Commonwealth of Virginia
Capacity Development Annual Implementation Report

October 1, 2022 through September 30, 2023

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Safe Drinking Water for a Healthy Virginia

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This report is available to the public on the VDH Office of Drinking Water website at:
https://www.vdh.virginia.gov/drinking-water/capacity-development/

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Introduction

In accordance with § 1420(a) of the *Safe Drinking Water Act* (SDWA) Amendments of 1996 (42 USC § 300g-9(a)), this report serves as evidence of the Commonwealth of Virginia's commitment to and implementation of a Capacity Development Program. This report documents Virginia's assistance to waterworks[1] owners and operators in the Commonwealth and covers federal fiscal year 2023, from October 1, 2022, through September 30, 2023. This program is based on and is compliant with Virginia's Capacity Development Strategy ("Strategy"). The United States Environmental Protection Agency (EPA) approved Virginia's revised Strategy on January 19, 2022. The Office of Drinking Water (ODW) revised the Strategy according to the requirements of the America's Water Infrastructure Act. It includes Virginia's approach for supporting, encouraging, training, and assisting waterworks with Asset Management Planning. Stakeholders in Virginia reviewed the revised Strategy.

PART 1: NEW SYSTEMS PROGRAM

1.1 Legal Authority

The VDH, though the ODW, is the primacy agency for implementation of the SDWA and National Primary Drinking Water Regulations in the Commonwealth of Virginia. Legal authority for Virginia's new systems program is provided in §§ 32.1-169 and 32.1-172 of the *Code of Virginia* (1950, as amended in 1994). Virginia's legal authority has not changed from the previous reporting year.

1.2 Control Points

In Virginia, all proposals to create a new waterworks must meet statutory and regulatory requirements that serve as control points for ensuring the capacity of new waterworks. There have been no modifications to Virginia's control points from the last reporting year.

Section 32.1-172 of the *Code of Virginia* states: "No owner shall establish, construct or operate any waterworks or water supply in the Commonwealth without a written permit from the Commissioner, except for the extension of water distribution piping having a diameter of eight inches or less and serving less than fifteen equivalent residential connections" and "the [permit] application also shall include a comprehensive business plan detailing the technical, managerial, and financial commitments to be made by the owner in order to assure that the system performance requirements for providing the water supply will be met over the long term."

To implement § 32.1-172 of the *Code of Virginia*, ODW requires owners to prepare and submit a comprehensive business plan, called a "Waterworks Business Operation Plan (WBOP)," for the development of new waterworks, or the purchase or transfer of an existing waterworks by a first-time owner of a waterworks in Virginia. In addition, ODW requires a WBOP when an owner has

[1] In Virginia, public water systems are called "waterworks." The definition of a waterworks, "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…" (*Code of Virginia* § 32.1-167) is equivalent to the federal definition of a public water system, which means "a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves at least twenty-five individuals." 42 USC § 300f(4)(A).

a poor compliance history with Virginia's *Waterworks Regulations*. ODW published the WBOP template on the VDH–ODW webpage:

https://www.vdh.virginia.gov/drinking-water/capacity-development/waterworks-business-operations-plan/

Section 32.1-172 E of the *Code of Virginia* states: "If the proposed waterworks is not in compliance with all regulations of the Board [of Health] but, in the opinion of the Commissioner, the public health will not be jeopardized, the Commissioner may issue a temporary permit for such a period of time and subject to such conditions as the Commissioner may deem appropriate for the owner to achieve compliance with such regulations." ODW staff utilize temporary permits most commonly for waterworks that do not fully comply with the *Waterworks Regulations.* These tend to be previously unpermitted waterworks that ODW identifies, called "newly-discovered waterworks," and waterworks with a change in ownership.

In addition, prior to receiving a permit to establish, construct, expand, or modify a waterworks, plans and specifications must comply with the *Waterworks Regulations* "Part III – Manual of Practice for Waterworks Design" (12VAC5-590-640 through 12VAC5-590-1235) to ensure new and modified waterworks are properly designed and physical facilities will be operated in a safe, reliable, and appropriate manner. The design shall provide the engineering basis to meet the drinking water standards under the SDWA.

Effective June 23, 2021, ODW completed the process for amending the *Virginia Waterworks Regulations* (Regulations). The Regulations establish requirements and procedures for the issuance of permits; minimum standards for water quality (including requirements for waterworks owners to submit regular analytical results of sampling for biological, chemical, radiological, physical, and other tests); requirements for recordkeeping, reporting, public notice, and consumer confidence reports; requirements for inspections; and criteria for the siting, design, and construction of waterworks. The regulatory action was a comprehensive update of the Regulations, including Part I – General Framework for Waterworks Regulations, Part II – Operation Regulations for Waterworks, and Part III - Manual of Practice for Waterworks Design. Part IV – Exceptions for Noncommunity Waterworks to Specific Sections of the Manual of Practice (Part III) was incorporated into Part III, and the appendices were incorporated into the body of the Regulations or, where they are no longer relevant, deleted. Many of the changes simply refined and provided further clarity to existing regulations.

During the reporting period, ODW worked to update policy documents to reflect changes to the Regulations. These updates included work on the *Field Operations Manual*, *Project Review & Permit Procedures Manual*, and the *Sampling Manual.* In addition, ODW developed training materials covering the updated regulated requirements for cross connection control and developed cross connection control program templates for use by the regulated community.

The ODW relies on a holistic approach to capacity development and emphasizes the role of long-established programs to enhance the technical, managerial, and financial (TMF) capabilities of waterworks. In addition to the permitting process already described, additional programs include sanitary surveys, technical assistance contacts by field staff, operator certification requirements, compliance and enforcement, and training courses offered by ODW, contractors, partners, and other technical assistance providers. The capacity building elements of these and other programs are described in more detail in Part 2 of this report, "Existing System Strategy" which summarizes

activities in these areas for both new and existing waterworks. It is important to note that new systems also benefit from these longstanding programs.

1.3 New Systems

Appendix A lists community and nontransient noncommunity (NTNC) waterworks that have become active during the period October 1, 2020, through September 30, 2023. Newly constructed facilities, previously unpermitted facilities that meet the definition of a waterworks (newly discovered waterworks), and existing facilities under new ownership are included. ODW may not have issued operation permits for all new waterworks listed in Appendix A. However, staff is working to ensure all new waterworks obtain the required permitting.

Newly discovered waterworks are typically businesses or small community water systems (*e.g.*, a restaurant, mobile home park, or group of single-family homes) that have operated for years without being aware of the requirement to comply with the Regulations. Once discovered, ODW field staff gather information from the owner to determine whether these systems meet the definition of a waterworks. If systems meet the waterworks definition, ODW notifies the owner and begins the process to issue an operation permit. Owners may challenge the determination under Virginia's Administrative Process Act (APA), *Code of Virginia* §§ 2.2-4000 through 2.2-4031, but most agree to regulatory oversight by ODW. The majority of newly discovered waterworks are transient noncommunity (TNC) waterworks; however, ODW has identified some NTNC and community waterworks.

The ODW provides technical assistance, makes site visits, provides templates for the WBOP, and sends reminders of sampling requirements and due dates to both new and existing waterworks. Examples of field office efforts to assist new waterworks owners and operators are included in Appendix F. Nevertheless, many newly discovered waterworks and waterworks with ownership changes continue to experience managerial and financial challenges while attempting to comprehend and comply with state and federal requirements. As a result, these waterworks tend to experience more compliance issues than other water systems.

As new waterworks incur violations (see Appendix B), ODW addresses their need by providing timely technical assistance, surveillance, and enforcement until the waterworks either returns to compliance or is issued a formal enforcement action.[2] ODW couples compliance and enforcement activities with corrective action technical assistance; therefore, violations reported for new waterworks are typically of short duration.

During the three-year period from October 1, 2020, through September 30, 2023, ODW identified 37 community and NTNC waterworks as "new." Not all of these waterworks are actually new systems. The list includes waterworks that have transferred ownership or ones that ODW reactivated in the State Drinking Water Information System (SDWIS) according to the "Status Activity Date" in the electronic waterworks record. Of those systems, 7 of them incurred violations. There has been a decrease the number of systems with violations since the last reporting

[2] EPA defines formal enforcement action in Water Supply Guidance 26 "… as one which requires specific actions necessary for the violator to return to compliance, is based on a specific violation, and is independently enforceable without having to prove the original violation." A consent order, issued by the State Health Commissioner, on behalf of the State Board of Health, to a waterworks owner, with the owner's consent, is one example of a formal enforcement action. Consent order are authorized by §§ 32.1-26 and 32.1-27 of the *Code of Virginia*.

period in which 10 new waterworks had violations. There was an increase in the number of new systems, up from 29 in the last reporting period. Of the 8 new systems in the preceding year (October 1, 2022, to September 30, 2023), 2 incurred violations. New waterworks may have initial violations of the Revised Total Coliform Rule (RTCR) due to the inadequate sources; some require rehabilitation. New waterworks also struggle with sampling protocols and techniques. ODW will continue to contact waterworks with violations and provide technical assistance to resolve the violations. None of these new systems are on the EPA's Enforcement Targeting Tool (ETT).

EPA designed the ETT to identify waterworks with violations that rise to significant noncompliance by focusing on those systems with health-based violations and those that show a history of violations across multiple rules (see Appendix C). The ETT formula calculates a score for each waterworks based on open-ended violations and violations that have occurred over the past five years but does not include violations that have returned to compliance or are on the "path to compliance" through a specified enforceable action. In calculating the ETT score, health-based violation criteria are weighted.

According to EPA's Office of Enforcement and Compliance Assurance's July 2023 ETT, 11 waterworks were identified as a "priority system." This represents a substantial increase from the prior year in which 2 waterworks were on the ETT. This increase is likely due to a fully staffed compliance and enforcement team at the ODW. They are actively pursuing compliance for waterworks with a strong enforcement foundation.

The ODW promotes the use of temporary operation permits with specific requirements for newly discovered waterworks not in compliance with the Regulations. Staff issue temporary permits with an expiration date not to exceed 24 months. To address critical issues promptly, staff include benchmark deadlines. The purpose of an expiration date is to provide a period for the waterworks to achieve compliance and, in doing so, demonstrate adequate TMF capacity prior to the issuance of a standard operation permit. ODW field staff prefer to complete an operation permit when possible; however, the use of temporary operation permits is a viable option.

Temporary operation permits protect public health while providing time for a new waterworks to make the changes required for meeting regulatory requirements. If a newly discovered waterworks does not demonstrate adequate TMF and does not meet requirements of the temporary operation permit prior to the expiration date, the waterworks would then be operating without a permit and would be subject to enforcement action. Enforcement generally begins by providing the owner written notice and may include meetings with ODW enforcement staff, a warning letter, a consent order, or possibly informal administrative proceedings that may result in the issuance of a special order directing actions required to return to compliance. This report provides more information about compliance and enforcement in Section 2.10 of this report.

PART 2: EXISTING SYSTEM STRATEGY

2.1 Programs, Tools, and Activities

ODW continues its surveillance program to identify waterworks with emerging compliance issues. Capacity Development staff monitor waterworks that appear to be having compliance issues for violations, and when violations occur, ODW Capacity Development staff consult with field staff to develop an informal plan of action. Staff use this consultation to provide a plan to improve the

waterworks' TMF capacity and ultimately prevent additional violations. Effective assistance includes:

- Regular sampling reminders by automated messaging, phone, email, or letter
- Site visits
- Referral to formal or informal training resources
- WBOP development or review
- Notifications and reminders of upcoming funding opportunities
- Direct one-on-one assistance by Sustainability Coordinators
- Referral to other technical assistance providers
- Warnings from the ODW's enforcement staff, and/or
- Issuance of Consent Orders
- Assessment of Civil Penalties and Charges

2.2 System Identification

ODW utilizes three common indicators to assess, identify, and prioritize waterworks in need of capacity development assistance: compliance, infrastructure condition, and managerial and financial capability. Compliance utilizes the data tools of the ETT score, compliance monitoring results, monthly operations reports, SDWA reports, and technical assistance fee payments. Infrastructure condition uses tools such as plan reviews and sanitary surveys to evaluate the waterworks' conformity to design standards and best practices for sources, treatment, storage, and distribution. The concepts of managerial and financial capacity are uniquely associated with each other and include indicators such as:

- The WBOP
- Customer complaints
- Staff licensure qualifications
- Status of programs, e.g. (safety, water accountability, and cross connection control)
- Responsiveness to correcting deficiencies
- Declaration of bankruptcy

The EPA requires ODW to conduct a triennial capacity assessment. Since July 2001, ODW has used an electronic tool to complete a capacity baseline assessment of all community and NTNC waterworks. The scoring system accounts for compliance status, infrastructure condition, managerial and financial indicators, and preparedness to comply with regulations. The higher the assessment score means that the system's capacity is more robust. Staff conducts this "triennial capacity assessment" once every three years and ODW uses the results to identify specific waterworks needing assistance as well as programmatic adjustments or efforts to address regional or statewide need. Staff conducted the last assessment in Q1 2023.

The assessment consisted of 18 "yes" or "no" questions, which were related to the three TMF capacities. VDH staff used official records to answer questions and directly contacted waterworks for additional information as needed. Staff compared results of this assessment to both the 2016 (baseline) and 2020 assessments. Technical questions explored whether the waterworks had sufficient operator coverage for sick leave and vacation as well as asking whether the facility addressed recommendations from recent sanitary surveys. Managerial questions included asking

whether the waterworks facilities and appurtenances were in good operating condition and whether the waterworks met all established National Drinking Water Standards. Financial questions included asking whether the waterworks had at least 45 days cash on-hand to cover expenses and whether the waterworks had adjusted rates in the past three years.

If staff were unable to get a response to a particular question, then staff answered that question "No" per the process instructions. Appendix E has the complete list of questions asked during the triennial assessment. VDH incorporated the Triennial Assessment questions into the electronic sanitary survey in 2022 but the data was not complete enough to use as the sole source of data for the evaluation. This is an area that VDH will continue to work on.

In prior years, the area generally identified as "Southside" received the lowest scores. In the 2023 evaluation, the distribution of low scores is more spread out and encompasses the middle section of the state from the western state line around Highland County, down through Southside, and into the Virginia Beach area. Southwest Virginia had the best performing systems because that area received substantial infrastructure funding over the past 20 years. Additionally, waterworks training opportunities are generally focused in Blacksburg and Roanoke. VDH recognizes the "success" formula and is making plans to expand upon the success learned working with Southwest Virginia to other parts of the Commonwealth.

The ODW has prioritized deploying training, funding workshops, technical assistance, and financial resources across the commonwealth of Virginia to address this trend. Specific efforts are included in the ODW success stories in Section 3.6.

Capacity Development continues to provide management training that includes an emphasis on asset management and rate adjustments. Customer service at waterworks remains an opportunity area. Waterworks with clear customer service policies and practices enhance customer experience and trust, which help the waterworks support needed improvements with rate and policy adjustments. Small waterworks can benefit from improved customer service. A written customer service plan codifies actions that ensure a similar response to each customer. ODW continues to provide system-by-system help to address specific challenges, no matter the size of the waterworks, its location, or its financial condition.

2.3 Approach to Assistance

Staff direct programs, tools, and activities that support Virginia's existing system strategy efforts to 1,078 community, 502 NTNC, and 1,248 TNC waterworks during the reporting period. These systems collectively serve approximately 7.75 million consumers--about 90% of the total population of Virginia (8.64 million people).

2.4 On-site Inspection: Sanitary Surveys and Site Visits

Relationship to TMF Capacity: On-site inspections of waterworks are a significant component of the sanitary survey program and provide opportunities for ODW staff to assess TMF capacity. During the course of a sanitary survey, staff conduct thorough evaluations of waterworks' infrastructure and treatment processes, in part by reviewing water quality monitoring records, examining operational practices and controls, and assessing operators' qualifications.

Staff utilize the sanitary survey process to identify waterworks' capacity needs and prioritize targeted guidance and assistance. The culmination of the sanitary survey is a written report that serves as a roadmap for waterworks owners to follow for correcting a waterworks' deficiencies or improving a waterworks' operation. ODW has implemented GEC SWIFT Surveys software to utilize electronic sanitary surveys to improve the efficiency of sanitary surveys, and to improve the consistency of our evaluations of waterworks and follow up on issues identified.

Staff conduct special site visits to evaluate waterworks new construction, investigate consumer complaints, provide guidance to waterworks required to conduct Level 1 Revised Total Coliform Rule (RTCR) assessments, conduct Level 2 RTCR Assessments, and respond to specific requests for assistance. Staff make site visits between sanitary surveys to confirm waterworks' progress in addressing sanitary survey comments and correcting significant deficiencies. Staff also make site visits to perform source water assessments and evaluate locations of proposed new wells for approval. These visits provide an opportunity for face-to-face interaction with waterworks owners and operators, allowing immediate technical assistance to improve TMF capacity.

Performance: During the reporting period, ODW staff performed 437 routine sanitary surveys, provided guidance to waterworks in completing 128 Level 1 RTCR Assessments, conducted 42 Level 2 RTCR Assessments, and performed 59 well site assessments**.**

2.5 Technical Assistance Contacts by Field Staff

Relationship to TMF Capacity: In addition to site visits, ODW staff interact with waterworks owners and operators and provide assistance through a variety of informal contacts including meetings, telephone calls, letters, and emails. Assistance covers a full range of TMF concerns. For instance, staff may assist with water quality sampling or follow up on corrective measures from a sanitary survey report. Staff notify waterworks operators of upcoming training opportunities or assist with water treatment dosage calculations. ODW notifies owners of pending regulatory impacts or requirements for consumer education.

Performance: During the reporting period, VDH–ODW staff received and responded to 17,586 assistance requests from waterworks owners and operators. They communicated with waterworks using a variety of methods as described in the previous paragraph. Technical assistance success stories are included in Appendix F.

2.6 Operator Certification

Relationship to TMF Capacity: In Virginia, the Department of Professional and Occupational Regulation (DPOR) regulates licensed waterworks operators through the *Code of Virginia* §§ 54.1-2300 through 54.1-2302. DPOR bases licensure on operators having applicable experience and education as well as demonstrating minimum required knowledge, skills and abilities through an examination; 18VAC160-30-10 *et seq.* Experience is limited to operation and maintenance of waterworks, laboratory work, and treatment plant maintenance. Experience level varies depending on the waterworks' classification. The minimum education requirement for an operator's license is a high school diploma or General Educational Development certificate. However, there are licensure regulation provisions for candidates without high school diplomas to substitute more operator-in-training experience for education.

Relationship to TMF Capacity: ODW facilitates the development of TMF competencies for waterworks owners and operators by offering and sponsoring on-going training opportunities. The curricula for these programs include technical topics such as equipment operation and maintenance, drinking water chemistry and microbiology, water treatment technologies, and operational math. The program addresses managerial aspects of waterworks operation through course offerings on the Regulations, financial planning, asset management, waterworks administration, source water protection, emergency planning, and waterworks security.

Performance: Following the pandemic, VDH-ODW and Virginia Tech transitioned courses to in person again. These courses have been well attended and participants are providing positive feedback. A listing of the courses is provided in Table 1.

Water Operators Short School: Virginia Tech transitioned short school classes to in person this year. ODW actively participates in the Short School by volunteering as course instructors at this weeklong course held annually since the 1930s. Historically, there have been three levels to the course: introductory, intermediate, and advanced. Each level provides approximately 15 sessions and focuses on a variety of waterworks operations topics. The curricula for the intermediate and advanced courses build on the preceding year's course. Starting in August 2018, Virginia Tech offered an additional level, "Year 4," for supervisors or operators looking to move into management. The Year 4 sessions include asset management, communications, human resources, as well as new technologies. Virginia Tech held the Short School from July 31 - August 4, 2023; approximately 106 people attended.

This year's water short school launched a pilot program with the Virginia Department of Professional and Occupational Regulation (DPOR). This pilot offered participants, that were eligible, the opportunity to take their licensure exam at the conclusion of short school. Virginia Tech and DPOR had 43 register to take licensure exams. The pass rate for the licensure exams from short school was 35%. The other participants took the Virginia Tech water short school exam at the conclusion of short school. The pass rate for the Virginia Tech water short school exam was 71%.

Table 1: Classes offered by ODW and Virginia Tech

Program Date	Program Name	Participants
October 12, 2022	Broadcast: Correcting Hydraulic Deficiencies at Existing Water and Wastewater Treatment Plants	137
October 18-20, 2022	Groundwater Math for Small Systems	10
October 17-28, 2022	Operation & Maintenance of Distribution Systems (Virtual)	17
November 1-2, 2022	Hands On Training at a Full-Scale Water Treatment Plant	19
November 16, 2022	Broadcast: Methods for Addressing a Variety of Inorganic Contaminants in Water Treatment Plant Operations	132
February 7-9, 2023	Basic Groundwater Course for Small Systems	20
February 15, 2023	Broadcast: Water System Hydraulics	90
March 6-20, 2023	Water Operations Math – Virtual	18
March 23-24, 2023	Hands On Training at a Full Scale Water Treatment Plant	11

March 15, 2203	Broadcast: Sampling: Collection, Monitoring and Interpretation	156
April 12, 2023	Broadcast: Managing and Developing the Water & Wastewater Professional	134
May 22-26, 2023	Operation and Maintenance of Distribution Systems	10
May 17, 2023	Broadcast*	
June 14, 2023	Broadcast: Alternative Disinfectants	138
June 27-29, 2023	Contaminants of Concern	16
July 12, 2023	Broadcast: VDH Office of Drinking Water Update	137
July 18-20, 2023	Management, Methods, and Money: Understanding Concepts in Capacity Development	23
August 29-31, 2023	Establishing a Successful and Sustainable Waterworks: Revenues, Rates and Funding	16
September 20, 2023	Broadcast: Lead Your Team to a Higher Level of Morale and Productivity	138
September 26-28, 2023	Groundwater Math for Small Systems	16

*Broadcast postponed till December due to speaker emergency.

2.7 Construction Plans and Permit Review

Relationship to TMF Capacity: ODW uses authority in §§ 32.1-169 & 32.1-172 of the *Code of Virginia*, and 12VAC5-590-190 of the *Waterworks Regulations* to prohibit the construction or change in the manner of transmission, storage, purification, treatment, or distribution of water (including the extension of water pipes for the distribution of water) at any waterworks or water supply without a written construction permit. Construction and operation permitting authority is a control point to prevent the creation of waterworks lacking sufficient TMF capacity to sustain operations. After construction, the waterworks owner must submit a statement by a licensed professional engineer. The engineer's statement confirms completion of the construction work in accordance with the approved plans and specifications, based on inspections of the waterworks during and after the construction, and for complicated projects, ODW confirms this with a final inspection. Upon receipt of the statement, and satisfactory completion of a final inspection if required, ODW issues a new or updated operation permit. The permit also establishes the classification of the waterworks for the purpose of licensure requirements for personnel.

Performance: During the reporting period, ODW issued 182 construction permits through the review of plans and specifications for new construction, expansion, or changes in the manner of transmission, storage, purification, treatment, or distribution of water (system improvements). In April 2022, ODW initiated a pilot centralized plan review program with a goal of improving consistency, efficiency, and permitting turn-around time over the current regionalized program. Initial results indicate that the pilot program achieved the goals, and ODW initiated hiring three engineering positions to form a permanent centralized plan review program.

2.8 Water Loss and Evaluation Assistance

Relationship to TMF Capacity: Distribution system water loss is a TMF capacity concern. Water loss may include impacts to hydraulic source capacity, reduction in pressure, negative pressure resulting in contamination from cross connections and leaks, increased treatment, and risk

to public health. Financial impacts include loss of potential revenue and increased operation costs (e.g. electricity, chemicals, unbilled water, and staff time). These factors affect management decisions and capital outlay necessary to correct significant water loss in the distribution system.

Performance: ODW staff does not conduct leak detection, as leak detection requires extensive training and expensive equipment. Instead, ODW continues to support our technical assistance partners by funding applications for leak detection equipment under the Drinking Water State Revolving Fund (DWSRF) set-asides. The Virginia Rural Water Association (VRWA) received grant funds for leak detection equipment. They provide the services through ODW referral and direct contact from waterworks. VRWA reported delivery of 615.25 hours of leak detection technical assistance service to several waterworks in Virginia during the reporting period. Information about leak detection services is included in Appendix D of this report.

Table 2, "Virginia Rural Water Association, Leak Detection- Waterworks Assisted" summarizes VRWA circuit riders' water loss assistance hours provided through routine leak detection technical assistance.

Table 2: Virginia Rural Water Association, Leak Detection- Waterworks Assisted

Hours of Leak Detection	Water System	Hours of Leak Detection	Water System
20.25	Appalachia	5.75	Greensville County PSA
16	Appomattox	2.5	Gretna
6	Bath County Service Authority	75.5	Grottoes
31.75	Berryville	6.25	Independence
17	Bland County	11.75	Iron Gate
33.75	Bowling Green	34.25	Louisa
6.75	Boykins	24.25	Milboro Water System
16.25	Buena Vista	15	Narrows
7.5	Burkville	16	Pembroke
1.25	Campbell County Utilities	20	Pound
12.75	Clark County Sanitary	8.25	Pulaski County PSA
8	Claypool Hill	10.5	Quantico
2.25	Covington	1	Roanoke River Service Authority
27	Dickenson County PSA	25.75	Shenandoah Utilities Services
16.5	Drakes Branch	13.75	Tazewell County PSA
18	Dungannon	18	Thomas Bridge Water Corp.
59.75	Edinburg	3	White Pine Village
12	Exmore	10.25	Wise County PSA
1.75	Farmville	1.5	Young Life Camp
11.75	Gate City	**326.25**	**Total**

2.9 Compliance and Enforcement Program

Relationship to TMF Capacity: ODW routinely reviews water quality data submitted by waterworks and issues Notices of Alleged Violation (NOAVs) for sample results that do not meet the standards contained in the Regulations. ODW issues NOAVs for monitoring infractions, improperly licensed staff, recordkeeping, reporting failures, or other conditions that deviate from standards established by the SDWA and the Regulations. These notifications include recommendations on a course of action for waterworks to follow to return to compliance.

In addition, ODW can issue warning letters to waterworks that fail to comply with the Regulations or are on the verge of becoming priority systems on the ETT. ODW utilizes warning letters to encourage waterworks owners to take actions necessary to ensure compliance. Warning letters summarize current conditions: the waterworks' noncompliance, request owners take corrective action within a specified timeframe, and define the possible consequences for failure to take action.

The State Health Commissioner, acting on behalf of the Board of Health, has the authority to issue binding bilateral consent orders (*Code of Virginia* §§ 32.1-26 and 32.1-27) and unilateral special orders (*Code of Virginia* § 32.1-175.01) to waterworks owners who have violated the Regulations. ODW uses consent orders and special orders to address situations where a waterworks has not returned to compliance in a timely fashion following issuance of an NOAV and/or a warning letter. As required by the Virginia Administrative Process Act, ODW enforcement staff conduct an informal fact-finding conference and/or formal administrative hearing to give waterworks owners their due process rights under the law before issuing an adverse decision that could lead to a unilateral special order. Both consent orders and special orders establish timelines and direct corrective measures that will lead to compliance. ODW focuses these enforcement efforts on priority systems identified in the ETT. Quarterly ETT reports are used to prioritize assistance to waterworks with numerous or especially serious compliance failures.

ODW's enforcement approach is highly focused on identifying solutions to the underlying causes of a waterworks' noncompliance with state and federal drinking water regulations. ODW enforcement utilizes various tools 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 hearing it may be determined that inadequate waterworks revenues are the ultimate cause of chronic monitoring failures. ODW may ask a waterworks owner to submit a WBOP as a budgeting tool. ODW may provide the waterworks owner with rate-setting assistance to address the underlying lack of financial capacity.

Performance: During the October 1, 2022, through September 30, 2023 reporting period, ODW issued 4,814 NOAVs and 64 Warning Letters. Additionally, the State Health Commissioner issued eight consent orders. Four waterworks satisfied the requirements in their consent orders and those orders were terminated, including three community waterworks and one transient non-community waterworks.

2.10 Waterworks Advisory Committee

Relationship to TMF Capacity: ODW collaborates with the Waterworks Advisory Committee (WAC), which is comprised of a diverse group of waterworks stakeholders throughout the state. The WAC provides input into the ongoing development of ODW policies and procedures. ODW consults the WAC frequently regarding the implementation of specific programs, including those related to capacity development. *Virginia Waterworks Regulations* 12VAC5-590-45 provides requirements related to the WAC.

Performance: The WAC and ODW staff met three times during the reporting period: February 16, 2023, March 8, 2023, June 14, 2023, and September 20, 2023. Meeting minutes are available on the Virginia Town Hall website.

2.11 Drinking Water State Revolving Fund – Construction Funding

Relationship to Technical, Managerial, and Financial Capacity: The ODW Financial Construction Assistance Program (FCAP) administers the Virginia Drinking Water State Revolving Fund (DWSRF) and provides financial assistance to waterworks owners in the form of low-interest loans and principal forgiveness. FCAP can use financial assistance to resolve health-related issues, for infrastructure improvement, and to refinance debt. Training, Capacity Development and Outreach (TCDO) staff assess all qualified waterworks applying to receive DWSRF construction fund assistance to determine if the waterworks has sufficient TMF capacity before disbursement of funds. Waterworks that do not appear to have adequate TMF capacity are required to submit a WBOP or take advantage of technical assistance provided by Capacity Development staff. ODW also coordinates through its financial partner, Virginia Resource Authority (VRA), to set requirements for waterworks restructuring as part of the funding process (rate increases or completion of annual audits).

The ODW implements outreach efforts to increase awareness of the opportunities available through the DWSRF program. ODW staff post information on the ODW website and on Town Hall. The DWSRF solicitation package includes eligibility information, application information and deadlines, program workshop dates, contact information, as well as other useful information. ODW utilizes the ETT to identify non-compliant waterworks that would most benefit from the DWSRF funding. FCAP can then notify these waterworks by letter of the DWSRF opportunities available through the year, rather than a couple months before the application deadline. FCAP continues to solicit eligible applicants for each DWSRF Construction funding cycle.

To promote sustainable programs FCAP requires water systems that receive funding through the DWSRF to either have an active asset management plan or prepare one before completion of the awarded project. Up to $15,000 in principal forgiveness is available to assist with the costs of developing or updating an asset management plan for those who do not have an active or up-to-date plan.

Performance: During the reporting period, ODW received applications for both FY 2023 Bipartisan Infrastructure Law (BIL) and FY 2024 funding. The Intended Use Plan (IUP) and the Project Priority List (PPL) have been drafted for all FY 2023 funding (Base + BIL). For FY 2023 BIL applications, the TMF assessment is being conducted and after it is finalized funding offer letters will be drafted and sent out to the funding applicants. As part of the TMF review, ODW

staff identify issues regarding low TMF capacity and recommend corrective actions in the funding offers. For FY 2024 funding, FCAP is in the process of developing the PPL. After this, a TMF review will be complete for these applicants.

2.12 Planning and Design Funded Projects

Relationship to TMF Capacity: ODW awards planning and design funds annually to small, financially challenged, community waterworks. The program provides up to $45,000 per project. The beneficiaries of this program are primarily 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 test wells to determine source feasibility, or other similar technical assistance projects. The submission of a preliminary engineering report (PER) is a requirement for both ODW's DWSRF construction program and the US Department of Agriculture's Rural Economic Development Loan & Grant Program. However, FCAP will accept applications without a PER, and can fund engineering services as part of a construction project.

Waterworks can submit Planning and Design Grant applications year-round. Staff reviews the applications upon receipt and makes funding offers for complete applications with acute or chronic health points. ODW will hold applications without acute or chronic health points until around September 1st of each year. If funds are still available, staff will review and score the remaining applications.

Outreach efforts by ODW increase awareness of the opportunities available through the Planning and Design Grants. Staff post information on the VDH–ODW website and in the *Virginia Register* during January of each calendar year. The information includes eligibility information, application information and deadlines, program workshop dates, contact information, as well as other useful information.

Performance: Waterworks owners submitted 10 applications totaling $364,210.43 to the Planning and Design Fund to-date during calendar year 2023. ODW receives applications on a rolling basis during the year, so there may be more to come in before end of year. ODW has made an offer to six waterworks totaling $240,000; one was ineligible, one withdrawn, and two incomplete. ODW continues to reimburse projects cost for offers from previous years with approximately $17,500 expended on prior year projects. Two projects from prior years remain active with one from 2021 and the other from 2022. TCDO staff continue to follow-up on these projects to ensure completion.

2.13 Emergency Preparedness

Relationship to TMF Capacity: Preparedness, response, and recovery for/from natural, manmade and technological disasters are a capacity gap for Virginia waterworks. Waterworks preparedness to respond to various emergencies leads to resilient waterworks capable of continuing operations, meeting state and federal requirements, and ensuring public health protection during these incidents. ODW provides a variety of training, exercises, and planning tools to assist waterworks' preparedness.

Performance: The ODW Emergency Services Coordinator aided across the commonwealth through direct technical assistance, participation in training and tabletop exercises, and support of emergency response agencies as described below:

The Emergency Services Coordinator provided incident management technical assistance for a cross-connection incident in a locality that required significant coordination with the Office of Drinking Water, the locality, various state agencies, and the private sector to ensure the community received the appropriate information regarding a Do Not Use notice that was issued. The Emergency Services Coordinator also conducted an after-action review to identify best practices and lessons learned.

The Emergency Services Coordinator worked with ODW Field Directors to contact waterworks due to pending severe weather from Hurricane Idalia.The Emergency Services Coordinator worked with ODW Field Directors to communicate with waterworks during Tropical Storm Ophelia and staffed the Virginia Emergency Operations Center (VEOC) with the Virginia Emergency Support Team (VEST) Emergency Support Function (ESF) #3 – Public Works and Engineering to assist across the commonwealth for potential resource requests needed from the impacts of excessive rain, high winds, and flooding.

The Emergency Services Coordinator participated in several trainings with other ODW team members, including the U.S. EPA Region 3 Emergency Drinking Water Supply (EDWS) Planning Workshop, as well as a planning meeting for an EPA cybersecurity tabletop exercise.The Emergency Services Coordinator worked with regional Field Directors in ODW to improve processes related to waterworks reporting notices regarding power outages, low pressure notices, boil water advisories and other needed notices from the waterworks to the public. The Reporting Tool had been broken for some time but is now operational and next steps are occurring to continue to improve the process.

The Emergency Services Coordinator worked with regional Field Directors and other staff members to report statewide impacts to drought conditions, specifically in the Shenandoah Valley. ODW has participated with many state agencies to assess drought conditions, share information from waterworks on mandatory or voluntary conservation measures and assist as needed to limit the impacts of drought conditions throughout the commonwealth.

2.14 Source Water Assessments

Relationship to TMF Capacity: Source water assessments serve as a tool for water supply resource planning and, specifically, to support waterworks' managerial capabilities. ODW performs assessments on new waterworks and updates existing assessments resulting from routine sanitary surveys and other technical assistance opportunities offered by the agency.

Performance: ODW field staff provided 489 preliminary or updated source water assessments. ODW continuously refines the source water assessment procedures and the agency's Geospatial Information System database layers and toolset. This work helps to improve the source water assessment reporting to waterworks.

2.15 Source Water Protection Program

Relationship to TMF Capacity: The Source Water Protection Program (SWPP) utilizes contract services, Wellhead Protection Implementation Projects Grants, and ODW staff technical assistance to help small community waterworks and localities (serving less than 50,000 persons) with development and implementation of source water protection plans. The resulting plans enable the participating waterworks to take steps to safeguard their drinking water sources by managing and controlling activities near the source that could compromise water quality and quantity. Additionally, ODW participates in interagency environmental reviews that serve as a barrier of protection in Virginia's multi-barrier approach to safe drinking water. These reviews minimize environmental impact from proposed projects to protect Virginia's waters and public health.

Performance: During the 2023 reporting period, the collective efforts of VDH contractors and Virginia Rural Water Association (VRWA) produced source water protection plans (SWPPs) for 25 community water systems (CWS). According to the results of the annual survey, there were 74 systems that meet the definition of having a strategy in place (SIP), including 51 "Yes Coastal Plain Construction" (YCPC) systems. All YCPC systems were assumed to not need a SIP change, regardless of the response from the system, because their classification is based on construction requirements. For all systems, we attempted to determine if they meet both the 2014 and 2021 definitions of substantial implementation (SI). Of the systems providing a response, 65 appear to meet the 2014 definition. This includes 14 systems with a SIP, 51 YCPC systems. Success stories from two VRWA projects are in Appendix D.

The following charts summarize Virginia's FY23 results pertaining to EPA's Strategic Targets SDW-SP4a (Community Water Systems covered by Substantial Implementation) and SDW-SP4b (Population covered by Substantial Implementation).

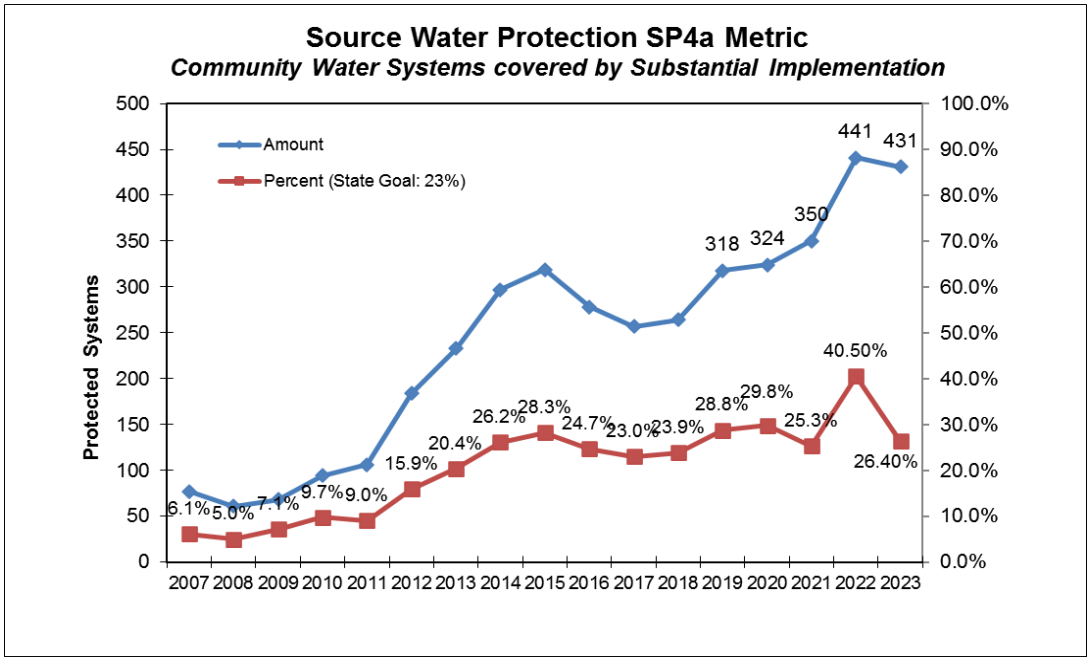

Figure 1: Source Water Protection SP4a Metric: CWSs covered by substantial implementation.

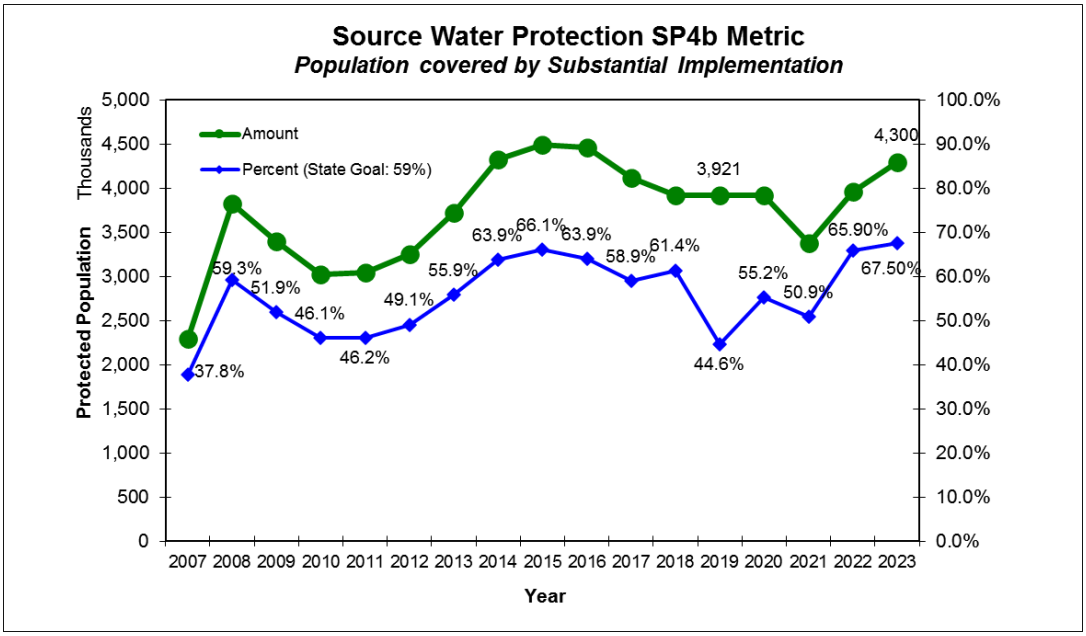

Figure 2: Source Water Protection SP4b Metric: Population covered by Substantial Implementation

The VDH issued the 2023 Source Water Protection Implementation Projects Request for Applications on May 12, 2023. The grant panel has a budget of $120,000 to fund source water protection grant projects. After evaluating each application, the panel came to the conclusion to fully fund the Town of Purcellville's project to Install security cameras at 4 Locations and fund Middleburg's project to Inspect five wells and install water level data logging equipment.

The Town of Purcellville - Fully fund $45,437.00
The Town of Middleburg - Fully fund $24,000.00

There were 2 applicants in total; staff distributed a total of $67,042 between the 2 awardees. The performance cycle for these awards ends on June 30, 2024. Performance information about the Wellhead Protection Implementation Projects Request for Applications is available at: https://www.vdh.virginia.gov/drinking-water/source-water-programs/source-water-protection-assistance-funding-opportunities/

2.16 Small Engineering Projects Program

The Small Engineering Projects Program utilizes the services of three engineering consulting firms for small projects at financially stressed waterworks serving typically fewer than 3,300 consumers. These projects include design and specifications for small construction at a waterworks that may not qualify for a DWSRF planning and design funded project. The program is now in its ninth year. During this reporting period, two new projects were initiated which involved an asset management plan for a small community in Narrows, Virginia, and a preliminary engineering report for a small community in Surry County, VA.. The Small Project Engineering program supports small

waterworks in complying with the engineering requirements of the Regulations and facilitates the resolution of public health issues in drinking water systems.

2.17 Staffing

Capacity Development staff are part of the TCDO Division of the Office of Drinking Water. The Capacity Development team reports to the TCDO Director and consists of three full-time regional sustainability coordinators with one serving as supervisor, one non-community sustainability coordinator who works with systems across the state, primarily with TNCs, and a part-time assistant (this position is currently vacant). TCDO additionally includes an Operator Training Coordinator in the Operator Certification Program. The Division considers field office staff time technical assistance; however, the time tracked for staff did not identify specific tasks that the field offices conduct which should be included in the technical assistance category. This report highlights some efforts that the field office staff conducted during the reporting year in Appendix F. This is not a comprehensive list of activities but shows the types of assistance provided by field office staff.

2.18 Financial Capacity Building

The Virginia Resources Authority (VRA) provides direct technical assistance to waterworks on financial capacity on behalf of ODW. VRA charges their time and effort to the Drinking Water State Revolving Fund Program. They provide financial analysis and guidance to waterworks that are potential DWSRF construction loan candidates.

2.19 Receivership Program

Section 32.1-174.3 of the *Code of Virginia* authorizes the State Health Commissioner to petition the circuit court of the jurisdiction for the appointment of a receiver. Although the Code authorizes the process, there are currently no existing state funds for this program. ODW intends to utilize DWSRF 15% set-aside funds to meet the needs of this "program." ODW will request funds be paid to third-party service providers to manage the receivership as ordered by the court system. This management will constitute direct technical assistance under the 15% set-aside provisions of the DWSRF. ODW limits this assistance to a specified period not to exceed 24 months. Technical assistance will address technical, managerial, and financial factors throughout the waterworks organization. ODW cannot utilize these funds for the renovation, expansion, or operations and maintenance of the waterworks. ODW anticipates conducting emergency procurements for technical assistance to specific waterworks as described in the 2022 revision of the EPA approved Capacity Development Strategy. This year, ODW initiated receivership proceedings in order to bring stability to waterworks whose owner effectively abandoned the systems. Details are in Appendix F.

2.20 Implementation Review

ODW utilizes the sanitary survey program as a means to assess waterworks' TMF capacity. During sanitary surveys, ODW field staff conduct thorough evaluations of waterworks infrastructure and water treatment processes. Staff reviews water quality-monitoring records, operational practices and controls, and assesses waterworks staff qualifications. ODW performs sanitary surveys more frequently than required by EPA, from once every six months to once every

three years; staff base the frequency on the population served by the waterworks and its facilities. ODW inspects larger waterworks more frequently. The sanitary survey process identifies, prioritizes, and targets waterworks' capacity needs. If a waterworks demonstrates little or no capacity, ODW addresses the issues very similarly to the methods utilized for new systems by providing the following:

- Follow-up sanitary surveys and increased frequency of future sanitary surveys,
- Regular reminders of compliance requirements (*i.e.*, monitoring, reporting, etc.),
- Development or update of a WBOP,
- Referral to upcoming formal and informal training,
- Direct one-on-one assistance by Capacity Development staff,
- Referral to other technical assistance providers,
- Notifications and reminders of upcoming funding opportunities,
- Warnings from ODW's enforcement staff, and/or,
- Initiation of enforcement action.

2.21 Update on Waterworks with an ETT ≥ 10

The July 2023 ETT report is included in Appendix C. The July 2023 ETT includes six community waterworks and five transient non-community waterworks with a score of more than 10. In the July 2022 ETT, one community waterworks and one transient non-community waterworks had a score of more than 10.

The use of the EPA's ETT will continue to serve as a tool to measure the improvement in a waterworks' TMF capabilities. As shown in Figure 3, below, the number of waterworks with a July ETT score greater than 10 has decreased since 2019 but increased in 2023. The numbers have showed a general downward trend to 2022. Field Office staff have worked closely with waterworks owners and operators to bring waterworks back into compliance. Compliance and Enforcement staff support the Field Office staff to improve the focus on out-of-compliance systems and enforcement efforts across the state. Capacity Development staff provide funding assistance and work with out-of-compliance waterworks with Waterworks Business Operation and Asset Management Plans. Capacity Development engages in Field Office staff and Compliance and Enforcement staff monthly meetings and contribute to discussions to reduce waterworks noncompliance.

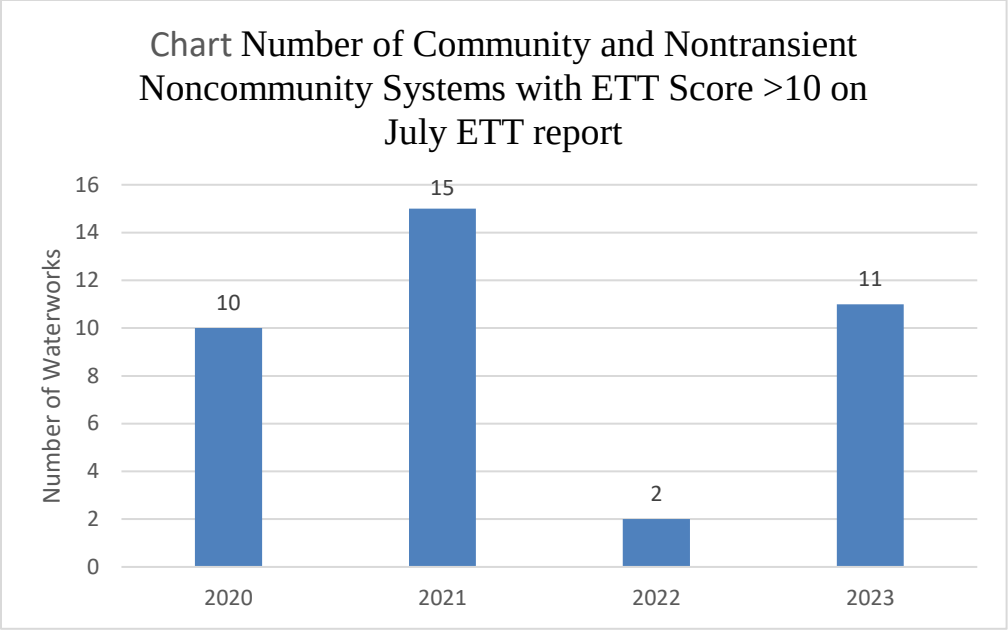

Figure 3: Number of Community and Nontransient Noncommunity Systems with Enforcement Targeting Tool (ETT) Score >10 on July ETT report

2.22 Program Progress and Performance Measures

Community and nontransient noncommunity waterworks are required to have licensed operators. Since 2008, there has been a gradual increase in waterworks fulfilling this requirement, with compliance exceeding 99% for the last seven years.

Table 3, below, shows the breakdown of operators by system type as of Sep 30, 2023, based on information gathered from SDWIS. Since DPOR does not track by type of system served but only tracks operators by class, these numbers may differ slightly from other reported percentages of operators. In addition, this data does not count more than one operator per system, only if the system had an active designated operator during the reporting period.

Table 3: Percent of Waterworks with Licensed Designated Operators as of September 30, 2023

Percent of Waterworks with Licensed Designated Operators As of September 30, 2023			
System Type	**# of Systems**	**# of Systems with Assigned Designated Operator**	**% of Systems with Active Designated Operator**
C	1078	1071	99.35%
NTNC	502	500	99.60 %
Total	***1580***	***1571***	***99.43%***

Further information regarding licensure of operators in Virginia is located in the "Annual Report on Operator Certification in Virginia" for the reporting period of October 1, 2022, to September 30, 2023. Table 4, below, depicts the number of licenses in Virginia by class, and the net gain or loss. The total number of licensed waterworks operators in Virginia is 2098 as of September 25, 2023. This reporting period revealed a loss of 156 operators in total. Staff attributes this decrease in to operators to an aging workforce. VDH-ODW will continue offering low-cost education solutions, which are now more important than ever. Data obtained from DPOR on Sept 25, 2023.

Table 4: Number of Operators by Class as of September 25, 2023

Number of Operators by Class as of September 25, 2023			
Class License	Number of 2022 Licensees	Number of 2023 Licensees	Net Gain (Loss)
6	224	199	(25)
5	248	237	(11)
4	324	302	(22)
3	382	331	(51)
2	340	323	(17)
1	736	706	(30)
Total	***2254***	***2098***	***(156)***

2.23 Projected Activities

As described in previous sections of this report, ODW has increased partnership efforts with technical assistance providers and other organizations. These efforts increase waterworks' TMF capacity by providing training, outreach materials, and field services. Capacity Development partnerships have included organizations such as Virginia Tech, VRWA, SERCAP, Environmental Finance Center Network (EFCN), planning district commissions, USDA-RD, and others. ODW will look to expand and improve partnerships with other organizations. The expected benefit will be to reduce noncompliance and extend Capacity Development Program initiatives. ODW collaborated with partners at SERCAP and VRWA, connecting them with

waterworks that needed leak detection. ODW continues to contract Virginia Tech for training seminars and workshops for waterworks staff including operators.

2.24 Modifications to Strategy

Virginia has an approved, revised Capacity Development Strategy to EPA that incorporates the requirements of America's Water Infrastructure Act of 2018 (AWIA) Section 2012, which amends the SDWA to require Virginia to amend its Capacity Development Strategy to describe how Virginia will encourage the development and use of Asset Management Plans (AMPs). Asset management planning is an important part of long-term prioritization of the maintenance, repair, improvement, and sustainability of waterworks. This is reflected in the revised Strategy. It includes Virginia's strategy for supporting, encouraging, training, and assisting waterworks with Asset Management Planning. This reporting period, as indicated in other sections, has seen the deployment and implementation of most of the initiatives contained within the existing Strategy.

ODW began to formalize a process to use AMPs in Virginia prior to the enactment of AWIA. ODW and participating organizations are continuing to train staff on AMPs and encouraged their use as a sustainability tool. ODW provides funding mechanisms for waterworks to develop AMPs that include the five core components: (1) Asset Inventory, (2) Life Cycle Costs, (3) Level of Service, (4) Criticality, and (5) Long-term Funding. ODW can fund AMPs through the Planning and Design Fund Program, the Small Project Engineering Program, and as an additional engineering cost associated with a DWSRF-funded construction project. ODW requires an AMP as part of a DWSRF project when a waterworks does not already have a current plan or has not updated it within the last 5 years. To encourage asset management planning, ODW will make available the lesser of the actual cost of an AMP or $15,000 as principal forgiveness when requested as part of a construction funding offer.

ODW staff trains waterworks staff on AMPs through one-on-one discussions and also through the "Money, Management and Methods" and "Establishing a Successful, Sustainable Waterworks" classes. Staff also refers water utilities to technical assistance partners for assistance completing AMPs. ODW is continuing to provide in-person and virtual training to waterworks owners and operators on this important tool to enhance TMF capacity and move towards waterworks sustainability.

PART 3: ADDITIONAL REPORTING REQUIREMENTS AND OTHER CONCERNS

3.1 Documentation of Ongoing Implementation

ODW submits this report to EPA as evidence of the Commonwealth of Virginia's commitment and implementation of the Capacity Development Strategy for waterworks owners and operators in the Commonwealth. This report covers the federal fiscal year 2023, from October 1, 2022, through September 30, 2023. Appendix D contains information regarding technical assistance providers contracted through EPA. ODW provides this information as supplemental documentation to any required reporting from SERCAP, VRWA, Virginia Section of the American Water Works Association (AWWA), and EFCN.

3.2 Report to the Governor

The Commonwealth of Virginia, Department of Health submitted the report "Efficacy of Virginia's Waterworks Capacity Development Strategy" on October 6, 2023, to the Governor of Virginia, with an approved extension of time from EPA. Additionally, ODW submitted the report to EPA and published the report on the VDH–ODW website at: https://www.vdh.virginia.gov/content/uploads/sites/14/2023/10/2023-Governors-Report_Final.pdf

The next Triennial Report is due by September 30, 2026.

3.3 DWSRF Assistance to Non-Complying Waterworks

The Commonwealth of Virginia's Financial and Construction Assistance Program requires that applicants meet eligibility requirements. Program eligibility includes the following criteria:

- An owner of a community waterworks or nonprofit non-community waterworks is eligible, except the state and federal government. 42 USC § 300j-12(a)(2).
- Section 1452 of the SDWA (42 USC § 300j-12(a)(3)) states "…no assistance… shall be provided to a public water system that– (i) does not have the technical, managerial, and financial capability to ensure compliance with the requirements of this subchapter; or (ii) is in significant noncompliance with any requirement of the national primary drinking water regulations or variance." However, a waterworks may receive assistance if use of funds will ensure compliance and the owner agrees to undertake appropriate changes in operations (including ownership, management, accounting, rates, maintenance, consolidation, alternative water supply, etc.) to assure compliance over the long term.
- Section 32.1-172 of the *Code of Virginia* requires that a waterworks owner obtain a permit from the State Health Commissioner before establishing, constructing, or operating a waterworks. ODW's permitting process includes a WBOP, which addresses the waterworks owner's ability to supply safe drinking water over the long term by identifying sufficient technical, managerial, financial, and operational abilities.

3.4 Evaluation of TMF Capacity for Waterworks Seeking DWSRF Assistance

ODW requires documented criteria be submitted with construction, and planning and design fund applications to ensure that applicants have TMF capacity prior to obtaining assistance through the DWSRF. Specific program criteria follow:

Financial

- ODW collaborates with VRA to ensure that all potential recipients of DWSRF assistance have adequate financial capacity. VRA reviews annual audits, tax records, analyzes rate structures, cash flow, and completes a comprehensive credit review.
- Financial requirements of the program include:
  - Compliance with the *Virginia Public Procurement Act*,
  - Compliance with *Office of Management and Budget Circular A – 102*,
  - Compliance with the *Uniform Financial Report Manual* and the *Single Audit Act.*

Technical

- ODW completes a comprehensive technical evaluation of all potential recipients of DWSRF funds. Individual evaluations include review of compliance with the Regulations, ETT review, routine sanitary survey review, and an evaluation completed by the ODW Field Office staff. This review ensures that ODW provides no assistance to waterworks that do not have TMF capacity to ensure compliance with the SDWA, unless the assistance resolves the noncompliance.
- Technical requirements of the program include:
    - An environmental review to include environmental impacts as well as measures (alternatives, prevention, or mitigation) which could minimize adverse impacts from the construction of the project.
    - Section 32.1-172 B of the *Code of Virginia* requires a person to apply to the ODW field office for a permit prior to the establishment, construction, or operation of a waterworks.
    - A Preliminary Engineering Conference is required. This provides for an exchange of information between all parties and ensures adherence to health protection and compliance objectives.
    - A Preliminary Engineering Report (PER) is required and must be prepared under the supervision of a Virginia licensed professional engineer. Information required for the PER, as referenced in 12VAC5-590-200 A of the *Waterworks Regulations*, will be determined during the Preliminary Engineering Conference. The DWSRF reserves the right to fund only the lowest cost alternative or the feasible options.
    - Plans, specifications, and construction documentation are required. Plans and specifications must comply with 12VAC5-590-200 of the Regulations. Construction documents must include:
        - Compliance with *Equal Employment Opportunity Act of 1972*
        - Certification on *Prohibition of Segregated Facilities* (1998, as amended in 2015)
        - Compliance with minority and women's business enterprise goals
        - Compliance with the *Civil Rights Act of 1964*
        - Compliance with *Age Discrimination Act of 1975, Rehabilitation Act of 1973*, and the prohibition against sex discrimination; and,
        - Utilization of small businesses in rural areas.
    - A permit is required prior to the construction or operation of any waterworks in accordance with 12 VAC 5-590-190 of the *Waterworks Regulations*.

Managerial

- ODW completes a general managerial review of all potential DWSRF recipients. Staff conducts this review using compliance information, review of sanitary surveys, review of budget and rate information, and other information provided with each DWSRF application.
- Managerial requirements of the program can include a WBOP when additional information is required. Recipients are required to submit the WBOP and receive approval prior to DWSRF assistance.

  The WBOP includes eight parts, as follows:

- Parts 1 through 4 consist of written statements, charts, or tables that describe the waterworks and its history, staffing arrangements, management and operations policies and procedures, and facility planning,
- Part 5 consists of financial worksheets that summarize the waterworks' budget and financial resources,
- Part 6 summarizes any sustainability improvements identified in the previous sections that would improve TMF capacity,
- Parts 7 and 8 include a checklist of WBOP submittal attachments, and a certification statement,
- The WBOP handbook is available to the public at: https://www.vdh.virginia.gov/drinking-water/capacity-development/waterworks-business-operations-plan/ ,
- The WBOP web resources consist of the following:
    - Instructions for completing the WBOP for community and non-transient noncommunity waterworks
    - Companion financial worksheets in Excel format
    - A simplified worksheet for transient noncommunity WBOPs.

3.5 DWSRF Success Stories

The DWSRF Annual Report was submitted on October 26, 2023. ODW highlights the Town of Coeburn's Water System Improvement Phase 1 project, and the Henry County Public Service Authority's Preston Road Water Extension project, both of which closed during the reporting period.

WSL-036-17E - Coeburn Water System Improvement Phase 1 Project

The Town of Coeburn (Town) is a residential and commercial center located in Wise County, Virginia, situated adjacent to the U.S. Route 58 corridor, with direct access to U.S. Route 58, the primary transportation corridor in the area. The Town owns and operates a 1.15 million gallon per day water treatment plant, with Toms Creek Reservoir as the raw water source for the system. The system provides water for approximately 4,630 persons through 1,621 connections and serves the Town of Coeburn and the communities of Cranesnest, Maytown, Bondtown, Banner, Riverview, and Flatwoods. The water distribution system consists of approximately 237,100 linear feet of ¾-inch through 12-inch waterline, four water storage tanks, one booster pump station, and five hydro-pneumatic pump stations/tanks.

The old existing treated water transmission line from the water treatment plant (WTP) to the downtown area was an approximately 80 to 90 years old asbestos cement line. Repairs to the old line required sawing the line under asbestos abatement protocols, which created an asbestos exposure risk to maintenance workers. Due to frequent leaks in the system, the Town had to issue frequent precautionary boil water notices, increasing operational cost for the Town.

On December 2, 2021, the Virginia Department of Health and the Virginia Resources Authority closed a loan with the Town of Coeburn for replacement of the old waterline with a funding package totaling $1,447,000. This included $886,000 in principal forgiveness and a $561,000 loan for 30 years at a 2.65% interest rate. The funding package also covered creation of an Asset

Management Plan and a study of the possible consolidation of the Town's water system with the Wise County Public Service Authority water system.

This project, referred to as Division 1, consisted of installation of approximately 27,526 linear feet of mostly 12-inch ductile iron pipe waterline from the Town's water treatment plant to downtown Coeburn, plus 38 gate valves, 12 fire hydrants, and 77 service reconnections. The work was completed under contract with Boring Contractors, who split the construction work between two subcontractors – Little B Enterprises, Inc., and Hill Construction. The project began on January 31, 2022, and was substantially complete on March 22, 2023.

This Virginia Department of Health funding has helped the Town achieve its goal of reducing water loss and operating expenses and increasing accountability for additional revenue. This project has also enabled the Town to provide safe potable drinking water to its customers on a more reliable basis.

WSL-017-20E - Henry County Public Service Authority Preston Road Water Extension Project

The Henry County Public Service Authority Preston Road Water Extensions Project was planned, designed, and constructed to include the completion of a secondary water transmission line from the Philpott Water Filtration Plant (WFP) to Chestnut Knob Tank, as well as the consolidation of two Henry County Public Service Authority (HCPSA) well systems (Pine Forest Subdivision PWSID# 5089634 and Eagle Lane Subdivision PWSID# 5089285). The proposed project area is in the Horsepasture District of Henry County and is almost entirely a single-family residential development. The water line extensions will make public water service available to an additional 137 water service connections. Construction included 40,875 linear feet (LF) of 14-inch, 12-inch, and 8-inch water lines and related appurtenances.

The Virginia Resource Authority closed Henry County Service Authority's funding package on February 11, 2022. The project funding package is comprised of $3,057,600 in Loan Funds at a 2.0% interest rate for a term of 30 years and $1,310,400 as Principal Forgiveness.

The overall project was bid out and contracted as two separate construction contracts between Prillaman & Pace (Contract 1) and C.W. Cauley & Son (Contract 2). Contract 1 Base Bid consisted of construction of approximately 19,500 LF of 12-inch and 14-inch water line and related improvements for $2,356,470. Contract 2 Base Bid consisted of approximately 12,000 LF of 8-inch and smaller extension water lines and an Additive Bid of 3,870 LF of 8-inch water line, and related improvements for $1,425,170. Contract 2 had three (3) Change Orders resulting in an additional $487,821 to the total contract amount.

The project was deemed Substantially Complete on August 23, 2023. All punch list items have been corrected and the systems are fully operational. The project achieved Final Completion on September 5, 2023. The project benefits are the elimination of two operating permits, improving the water system's transmission capabilities, and providing safe public drinking water to 137 new water connections.

3.6 Capacity Development Success Stories

Capacity Development – Staff Achievements

Capacity development staff is part of the Training, Capacity Development, and Outreach Division of ODW. Five full-time staff actively support the Capacity Development Strategy for the reporting period. Four of the full-time positions are "Sustainability Coordinators." The Sustainability Coordinators came from backgrounds as ODW Environmental Health Specialists (Inspectors). They provide direct technical assistance to both waterworks and other ODW staff. During the reporting period, staff:

- initiated, coordinated, and provided instruction at training events for waterworks
- made marketing efforts to increase the number of waterworks personnel attending training events
- collaborated with the Financial Construction and Assistance Program to host funding workshops for waterworks in Virginia.
- worked with utility boards and staff to provide regulatory insight, discuss technical issues, and offer suggestions for funding options
- reviewed 16 applications in the first round DWSRF and BIL Construction Applications for TMF capacity. The process involves making recommendations for improvements to TMF as requirements for funding offers.
- collaborated with Hampton Roads Planning District Commission to present a Funding Workshop in the Tidewater Region.

Capacity Development staff works with waterworks across the state on complex issues that often take a long time to resolve. What follows are a few progress reports and success stories from the past year:

Arlington Plantation is a small, rural, community waterworks in Northampton County on the Eastern Shore of Virginia. The waterworks serves 24 connections and approximately 45 people. In 2014, the Arlington Plantation Property Owners Association applied for Planning and Design Funds through the Drinking Water State Revolving Fund for developing a Preliminary Engineering Report. The Report identified and prioritized needed improvements and was approved in January 2016. During this time, the waterworks had multiple detections of total coliform bacteria in the distribution system. In 2021, VDH awarded DWSRF construction funds to remove and replace a half-buried storage tank with a 10,000-gallon storage tank, install 2 transfer pumps set above ground, recoat the inside and outside of the 3,000-gallon hydro-pneumatic pressure tank, and add chlorination. The project will prevent catastrophic corrosive failure of both the half-buried storage tank (via soil contact) and the pressure tank. Rehabbing the water plant will add chlorination and provide the community with safe drinking water. After nine years, construction has begun. This project highlights the significant time and resource investment to help a small community to build a plan and implement it.

Darden's Mill Estates is a small subdivision in Southampton County, Virginia, with 54 connections serving approximately 180 people. The waterworks changed hands following the death of its previous owner. The current owner struggled with maintaining the system adequately and failed to collect required water quality samples. Staff provided guidance and technical assistance, but the compliance and maintenance problems persisted. After VDH issued Notices of Alleged

Violation, the waterworks received a Special Order to require compliance with applicable regulations. In 2020, the Circuit Court of Southampton County entered a Court Order requiring the owner to take certain steps to comply with a pre-existing special order and the Waterworks Regulations. The owner did not comply with the Court Order. In July 2023, the waterworks was placed into receivership by the Circuit Court. The receiver has experience operating waterworks in Virginia and is in control of the assets of the waterworks during the receivership. The owner has agreed to sell the waterworks by February 2024. Resolving the managerial issues at this waterworks has taken a lot of staff time, expertise, and collaboration with other agencies.

TCDO and Division of Technical Services staff met with Bobby Weeks, operations manager and prospective future owner of Scottland Riverview, small community waterworks in Surry County to discuss funding opportunities for a whole system upgrade. Mr. Weeks recently submitted a DWSRF construction project application to pay for the project. Unbeknownst to him, Scottland Riverview has an active award from FY2022 to replace the distribution system and install water meters. His FY2024 application is currently on hold, but he will be able to access the FY2022 funds. Mr. Weeks plans to begin work on the meter replacements, which will bolster his application for FY2025. He is also planning to apply for the Equal Access to Drinking Water Fund to offset some of the costs of consolidating Scottland Riverview. Scottland Riverview also plans to submit a Lead Elimination and Assistance Program (LEAP) application for assistance in completing their new Lead Service Line Inventory before the October 2024 deadline.

TCDO staff accompanied Financial Construction and Assistance Program (FCAP) staff to an environmental review site visit at Scottland Riverview Water Supply in Surry County. Scottland Riverview has been awarded construction funds for water meter installations. The waterworks is in need of additional funding to tackle other aging infrastructure and associated reliability problems. TCDO, FCAP, and staff from Southeast Virginia Field Office (SEVFO) are working in constant collaboration to increase the technical, managerial, and financial capacity of Scottland Riverview. SEVFO and TCDO staff have discussed the outstanding problems at Scottland and are working with Scottland's contract operator and prospective owner to obtain funding. The future is promising for the waterwork, and ultimately the residents, at Scottland Riverview. TCDO is especially thankful for collaboration with SEVFO and FCAP to tackle this complex and evolving project.

TCDO staff submitted a Waterworks Infrastructure Improvements for the Nation (WIIN) grant application to EPA on behalf of Scottland Riverview Water Supply (Surry County). If awarded the WIIN grant, the funds will be used to assess, and if necessary, replace all components of the waterworks. The system was taken on as is, in the late 1970's and needs significant infrastructure improvements and/or replacement.

E. L. Goddard Inc. owned seven small, rural, regulated waterworks in Northumberland County, in addition to other smaller systems that do not meet the definition of a waterworks. The owner was under a Consent Order to correct problems that largely revolved around failure to complete compliance sampling. With the assistance of VDH staff, the owner was able to get a licensed operator who brought the systems back into compliance with the Virginia *Waterworks Regulations*. Additionally, staff was able to identify a utility company that was interested in purchasing the systems. The sale of the E.L. Goddard systems was completed in the summer of 2023. Funding for the repairs and maintenance needed to bring the waterworks up to standards was provided through the Equitable Access to Drinking Water Fund, funding allocated by the

Virginia General Assembly for the purpose of assisting with consolidation. This represents the resolution of problems spanning many years and VDH is pleased to bring it to resolution.

TCDO staff assisted the Field Office staff during a routine inspection for the Town of Goshen. This past winter, the Town experienced a water shortage along with reduced system pressure issues that were due to a distribution main valve being only partially open. The Town is fed by an unfiltered, grandfathered spring and has a contracted operator that is on-site about once a month while the Town clerk and a maintenance employee run the daily system chlorine checks, meter readings, and log pump hours and do routine repairs to the chlorine feed pump and maintain chlorine solution tanks. The Town clerk is currently working on obtaining the required Class 6 Waterworks Operators License from the Department of Professional and Occupational Regulation. They will receive money directly from the Virginia General Assembly to address the repairs that were made during that time, and they are currently working on a Planning and Design Grant Application to complete a whole system inventory and identify improvements that would address the Town's deficiencies. Discussed during the inspection was the need to develop an Asset Management Plan, Waterworks Business Operations Plan and a Capital Improvement Plan.

The Four Winds Campground, located in Caroline County, is required to complete a WBOP in order to satisfy a Special Order. This rural community waterworks serves approximately 1,000 connections with around 50 year-round residents. Over the past year, Capacity Development staff has been working with them to complete a Waterworks Business Operations Plan. Since the system has lacked leadership in the past, records for the waterworks have not been in good order and finances were unclear. Throughout this process, Four Winds has developed a waterworks budget, assessed additional fees to lot owners to cover waterworks expenses, gathered maps and utility records, begun developing standard operations procedures, and found information on an old easement for their elevated storage tank across the street. They received assistance from the Community Engineering Corps (CEC) to begin developing an asset inventory. That inventory is being used for a Preliminary Engineering Report (PER) funded through DWSRF Planning and Design Funds. They also received $100,000 in ARPA funds to address critical distribution system issues and add a generator. The progress here is indicative of what can happen when waterworks have engaged leadership.

Early in 2022, TCDO staff met virtually with a representative with the Dickenson County Public Service Authority to discuss ongoing Disinfection Byproduct (DBP) issues. The Honey Camp section of the Dickenson County PSA receives water from the Town of Clintwood, which receives water from the John Flannagan Water Treatment Plant (WTP). The Honey Camp section of the PSA has experienced elevated Total Trihalomethanes (TTHM) results and has now exceeded the Operational Evaluation Level (OEL) due to multiple factors including increased water age from the WTP location, large storage tanks that provide fire protection but with decreasing daily water usage, and post chlorinating to meet the residual regulations. The PSA has installed tank mixing in a different location due to similar issues with water age and that has provided some help with reducing the DBP issue, but they are still struggling to control the DBPs to an optimal level. They are exploring the option of completing a Planning and Design Grant Application to investigate different ways of reducing the TTHMs in their system. In mid-2022, the Dickenson County PSA applied for and was awarded a Planning and Design Grant to start evaluating their distribution system in order to alleviate their ongoing DBP exceedance issues. Thompson & Litton plans to work with the DCPSA to identify the problems and offer solutions to reducing the TTHM and HAA5 levels in the distribution systems, which is extensive, starting at the John Flannagan Water

Treatment Plant through the Town of Clintwood and then to the Honey Camp sections. The DCPSA population benefit is approximately 813 customers.

The Pine Hill Community Waterworks, located in Roanoke County, serves 21 rural connections. TCDO staff received a call from the Regional Field Office about the Pine Hill out of water. Staff began gathering information and went on site to investigate the situation. They found that the well pump and storage tank were fine but the booster pump that supplied pressure throughout the distribution system was inoperable. Due to the increased lead times in receiving parts, such as booster pumps, the waterworks owner ordered a new pump but could not get it quickly. Staff reached out to the Western Virginia Water Authority who was able to provide a properly sized pump within a few hours for Pine Hill to use until they could receive their ordered pump. Staff issued a precautionary Boil Water Advisory door to door for the residents, which was lifted following restoration of service and satisfactory bacti results.

The success stories in the preceding paragraphs show the range of complexity of issues facing waterworks in Virginia. In its work to enforce state and federal drinking water laws and regulations, VDH uses a range of regulatory, compliance, and both technical and financial assistance tools to improve the capacity of the 2,828 waterworks in the state. VDH has found that while statewide programs and initiatives are able to ensure that most waterworks comply with the regulations, often VDH must take a case-by-case approach to affect lasting change at specific waterworks. In spite of many challenges facing the regulated waterworks community, VDH remains committed to its goal of protecting the health and promoting the well-being of all people in Virginia. Additional success stories are in Appendix F.

APPENDIX A
New Community and NTNC Waterworks
October 1, 2020 – September 30, 2023

Newly constructed facilities and existing facilities under new ownership are included. Please note that not all new waterworks listed have received operation permits.

County/City	PWSID	Waterworks Name	System Type	Activity Date
MECKLENBURG COUNTY	VA5117107	MECKLENBURG INTERIM SCHOOL	NTNC	9/15/23
CAROLINE COUNTY	VA6033049	WARRIORS HEART VIRGINIA	NTNC	8/14/23
WESTMORELAND COUNTY	VA4193990	NORTHERN NECK CHRISTIAN SCHOOL	NTNC	8/1/23
BUCHANAN COUNTY	VA1027500	BCPSA - KENNEL GAP	C	7/7/23
NORTHAMPTON COUNTY	VA3131302	KIPTOPEKE INN	C	6/28/23
NORTHUMBERLAND COUNTY	VA4133020	BOYS & GIRLS CLUB NORTHUMBERLAND CO UNIT	NTNC	6/4/23
PRINCE GEORGE COUNTY	VA3149870	SIMPSONS COUNTRY CENTER	NTNC	5/17/23
WASHINGTON COUNTY	VA1191275	GREEN SPRING ROAD	C	5/2/23
HANOVER COUNTY	VA4085345	HANOVER COMMUNITY CENTER,	NTNC	3/31/23
LOUDOUN COUNTY	VA6107700	STONELEIGH	C	3/1/23
POWHATAN COUNTY	VA4145025	HI-5 EARLY LEARNING CENTER	NTNC	3/1/23
FLUVANNA COUNTY	VA2065265	FLUVANNA COUNTY ZION CROSSROADS	C	2/28/23
ACCOMACK COUNTY	VA3001670	CAF HOUSING WATERWORKS	NTNC	2/23/23
SALEM, CITY OF	VA2775485	SALEM VETERANS AFFAIRS MEDICAL CENTER	NTNC	2/13/23
HALIFAX COUNTY	VA5083546	GRAND SPRINGS DISTRIBUTION	NTNC	1/23/23
ACCOMACK COUNTY	VA3001690	MARSHALLS DEPT STORE	NTNC	1/18/23
ROANOKE COUNTY	VA2161046	BLACKWOOD	C	11/5/22
BOTETOURT COUNTY	VA2023870	WVWA NORTH BOTETOURT	C	11/5/22
CHARLES CITY COUNTY	VA4036860	TREVORS BEND	C	10/11/22
ROCKINGHAM COUNTY	VA2165425	LINDALE MENNONITE CHURCH	NTNC	8/22/22
NORTHUMBERLAND COUNTY	VA4133030	BAY HARBOR	C	5/11/22
RUSSELL COUNTY	VA1167240	GLADE HOLLOW - RCPSA	C	4/18/22
MIDDLESEX COUNTY	VA4119587	MIDDLESEX WATER AUTHORITY	C	4/5/22
ACCOMACK COUNTY	VA3001880	20250 FAIRGROUNDS ROAD	NTNC	3/21/22
ROCKINGHAM COUNTY	VA2165620	NEW BEGINNINGS MONTESSORI SCHOOL	NTNC	1/31/22
PATRICK COUNTY	VA5141546	NANCY'S CANDY COMPANY	NTNC	1/12/22
WARREN COUNTY	VA2187232	BRINKLOW MHP JAMES STREET	C	12/13/21
PRINCE WILLIAM COUNTY	VA6153082	PWCSA - CARTERS GROVE	C	12/1/21
NEW KENT COUNTY	VA4127115	THE COLONIES	C	11/8/21
PAGE COUNTY	VA2139473	PAGE COUNTY HIGH SCHOOL	NTNC	8/16/21
MADISON COUNTY	VA6113130	FELLOWSHIP BAPTIST	NTNC	8/12/21
VA BEACH, CITY OF	VA3810016	BACK BAY CHRISTIAN ASSEMBLY	NTNC	6/1/21
FAIRFAX COUNTY	VA6059739	ST FRANCIS EPISCOPAL CHURCH	NTNC	4/1/21
ARLINGTON COUNTY	VA6013800	VIRGINIA HOSPITAL CENTER	NTNC	2/5/21
HAMPTON, CITY OF	VA3710850	NSA HAMPTON ROADS, MAIN BASE	C	1/5/21
ACCOMACK COUNTY	VA3001489	NANDUA MIDDLE SCHOOL	NTNC	12/9/20
ACCOMACK COUNTY	VA3001016	ARCADIA MIDDLE SCHOOL	NTNC	12/9/20

Appendix B

List of New Water Systems Violations

As of the July 2023 published ETT list, no waterworks that became active during the reporting period (10/1/23-9/30/23) are priority systems according to EPA's Office of Enforcement and Compliance Assurance's Enforcement Targeting Tool (ETT).

PWSID	Waterworks Name	Violation No.	Violation Type	Violation Description	Analyte Name	Determination Date	Begin Date
VA2161046	BLACKWOOD	2	27	MONITORING, ROUTINE (DBP), MAJOR	CHLORINE	8/1/23	1/1/21
VA2161046	BLACKWOOD	1	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	8/1/23	5/1/23
VA4036860	TREVORS BEND	33	75	PUBLIC NOTICE RULE LINKED TO VIOLATION	PUBLIC NOTICE	9/25/23	7/1/22
VA4036860	TREVORS BEND	32	52	FOLLOW-UP OR ROUTINE TAP M/R (LCR)	LEAD & COPPER RULE	2/16/23	7/1/22
VA4036860	TREVORS BEND	11	03	MONITORING, ROUTINE MAJOR	1,2,4-TRICHLOROBENZENE	1/12/23	7/1/22
VA4036860	TREVORS BEND	12	03	MONITORING, ROUTINE MAJOR	CIS-1,2-DICHLOROETHYLENE	1/12/23	7/1/22
VA4036860	TREVORS BEND	13	03	MONITORING, ROUTINE MAJOR	XYLENES, TOTAL	1/12/23	7/1/22
VA4036860	TREVORS BEND	14	03	MONITORING, ROUTINE MAJOR	DICHLOROMETHANE	1/12/23	7/1/22
VA4036860	TREVORS BEND	15	03	MONITORING, ROUTINE MAJOR	O-DICHLOROBENZENE	1/12/23	7/1/22
VA4036860	TREVORS BEND	16	03	MONITORING, ROUTINE MAJOR	P-DICHLOROBENZENE	1/12/23	7/1/22
VA4036860	TREVORS BEND	17	03	MONITORING, ROUTINE MAJOR	VINYL CHLORIDE	1/12/23	7/1/22
VA4036860	TREVORS BEND	18	03	MONITORING, ROUTINE MAJOR	1,1-DICHLOROETHYLENE	1/12/23	7/1/22
VA4036860	TREVORS BEND	19	03	MONITORING, ROUTINE MAJOR	TRANS-1,2-DICHLOROETHYLENE	1/12/23	7/1/22
VA4036860	TREVORS BEND	20	03	MONITORING, ROUTINE MAJOR	1,2-DICHLOROETHANE	1/12/23	7/1/22
VA4036860	TREVORS BEND	21	03	MONITORING, ROUTINE MAJOR	1,1,1-TRICHLOROETHANE	1/12/23	7/1/22

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VA4036860	TREVORS BEND	22	03	MONITORING, ROUTINE MAJOR	CARBON TETRACHLORIDE	1/12/23	7/1/22
VA4036860	TREVORS BEND	23	03	MONITORING, ROUTINE MAJOR	1,2-DICHLOROPROPANE	1/12/23	7/1/22
VA4036860	TREVORS BEND	24	03	MONITORING, ROUTINE MAJOR	TRICHLOROETHYLENE	1/12/23	7/1/22
VA4036860	TREVORS BEND	25	03	MONITORING, ROUTINE MAJOR	1,1,2-TRICHLOROETHANE	1/12/23	7/1/22
VA4036860	TREVORS BEND	26	03	MONITORING, ROUTINE MAJOR	TETRACHLOROETHYLENE	1/12/23	7/1/22
VA4036860	TREVORS BEND	27	03	MONITORING, ROUTINE MAJOR	CHLOROBENZENE	1/12/23	7/1/22
VA4036860	TREVORS BEND	28	03	MONITORING, ROUTINE MAJOR	BENZENE	1/12/23	7/1/22
VA4036860	TREVORS BEND	29	03	MONITORING, ROUTINE MAJOR	TOLUENE	1/12/23	7/1/22
VA4036860	TREVORS BEND	30	03	MONITORING, ROUTINE MAJOR	ETHYLBENZENE	1/12/23	7/1/22
VA4036860	TREVORS BEND	31	03	MONITORING, ROUTINE MAJOR	STYRENE	1/12/23	7/1/22
VA4036860	TREVORS BEND	8	03	MONITORING, ROUTINE MAJOR	GROSS ALPHA, EXCL. RADON & U	10/18/22	7/1/22
VA4036860	TREVORS BEND	9	03	MONITORING, ROUTINE MAJOR	COMBINED URANIUM	10/18/22	7/1/22
VA4036860	TREVORS BEND	10	03	MONITORING, ROUTINE MAJOR	COMBINED RADIUM (-226 & -228)	10/18/22	7/1/22
VA4036860	TREVORS BEND	6	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	9/19/22	8/1/22
VA4036860	TREVORS BEND	5	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	8/16/22	7/1/22
VA4036860	TREVORS BEND	3	12	QUALIFIED OPERATOR FAILURE	DBP STAGE 1	8/1/22	8/1/22
VA4036860	TREVORS BEND	4	C1	FAILURE TO REPORT BY 10TH DAY OF MONTH		8/1/22	8/1/22
VA4036860	TREVORS BEND	2	A0	NO WATERWORKS OPERATION PERMIT		8/1/22	8/1/22
VA1167240	GLADE HOLLOW - RCPSA	1	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	6/3/22	1/1/23

Appendix B

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VA5141546	NANCY'S CANDY COMPANY	2	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	5/23/22	4/1/22
VA2187232	BRINKLOW MHP JAMES STREET	2521095	03	MONITORING, ROUTINE MAJOR	NITRATE-NITRITE	1/30/23	1/1/22
VA2187232	BRINKLOW MHP JAMES STREET	2521093	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	5/25/22	4/1/22
VA2187232	BRINKLOW MHP JAMES STREET	2521092	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	3/3/22	2/1/22
VA2187232	BRINKLOW MHP JAMES STREET	2521091	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	3/3/22	1/1/22
VA2187232	BRINKLOW MHP JAMES STREET	2521090	12	QUALIFIED OPERATOR FAILURE	DBP STAGE 1	2/25/22	1/1/22
VA3810016	BACK BAY CHRISTIAN ASSEMBLY	1731	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	7/25/23	6/1/23
VA3810016	BACK BAY CHRISTIAN ASSEMBLY	1730	52	FOLLOW-UP OR ROUTINE TAP M/R (LCR)	LEAD & COPPER RULE	7/25/23	1/1/23
VA3810016	BACK BAY CHRISTIAN ASSEMBLY	1729	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	6/21/23	5/1/23
VA3810016	BACK BAY CHRISTIAN ASSEMBLY	1728	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	5/30/23	4/1/23
VA3810016	BACK BAY CHRISTIAN ASSEMBLY	1727	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	4/27/23	3/1/23
VA3810016	BACK BAY CHRISTIAN ASSEMBLY	1726	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	3/28/23	2/1/23
VA3810016	BACK BAY CHRISTIAN ASSEMBLY	1725	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	2/23/23	1/1/23
VA3810016	BACK BAY CHRISTIAN ASSEMBLY	1724	52	FOLLOW-UP OR ROUTINE TAP M/R (LCR)	LEAD & COPPER RULE	2/23/23	7/1/22

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VA3810016	BACK BAY CHRISTIAN ASSEMBLY	1723	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	1/31/23	12/1/22
VA3810016	BACK BAY CHRISTIAN ASSEMBLY	1722	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	12/22/22	11/1/22
VA3810016	BACK BAY CHRISTIAN ASSEMBLY	1721	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	11/23/22	10/1/22
VA3810016	BACK BAY CHRISTIAN ASSEMBLY	1720	B2	LACKS PROPERLY LICENSED OPERATOR	DBP STAGE 1	11/9/22	11/9/22
VA3810016	BACK BAY CHRISTIAN ASSEMBLY	1719	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	11/2/22	9/1/22
VA3001489	NANDUA MIDDLE SCHOOL	2	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	5/17/21	4/1/21

Appendix C

Enforcement Targeting Tool – July 2023

All ETT scores at or above 11 are highlighted in yellow

July 2023 SDWIS/FED Freeze *(For most states, this includes data up to 3/31/2023)*

PWSID	PWS Name	ETT Score	Sys has HB viols?	PWS Type	Population Served	Priority Since Date	Total Unresolved Points	On Path to Compliance?	School or Childcare
VA1155055	BROOKMONT AREA	26	Y	C	100	6/30/2023	70	New >= 11	Y
VA3595250	EMPORIA, CITY OF	21	Y	C	5600	3/31/2023	55	Previously >= 11 Not on Path	Y
VA2125650	NCSA - SCHUYLER	15	Y	C	477	6/30/2023	15	New >= 11	Y
VA4119420	DELTAVILLE MARINA	15	Y	NC	100	6/30/2023	15	New >= 11	N
VA5135100	BLACKSTONE, TOWN OF	15	Y	C	6345	6/30/2023	15	New >= 11	Y
VA3093850	WILLING WORKERS CLUB	15	Y	C	31	3/31/2023	94	Previously >= 11 Not on Path	N
VA5031046	EZ MINI MART	14	Y	NC	100	6/30/2023	14	New >= 11	N
VA5019612	LAKE HAVEN MARINA	13	N	NC	26	3/31/2023	12	Previously >= 11 Not on Path	N
VA5029182	ALI'S MARKETPLACE	12	Y	NC	100	6/30/2023	11	New >= 11	N
VA2069505	WINCHESTER BATTLEFIELDS VISITOR CENTER	12	Y	NC	25	12/31/2021	10	Previously >= 11 Not on Path	N
VA4103985	WINDMILL POINT	12	Y	C	146	3/31/2023	10	Previously >= 11 Not on Path	N

Appendix D

EPA Grant Projects
Southeast Rural Community Assistance Project (SERCAP)

Southeast RCAP EPA Projects: Oct 2022 - Sep 2023
***ERP** - Emergency Response Plan; **SVA** - Security Vulnerability Assessment;*
***CCR**- Consumer Confidence Report*

Location	County	Summary	Population
Barkay Estates	Tazewell	Completed CCR	85
Bayside	Accomack	Assist in completing CDP DW Funding	120
Big Creek/Coaldan	Tazewell	Completed CCR	300
Big Hill	Lee	Completed CCR	188
Brown's Mobile Home Village	Franklin	Completed CCR	75
Charlotte Court House Town	Charlotte	Assist in completing ERP	543
Charlotte Court House Town	Charlotte	Assist in completing SVA	543
Craigsville Town	Augusta	Assist in completing ERP	923
Craigsville Town	Augusta	Assist in completing SVA	923
Curve Road	Giles	Completed CCR	31
Daw Road	Tazewell	Completed CCR	43
Dinwiddie Assisted Living	Dinwiddie	Completing grant funding application	35
Eastern Tazewell PSA (4 Systems)	Tazewell	Completed CCR	3,097
Fleenortown	Lee	Completed CCR	160
Fries Town	Grayson	Assist in completing Asset Management DW	484
Glen Lyn	Giles	Completed CCR	92
Grassy Creek	Buchanan	Completed CCR	440
Greater Tazewell County PSA (8 Systems)	Tazewell	Completed CCR	12,575
Groundhog Mountain W&S Co.	Roanoke	EPA WW Treatment Works	
Hardy Road Trailer Park	Bedford	Assist in performing Corrective Action Plan updates	200
Hardy Road Trailer Park	Bedford	Assisting in construction management of WIIN project	200
Hardy Road Trailer Park	Bedford	Investigated opportunities for regionalization	200
Hardy Road Trailer Park	Bedford	Assist in applying for WIIN grant	200
Hardy Road Trailer Park	Bedford	Completed CCR	200
Kilmarnock, VA	Lancaster	Assist in completing ERP & SVA	1,487
Lurich Water System	Giles	Completed CCR	48
Luray, Town	Page	EPA NPA 2 Wastewater	4,895
Montvale	Bedford	Assist in completing ERP	698
Montvale	Bedford	Assist in completing SVA	698
Page Water System	Page	Completed CCR	50
Port Royal	Caroline	Assisted in completing AMP	126
Powell Mountain Water	Giles	Completed CCR	487
Shortt Gap	Buchanan	Completed CCR	64
St. Charles	Lee	Assist in completing ERP	1,959
Victoria Town	Lunenburg	Completed CCR	1,752
Victoria Town	Lunenburg	Assist in completing ERP	1,752
Walnut Grove MHP	King George	EPA NPA 1 Drinking Water	51
Willing Workers Club	Isle of Wight	Procured funding and contractor to address significant deficiencies and dissolve community water system	31

Appendix D

EPA Grant Projects
Virginia Rural Water Association (VRWA)

Virginia Rural Water Association Training
October 1, 2022, through September 30, 2023

Date	Title	Location	Attendees
10/4/2022	Asset Management & Rate Setting Team (Pt 2)	webinar	21
10/17/2022	VDOT Basic Work zone Safety and Flagger Certification	Fishersville	22
10/18/2022	Don't Get Stuck - Tips & Trips for Asphalt Repairs	Fishersville	65
10/18/2022	Keep on Trucking : CDL Training to Keep you Rolling	Fishersville	91
10/18/2022	Notes from the Field: Moderated Discussion of Water Experts	Fishersville	81
10/18/2022	How to Keep Pumping: Understanding Pumps and Contingency Plans	Fishersville	54
10/19/2022	Treatment Plant Safety: Watch out for Hazards at Work	Fishersville	64
10/19/2022	It's Not Simply Concrete Pipe - Asbetos Pipe: Indetifying & Handling	Fishersville	76
10/20/2022	VDOT Basic Work zone Safety and Flagger Certification	Broadway	10
10/25/2022	Water Distribution Product Training	Ashburn	93
10/26/2022	Management of W/WW Facilities in the Real World	Wise	8
10/27/2022	Water Distribution Product Training	Richmond	62
11/1/2022	Water Distribution Product Training	Norfolk	61
11/3/2022	Water Distribution Product Training	Roanoke	49
11/9/2022	Exam Prep-Basic Math	Lee County	8
11/10/2022	Exam Prep - Water Treatment Principles	Lee County	8
11/10/2022	Exam Prep - Wastewater Treatment Principles	Lee County	8
11/15/2022	Five Steps to Protect Your Utility - Cybersecurity	webinar	10
11/16/2022	I&I	South Hill	
11/16/2022	Operation & Safety: Chlorine	Wise	9
11/17/2022	Conflict Resolution	webinar	12
12/5/2022	Management in the Real World	Emporia	17
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1/24/2023	Opeartional & Safety Aspects: W/WW Chlorine	Richlands	12
2/6/2023	Management in the Real World	Buena Vista	20
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Virginia Rural Water Association (VRWA)

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2/21/2023	Pump Operation & Maintenance	Buena Vista	22
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4/18/2023	Conf 2023 - Anaerobic Treatment: One Solution to High Strength Food & Beverage Waste Streams	Roanoke	41
4/18/2023	Conf 2023 - Basic Asset Management & Preventative Maintenance Equals Lower Costs, Grant Money and Higher Reliability	Roanoke	46
4/18/2023	Conf 2023 - Being a Woman in Rural Water: Panel Discussion	Roanoke	46
4/19/2023	Conf 2023 - Best Practices for Leveraging Technology in Facility Asset Management	Roanoke	38
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4/18/2023	Conf 2023 - Crisis Communications in the Instant Information Age: Lessons Learned from the Texas Freeze	Roanoke	73
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4/19/2023	Conf 2023 - Guarantee the Success of Upgrading Your Wastewater Plant Using the ESCO Model	Roanoke	23
4/18/2023	Conf 2023 - How to Achieve LCRR Compliance with Confidence	Roanoke	73
4/18/2023	Conf 2023 - Lagoon Aeration Technology: Reduces Energy, Activates & Digests Sludge	Roanoke	33
4/18/2023	Conf 2023 - Navigating the Flood of Advanced Metering Technology	Roanoke	47
4/19/2023	Conf 2023 - New Technologies for Joining & Restraining Pipe	Roanoke	61
4/17/2023	Conf 2023 - OSHA at a Glance	Roanoke	72
4/19/2023	Conf 2023 - PFAS Considerations	Roanoke	61
4/19/2023	Conf 2023 - Pumping Contingency Plans	Roanoke	23
4/18/2023	Conf 2023 - Remote Zero-Discharge and Hybrid Reuse Onsite Wastewater Treatment Systems in Virginia	Roanoke	32

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Virginia Rural Water Association (VRWA)

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4/18/2023	Conf 2023 - Science of Water Main Breaks & Service Line Leaks	Roanoke	72
4/18/2023	Conf 2023 - Smart Sewer Technology Tracks I&I and Avoids Spills Across Small Communities	Roanoke	32
4/18/2023	Conf 2023 - Sustainable Water & Wastewater Treatment: Reducing Carbon Footprint of Operations	Roanoke	60
4/19/2023	Conf 2023 - Teams Matter: How to Increase Morale and Productivity on Your Team	Roanoke	77
4/18/2023	Conf 2023 - The Art of Direct Procurement: Streamline the Process and Reduce Costs	Roanoke	57
4/18/2023	Conf 2023 - The Future of Pump Control	Roanoke	72
4/18/2023	Conf 2023 - The Show Must Go On: Business Continuity, Succession Planning, Emergency Response	Roanoke	68
4/17/2023	Conf 2023 - Tools and Tech for Business Continuity	Roanoke	36
4/19/2023	Conf 2023 - Town of Dayton Water Plant Up-Grade Success Story	Roanoke	40
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EPA Grant Projects
Virginia Rural Water Association (VRWA)

VRWA Leak Detection 2022 - 2023
Drakes Branch
On November 1, 2022, Robbie Jones, Virginia Rural Water Association Circuit Rider, was contacted by Phillip Jackson, Mayor for the Town of Drakes Branch. Mr. Jackson requested assistance in locating a large water leak the town's maintenance crew had been trying to locate for several days without success.

The Circuit Rider responded the next morning and met with Mayor Jackson and the Water Operations Specialist in Training. After referring to water distribution system drawings and consultation with the mayor and maintenance crew a plan was formulated to use the Seba MKT acoustic leak detection system in a grid pattern starting with the nearest fire hydrants to the suspect problem areas.

After several hours of listening and canvassing the area a significant discharge of water was located flowing into a nearby creek. After back tracking from the discharge area to the water main using the Seba MKT the leak was pinpointed on main street which is a heavily traveled road. It was decided the best course of action would be to further pinpoint the leak because of the proximity to the road. A correlation device was implemented, and the leak was approximated to be in the middle of the road.

Mayor Jackson contacted the Virginia Department of Transportation to obtain an emergency work order for the next day. The excavation was done on the 3rd of November and a large section of six-inch main had split causing a significant scouring of the roadbed and water loss. A new piece of main was installed successfully with minimal down time for both the road closure and disruption of water service.

The town council and Mayor Jackson were extremely appreciative of the efforts made to locate the leak by the Virginia Rural Water Association Circuit Rider. Savings to the system was valued at $44,000.

Buena Vista
On May 17, 2023, the City of Buena Vista Water Superintendent requested Virginia Rural Water Association Circuit Rider Ken Talley to perform leak detection. An extreme leak had been ongoing since November of the previous year, surfacing in various areas from multiple directions, but the source was never discovered.

The Circuit Rider scheduled the time to begin the process of listening, tracking from hydrant to valve to meters. The main line was eight-inch ductile, but nothing was heard due to extreme traffic on US Route 501. Time was scheduled for using a correlation device early in the morning. The device yielded no results on an unusually quiet main. Enlarging the search to surrounding streets, the Circuit Rider discovered more noise emanating from the top of the next block more than a thousand feet away. He then found a suspect area and changed devices to narrow the location. The leak was dug up and yielded an abandoned, unmapped one- and a half-inch service line, completely disconnected, and a leaking valve. The line was removed, and the valve

repaired.

The Circuit Rider informed the municipality to watch for more evidence of any ongoing leaks elsewhere. The water leak dried up completely within twenty-four hours. Over the course of nearly four days, the Circuit Rider saved the city $4,000 in leak detection as a one-time savings, not to mention untold thousands of gallons of lost treated water

Town of Narrows
On May 19, 2023, Virginia Rural Water Association Circuit Rider Nathan Olmsted traveled to the Town of Narrows and met with Public Works Director John Davis. After a brief discussion, it was disclosed that the city had a water leak or multiple leaks, with a 40% water loss issue.

It was determined that the Circuit Rider should meet with the city's Operations Specialist for introduction and to help. The Operations Specialist was initially reluctant to accept outside help. The Circuit Rider explained that his job was to assist the community to build, maintain, and improve the water system at no financial charge. After about 45 minutes of discussion, the Operations Specialist stated that an all-night leak detection would be performed, and certain sections of the town would be isolated. The leak detection was scheduled to begin on Monday night at 10:00pm. The Circuit Rider believed this to be a test as to if he was reliable with his word and would assist outside of normal working hours when needed.

The Circuit Rider returned the following Monday evening and the isolation and leak detection ensued. Within 30 minutes, two significant leaks were found. As the evening continued, two additional leaks were detected. At 7:00 a.m. the following morning, the work was concluded from the evening. Return visits will be required.

The Operations Specialist was appreciative of the assistance provided and would welcome him at the system any time. The water loss of 40% amounted to 40,000 gallons per day, at a rate of $4.14 per 1,000 gallons. The Circuit Rider's assistance provided the system with an annual savings of $60,444.

Boykins-Branchville System Courtland
On the morning of July 24,2023, The Virginia Rural Water Circuit Rider Tony Roark received a request from Patricia Davis of The Boykins-Branchville System Courtland for Leak Detection Assistance. When Circuit Rider Roark arrived, Boykins-Branchville System Courtland personnel preceded to explain the problem. The Boykins-Branchville System Courtland was losing 10-12 million gallons year and personnel didn't know where to begin looking. The system has 4 wells that are disinfected and sent to storage tanks. One storage tank has 2 wells and 1 side is currently offline. It also has a leak at the meter box for that well. Circuit Rider Roark suggested that would be where to start. Upon arrival at that site, Circuit Rider Roark found there was a leak at the well meter box and it had been dug up and the hole was full of water .

As Circuit Rider Roark unpacked the Acoustic listening device Seba KMT Hydrolux, the system personnel bailed the water from the hole. VRWA Circuit Rider Roark preceded to listen to the

piping of the well offline. As these well pumps run on demand Circuit Rider Roark suggested we run them as they would naturally. The well pumps were run one at a time and concurrently while Circuit Rider Roark listened to well piping to tank with the acoustic device .During this Process Circuit Rider Roark noticed that water came up to the top of ground between the pumps and before the Meter box leak , when both pumps were mimicking low water in tank, and running simultaneously .This area was on the side with the previously offline pump and before the 2 well lines combined to enter storage tank. The system personnel and Circuit Rider Roark agreed that these leaks needed to be fixed before Leak Detection should precede.

The Boykins -Branchville System Courtland and Personnel were very appreciative to Virginia Rural Water Association and VRWA Water Circuit Rider Roark for its prompt and fast answer to the request for assistance .Circuit Rider Roark and the system personnel discussed the importance of a leak detection program and that the Boykins -Branchville System Courtland leak detection project should be a progressive project and VRWA and its staff would be glad to help The Boykins -Branchville System Courtland Staff precede.
The Boykins-Branchville System Courtland Staff thanked Virginia Rural Water and it's staff.

Tazewell Public Service Authority
On Wednesday September 19, 2023, Virginia Rural Water Association Water Circuit Rider #3 met with Tazewell Public Service Authority Staff Members Darrell Cole the Public Works Director and Gilbert Cox the Distribution Maintenance Supervisor for a system request leak detection. There would be two (2) sites with the smallest of approximately 5 miles of water line, which would be done on September 19,2023, it was performed with no significant leaks found. On Wednesday September 20, the Circuit Rider met with the Distribution Supervisor at a pump station to begin the process of leak detection. The pump station was to be shut down to lessen the ambient noise while listening for leaks.

While the Distribution Supervisor was preparing the pump station, Circuit Rider Roark was setting up the Seba MKT acoustic listening device. During this time the Circuit Rider heard water running further up the mountain roadway, the Distribution Supervisor received a call, and a passerby stopped to report water coming to surface about 1500 feet uphill from station.
The Circuit Rider walked up roadway while The Distribution Supervisor immobilized his staff. This leak was flowing out of the roadside bank about 25 feet below the roadbed. It had been leaking for quite some time and was starting to surface beside roadway. As the Circuit Rider had on the Traffic safety equipment and this leak was on edge of the road, the Circuit Rider performed traffic control while crew arrived and set up excavation site and repaired the damaged line.

This leak was in an 8 inch Ductile iron pipe that had corroded from the outside inward due to the corrosive nature of the coal laden soil in 3 different places, 2 holes facing up and one facing down. The crew estimated that it lost about 750000 gallons during repairs at a cost of $7500. The actual cost savings is yet to determined. The Tazewell Public Service Authority was Grateful for the leak detection and traffic control provided by The VRWA Circuit Rider Program and the Circuit Rider and asked that they return at a later date and time.

Appendix D

EPA Grant Projects
Environmental Finance Center Network (EFCN)

For the period of October 1, 2022, through September 30, 2023, the Environmental Finance Center Network provided the following services to small systems in Virginia:

- The EFCN held an in-person workshop in Wytheville, VA on 10/05/2022 called *Asset Management for Sustainable Wastewater Operations*.
- EFCN also held an in-person workshop in Chase City, VA on 10/06/2022 called *Setting the Right Rates for Small Drinking Water Systems*.

Appendix E

2023 Triennial Capacity Assessment Questions

Technical	Is the waterworks score on the 2022 ETT ≤ 10?	Does the waterworks have sufficient operator coverage for sick leave and vacation?	Has the waterworks either not received significant deficiencies, or completed timely correction of all significant deficiencies?	Did the waterworks address recommendations from recent sanitary surveys?	Does the waterworks have a written policy for responding to customer complaints?	Are all plans and reports up to date and implemented (e.g. BSSP, LCR Plan, CCCP, CCR, WBOP, Sampling, etc.)?
Managerial	Did the waterworks consistently operate within 80% of its permitted capacity in the last 3 years?	Does the system meet Waterworks Regulations design and construction standards?	Are the waterworks facilities and appurtenances in good operating condition?	Are all service connections metered and is there a water accountability program in place?	Does the waterworks meet all established National Primary Drinking Water Standards?	Have all operators attended a technical training seminar or conference each year covered by this survey?
Financial	Did the waterworks pay the technical assistance fee?	Does the waterworks have at least 45 days cash on-hand to cover expenses?	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 Plan?

Appendix F

ODW Technical Assistance by Field Staff

The following Success Stories are a snapshot of assistance provided by staff posted at the six regional ODW Field Offices located across the state. Field Staff provide technical assistance on a variety of topics, with an emphasis on facilitating education of waterworks staff and ensuring compliance with the Safe Drinking Water Act and *Virginia Waterworks Regulations* requirements. Their work is important for improving TMF capacity at waterworks in Virginia through identification and resolution of deficits as well as on-site training and assistance.

Abingdon Field Office (AFO)educational efforts to increase technical and managerial capacity at rural waterworks.

Recognizing the critical need for waterworks to maintain competent and appropriately licensed water operators, staff have participated extensively in the Virginia Tech/Virginia Department of Health continuing education courses Water Operations Math, Applied Math and Basic Science for Waterworks Operators, Contaminants of Concern, and Groundwater Math for Small Systems, providing presentations on basic math with water applications, water chemistry, hydraulics, and disinfection/disinfection byproducts. The staff also provided presentations at the annual VT Water Operator Short School on disinfection, chemical feeders & pumps, sedimentation, fluoridation, and distribution system operations (including atmospheric storage tank operation and maintenance), and preparing for licensure testing. A number of operator attendees passed their operator license exams after attending the Short School.

Staff also provided water utility management training within the VT/VDH courses Management, Methods, and Money; Understanding Concepts in Capacity Development, and Establishing a Successful and Sustainable Waterworks, with presentations on financial proficiency and capacity development, capital assessment and planning, costs allocation, and strategic planning. These courses provide a framework for waterworks to plan and utilize available resources effectively, and also provide the waterworks with a contact in the ODW field office to respond to questions and serve as a contact for information requests after training has concluded, especially for rural waterworks with limited resources.

Culpepper Field Office (CFO) Assistance completing Corrective Action Plan items.

CFO Compliance Specialist and District Engineer have worked closely with the staff at the Winchester Battlefields Visitors Center in Frederick County. Winchester Battlefields Visitors Center is small TNC waterworks that requires 4-log inactivation (4LIV) of viruses. Staff have supported them in the completion of a Corrective Action Plan (CAP). The Center has struggled for several years to complete all the steps involved in getting the facility equipped with the treatment demanded by their well's inconsistent water quality. After multiple delays and an extension of the CAP, the facility finally had their 4LIV-validated for an ultraviolet treatment system installed in June of 2023. CFO staff also assisted the Center to finalize arrangements with a licensed waterworks operator as required by their updated waterworks operation permit.

Danville Field Office (DFO) Assistance completing Corrective Action Plan items.

In February of 2023, Disinfection By Product (DBP) issues with the Town of Altavista's consecutive partner, the Town of Hurt, lead to the issuance of a Consent Order to Hurt. LFO's Assistant District

Engineer (ADE) constructed a contact time calculation spreadsheet using the ODW resource "CTCal Utah" for the Town of Altavista to use for the evaluation and implementation of relocating the chlorine feed point within the Town's treatment plant. This critical resource for evaluation was significant for actions to put Hurt on a pathway to compliance.

LFO District Engineers provided technical assistance to the Town of Hurt, the Town of Altavista and a consultant working on the regional DBP issue in late March of 2023, following the issuance of a Consent Order to the Town of Hurt. During the meeting, LFO staff presented the spreadsheet developed by their ADE to the Town of Altavista, they walked the town through its use and informational input/outputs. The Town of Hurt is currently in the process of completing construction at their water treatment plant to satisfy the Consent Order.

Lexington Field Office (LFO) RTCR Compliance Assistance

In early June 2023, LFO Compliance Specialist, Environmental Inspector, Sampling Verification Specialist performed a Level 2 Revised Total Coliform Assessment at a rural summer camp in Craig County. The assessment was triggered when the waterworks detected confirmed E. coli in the treated water. Subsequently, the camp was put on Boil Water Advisory. Fortunately, campers have not yet arrived for the season. LFO staff found serious problems with a storage tank and chlorination system, and they also learned that the operator wasn't operating chlorine residual testing equipment properly.

The Boil Water Advisory at the Craig Springs Camp was lifted in late June 2023 after consecutive days of passing sample results and sufficient chlorine residuals. LFO staff continues working with the camp to encourage additional improvements to reduce potential contamination pathways.

Richmond Field Office (RFO) Emergency Response

On August 16, 2023, a Do Not Use notice was issued for Shenandoah Crossing (PWSID 2109650) due to the cross connection of a residential sewer line pressurized by a grinder pump to the potable water supply through a blow-off valve. This was performed by a contractor building a new home at the waterworks. An incident command system was quickly established and RFO staff provided technical expertise and assistance on the sampling protocol to determine the extent of the contamination issue, interpreting sample results, and providing guidance on best course of response after the sample results were provided. RFO staff also conducted confirmation bacteriological sampling and visited customer homes who shared concerns about water quality.

Southeast Virginia Field Office (SEVFO) Well Site Assistance

An NTNC campground wanted to add a new well to their system, in order to increase reliability (ensure adequate supply in case one of their wells went down). They proposed use of a very small lot for the new well. The staff member observed the site, and quickly suggested the use of a different site, because of concerns about the originally proposed site (proximity to a sewage dump station used by RVs), the location of the lot at the end of a camp road that is used as a turn-location for vehicles (tight cornering is needed, and there was evidence vehicles going over the lot in order to make the turn), probably difficulties in getting a drilling rig properly set on the lot, along with the

necessary mud pit, etc. The staff member worked with the owner to find a better site which would accommodate the well (and drilling rig), as well as a potential alternative site. The owner was very grateful for the guidance received, and gladly accepted the suggestions. The owner is in the process of getting the new well drilled.