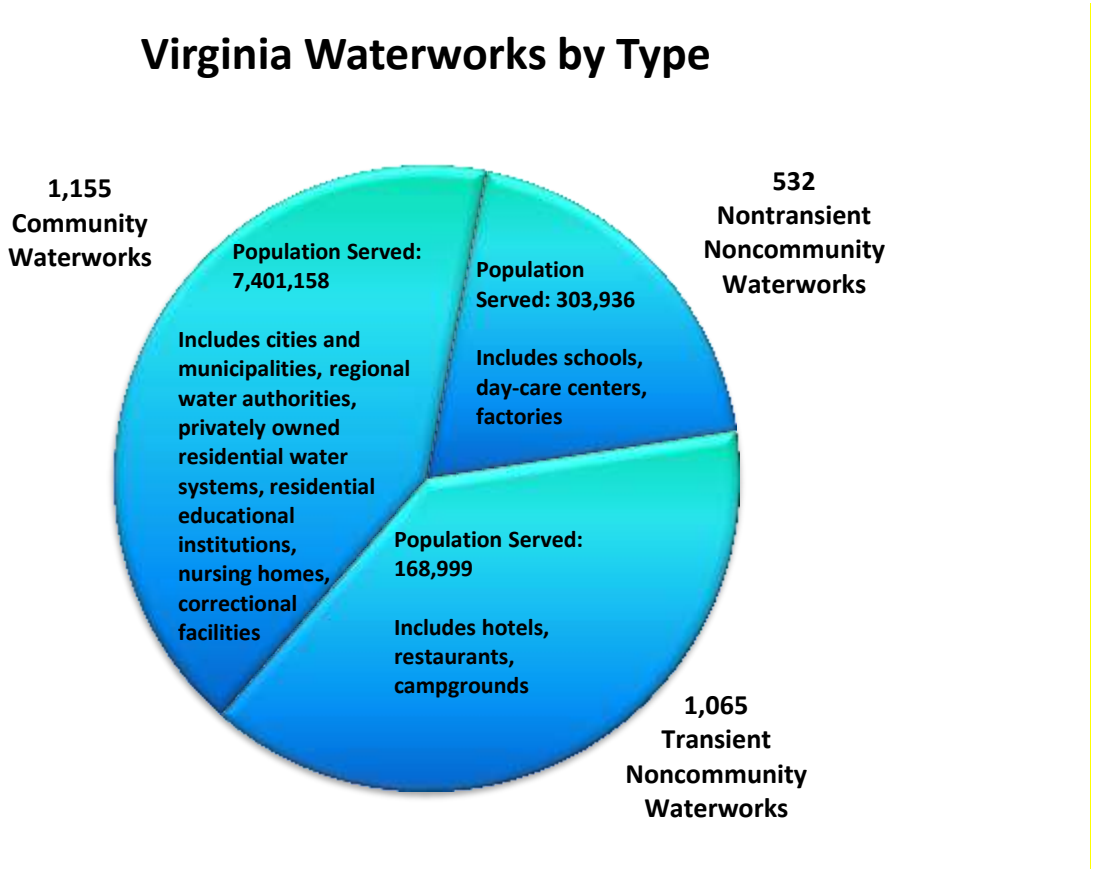


Figure 1

Waterworks Business Operations Plan

Prior to issuance of an Operations Permit, ODW requires the completion of a Waterworks Business Operations Plan (WBOP) as a financial evaluation tool; 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 as a corrective measure during enforcement proceedings.

In the process of preparing a WBOP, waterworks management can gain valuable insights into strengthening 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.

Construction Plans and Permit Review

ODW approved 978 permit applications and 1,136 plans and specifications for new construction or system improvements 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 Virginia Waterworks Regulations to prohibit the establishment, construction, or operation of a water supply 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 only 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 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 the facility will be adequately staffed by skilled, appropriately licensed staff. These measures also compel prospective owners to plan for long term financial sustainability.

Sanitary Survey Program / On-site Inspections

ODW staff perform on-site inspection of waterworks through the sanitary survey program, which includes the assessment of waterworks TMF capacity. The sanitary survey includes a thorough evaluation of waterworks infrastructure and water treatment processes. Drinking water quality monitoring records are reviewed, and operational practices and controls are examined. Waterworks staff qualifications are also reviewed.

Through the sanitary survey program, waterworks' capacity needs are identified, prioritized, and targeted for guidance and assistance from ODW staff. ODW staff review the waterworks Monthly Operations Reports at the time of site visits and throughout the year to track the technical capacity of those waterworks. The culmination of the sanitary survey is a written report which serves as an action plan for waterworks owners to follow for correcting waterworks deficiencies and improving waterworks operation.

ODW personnel also conduct special sanitary surveys of waterworks, consisting of site visits to evaluate new construction, investigate consumer complaints, and respond to specific requests for assistance. Site visits are also made to perform Source Water Assessments, and to evaluate the locations of proposed new wells. These site visits provide an opportunity for direct, face-to-face

interaction with waterworks owners and operators, allowing provision of guidance on means to improve TMF capacity.

Effective June 30, 2011, updates and improvements were made to the sanitary survey program. Updates include the incorporation of Ground Water Rule (GWR) requirements. Specific updates to the GWR include the identification of "Significant Deficiencies" and the development and execution of "Corrective Action Plans." Significant Deficiencies are any defects that may 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 within a specific time period. Other program updates include: a process to identify and resolve imminent health threats, clarified sanitary survey scheduling, a revised survey inspection forms and report templates, asset management, and water accountability evaluations.

During the reporting period, ODW staff performed 6,140 routine sanitary surveys, 546 special sanitary surveys (including inspection of new construction, complaint investigations requiring field visits, and delivery of on-site assistance), and 191 site visits to assess water sources. ODW field activities are summarized and compared to past reporting periods in Figure 2.

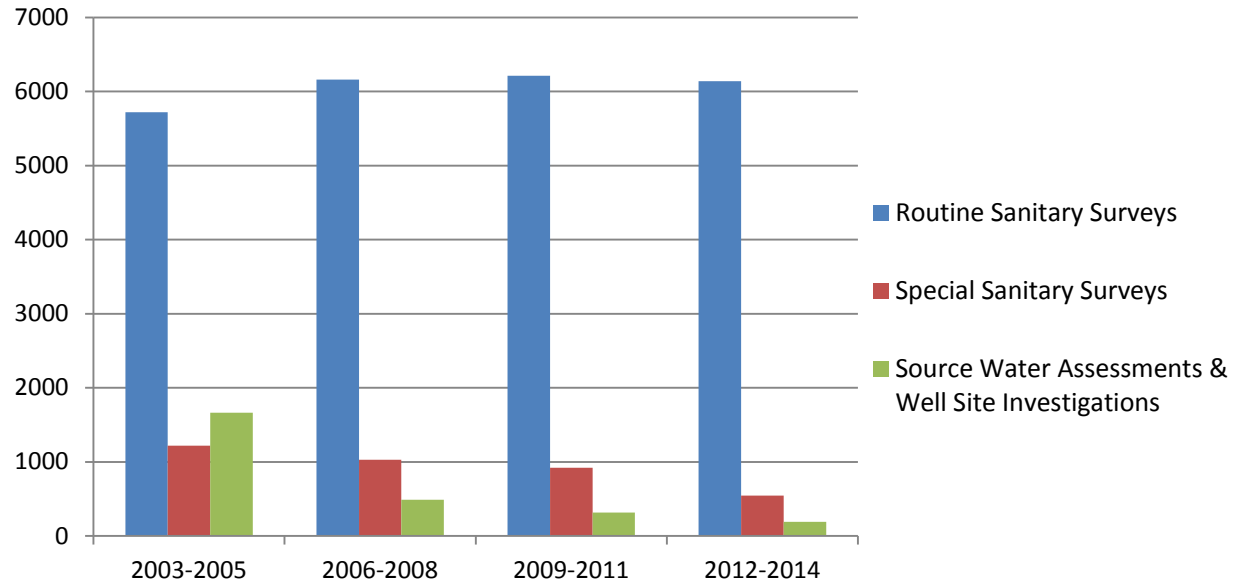


Figure 2

Waterworks Classification and Operator Licensure

Community and non-transient non-community waterworks are classified by the potential health risks based on population served, source, and complexity. There are six waterworks classifications from VI, the lowest Class, to I, the highest Class. Each classified waterworks is required to have a licensed operator of equal or higher classification. As of June 2014, the total number of community and non-transient non-community waterworks in Virginia required to have a licensed operator was 1,646. Since 2002, the number of waterworks required to have licensed operators has decreased by approximately 200. Very small waterworks, which often do not have TMF capacity, are being eliminated through consolidation, therefore; this decline in waterworks is a positive trend. 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 the Virginia Department of Professional and Occupational Regulation. 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 2014, there were a total of 2,240 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 previous reporting period (2011), there was an average of 1.2 waterworks operators per number of waterworks required to have operators. Currently, there are 1.4 waterworks operators per number of waterworks required to have operators. The balance of operators to systems has been a net gain over the last three years.

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 Course is the preeminent ODW-sponsored training. This annual training is a week-long short course held at Virginia Tech since the 1940's. There are three levels to the course: introductory, intermediate, and advanced. Each course 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 VDH ODW website: www.vdh.virginia.gov/ODW/TrainingOpportunities%20.htm.

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.

Assistance Contacts by Field 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.

ODW Oversight of Transient Noncommunity Waterworks

Beginning in 2002, the oversight of Virginia's transient noncommunity waterworks was transferred from the local health departments to ODW, in response to the recommendation of EPA. ODW is now supplying oversight to 1,065 active transient noncommunity waterworks. This class of waterworks is comprised of businesses such as restaurants, hotels, and campgrounds that operate independent water supplies. In the last year there has been an increased cooperation between the local health departments and ODW to identify transient noncommunity waterworks without operations permits. For these businesses, the availability of a reliable source or drinking water is essential to business 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.

Compliance and Enforcement Program

ODW routinely reviews water quality data submitted by waterworks, and issues Notices of Violation (NOVs) for sample results that do not meet the standards contained in the Virginia Waterworks Regulations. NOVs are also issued for monitoring infractions, improperly licensed staff, recordkeeping, and reporting failures; or for other conditions that deviate from standards established by the SDWA and the Virginia Waterworks Regulations. During the reporting period, ODW issued 4,467 NOVs to noncompliant waterworks; approximately 64% of those were for monitoring violations, that is, violations incurred by a waterworks' failure to collect and analyze required water quality samples.

ODW is currently proposing to amend the Waterworks Regulations (12VAC5-590) to improve content and readability. Since 1995, amendments to the Waterworks Regulations have been limited to incorporating new federal requirements under the Safe Drinking Water Act (SDWA). In preparation of filing the Notice of Intended Regulatory Action, ODW has formed a Regulatory Advisory Panel to assist in the development of proposed amendments to the Waterworks Regulations. The panel consists of 31 members with significant knowledge and expertise in providing safe drinking water to consumers and who represent various stakeholders (i.e., owners, operators, engineers, well drillers, and other government agencies). The panel will meet four times from August to October 2014 with the goal of reaching consensus on the proposed amendments to the Waterworks Regulations. The regulatory advisory panel meetings are being facilitated by the University of Virginia - Institute for Environmental Negotiation**.**

ODW uses the EPA developed approach for enforcement targeting under the SDWA. This approach is designed 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. This approach utilizes the Enforcement Response Policy and Enforcement Targeting Tool (ETT). The ETT is a list of waterworks not in compliance with the SDWA and enables the prioritization of waterworks by assigning each violation a "weight" or number of points based on the assigned threat to public health. Points for each waterworks violation are added together to provide a total score for that waterworks. Waterworks whose scores exceed "10" are considered priority systems for enforcement.

The enforcement targeting formula is the basis for the ETT that 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. Quarterly ETT reports are used 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 3 shows the number of systems with an ETT score greater than 10 is 42 in 2014; however, this represents less than 2% of all regulated waterworks.

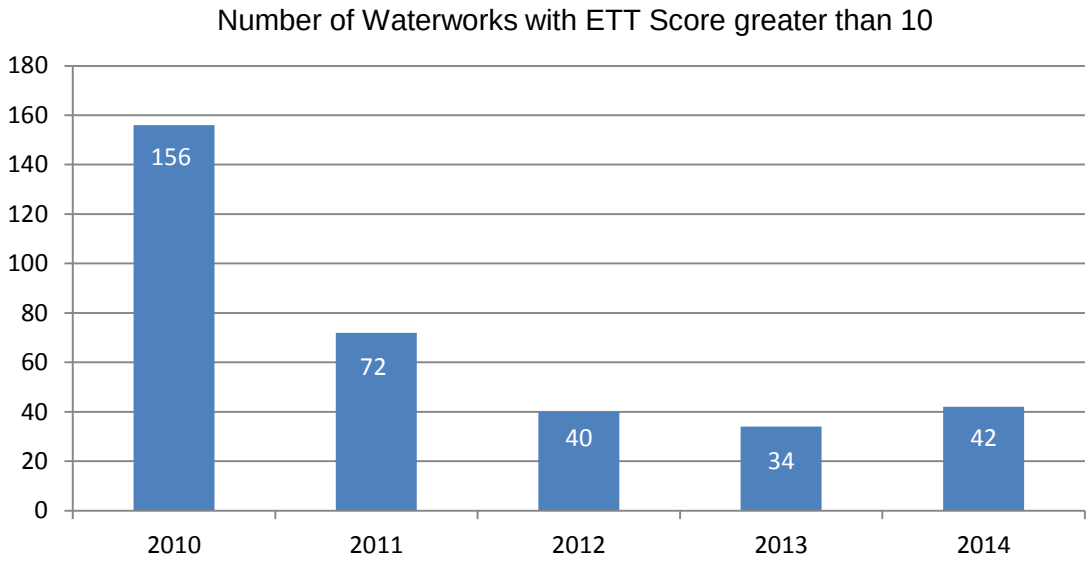


Figure 3

The ETT is also used as a guide for the issuance of warning letters, which are used 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 82 warning letters to noncompliant waterworks during the reporting period.

In cases of chronic or egregious noncompliance, ODW 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 state law, hearings are conducted to give parties their due process rights under the law 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, ODW issued 11 administrative orders to bring waterworks into compliance.

During the reporting period nine consent orders were issued and nine consent orders were adequately resolved. Of the nine consent orders resolved, seven were issued during the prior reporting periods.

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 enforcement 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 program'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 program and compliance has on the health of Virginians.

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. Participation in this program now includes surface water source water treatment systems serving less than 10,000 persons. Approximately 22 small waterworks prepare site-specific Source Water Protection Plans each year. Other annual program activities include contacting an average of 50 waterworks to determine interest, making seven program presentations, and facilitating 12 Local Advisory Committee meetings. Approximately 550 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 42 Wellhead 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 1,336 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.

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 nontransient noncommunity 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. This reassessment revealed a continued general trend towards improvement within the TMF capacity of the waterworks assessed. A lower score indicates improvement in waterworks' capacity. In figure 4, each colored column represents the TMF total score for a specific field office. ODW is comprised of six field offices.

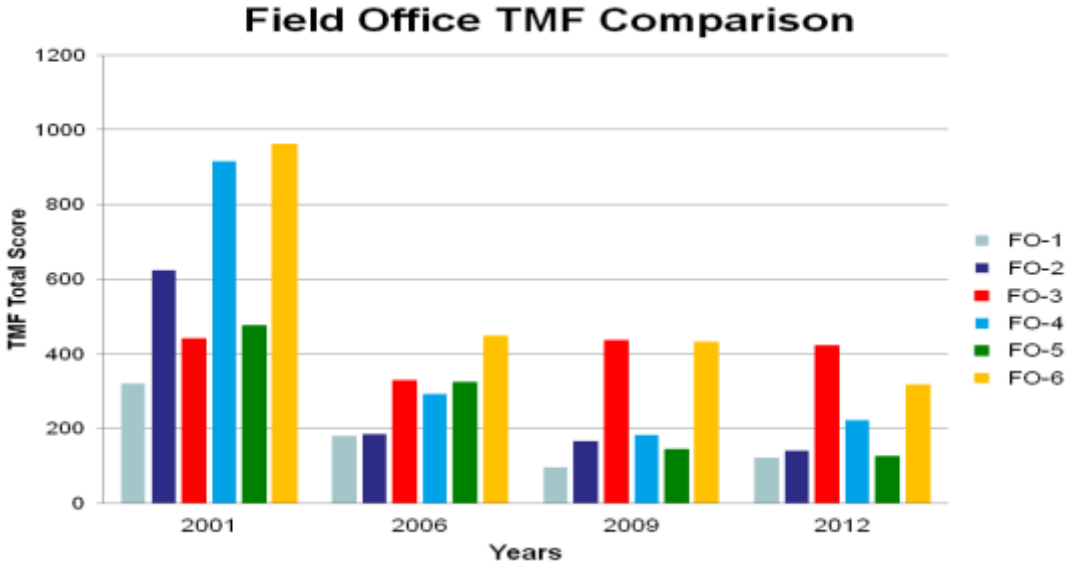


Figure 4

Waterworks Advisory Committee

The SDWA requires states to identify persons with interest or involvement in the creation and execution of their Capacity Development programs. 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 capacity development. The Waterworks Advisory Committee and ODW staff met ten times during the reporting period. The revised Capacity Development Strategy was vetted through the WAC prior to submission to the EPA for approval.

Water Loss and Evaluation Assistance

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

During 2012 through 2014, 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 physical leaks in distribution systems through the use of leak detection equipment.

In March 2013, VRWA purchased leak detection equipment utilizing funds provided by ODW through the State Revolving Fund. This equipment is being used to directly assist waterworks with leak detection services in their distribution systems. Since July 1, 2011, ODW and VRWA have coordinated leak detection technical assistance. The following waterworks that benefitted from this service include:

Town of Pennington Gap

In November 2012, two days of leak detection services were provided by VRWA. Three water leaks were located: fire hydrant, 6-inch water main, and 3-inch water main. An estimated savings of 400,000 gallons of water per day were reported after the leaks were repaired.

Savings were realized in water treatment chemical cost, pump and plant electrical costs, and reduced future maintenance expenses on water treatment plant equipment.

Town of Amherst

In April 2013, two hours of emergency leak detection services were provided by VRWA. A major water loss was occurring. Amherst town staff had been searching for the location of a leak all day and were unable to locate the cause. A VRWA circuit rider was called at 8:30 p.m. The water plant had not been able to keep up with water leak and maintain adequate storage tank level. The circuit rider arrived at 11:30 p.m. and began surveying for the water leak in an area identified by town staff.

Using a ground microphone he was able to pinpoint the water leak on an 8-inch water main. During the time it took to locate the water leak; over 1,000,000 gallons of water was lost.

Savings to the utility were in water treatment chemical cost, pump and plant electrical costs, and reduced future maintenance expenses on their water treatment plant equipment. Also, since the water plant was unable to pump enough water to maintain storage tank levels and the tank level had been dropping all day, locating and isolating the leak prevented a boil water notice and protected the health of the customers served by maintaining pressure within the distribution system.

Town of Pamplin City

In April 2014, five days of leak detection services were provided by VRWA. The VRWA circuit rider had previously surveyed the Town of Pamplin City for water loss causing their well pumps to run additional hours. The water distribution system was updated in 1980's. The current pipe material is PVC water mains, and plastic water service connections. The circuit riders had previously listened on all valves, hydrants, and water meters and several small leaks were detected. However, the water loss causing the pump run time was not discovered. Circuit riders returned to isolate sections of the water distribution system using a pressure gauge to locate the leak. The leak was located at a flush valve, off of an 8-inch water main that had been covered with fill over the years.

The Town of Pamplin City was pumping an additional 10,000 gallons of water per day due to the water leak. This leak was raising their water loss to between 50 and 60% per month. The Town of Pamplin is a very small water system with approximately 120 water connections.

The savings to the Town of Pamplin City, since the water leak was repaired consist of: water treatment chemical costs, electrical costs associated with pump operations at the wells, and reduction in future maintenance expenses on their well pumps and equipment.

This program is highlighted again later in the Success Story section of the report. Water loss and evaluation studies are also eligible for ODW's planning and design grant program. This activity is further discussed in the planning and design grant section of this report.

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, respond, and recover from tornados, hurricanes, winter storms, earthquakes, floods, terrorism, vandalism, and other 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 field 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 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, 67% 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. During 2012, 2013 and 2014, ODW partnered with EPA and the Horsley Witten Group to provide six regional tabletop exercises and one local tabletop exercise in Virginia to a total of 181 participants. These exercises consisted of drinking water specific training for the National Incident Management System and the Incident Command System, which were followed by an incident-specific tabletop exercise. The purpose of these exercises are to increase understanding of the roles and responsibilities between local, county, and state organizations and agencies responsible for planning and responding to a contamination incident impacting a public waterworks. Participants leave these exercises with a desire to coordinate meetings with local, county, and state planning and response partners in an effort to address the identified planning and response gaps.

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 offered binding commitments on low-interest or interest-free construction loans totaling $72,590,592 to 50 waterworks.

The DWSRF program has worked diligently to fund important water infrastructure projects and guide those projects to completion. New requirements from EPA during the reporting period include:

- Green Project Reserve: At least 20% of SRF funds are required to be used for projects such as water efficiency improvements, energy efficiency improvements, green infrastructure, and environmentally innovative projects.
- Buy American: All iron and steel manufactured goods incorporated into projects that receive any SRF funds were required to be made in the United States unless a waiver was received from EPA.
- Davis-Bacon Wage Rates: All laborers and mechanics working on projects funded in whole or in part by SRF are required to be paid prevailing wages as determined by the U.S. Department of Labor.

Planning and Design Grant Assistance

ODW awards planning and design grants annually 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 $1,521,080 of grant funds to 40 waterworks planning and design projects.

ODW implements outreach efforts to increase awareness of the opportunities available through the planning grant program. Information is posted on the ODW website and in the Virginia Register. Information packages are also sent to all community and nontransient noncommunity 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. ODW has also begun to utilize the ETT to identify noncompliant waterworks that would most benefit from a planning and design grant. These waterworks have been directly notified by letter of the planning and design grant opportunities available approximately one month before the application deadline.

In recognition of the need for small waterworks to actively address water loss due to excessive leakage, ODW revised its planning and design grants criteria in 2006. The revised prioritization criteria added points for leak detection activities. Eligible activities for grant 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. During the reporting period, ODW committed $306,800 of grant funds to eight waterworks planning and design projects to address water loss and leakage.

Success Stories

This "Report to the Governor" utilizes data to describe the Capacity Development program; however, numbers aren't the whole story. For this reason, the Office of Drinking Water provides the following success stories to highlight the type of projects and the impact that it has on the industry and the citizens of the Commonwealth of Virginia.

Town of St. Paul

"The Town of St. Paul, Virginia was awarded a Water Supply Assistance Grant in the amount of $363,700.00 to perform rehabilitation to six of the water storage tanks in its water system. The project included painting the exterior of the five steel tanks and interior of three of those five tanks. The sixth tank included replacing and spot repairs to panels of a vertical bolted glazed steel panel tank. Also, the project included telemetry installation and/or upgrades to all six tanks. The project was substantially completed on December 16, 2013. The project was a great success in upgrading the condition of six water storage tanks in the Town's water system. The tanks were beyond need of repair and without the assistance of the VDH WSAG [funding], the Town would not have been able to complete the project as it did. The benefits from the project include the prevention of contaminants from entering the distribution system from the tank paint and structures failing. The Town, as is VDH, is committed to providing safe drinking water to its citizens and public health is always a priority. The project had one (1) change order, which included temporary tanks to allow tanks to be

taken out of service for painting, and replacing an existing Town logo on the Upper West Hills Tank." *Cody A. McElroy, Project Engineer - Mattern & Craig.*

The following pictures are typical of the results that are achieved by waterworks utilizing State Revolving Fund loans to improve their infrastructure. However, often the infrastructure improvements are not visible (either waterline beneath the ground surface or equipment improvements inside of water treatment plants rarely seen by the public). Water tanks however are highly visible and are a good window to view the achievements of the waterworks and the Office of Drinking Water's State Revolving Fund.

St. Paul - Hardy Hollow Tank – Before

St. Paul - Hardy Hollow Tank – After

Virginia Rural Water Association Leak Detection

Virginia Rural Water Association (VRWA) recognized the efforts of the ODW in its Fall 2013 edition of ***StreamLine.*** ODW provided funding to purchase leak detection equipment and in return VRWA has provided needed technical assistance service to small waterworks throughout Virginia. The services provided are reported to EPA via the ODW Annual Capacity Development Report.

From The Executive Director

BY MYRICA W. KEISER, EXECUTIVE DIRECTOR

Just Who Are Those People?

HAVE YOU EVER sat back and asked yourself the question, "Just who are those people?" When my mother-in-law would see a stranger (looking strange) she would say, "Well, they aren't our kind!" Not that she meant any harm or disrespect, being she was 92 years young …

But yet, we still ask the question, "Just who are they?" Now I am talking about the VRWA field staff that travels the highways and stops along the way visiting water and wastewater systems alike. You know, the one who stopped in about the time your operator told you that the system was losing 104+ gallons of water a minute and you have no idea where it was going. Or the operator who needs to sit for his water exam and needs additional assistance on the math part. Or when you have discovered that your emergency plan is completely out of date and you have no idea who to go to or where to start. You know who we are talking about: that circuit rider may be Kenny or Tracy or the wastewater technician Frank or Donna.

So just who are those people? They are the ones with the mission to assist, educate and serve those in need.

Thank you

Recently VRWA was awarded, through the Drinking Water Program Set-Aside General Grant, funds to purchase much-needed leak detection equipment. With the new equipment, Kenny and Tracy are able to assist more systems and it even gives them the opportunity to train the operators on the use of the equipment. Goals are to not only find the leaks, but to encourage systems to purchase their own equipment as well assisting them to stay within compliance.

They are the ones who have a mission to provide assistance and training to those operators in need.

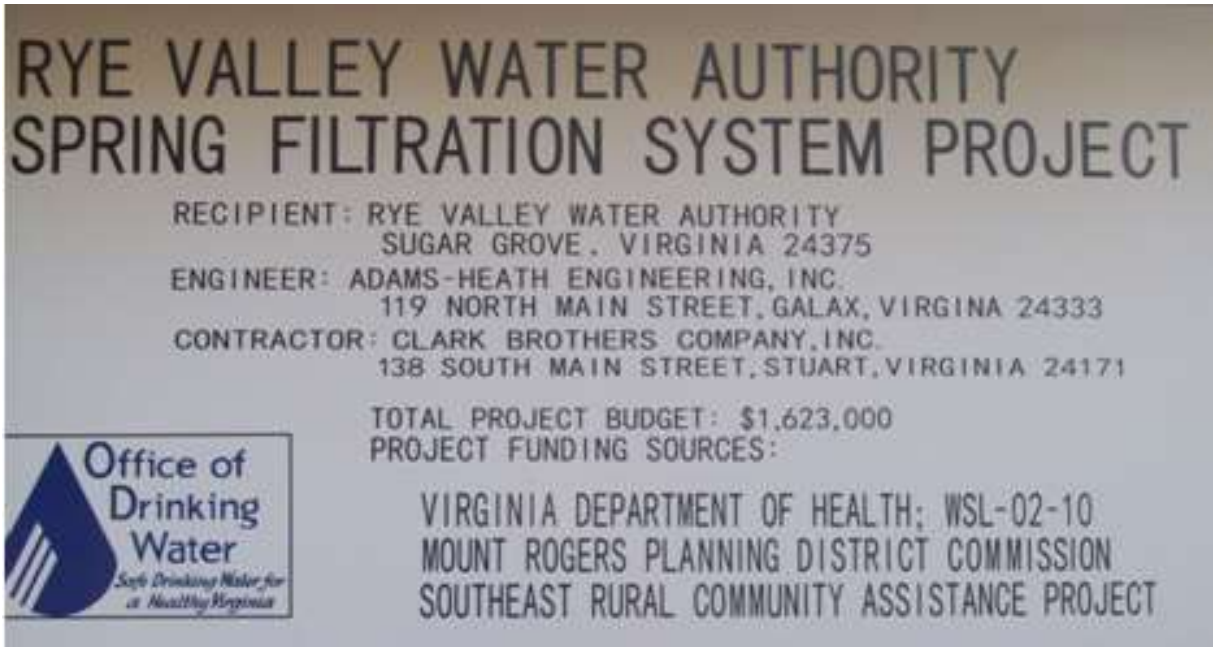
Sometimes we fail to recognize that VRWA offers more services other than leak detection or smoke blowing. Sometimes I feel that we are still the best kept secret and that we have failed to spread our names out across the state. This all comes back to the question, "Just who are those people?" So now that we have recognized the problem, the question is, "How do we fix it?" How do we reach the water and wastewater systems that have a less than 10,000 population and need our assistance? How do we become that first phone number that is on speed dial when help is needed or the first name that comes to mind?

Well, for a start, we use our magazine *StreamLine*, website, Facebook and emails, and it is through our training programs and definitely through our personal visits to your systems. Then we need to encourage you to take advantage of those avenues and use those services. We also put ourselves out front by partnering with QS/1 by offering discounts to members who take advantage of their billing software programs. There is SunCoast Learning where you can take online classes to keep your license up to date. And we also have a CEU Plan, which is a new online training source for you to take advantage of. Need a website, but funds are limited? Check out RuralWaterImpact.com. VRWA has partnered with them in order to offer discounted rates to our members who are in need of a website. Be sure and check out the VRWA website: Here you will find first-hand information, training class information, as well as a link to NRWA's new App Store.

So just who are those people? They are the ones with the mission to assist, educate and serve those in need.

The Rye Valley Water Source Improvements

The Rye Valley Water Source Improvements project allowed the Rye Valley Water Authority to utilize all of its existing spring supply sources; ensuring the purity of the finished water and protect the health of the water system's customers. Located in Smyth County, the system's spring was determined to be Groundwater under the Direct Influence of Surface Water and a Boil Water Notice was issued on June 11, 2009. Total amount of funding for the project was $1,513,000; and included the installation of a Membrane Filtration System. The Boil Water Notice was lifted in July, 2013, upon completion of the construction; the project came in $93,327 under budget.



Rye Valley - Completed

Red Fox Lane Water Line Extension

"Washington County Service Authority would like to thank the Virginia Department of Health's Office of Drinking Water Financial and Construction Assistance Program for the financial assistance for both of the… projects, which enabled WCSA to provide a safe and dependable supply of drinking water to several Washington County residents who desperately needed it. This project consisted of approximately 1,500 linear feet of 4-inch waterline and all related appurtenances. This project also received funding in 2011. In 2013, WCSA was able to advertise the project and complete the construction. The residents of this community are now served by a safe, dependable drinking water supply. These projects and their success would not have been possible without the funding assistance provided by your department. WCSA greatly appreciates your program and enjoyed working with your staff to make this project a reality." *April Helbert, P.E., Manager of Engineering Services – Washington County Service Authority.*

Workforce Initiative to Hire Veterans

The Office of Drinking Water has been working with the U.S. Army Quartermaster School (USAQS), Fort Lee, since August 2011 to assist Army water treatment specialists (92W) obtain licenses and to assist veterans in finding jobs as waterworks operators. Originally intended to assist veterans, the effort has expanded to service members who hold the military occupational specialty of a water treatment specialist.

The ODW Professional Development Coordinator serves a member on the Joint Work for Water Committee and serves as a liaison for ODW's hiring veterans initiative. Staff presented at an industry conference called Water JAM in September, 2013 on this topic. ODW coordinated the exhibit of a water purification unit from the US Army Quartermaster's School's Petroleum and Water Department. The Water JAM organizing committee provided two free registrations as well as a free exhibit booth to Fort Lee.

ODW staff joined Fort Lee representatives who met with DPOR staff to discuss the experience verification form to explore another way of documenting military experience. Selected ODW technical staff reviewed the program of instruction used to train water treatment specialists. Staff spent three days at Fort Lee in this review. When possible, USAQS instruction staff would like to align its training and terminology more closely with that of the drinking water industry. During the review, instructors asked ODW for assistance in developing a new program of instruction on well operations. ODW staff suggested going to the industry for assistance and arranged for USAQS instructors to attend the winter meeting of the Virginia Well Water Association without charge. The USAQS received several offers of assistance at that meeting.

Town of Amherst

"Four recent EPA-funded Virginia Water Supply Revolving Fund grants have impacted the Town of Amherst's water users… The program fully funded the 60 West water line project design… the fourth grant provided $539,153 to help capitalize the actual construction of the 60 West water line… Benefits of the 60 West project include: replaced a long run of old 6" diameter dead-end pipe… that had a history of frequent breaks… Water quality will be improved… and new hydrants will allow improvements to the Town's scheduled flushing program. The 60 West area has a history of sporadic failing wells, but the Town has not been able to allow new connections in that area due to hydraulic and service level maintenance considerations. Due to the project, the moratorium can be relieved in much of the service area… In short, the Town of Amherst sincerely appreciates the project funding

for the 60 West water line project since it would have been almost impossible to undertake without such grant monies. We are eager to participate in future funding opportunities as this will enable the Town to provide customers the best quality of water on the most reliable basis at the lowest possible cost, consistent with the federal Capacity Development initiative." *Jack Hobbs, Town Manager - Town of Amherst*

Conclusion

The Capacity Development Strategy proves to be an effective tool to improve the technical, managerial, and financial components of Virginia's public waterworks ability to reliably produce and deliver safe drinking water to consumers. The incorporation of the strategy into the Office of Drinking Water's major program activities and the daily work of staff maximize the potential for successful capacity development.

Since July 1, 2014; ODW has staffed 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 public waterworks will largely depend on the continued development and successes of this program. An increase in 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. An ODW Capacity Development staff will continue to be necessary to provide technical assistance, track routine sanitary surveys, and to evaluate the capability of waterworks to deliver an adequate quality and quantity of safe drinking water and to comply with state and federal drinking water standards.

ODW will continue to achieve the fundamental goals of the Capacity Development program with funding and staffing capable of implementing activities most critical to enabling waterworks to achieve and maintain sufficient technical, managerial, and financial capacity for the provision of safe drinking water to the citizens of the Commonwealth of Virginia.