Center for Drinking Water Quality
2022 Annual Report

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Message from the Chief of Drinking Water Quality

I am pleased to present the 2022 Annual Report of the Center for Drinking Water Quality on behalf of the Rhode Island Department of Health (RIDOH). I wish to acknowledge the contributions of our many partners who share our mission to safeguard drinking water in Rhode Island. Highlighted in this message are a few of our focus areas from 2022, in addition to the numerous responsibilities our dedicated staff take on every day to protect and promote public health, as detailed in this report.

In 2022, we applied for and received the *Bipartisan Infrastructure Law* (BIL)/*Infrastructure Investment and Jobs Act* (IIJA) funding from the US Environmental Protection Agency (EPA), in partnership with the Rhode Island Infrastructure Bank (RIIB). This funding significantly increases the amount of Drinking Water State Revolving Fund (DWSRF) loans available to public water systems for drinking water infrastructure projects. This historic opportunity increases our state's ability to invest in water infrastructure in disadvantaged communities and across Rhode Island, lead service line replacements, and addressing per- and polyfluoroalkyl substances (PFAS). RIDOH will continue to apply for this funding each year for the next few years and encourage public water systems to submit their applications to get placed on the DWSRF Project Priority List.

The BIL/IIJA funding increased the number of drinking water infrastructure projects, presenting significant challenges and opportunities. These projects require increased project management and additional staff within, and in support of, the Center for Drinking Water Quality. Existing staff showcased their strong work ethics to navigate this, and I am proud of what we have been able to accomplish.

Lead contamination of drinking water remained a top priority in 2022. RIDOH has been preparing for the initial lead service line inventory compliance date of October 16, 2024, established in the *Lead and Copper Rule Revisions*. RIDOH is awaiting the EPA's proposed *Lead and Copper Rule Improvements*, expected to be announced by September 2023 and promulgated prior to mid-October, 2024. The *Improvements* are expected to include updated requirements for lead service line replacements, compliance tap sampling, action and trigger levels, and prioritizing historically underserved communities. RIDOH has also been discussing the future of lead service line replacements in our state with EPA, water system managers, and other state agencies and stakeholders.

Concern about per- and polyfluoroalkyl substances (PFAS) contamination of drinking water continued in 2022. In June 2022, the EPA announced interim health advisories for PFOA and PFOS and communication guidance for states and water systems. The *Rhode Island PFAS in Drinking Water, Groundwater, and Surface Waters Act* was signed into law in June 2022. The first deadline for PFAS sampling is July 1, 2023. RIDOH communicated the EPA guidance and Rhode Island requirements by updating our PFAS website for consumers of water from public water systems and private wells as well as sending letters and holding numerous meetings with water system managers. RIDOH also collaborated with the State Health Laboratories on the addition of their new PFAS analysis equipment.

RIDOH welcomes your comments and suggestions, and I encourage you to contact the Center for Drinking Water Quality at 401-222-6867, DOH.RIDWQ@health.ri.gov, or online at http://health.ri.gov/water/ about/yourwater/.

Sincerely,

Amy B. Parmenter
Chief Administrator, Center for Drinking Water Quality
Division of Environmental Health
Rhode Island Department of Health

Financials

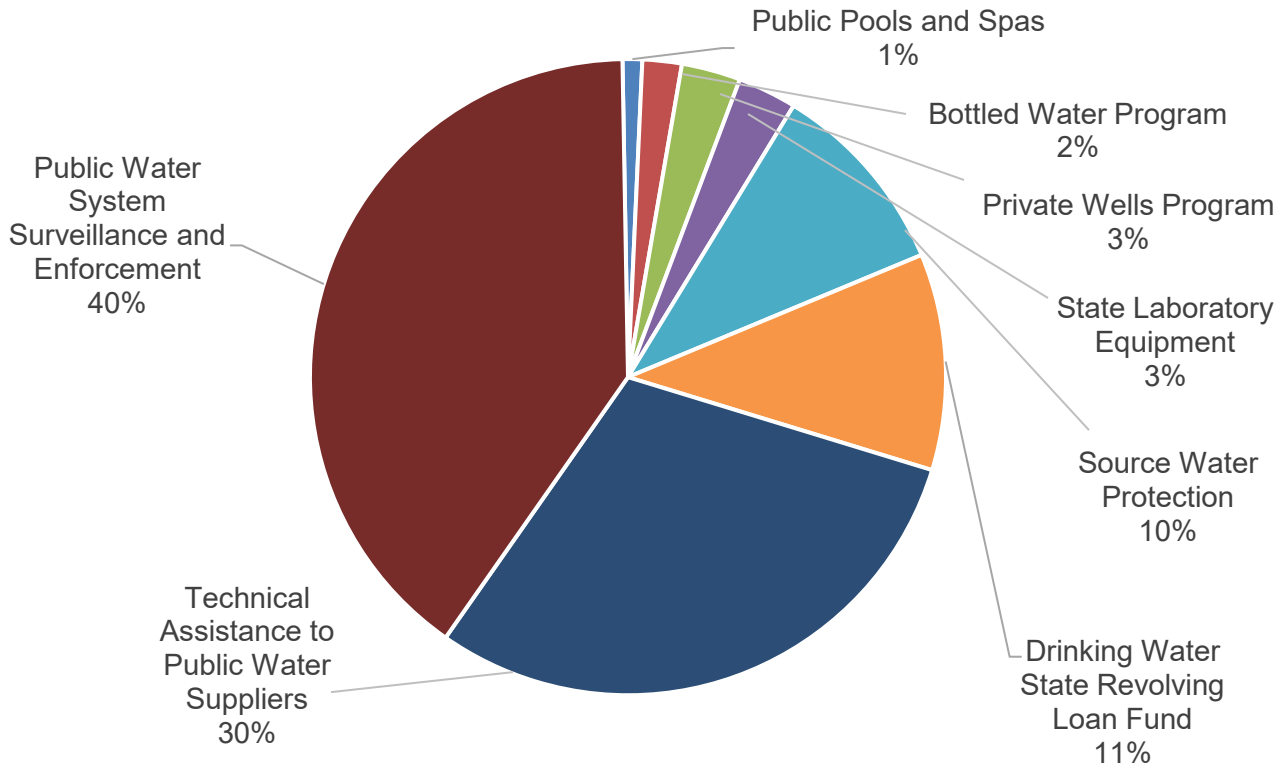
Since 1976, the EPA has received an annual Congressional appropriation under Section 1443(a) of the *Safe Drinking Water Act* (SDWA) to assist states, territories, and tribes in carrying out their Public Water System Supervision programs. Each year, RIDOH receives a grant to develop, implement, and enforce the requirements of the SDWA and to ensure that water systems comply with *National Primary Drinking Water Regulations*. Since 1996, when the SDWA was amended to create the State Drinking Water Revolving Fund (DWSRF), RIDOH has received additional federal funding in the form of set-asides from the loan fund capitalization grant to assure safe drinking water. In 2022, the *Bipartisan Infrastructure Law*/*Infrastructure Investment and Jobs Act* funding was incorporated into the DWSRF and is expected for five years.

In addition, RIDOH receives licensing fees for aquatic venues and bottled water that are applied as an investment back into Rhode Island's licensed aquatic venues and bottled water vendors through a Restricted Receipt account.

In 2022, RIDOH invested $3,983,537.95 in state and federal funds in Rhode Island's public water systems, aquatic venues, and bottled water vendors.

Federal Funds	**$3,528,304.95**
State Funds	**$312,633.00**
Restricted Receipts	**$142,600.00**
Total Budget:	**$3,983,537.95**

Distribution of Federal Funds, State Funds, and Restricted Receipts



Oversight

In Rhode Island, RIDOH is the agency responsible for carrying out the Public Water System Supervision (PWSS) program. Key activities include:

- Developing and maintaining state drinking water regulations;
- Developing and maintaining an inventory of public water systems throughout the state;
- Developing and maintaining a database to keep compliance information on public water systems;
- Conducting sanitary surveys, conformance inspections, and compliance inspections;
- Supporting technical, managerial, and financial capacity of public water systems;
- Reviewing public water system plans and specifications;
- Providing technical assistance to managers and operators of public water systems;
- Ensuring that public water systems regularly inform consumers about the quality of the water that they are providing;
- Certifying laboratories that can perform the analysis of drinking water used to determine compliance with the regulations; and
- Carrying out an enforcement program to ensure that the public water systems comply with state requirements.

Public Drinking Water

The mission of the Public Drinking Water Program is to protect and promote the health and safety of Rhode Islanders by ensuring the quality of the state's public drinking water supplies for use by Rhode Island households, businesses, hospitals, nursing homes, schools, restaurants, industry, and firefighting and emergency response services. RIDOH's Center for Drinking Water Quality works diligently and maintains an excellent record of meeting this high-priority public health responsibility.

Rhode Island Water Systems and Customer Counts, 2022

Public Water System Type	**System Count**
Community Systems	95
Non-Transient, Non-Community Systems	80
Transient, Non-Community Systems	307
Total	482
Public Water System Source Water	**System Count**
Systems using surface water	35
Systems using groundwater	447
Total	482[2]
Public Water System Source Water	**Customer Count**
Surface Water Systems	916,108[1]
Groundwater Systems	230,856[1]
Total	1,146,964[1]
Active Non-Operational Systems	19

[1] *Includes all populations (transient, residential, and workplace).*

[2] *Some water systems use both groundwater and surface water (purchased and non-purchased).*

Private Drinking Water

In Rhode Island, an estimated 120,000 people rely on private water systems for drinking water. In 2022, the Private Wells Program responded to more than 1,000 inquiries regarding well water quality. These inquires came from residents, realtors, lenders, and other state agencies.

The Private Wells Program conducted ongoing private well workshops for residents, realtors, and regulators. Following the success of remote workshops throughout the COVID-19 pandemic, the program will hold hybrid in-person and online workshops moving forward. The Private Wells Program also worked with the Rural Community Assistance Partnership (RCAP) to provide the program's first online Private Well Water Sampling seminar, which can be taken to fulfill the training requirement for the RIDOH Private Water System Sampler license. In addition, the program also developed new educational materials and resources for residents on PFAS-related topics.

The Private Wells Program also completed the next phase of the Well Completion Report data integrity project started in 2020, which aims to create a complete electronic repository for all Well Completion Reports submitted to the Center for Drinking Water Quality since the reports were first required in 1972. Town and year files were audited for organizational accuracy, and the reports were scanned and indexed by location. The project also included creating and importing the indices into an ArcGIS-ready database. The program is currently exploring potential data entry assistance opportunities for digitizing other well data on the reports, such as depth and stratigraphy.

The Private Wells Program also continued its work with both local and interstate community partners, assisting other agencies and educational institutions with data, resources, and other collaborative projects.

Licensed Aquatic Venues

In 2022, RIDOH licensed 407 aquatic venues. Indoor pools are licensed to operate year-round. Seasonal pools are licensed to operate from June 1 to September 30. Annually, RIDOH or the aquatic venue licensee collects and analyzes water quality samples for bacteria, free residual chlorine, combined chlorine, and potential of hydrogen (pH) levels. Compliance data are available in Appendix F.

Swimming Pools		**Therapy Pools (Hot Tubs)**	
Yearly	Seasonal	Yearly	Seasonal
152	**186**	**63**	**6**

Bottled Water

Bottled water continues to increase in popularity, with an estimated $303.9 billion worth sold in the US in 2022. The United States Food and Drug Administration (FDA) regulates bottled water as a food product. Under the federal *Food, Drug, and Cosmetic Act* manufacturers are responsible for producing safe, unadulterated, and truthfully labeled products. The FDA has established regulations for bottled water including identity standards that define bottled water as, “water that is intended for human consumption and that is sealed in bottles or other containers with no added ingredients except that it may optionally contain safe and suitable antimicrobial agents.”

Bottled water may be well water, municipal water from public water systems, mineral water, purified water, sparkling water, or spring water. The requirements for obtaining a bottling permit are submission and approval of analytical data for the water source and product, label approval, satisfactory inspection reports, and approval of the permit application.

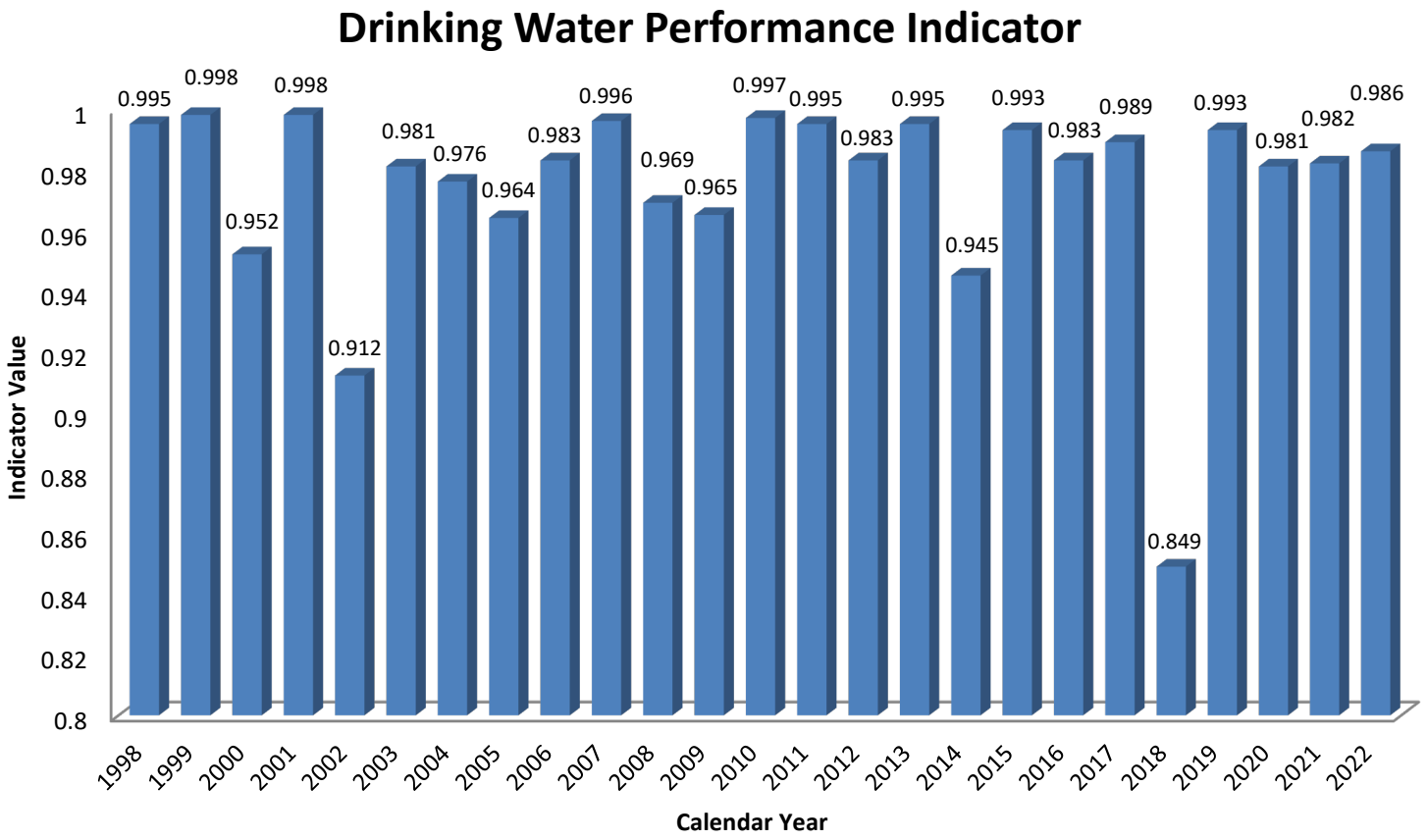
As of December 31, 2022, one licensed in-state water bottler and 182 licensed out-of-state water bottlers were selling bottled water in Rhode Island.

Impact and Performance

The performance of the state's public drinking water systems for 2022 is based on compliance with multiple water quality requirements specified in the Safe Drinking Water Act and is evaluated and compared to data from previous years. The outcome of the analysis is an overall performance indicator based on a composite of three metrics:

- Number of days each water system is in compliance with all maximum contaminant levels (MCLs) and treatment technique requirements;
- Number of customers each water system serves; and
- Number of days the water system operates.

A performance indicator value of 1.0 indicates that all public water systems (PWS) were in compliance with MCL and treatment technique requirements for the entire year (note that the performance indicator value can be significantly influenced by water systems with large populations). Much of the decrease in the 2018 indicator value was due to the impact of one maximum contaminant level violation at a water system with a very large population for a contaminant that is monitored approximately every 90 days. Without this violation, the performance indicator value was 0.948. The 2022 indicator value was 0.986.



Indicator Value = $\frac{\Sigma \text{ (PWS Population Served) x (Days in Compliance with MCLs and Treatment Technique Requirements)}}{\Sigma \text{ (PWS Population Served) x (Total Days in Operation)}}$

Capacity Development Tools and Assistance

Rhode Island's public drinking water systems face a wide array of challenges in meeting the public health protection standards to ensure safe drinking water for community members, residents, and visitors.

RIDOH maintains a capacity development strategy aimed at improving the financial, managerial, and technical capacities of small public water systems that serve fewer than 10,000 people. The mission of the capacity development program is to identify methods for assisting water utilities in achieving sustainable operations over time.

To accomplish this mission, RIDOH maintains various contracts with industry professionals and organizations to provide wide-ranging services to the owners and operators of public water systems. These services and training initiatives are included in RIDOH's work plan and are funded through Drinking Water State Revolving Loan Fund (DWRSF).

Services provided during the reporting period included:

Vendor	Service	Outcomes
Global Environmental Consulting (GEC)	Consumer confidence reports for systems serving 10,000 or fewer	89 reports completed
Northeast Water Solutions, Inc.	Facilities Improvement Plans for Community (C), nonprofit Non-Transient Non-Community (NTNC), and nonprofit Transient Non-Community (TNC) systems serving 10,000 or fewer	Seven systems received services
Northeast Water Solutions, Inc.	Engineering services for C, nonprofit NTNC, and nonprofit TNC systems serving 10,000 or fewer	Seven systems received services
New England Water Works Association	Free operator training opportunities	513 training contact hours delivered
RCAP Solutions	Financial and managerial training for small PWS receiving DWSRF	One system received services

RIDOH also maintains a cooperative agreement with University of Rhode Island (URI) Cooperative Extension. Under this agreement, URI provides:

- Technical assistance and outreach to municipal officials, water suppliers, and private drinking water well users on assessment results and local protection measures;
- Outreach to professionals who play a role in public water supply protection; and
- Resources to build audience capacity to adopt source water protection measures.

Operator Certification

Ensuring a competent workforce is a key element in the protection of public health and the provision of safe drinking water. Individuals who operate public water supply treatment and distribution systems must be certified and licensed by RIDOH. Once licensed, operators adhere to continuing education and experience requirements prior to license renewal or upgrade.

There are approximately 690 licenses for treatment and distribution operators issued in the state, and some individuals hold multiple licenses and certifications. There are 89 Community and 80 Non-Transient, Non-Community public water systems that are required to comply with the state's operator certification rules and regulations. The state has classified these systems for distribution and/or treatment.

Training initiatives are included in RIDOH's work plan and are funded through DWSRF. RIDOH provides extensive opportunities for training and exam preparation through contracts with industry assistance providers.

In 2022, New England Water Works Association conducted five training sessions and granted a total of 513 contact hours. These training sessions were scheduled in fall 2021 for delivery in winter and spring 2022.

The program selected courses with topics that address compliance issues, violation trends, and small public water system compliance, including:

- Understanding and Using the Public Notification Rule
- Asset Management to Ensure Stable and Sustainable Water Utility Operations
- Solving Drinking Water Operator Exam Word Problems
- Where it all Begins: Knowing and Protecting Your Source Water
- How to Successfully Operate and Maintain Your Distribution System
- Energy Management for Water Utilities

RIDOH does not directly reimburse operators for expenses related to training and exams. These learning opportunities are free of charge. They are open to all operators and address small public water system operations.

Drinking Water Operators by License Type, 2022

Distribution License Type	License Count
DO (Distribution Operator) Class 1-Full	112
DO Class 1-Grandfathered	14
DO Class 1-Operator in Training	26
DO Class 2-Full	65
DO Class 2-Grandfathered	1
DO Class 2-Operator in Training	1
DO Class 3-Full	97
DO Class 3-Grandfathered	0
DO Class 3-Operator in Training	4
DO Class 4-Full	44
DO Class 4-Grandfathered	0
DO Class VSS-Full	22
DO Class VSS-Grandfathered	9
DO Class VSS-Operator in Training	1
DO Provisional	1
Total	397

Treatment License Type	License Count
TO (Treatment Operator) Class 1-Full	88
TO Class 1-Grandfathered	5
TO Class 1-Operator in Training	10
TO Class 2-Full	70
TO Class 2-Grandfathered	3
TO Class 2-Operator in Training	6
TO Class 3-Full	63
TO Class 3-Grandfathered	0
TO Class 3-Operator in Training	9
TO Class 4-Full	27
TO Class 4-Grandfathered	0
TO Class VSS-Full	8
TO Class VSS-Grandfathered	3
TO Class VSS-Operator in Training	1
TO Provisional	0
Total	293

Drinking Water State Revolving Loan Program

The *Safe Drinking Water Act* amendments of 1996 authorized the creation of a DWSRF program. This fund helps public water systems finance the costs of infrastructure needed to achieve or maintain compliance with the requirements and public health objectives of the SDWA.

In conjunction with the Rhode Island Infrastructure Bank, RIDOH's Center for Drinking Water Quality operates the DWSRF program with funds supplied by an annual EPA grant. RIDOH is responsible for compilation of a priority list for current, ongoing, and proposed projects; engineering and environmental review of proposed projects; oversight of construction; assuring all grantees and sub-grantees follow DWSRF requirements; and review and approval of contractor payment requests. Completion of capacity development and maintenance of operator certification are key eligibility requirements for the DWSRF and are reviewed during the application process.

In 2022, RIDOH approved and the Rhode Island Infrastructure Bank funded six new loans totaling $23.2 million.

2022 Rhode Island Infrastructure Bank Loan Projects

Village at Chopmist Hill
$811,000 for decommission of well #6 and well #8, installation of well #9 and well #10, installation of a new storage tank, and the replacement of hot boxes, the installation of higher capacity duplex distribution pumps, upgrades to the control and monitoring systems, and the addition of an emergency generator in the Village of Chopmist Hill service area

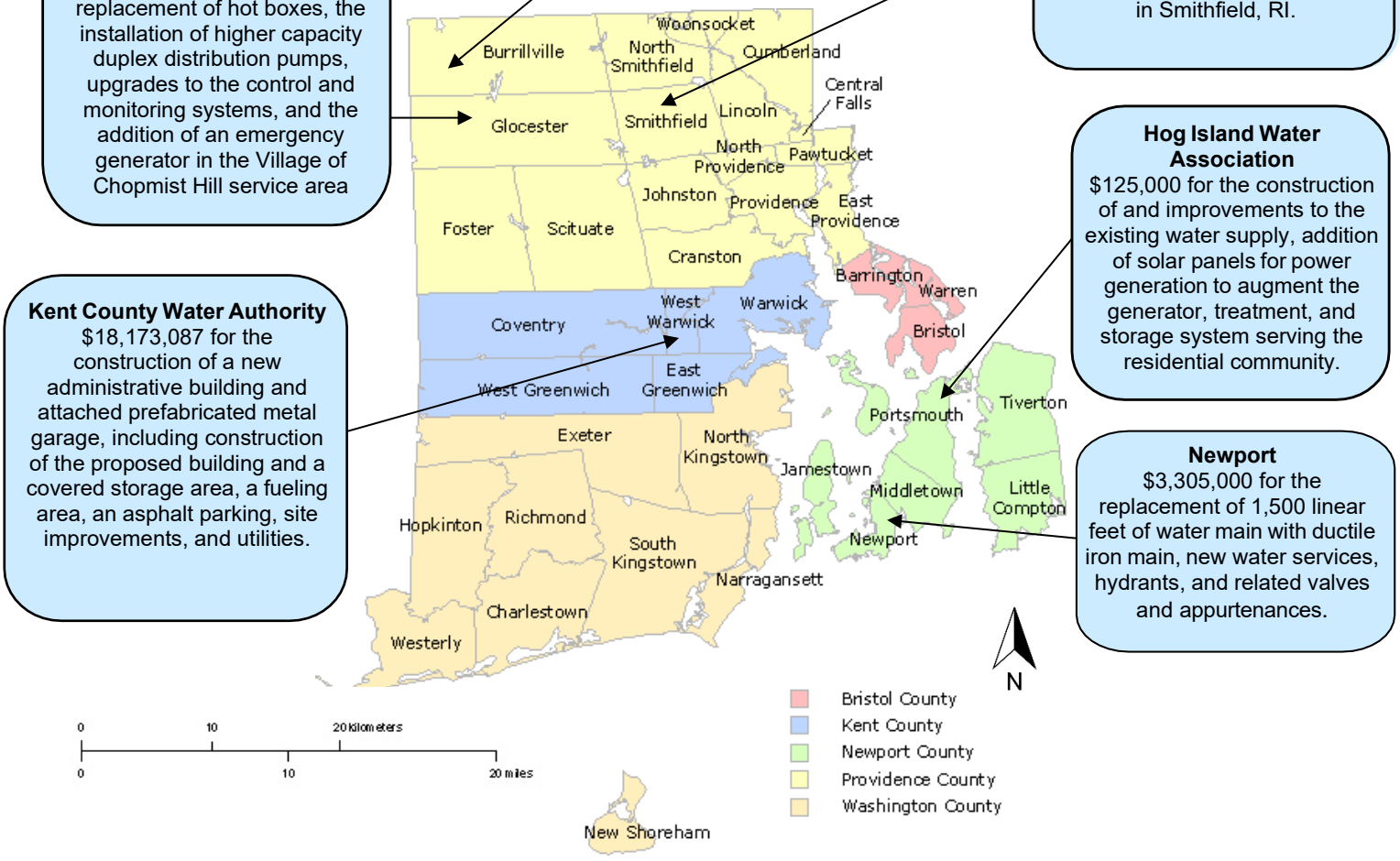
Pascoag Utility District
$59,000 for the installation of submersible mixing systems in the Rock Avenue and South Main Street standpipe tanks within Pascoag, RI.

Smithfield
$750,000 for the installation of four pressure-reducing valves (PRVs) in North Providence, RI and the installation of a new 12-inch pipe in Calvary Drive and Douglas Pike in Smithfield, RI.

Hog Island Water Association
$125,000 for the construction of and improvements to the existing water supply, addition of solar panels for power generation to augment the generator, treatment, and storage system serving the residential community.

Kent County Water Authority
$18,173,087 for the construction of a new administrative building and attached prefabricated metal garage, including construction of the proposed building and a covered storage area, a fueling area, an asphalt parking, site improvements, and utilities.

Newport
$3,305,000 for the replacement of 1,500 linear feet of water main with ductile iron main, new water services, hydrants, and related valves and appurtenances.



Engineering Review

The engineering approval process is designed to help ensure the sustainability of the system and the safety of water sources. Once an applicant has demonstrated that a project has adequately met the requirements for public water facilities on paper, projects may proceed. Inspections are conducted during and after construction.

There are four sections of the Engineering Review Program:

Drinking Water Source Approval

This process requires applicants to submit plans and supporting documentation that demonstrate that the location of the proposed new source is such that the source is protected from potential contamination.

Drinking Water Facilities Plan Review and Approval

This process includes technical and engineering review of infrastructure projects under the PWSS program in accordance with the SDWA. Infrastructure review is required for wells, pumping, storage, and treatment, both new and rehabilitative.

Drinking Water State Revolving Loan Fund Plan Approval

Projects submitted for funding through the DWSRF program must comply with specific requirements of the funding program, including state and federal statutes and federal executive orders. At the same time as these projects are reviewed under the Drinking Water Facilities Plan review and approval process, the engineers ensure that the projects are compliant with all DWSRF requirements. In addition, the engineers inspect the projects during construction to ensure that all federal and state requirements are met.

Plan Review, Approval, and Inspections for Licensed Aquatic Venues

RIDOH ensures that licensed swimming pools and spas are constructed and operated in a safe and sanitary manner. Technical and engineering reviews are conducted for all new public pools and spas and for any alterations to existing pools and spas. Additionally, inspections of filtering systems, water quality, and other sanitary and safety concerns are performed by RIDOH and through a self-inspection and self-monitoring program.

Engineering Projects 2022	Received[1]	Approved[2]	Completed[3]
Non-DWSRF	12	11	4
DWSRF	16	10	1
In-Kind Replacement Forms	29	27	*n/a*

[1] *The number of engineering applications received during 2022.*

[2] *The number of engineering applications that received preliminary approval in 2022. Some of these may be applications received in 2021 that were carried over into 2022.*

[3] *The number of applications that received final approval in 2022, meaning that the construction of the project was completed. Some of these applications received preliminary approval in previous years but construction of the project was not completed until 2022.*

Inspections and Site Visits

All aspects of a public water system (water source, treatment facility, storage, pump stations, operations, and maintenance) require periodic inspection to help ensure that the water system continuously supplies safe drinking water to the public.

In 2022, RIDOH staff conducted 88 sanitary survey inspections. The inspection team coordinated with the Center for Drinking Water's compliance program and engineering team to ensure that all identified deficiencies were corrected or are under a corrective action plan. RIDOH staff also performed inspections at the request of water systems as part of the State's capacity development program.

In addition, RIDOH staff performed four conformance inspections of new construction and significant improvements to water system infrastructure as well as 20 Level 2 Assessments in response to violations of the *Revised Total Coliform Rule*.

2022 Sanitary Survey Inspections		
System Type	**Population Served**	**Inspections**
Community Water System	471,983	27
NTNC Water System	2,510	10
TNC Water System	11,043	51
TOTAL	**485,536**	**88**

Emergency Planning and Security

Water systems can face emergency situations caused by a variety of events, from impacts due to significant weather to supply chain interruptions. Emergency planning for water systems includes evolving fields like cybersecurity preparedness and climate change resiliency. Developing proactive policies can improve the conservation of resources, reduce repair expenses, minimize interruption of service, and enhance consumer confidence in drinking water utilities.

Program activities included:

- Dissemination of EPA planning tools to the water systems, including the *Vulnerability Self-Assessment Tool*, the *Water Health and Economic Analysis Tool*, and the Incident Action Checklists to assist drinking water and wastewater facilities of all sizes in enhancing their security and resiliency;
- Development of Emergency Drinking Water Source Plan;
- Participation in the Statewide Water Resources Board's Drought Steering Committee;
- Use of the email marketing service MailChimp to keep public water systems informed of imminent or ongoing emergencies;
- Development and implementation of an emergency generator program;
- Training for Center for Drinking Water Quality staff in EPA, Federal Emergency Management Agency (FEMA), and Occupational Safety and Health Administration (OSHA) practices for emergency preparedness and response;
- Development of emergency response planning templates, guidance, and certification forms;
- Requiring the completion and certification of Emergency Response Plans for all public water systems; and
- Maintenance and curation of information for the Emergency Information for Public Water Systems website.

In 2021 and 2022 the Center for Drinking Water Quality began providing public water systems with guidance in response to cybersecurity incidents and on navigating supply chain impacts. Information was promptly compiled and forwarded to our public water systems as it became available to our office.

In 2023-2024 the Center for Drinking Water Quality will continue working on proactive approaches to help public water systems prepare for cybersecurity, climate resiliency, and emergencies. Guidance documents are also posted to the Emergency Information for Public Water Systems webpage (health.ri.gov/water/for/publicwatersystemsduringemergency/).

Water Quality Monitoring

Our nation's waters are monitored by local, state, and federal agencies, universities, dischargers, and volunteers. Water quality data are used to describe the physical aspects of the water, identify trends or emerging problems, evaluate pollution control efforts, and help respond to emergencies.

Maximum Contaminant Levels
Under the SDWA, the EPA sets maximum legal limits on the levels of certain contaminants in drinking water. The legal limits for these contaminants, known as Maximum Contaminant Levels (MCLs), are set at levels that protect the public's health and that are reasonably achievable with available technology. The EPA also sets treatment requirements, water-testing schedules, and sampling methods that all water systems are required to follow. RIDOH is responsible for ensuring that water systems in Rhode Island comply with EPA requirements.

Contaminant Rules
RIDOH regulates more than 90 contaminants in six contaminant groups: disinfectants, disinfection byproducts, inorganic chemicals, microorganisms, organic chemicals, and radionuclides. Drinking Water Standards and Advisory Tables summarizing all contaminants and their respective MCLs are maintained on the EPA's website (epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations).

A system's type, size, and water source determine which contaminants they must monitor. More than 60 of the regulated contaminants are in two of the contaminant groups: inorganic contaminants (IOCs) and organic contaminants (volatile organic contaminants, or VOCs, and synthetic organic contaminants, or SOCs).

Arsenic
Arsenic is a toxic element that naturally occurs in soil, rocks, and minerals. It is unevenly distributed and enters drinking water supplies from natural deposits in the earth and from agricultural and industrial practices.

***Groundwater Rule* (GWR)**
Most of the state's water systems use groundwater sources to supply customers. The GWR aims to reduce disease incidence associated with microorganisms in drinking water. The Rule establishes a risk-based approach and targets groundwater systems that are at risk of fecal contamination. These vulnerable groundwater systems work to take corrective action to reduce potential illness from exposure to microbial pathogens. This rule applies to all systems that use groundwater as a source of drinking water.

Disinfectants and Disinfection Byproducts
Water that comes from a lake, river, reservoir, or groundwater aquifer must be disinfected to kill harmful bacteria. However, water suppliers are challenged to balance the risks associated with harmful bacteria against the risks associated with disinfection byproducts. In 2022, 55 water systems were required to comply with the *Disinfection Byproducts Rule (*DBPR) either because they added a disinfectant to the water or purchased and distributed water that had been treated with a disinfectant by the seller. The most recent changes to the DBPR require that compliance is based on MCL results at individual sample locations instead of calculating one average value of all distribution system sample results for all water systems subject to the DBPR.

Lead and Copper Rule
The *Lead and Copper Rule* is intended to minimize lead and copper in water provided by community and NTNC water systems. Most lead and copper contamination comes from pipes or solder that break down and mix with water. To treat water that contains lead or copper, the water must be collected from faucets that are inside homes and businesses. If the water is extremely corrosive or contains very fine lead particles, this triggers requirements for treatment, public education, and, if applicable, lead service line replacement.

Radionuclides
Most drinking water sources have low levels of naturally occurring radioactive contaminants; however, man-made nuclear materials can also contaminate drinking water sources. All community water systems are required to monitor for radionuclides.

Synthetic Organic Contaminants Waivers
Community and NTNC groundwater systems that serve less than 3,300 people and do not use SOCs within their wellhead protection areas may qualify for a waiver that exempts them from monitoring for individual SOCs. There are 145 public water systems that currently meet these criteria and are eligible to submit waivers on a rotating three-year schedule. In 2022, 0 of 34 eligible systems took advantage of this opportunity and submitted applications for waivers for the 2022 monitoring year. The RIDOH waiver process requires a land-use and chemical-use review and evaluation by the water system and RIDOH staff before a waiver is granted.

Surface Water Treatment Rule
The *Surface Water Treatment Rule* establishes filtration and disinfection treatment requirements for any public water system supplied by surface water sources or groundwater sources under the influence of surface water. Seven water systems in Rhode Island are covered by these rules that are designed to reduce or eliminate harmful bacteria. These water systems include filtration and disinfection as part of their treatment processes. An additional 22 water systems purchase filtered and treated water to sell to consumers. These systems are required to maintain a chlorine residual throughout their distribution system.

Total Coliform
There are a variety of bacteria, parasites, and viruses that can make people sick if they are present in drinking water. Instead of testing for each different kind of bacteria, water systems test for coliform bacteria. The detection of coliform bacteria indicates that disease-causing contaminants may be in the water.

Algal Toxin Rule
Active as of May 2019, the *Algal Toxin Rule* applies to all public water systems that have a surface water source. Algal toxins can be created when colonies of naturally-occurring bacteria (also known as blue-green algae) in a lake or reservoir start producing compounds that affect the liver and brain. The standard monitoring period for the rule is May through October, and systems are required to check their surface water sources daily for signs of a harmful algal bloom (HAB), sample any HABs to identify and count bacteria, and test their raw and finished water for algal toxins when certain risk criteria is met. Public water systems must also submit plans that detail their treatment options and emergency response plans in the event of a HAB or toxin detection. As of 2022, this rule applies to eight public water systems.

Rhode Island is currently one of the few states that have successfully established public water algal toxin regulations.

Water Quality Sampling

Water quality sampling and testing ensures the quality of the state's drinking water and that each water system is in compliance with monitoring requirements. RIDOH's State Health Laboratories continue to assist water systems with required water quality testing.

In 2022, the State Health Laboratories analyzed 3,813 water samples. The Center for Drinking Water Quality evaluated 30,979 analytical results from the State Health Laboratories and other state-certified labs.

In support of the Center for Drinking Water Quality, the State Health Laboratories:

- Tested drinking water for bacteria, organic and inorganic contaminants, minerals, and trace metals to determine safety and compliance with the *Safe Drinking Water Act*;
- Tested potability of water from private wells;
- Analyzed water samples in support of special pollution-monitoring programs;
- Maintained analytical instruments to detect and measure the concentration of a variety of pesticides and VOC and SOC pollutants in drinking water;
- Performed continuous quality improvement of testing processes;
- Operated the analytical laboratory certifications program; and
- Maintained a list of laboratories that are certified for the analysis of drinking water, non-potable water, and environmental lead.

Compliance

The complete 2022 Compliance Table summary, as required by the Safe Drinking Water Act amendments of 1996, can be found in Appendix E. In 2022, a total of 339 violations of the Safe Drinking Water Act and Public Drinking Water Regulations [216-RIRC-50-01-1] were reported in the state's public water systems. Of these 339 violations, 19 were water quality violations, 268 were monitoring and reporting violations, 20 were treatment technique violations, and 32 were notification violations. A summary of the violations is presented in Appendices B, C, and D.

Quality Violations
Quality violations occur when the monitoring results for a particular contaminant exceed the maximum allowable standard within a specific time period. Public water systems must monitor for more than 90 contaminants including inorganic compounds, VOCs, SOCs, radionuclides, and pathogens.

In 2022, 10 public water systems exceeded a maximum allowable amount of a contaminant for a total of 19 violations. Of those 19 violations, 3 were bacteriological violations, 4 for inorganic contaminants, 8 were radiological, and 4 were for disinfection by-products (total trihalomethanes).

Monitoring and Reporting Violations
Monitoring and reporting violations occur when a water system fails to perform the required monitoring for a contaminant in a specified time period and/or fails to report the results or required actions on time. In 2022, a total of 268 monitoring violations occurred.

Lead and Copper Rule (LCR) Violations
Two public water systems exceeded the lead action level in 2022. Three public water systems exceeded the copper action level in 2022. Forty public water systems received a total of 64 lead and copper rule violations in 2022. Of these violations, 19 were failure to properly collect, analyze, or report LCR monitoring samples; 10 were for failure to report water quality parameters on time; 29 were failure to report lead results to consumers within 30 days of receiving results from laboratory; 5 were for failure to submit a corrosion control proposal by the due date; and 1 was a state reporting violation for failure to report a lead exceedance within 24 hours.

Public Notification (PN) Violations
Public Notification violations occur when a water system does not notify customers of a violation within the required time period. In 2022, 22 public water systems failed to perform Public Notification as required.

Consumer Confidence Report Violations
Consumer Confidence Report (CCR) violations occur whenever a community public water system does not provide a CCR to their customers and/or does not submit a CCR Certification Form to RIDOH by the required deadline. In 2022, 8 community public water systems did not provide a CCR or a CCR Certification Form by the required deadline.

Treatment Technique Violations
Treatment technique violations occur when a public water system does not comply with the required treatment, does not correct a significant deficient/sanitary defect in the required timeframe does not complete a Level 1 or Level 2 Assessment by the required deadline, or does not complete State-approved seasonal start-up procedures before providing water to customers. In 2022, 18 public water systems were issued a total of 20 treatment technique violations.

Appendix A: Compliance Table Definitions

Filtered systems: Surface water systems that have installed filtration treatment.

Inorganic contaminants: Non-carbon-based compounds, such as metals, nitrates, and asbestos, naturally occur in some water and can also get into water through farming, chemical manufacturing, and other human activities. The EPA has established MCLs for 15 inorganic contaminants.

Lead and Copper Rule (LCR): Established national limits on lead and copper in drinking water; states report violations of the Lead and Copper Rule in the following categories:

- Initial lead and copper tap monitoring and reporting: Water system did not meet initial lead and copper testing requirements or failed to report the results of those tests to the State.
- Follow-up or routine lead and copper tap monitoring and reporting: Water system did not meet follow-up or routine lead and copper tap-testing requirements or failed to report the results of those tests to the State.
- Water Quality Parameters (WQP): Water system did not collect or report water quality parameter samples properly.
- OCCT/SOWT RECOM/STUDY: Water system did not properly complete or submit an Optimal Corrosion Control Treatment (OCCT) or Source Water Treatment (SOWT) recommendation or study for a lead and/or copper exceedance.
- Treatment installation: Water system did not install optimal corrosion-control treatment system or source-water treatment system to reduce lead and copper levels in water at the tap.
- Public education/Lead Consumer Notice: Water system did not provide required public education about reducing or avoiding lead intake from water or notification of lead results to individuals served by taps used for Lead and Copper Rule tap monitoring or did not adequately report either to the State.

Maximum Contaminant Level (MCL): Highest amount of a contaminant that the EPA allows in drinking water while ensuring no short-term or long-term health risk; quantified as milligrams per liter (parts per million) unless otherwise specified.

Monitoring: EPA-specified water-testing methods and schedules for testing frequency, which water systems are required to follow (for purposes of this report, a major monitoring violation occurs when at least 90% of the required samples were not taken or results were not reported during the specified period).

Organic Contaminants: Carbon-based compounds, such as industrial solvents and pesticides, that generally get into water through runoff from cropland or discharge from factories; the EPA has set MCLs for 54 organic contaminants.

Radionuclides: Radioactive particles occurring in water naturally or from human activity; the EPA has MCLs for five types of radionuclides: radium-226, radium-228, gross alpha, uranium, and beta particle/photon radioactivity; violations are reported in the following categories:

- Gross alpha: Alpha radiation higher than MCL of 15 picocuries/liter (pCi/L); includes radium-226 but excludes radon and uranium.
- Combined radium-226 and radium-228: Combined radiation from two radium isotopes higher than MCL of 5 pCi/L.
- Uranium: Combined uranium higher than MCL of 30 micrograms per liter (µg/L).
- Gross beta: Beta particle and photon radioactivity from man-made radionuclides higher than four millirems/year.

Reporting Interval: January 1, 2022 - December 31, 2022; includes violations in previous years which did not return to compliance until 2022.

Safe Drinking Water Information System (SDWIS) Code: Specific numeric code assigned to each violation type or contaminant; two-digit code for violation type; four-digit code for contaminant.

State Compliance (SC): Compliance requirement regulated by the state but not regulated under the Safe Drinking Water Act. Usually failure to correct minor deficiencies or failure to submit license renewal application.

State Level (SL): MCL for a contaminant regulated by the state but not regulated under the Safe Drinking Water Act.

State Monitoring (SM) or State Reporting (SR): Monitoring or reporting requirement for a contaminant regulated by the state but not regulated under the Safe Drinking Water Act.

Surface Water Treatment Rule (SWTR): Establishes criteria under which water systems supplied by surface water sources, or ground water sources under the direct influence of surface water, must filter and disinfect their water; violations are reported in four categories:

- Monitoring, routine/repeat (filtered systems): Water system does not perform required tests or does not report the results of those tests.
- Treatment techniques (filtered systems): Water system does not properly treat its water.
- Monitoring, routine/repeat (unfiltered systems): Water system does not perform required water tests or does not report the results of those tests.
- Failure to filter (unfiltered systems): Water system does not properly treat its water.

Total Coliform Rule (TCR): Effective until October 31, 2018; established regulations for microbiological contaminants in drinking water that can cause short-term health problems; violations were reported in two categories:

- Non-acute MCL violation: Water system detected total coliform in its water at a frequency or level that exceeds the standard.
- Routine/repeat monitoring or reporting: Water system did not perform the required monitoring and/or reporting.

Revised Total Coliform Rule (RTCR): Effective April 1, 2016; established regulations for microbiological contaminants in drinking water that can cause short-term health problems; acute MCL violation refers to confirmed E. Coli not total coliform; presence of total coliform results in assessment; established additional requirements for seasonal water systems.

Treatment Techniques: EPA-required water treatment process (instead of an MCL) for contaminants that laboratories cannot adequately measure; also, failure to correct a significant deficiency discovered during a sanitary survey, failure to correct a sanitary defect discovered during an assessment, failure to perform a Level 1 or Level 2 assessment, or failure to adequately perform seasonal start-up procedures.

Unfiltered Systems: Water systems that do not need to filter water before disinfecting it because the source is very clean.

Violation: Failure to meet any state or federal drinking water regulation.

Appendix B: Community Water Systems Violations

Quality Violations	
Hillsdale Housing Cooperative, Inc. (Gross Alpha)	3
Narragansett Water Dept-North End (Trihalomethanes [TTHM])	1
Portsmouth Water & Fire District (TTHM)	1
Providence-City Of - Whipple (TTHM)	2
Rockland Oaks (Beryllium, Combined Radium)	6
Shadow Woods at Deer Brook (Gross Alpha)	1
Total	14
Monitoring and Reporting Violations	
Abbey Lane Community Assn., Inc. (Cyanide)	1
Alpine Nursing Home (LCR)	1
Bethel Village Water Assn (Asbestos, LCR)	5
Chimera Inc. (DEHP [Di(2ethylhexyl)phthalate], SOC)	2
CNE - New London Turnpike Entry Point (DBPR)	1
Cumberland, Town of (LCR)	1
Exeter Job Corps Center (LCR)	1
Four Seasons MHP Co-Op Assn. (LCR)	1
Hillsdale Housing Cooperative, Inc. (Combined Uranium, Gross Alpha)	2
JEMP 1 LLC (RTCR)	2
Kingston Center (LCR)	1
Ladd Center Water System (RTCR)	1
Lincoln Water Commission (RTCR)	1
Lindhbrook Water Company (Combined Radium, LCR, SOC)	10
Meadowlark, Inc. (Nitrate)	1
Mobile Village, Inc. (LCR)	1
Nasonville Water District (LCR)	1
Naval Station, Newport (RTCR)	1
Paige Associates (SOC)	1
Pine Acres ALR (LCR, State Reporting)	3
Providence-City of - Whipple (LCR)	1
Prudence Island Water District (VOC)	1
Quonochontaug East Beach Water Association (LCR, SOC)	2
Richmond Ridge Development (LCR)	3
Richmond, Town of (RTCR)	1
Rockland Oaks (SOC, State Reporting, VOC)	4
Shadow Woods at Deer Brook (Combined Uranium, Gross Alpha)	20
Split Rock Corporation (LCR)	3
Stone Bridge Fire District (DBPR, LCR)	2
Sunset Cove Properties LLC (LCR)	1
The Village on Chopmist Hill (Combined Radium, Combined Uranium, Gross Alpha, IOC, Nitrate, Nitrite, SOC, State Reporting, VOC)	14
Westerly Water Department (E. Coli)	1
Woonsocket Water Division (DBPR, LCR)	7
Total	98

Public Notification Violations	
Bethel Village Water Assn (CCR)	1
Chimera Inc. (PN)	1
CNE - Hopkins Hill Road Entry Point (CCR)	1
CNE - New London Turnpike Entry Point (CCR)	1
Hopkinton, Town of (PN)	1
JEMP 1 LLC (CCR)	1
Lindhbrook Water Company (CCR)	1
Paige Associates (CCR)	1
Rockland Oaks (PN)	1
Shadow Woods at Deer Brook (CCR)	1
Total	10
Treatment Technique	
Hebert Health Center (LCR)	1
Hopkinton, Town of (RTCR)	1
Lindhbrook Water Company (LCR)	1
Sunset Cove Properties LLC (State Compliance)	1
Total	4
PWS Licensing	
(none)	0
Total	0
All Violations	
Total	126

Appendix C: Non-Transient Non-Community Water Systems Violations

Quality Violations	
(none)	0
Total	0
Monitoring and Reporting Violations	
Acorn Academy, LLC (Cyanide, Fluoride, LCR)	3
Ashaway Line & Twine Mfg. Co.-Lower Mill (RTCR)	1
Briarwood Child Academy Smithfield (LCR)	1
Carousel Industries of North America LLC (LCR)	2
Charlestown Police Station (LCR)	1
Charlestown Senior Community Center (LCR)	1
Dean Warehouse Services (LCR)	1
Early Learning Centers of RI Saunderstown (LCR, RTCR, SOC, State Reporting)	6
Fogarty Memorial School (LCR)	3
Foster Town Hall (LCR)	1
Glocester Town Hall-School Administration (LCR)	2
Mildred E Lineham School (LCR)	3
Nach Realty Trust (LCR)	1
North Scituate Elementary (DBPR)	1
North Smithfield Air National Guard SYST (SOC)	1
Ocean State Transit-Chariho (State Reporting)	1
Pinewood Park School (LCR)	1
R.I. State Police Headquarters -New (LCR)	1
Silveira Kindergarten & Nursery School, (LCR)	1
Western Coventry Elementary School (LCR)	1
Wilbur and McMahon School (LCR)	1
Wood River Health Services (LCR)	1
Wrights Farm Corp. (Fluoride, IOC, LCR, Nitrate, Nitrite, SOC, VOC)	7
Alpine Country Club (Inactive) (LCR, State Reporting)	3
Total	45
Public Notification Violations	
Carousel Industries of North America LLC (PN)	1
Charlestown Police Station (PN)	1
Ponaganset High School (PN)	1
Quonset Business Park (PN)	1
Total	4
Treatment Technique	
Carousel Industries of North America LLC (LCR)	1
Early Learning Centers of RI Saunderstown (State Compliance)	1
Fogarty Memorial School (LCR)	1
Ponaganset High School (LCR)	1
Silveira Kindergarten & Nursery School (State Compliance)	1
Total	5

PWS Licensing	
(none)	0
Total	0
All Violations	
Total	54

Appendix D: Transient Non-Community Water Systems Violations

Quality Violations	
Confreda Greenhouses & Farms, LLC (Nitrate)	2
Ideal Pizza (E. Coli)	1
Michaels Shell Station (E. Coli)	1
Seacrest Inn, Inc. (E. Coli)	1
Total	5
Monitoring and Reporting Violations	
334 Narrow Lane LLC (RTCR)	1
Block Island Airport Operations (RTCR)	1
Bowdish Lake Camping Area, Brown 1 & 2 (E. Coli, RTCR)	3
Brick And Grills Restaurant (RTCR)	2
Buck Hill Family Campground (RTCR)	1
Cadys Tavern (E. Coli, Nitrate, RTCR)	5
Camp Hoffman (E. Coli)	1
Camp Ponagansett (RTCR)	1
Camp Watchaug (RTCR)	2
Champlins Marina & Resorts, Inc. (RTCR)	1
Chapmans Food and Drink (RTCR)	5
Charlestown Village,LLC Simple Pleasures (Nitrate)	1
Clark Memorial Library (RTCR)	1
Classic Motor Lodge, Inc. (E. Coli)	2
Cold Brook Cafe (E. Coli)	2
Cornerstone Pub (RTCR)	1
Ct Mark Holdings LLC The Breachway Grill (Nitrate)	1
Echo Lake Campground (RTCR)	1
Famous Pizza (Nitrate, RTCR)	11
Foster Country Club Inc. (Nitrate)	1
Gemelli Bistro - ANO (Active Non-Operational) (RTCR)	4
General Stanton Inn (RTCR)	1
George Washington Campground (RTCR)	2
George Washington Campground Rest Rm Fac (RTCR)	1
Glad Tidings Community Church (E. Coli)	1
Glocester Motor Inn (RTCR)	1
Grays Ice Cream, Inc. (E. Coli)	1
Harborside Inn, Inc. (RTCR)	1
Hickory Ridge Family Campground (RTCR)	1
Highview Inn (E. Coli, RTCR)	2
Hills Tavern And Grill (RTCR)	4
Hog Island Water Association-South End (RTCR)	1
Holiday Acres, Inc. (RTCR)	2
Howards Country Chowder Shack (E. Coli, Nitrate, RTCR)	6
Knight Farm LLC (RTCR)	1

Long Cove Marina & Campground (E. Coli)	1
Michaels Shell Station (E. Coli)	1
Monahan's Clam Shack (Nitrate)	1
Money Hill Plaza (RTCR)	1
Mother Of Hope Day Camp (Nitrate)	1
Mr. Zs by the Lake LLC (Nitrate)	1
New Hope Chapel (RTCR)	1
Newport Boys & Girls Club Camp - Well (Nitrate)	1
Ninigret Inn (RTCR)	1
Ninigret Park-Little Nini Pond (RTCR)	1
Ninigret Park-Tennis Court (RTCR)	1
North Scituate Public Library (Nitrate)	1
Oakleaf Campground (RTCR)	1
Ohm Ganesh DBA Country Farms (Nitrite)	1
Overlook Hotel (RTCR)	1
Partners Auto Auction RI (E. Coli, RTCR)	3
Phil & Anns Sunset Motel, Inc. (RTCR)	1
R.L.Flounders (Nitrate)	1
Round Meadows Campground (E. Coli)	1
Sachuest Point Natl Wildlife Refuge (RTCR)	2
Scituate LDS Church (RTCR)	1
Seaconnet Point Farm (RTCR)	1
Seacrest Inn, Inc. (Nitrate)	1
Seasons Corner Market #21 (VOC)	1
Shady Acres Fry Shack LLC (RTCR)	1
Simmons Cafe And Marketplace (RTCR)	1
Slatersville Medical Complex (RTCR)	4
Sly Fox Den Too (RTCR)	1
Sophies Brew House Inc (RTCR)	1
South Shore Mental Health Center, Inc. (Nitrate)	1
Spring Lake Recreational Facility (Nitrate)	1
St. Mary & St. Mena Coptic Church of RI (Nitrate)	1
Summit General Store, Ltd. ANO (Nitrate)	1
The Sullivan House (Nitrate)	1
TPE RI WA1 Land LLC ANO (RTCR)	4
Tropic Frost Inc. (RTCR)	1
US Fish and Wildlife Service Visitor Ctr (RTCR)	1
West Kingston Park (RTCR)	1
Westwood YMCA (Nitrate)	1
White Wine Plaza (RTCR)	1
Wood River Golf LLC (Nitrate)	1
YMCA Camp Fuller (GWR)	2
Total	125

Public Notification Violations	
Bowdish Lake Camping Area, Brown 1 & 2 (PN)	1
Chapmans Food and Drink (PN)	2
Charlestown Mini-Super, Inc. (PN)	1
Famous Pizza (PN)	9
Gemelli Bistro - ANO (PN)	2
Harmony Corner Store (PN)	1
Hills Tavern And Grill (PN)	1
North Scituate Public Library (PN)	1
Total	18
Treatment Technique	
Assados Kitchen and Bar (GWR)	1
Bowdish Lake Camping Area, Brown 1 & 2 (RTCR)	1
Cadys Tavern (RTCR)	1
Camp Aldersgate Campsite Dining Hall (RTCR)	1
Famous Pizza (RTCR, State Compliance)	3
Seaconnet Point Farm (RTCR)	1
Slatersville Medical Complex (State Compliance)	1
Westwood YMCA (RTCR)	1
YMCA Camp Fuller (GWR)	1
Total	11
PWS Licensing	
(none)	0
Total	0
All Violations	
Total	159

Appendix E: Compliance Table (January 1, 2022 – December 31, 2022)

SDWIS Codes		MCL[1] (mg/l)	MCLs		Treatment Techniques		Monitoring/ Reporting	
			Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations
Organic Contaminants								
2981	1,1,1-Trichloroethane	0.2	0	0			6	5
2977	1,1-Dichloroethylene	0.007	0	0			6	5
2985	1,1,2-Dichloroethylene	0.005	0	0			6	5
2378	1,2,4-Trichlorobenzene	0.07	0	0			6	5
2931	1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0	0			11	9
2980	1,2-Dichloroethane	0.005	0	0			6	5
2983	1,2-Dichloropropane	0.005	0	0			6	5
2063	2,3,7,8-TCDD (Dioxin)	3x10-8	0	0			0	0
2110	2,4,5-TP	0.05	0	0			11	9
2105	2,4-D	0.07	0	0			11	9
2051	Alachlor (LASSO)	0.002	0	0			11	9
2050	Atrazine	0.003	0	0			11	9
2990	Benzene	0.005	0	0			6	5
2306	Benzo[a]pyrene	0.0002	0	0			11	9
2046	Carbofuran	0.04	0	0			12	9
2982	Carbon tetrachloride	0.005	0	0			6	5
2959	Chlordane	0.002	0	0			11	9
2380	cis-1,2-Dichloroethylene	0.07	0	0			6	5
2031	Dalapon	0.2	0	0			11	9

SDWIS Codes		MCL[1] (mg/l)	MCLs		Treatment Techniques		Monitoring/ Reporting	
			Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations
2035	Di(2-ethylhexyl) adipate	0.4	0	0			11	9
2039	Di(2-ethylhexyl) phthalate	0.006	0	0			12	9
2964	Dichloromethane	0.005	0	0			6	5
2041	Dinoseb	0.007	0	0			11	9
2032	Diquat	0.02	0	0			0	0
2033	Endothall	0.1	0	0			0	0
2005	Endrin	0.002	0	0			11	9
2992	Ethylbenzene	0.7	0	0			6	5
2946	Ethylene dibromide	0.00005	0	0			11	9
2034	Glyphosate	0.7	0	0			0	0
2065	Heptachlor	0.0004	0	0			11	9
2067	Heptachlor epoxide	0.0002	0	0			11	9
2274	Hexachlorobenzene	0.001	0	0			11	9
2042	Hexachlorocyclo-pentadiene	0.05	0	0			11	9
2010	Lindane	0.0002	0	0			11	9
2015	Methoxychlor	0.04	0	0			11	9
2989	Monochlorobenzene	0.1	0	0			6	5
2968	o-Dichlorobenzene	0.6	0	0			6	5
2969	para-Dichlorobenzene	0.075	0	0			6	5
2383	Total polychlorinated biphenyls (PCB's)	0.0005	0	0			0	0
2326	Pentachlorophenol	0.001	0	0			11	9
2987	Tetrachloroethylene	0.005	0	0			6	5
2984	Trichloroethylene	0.005	0	0			6	5
2996	Styrene	0.1	0	0			6	5
2991	Toluene	1	0	0			6	5

SDWIS Codes		MCL[1] (mg/l)	MCLs		Treatment Techniques		Monitoring/ Reporting	
			Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations
2979	trans-1,2-Dichloroethylene	0.1	0	0			6	5
2955	Xylenes (total)	10	0	0			6	5
2020	Toxaphene	0.003	0	0			11	9
2036	Oxamyl (Vydate)	0.2	0	0			12	9
2040	Picloram	0.5	0	0			11	9
2037	Simazine	0.004	0	0			11	9
2976	Vinyl chloride	0.002	0	0			6	5
		Subtotals	**0**	**0**	**0**	**0**	**19[2]**	**11[2,4]**
Stage 2 Disinfection Byproducts Rule								
1009	Chlorite	1	0	0			6	1
1011	Bromate	0.01	0	0			0	0
1006	Chloramines	4	0	0			0	0
1008	Chlorine Dioxide	0.8	0	0			0	0
999	Chlorine	4	0	0			0	0
2950	Total Trihalomethanes	0.08	4	3			2	2
2456	Total Haloacetic Acids	0.06	0	0			2	2
2920	Total Organic Carbon Removal Ratio				0	0	1	1
		Subtotals	**4**	**3**	**0**	**0**	**9[2]**	**4[4]**
Inorganic Contaminants								
1074	Antimony	0.006	0	0			2	2
1005	Arsenic	0.01	0	0			2	2
1094	Asbestos (>10 micrometers)	7 million fibers/L	0	0			1	1
1010	Barium	2	0	0			2	2
1075	Beryllium	0.004	2	1			2	2
1015	Cadmium	0.005	0	0			2	2
1020	Chromium	0.1	0	0			2	2

SDWIS Codes		MCL[1] (mg/l)	MCLs		Treatment Techniques		Monitoring/ Reporting	
			Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations
1024	Cyanide (as free cyanide)	0.2	0	0			4	4
1025	Fluoride	4	0	0			2	2
1035	Mercury	0.002	0	0			2	2
1040	Nitrate	10 (as N)	2	1			23	23
1041	Nitrite	1 (as N)	0	0			3	3
1045	Selenium	0.05	0	0			2	2
SM	Sodium						0	0
1085	Thallium	0.002	0	0			2	2
1038	Total nitrate and nitrite	10 (as N)	0	0			0	0
		Subtotals	**4**	**2**	**0**	**0**	**33[2]**	**27[4]**
Radionuclides								
4000	Gross alpha particle activity	15 pCi/l	4	2			13	3
4010	Combined Radium 226/228	5 pCi/l	4	1			3	2
4006	Combined uranium	30 µg/l	0	0			13	3
4101	Gross beta	4 mrem/yr.	0	0			0	0
		Subtotals	**8**	**3**	**0**	**0**	**29**	**4[4]**
Revised Total Coliform Rule								
1A	Acute (*E. Coli*) MCL	Presence[3]	3	3				
2A	Level 1 Assessment missing or incomplete				3	3		
2B	Level 2 Assessment missing or incomplete				1	1		
2C	Corrective/ Expedited Actions				1	1		
2D	Seasonal Startup Procedures				2	2		

SDWIS Codes		MCL[1] (mg/l)	MCLs		Treatment Techniques		Monitoring/ Reporting	
			Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations
3A/3B	Major or minor routine/additional routine						53	25
3C	Monitor extra coliform after turbidity exceedance (unfiltered SW)						0	0
3D	Lab/Analytical Method Error						0	0
4A	Reporting, Assessment Forms						1	1
4B	Reporting, Sample Results						18	17
4C	Reporting, Seasonal Startup Procedures Certification						12	12
4D	Notification to State w/in 24 hrs. of E. Coli result						0	0
4E	Notification to State w/in 24 hrs. of E. Coli MCL						0	0
4F	Notification to State w/in 24 hrs. of Assessment or Corrective Action Violation						0	0
5A	Sample Siting Plan Errors						0	0

SDWIS Codes		MCL[1] (mg/l)	MCLs		Treatment Techniques		Monitoring/ Reporting	
			Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations
5B	Record-keeping						0	0
SC	State Compliance (failed to conduct LV1A in 10 days)				0	0		
SR	State Reporting (failed to electronically upload the data by the due date)						7	7
	Subtotal		**3**	**3**	**7**	**7[4]**	**91**	**56[4]**
Groundwater Rule								
5	State notification of treatment failure						0	0
28	Sanitary Survey Coop Failure				1	1		
19	Assessment monitoring of well						6	6
31	Failure to monitor treatment						2	1
34	Triggered monitoring of well						13	9
41	Failure maintain microbial treatment				1	1		
45	Failure address significant deficiency				0	0		
73	Failure notify other water system of E. Coli result(s)						0	0

SDWIS Codes		MCL[1] (mg/l)	MCLs		Treatment Techniques		Monitoring/ Reporting	
			Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations
SC	State-compliance (failure to correct deficiency)				3	2		
SR	State-reporting (Failure to report correction of deficiency)						0	0
		Subtotal	**0**	**0**	**5**	**4[4]**	**21**	**15[4]**
Surface Water Treatment Rule								
36	Monitoring & Reporting SWTR						0	0
38	Monitoring & Reporting IESWTR							
40 - 45	Treatment techniques				0	0		
32	Monitoring, routine/repeat (Source, LT2)						0	0
SR	State-reporting (failure report CT parameters)						0	0
		Subtotal	**0**	**0**	**0**	**0**	**0**	**0**
Lead and Copper Rule								
51	Initial lead and copper tap M/R						0	0
52,56	Follow-up or routine lead and copper tap M/R						19	12
53	Water Quality Parameters						10	6

SDWIS Codes		MCL[1] (mg/l)	MCLs		Treatment Techniques		Monitoring/ Reporting	
			Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations
57	OCCT/ SOWT RECOM/ STUDY				3	3		
58, 63	Treatment Installation				2	2		
65, 66	Public education, Lead Consumer Notice				0	0	29	27
SR	State Reporting (priority results)						1	1
	Subtotal		**0**	**0**	**5**	**5**	**59**	**37[4]**
Consumer Confidence Reports (CCR)								
71	CCR failure to report (major)						5	5
72	CCR inadequate content or reporting (minor)						2	2
Public Notice Rule								
75	Public Notification						24	15
76	Public Notification for state-only violation						1	1
	Subtotal		**0**	**0**	**0**	**0**	**32**	**22[4]**
State Violations (Miscellaneous)								
SC	State-compliance (Operator License)				3	3		
SR	State-reporting (failed to notify pressure <20 psi)						7	6

SDWIS Codes		MCL[1] (mg/l)	MCLs		Treatment Techniques		Monitoring/ Reporting	
			Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations
		Subtotal	**0**	**0**	**3**	**3**	**7**	**6**
Totals			**19**	**10[4]**	**20**	**18[4]**	**300**	**140[4]**

1 *Values are in milligrams per liter (mg/l), unless otherwise specified.*

2 *Monitoring violations for Volatile Organic Chemicals, Synthetic Organic Chemicals, Inorganic Chemicals, Disinfection Byproducts, and Long Term 2 Enhanced Surface Water Treatment Rule (LT2) are issued as a single violation for the suite of contaminants, not as violations for each of the regulated contaminants.*

3 *The coliform maximum contaminant level (MCL) is based on presence or absence of total coliforms in a sample, rather than coliform density. For total coliforms: if a public water system collects at least 40 samples per month, the MCL is exceeded when more than 5% of samples collected during the month are total coliform positive; if a public water system collects fewer than 40 samples per month, the MCL is exceeded if more than one sample is total coliform positive. For E. Coli, the MCL is exceeded when a single E. Coli positive sample is confirmed by a consecutive total coliform positive or E. Coli positive sample.*

4 *The subtotal and total number of public water systems with violations is not necessarily the sum of the number of public water systems within each rule category. This is because each public water system might have more than one violation within each rule category.*

Appendix F: Compliance Data for Licensed Aquatic Venues

Figure 1: 2022 Total, Water Quality Samples (Bacteria, Free Residual Chlorine, pH level), Swimming Pools and Therapy Pools, collected by Licensees

Swimming Pools		Therapy Pools	
Indoor	Outdoor	Indoor	Outdoor
181	335	37	23

Figure 2: 2022 Swimming and Therapy Pools Violations, By Violation Type

Bacterial Violations				Chlorine Violations				pH Violations			
Swimming Pools		Therapy Pools		Swimming Pools		Therapy Pools		Swimming Pools		Therapy Pools	
Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor
3	2	0	0	10	3	6	1	2	3	0	0

Staff Acknowledgments

This list reflects staff names and titles/roles as of December 31, 2022.

Alicyn Murphy – Operator Certification, Outreach and Training
Amy Parmenter – Chief Administrator
Andrew Hall – Water System Inspections, Sanitary Surveys, Level 2 Assessments
Ann Battersby – Compliance and Enforcement, PFAS
Bill Walaska, Jr. – Water Quality Sampling
Brenda Cheaye – Operator Certification, Capacity Development
Carlene Newman – Drinking Water State Revolving Loan Fund, Engineering Plan Review
Chrissy Millar – Bacteria/Total Coliform Rule, SOCs, VOCs, IOCs, General sampling requirements, Groundwater Rule, Arsenic Rule
Courtney Crane – Project Manager
David Zanfagna – Water System Inspections, Sanitary Surveys, Level 2 Assessments
Deborah LaMond – Lead and Copper Rule
Edward Stenovitch – Engineering Plan Review
Emilie Brace – Executive Assistant
Erin O'Neill – Environmental Scientist, Level 1 Assessments, Radionuclides
Garth Hoxsie-Quinn – Sanitary Survey Program, Level 2 Assessments, Public Water System Preparedness, Emergency Planning and Security
Grace Clancy – Administrative Officer
Jack Sahlin – Engineering Plan Review
Linda Correia – Data Management
Mary Barbar Askar – Data Management
Shannon Harrower-Nakama – Private Wells, Water Sampler/Interpreter Licensing, Source-Water Protection, HABs, Groundwater Under the Direct Influence of Surface Water Rule
Sonia Frias – Licensed Aquatic Venues, Bottled Water Licensing/Surveillance, SWTR and DBPR
Thomas Tremblay – Water Quality Sampling Data Entry
VACANT – Director, Division of Environmental Health
VACANT – Engineering Plan Review, SWTR and DBPR Assistance, Cross-Connection Control, Licensed Aquatic Venues, Private Wells Program Oversight, Bottled Water Program Oversight