The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Robert R. Scott, Commissioner

October 22, 2019 *Via email*

Ms. Jeri Weiss
Drinking Water Quality and Protection Unit
USEPA - New England
One Congress Street, Suite 1100 (CDW)
Boston, MA 02114
Weiss.Jeri@epa.gov

Re: **New Hampshire Capacity Development Report for SFY 2019 (July 1, 2018 to June 30, 2019)**

Dear Ms. Weiss:

We are submitting herewith New Hampshire's Annual Capacity Development report for state fiscal year 2019. This report is posted annually for public review at www.des.nh.gov, A to Z List, **Small Public Water System Help Center**.

The report is organized in accordance with EPA's requirements to include state activities and control points for capacity assurance for new and existing non-transient public water systems. Special initiatives pursued this fiscal year included:

- Expanded outreach about lead in drinking water to schools, daycares and public water systems;
- One-on-one outreach on Level 1 and Level 2 assessments for the Revised Total Coliform Rule (RTCR), in an effort to reduce recurring total coliform issues in our very small systems;
- Continued managerial, technical, and financial assistance to small, privately-owned community water systems through our Tank Inspection Grant, Record Drawings Grant, and the Drinking Water State Revolving Loan Fund; and,
- One-on-one assistance to small systems to develop water system business plans for those receiving SRF funding.

Please contact me at (603) 271-2949 with any questions or comments about our technical assistance activities or this report.

Very truly yours,

Shelley Frost

Shelley Frost, P.E., P.G.
Small Systems Survey and Technical Assistance Program Manager
Drinking Water and Groundwater Bureau

ec. S. Pillsbury, C.Klevens – NHDES

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FY 2019 CAPACITY DEVELOPMENT

ANNUAL REPORT TO EPA

July 2018 to June 2019

Robert R. Scott, Commissioner
Sarah A. Pillsbury, P.G., Drinking Water & Groundwater Bureau Administrator

September 30, 2019

NEW HAMPSHIRE

NHDES

Drinking Water and Groundwater Bureau
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Compiled by Shelley Frost, P.E., P.G.

R-WD-18-17

FY 2019 CAPACITY DEVELOPMENT
ANNUAL REPORT TO EPA
July 2018 to June 2019

October 8, 2019

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Robert R. Scott, Commissioner
Rene Pelletier, Water Division Assistant Director

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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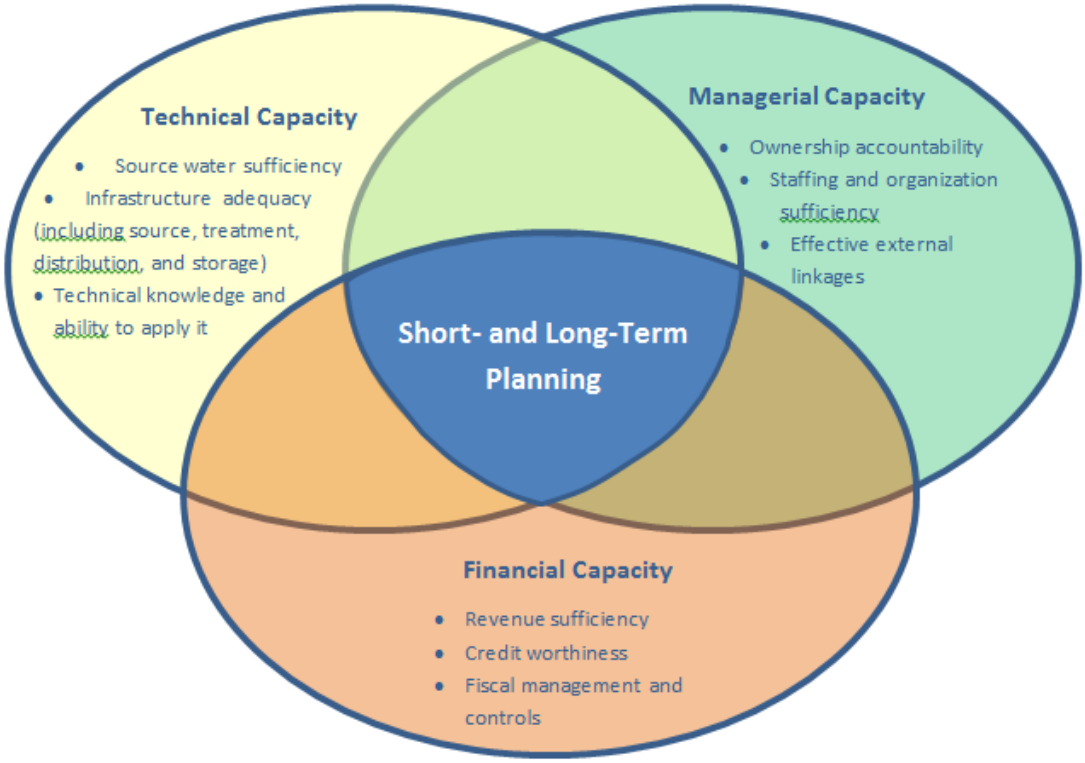
I. INTRODUCTION

1. BACKGROUND

Under the 1996 Amendments to the Safe Drinking Water Act (SDWA), Section 1420(c), each state must develop, implement, measure and report on their "capacity assurance" efforts to ensure that all new and existing public water systems (PWS) have adequate technical, managerial and financial means to provide clean, safe and reliable drinking water to their customers. States failing to comply with these requirements are subject to withholding up to 20 percent of their Drinking Water State Revolving Loan Fund (DWSRF) allotment. Water system capacity is defined in three categories, as shown in the image below.



Technical- The physical and operational ability of a water system to meet SDWA requirements, including the adequacy of its source water, physical infrastructure, technical knowledge and capability of operating personnel.

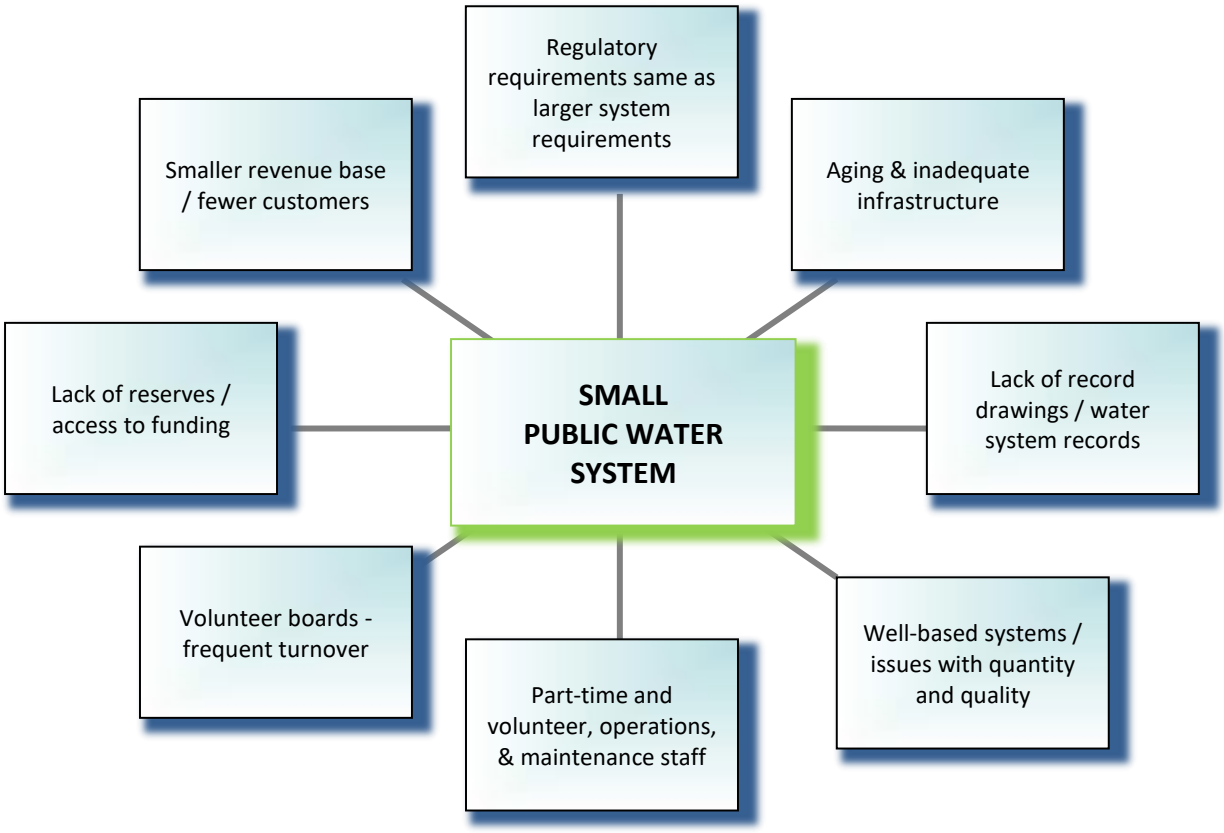
Managerial- The ability of a water system to conduct its affairs in such a manner to achieve and maintain compliance with SDWA requirements, including the system's institutional and administrative capabilities.

Financial- The water system's ability to acquire and manage sufficient financial resources to achieve and maintain compliance with SDWA.

This report is structured in accordance with the reporting criteria required by EPA. Section II describes water system compliance issues or capacity development "needs"; Section III describes activities to ensure adequate capacity of ***new*** public water systems, and Section IV summarizes activities to improve the capacity development of ***existing*** systems.

The goal of capacity assurance is to improve the long-term sustainability and rate of compliance of community public water systems (CWS) and non-transient non-community (NTNC) public water systems. New Hampshire's program is administered through the Department of Environmental Services Drinking Water & Groundwater Bureau (DWGB). New Hampshire focuses our capacity development efforts on the very small water systems (<250 service population), because these systems exhibit a multitude of hardships to manage and maintain water system compliance (Figure 1), have a limited rate base, and incur the highest number of violations both for health-based parameters and for monitoring and reporting requirements.

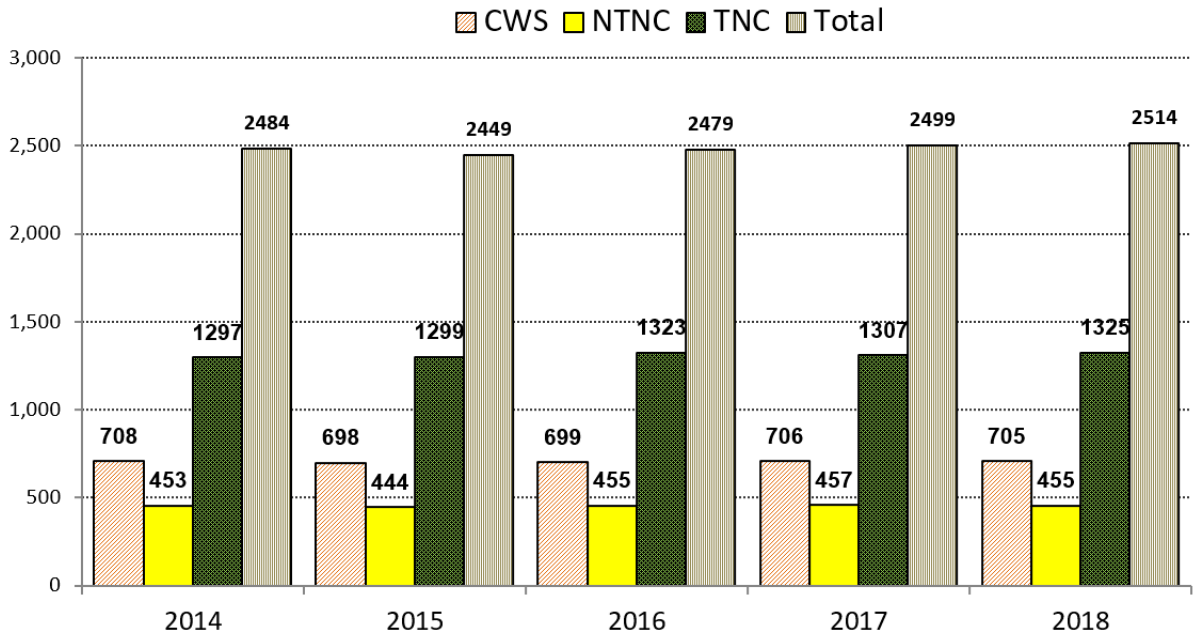
Figure 1 - Small Public Water System Challenges



2. PROFILE OF NEW HAMPSHIRE PUBLIC WATER SYSTEMS

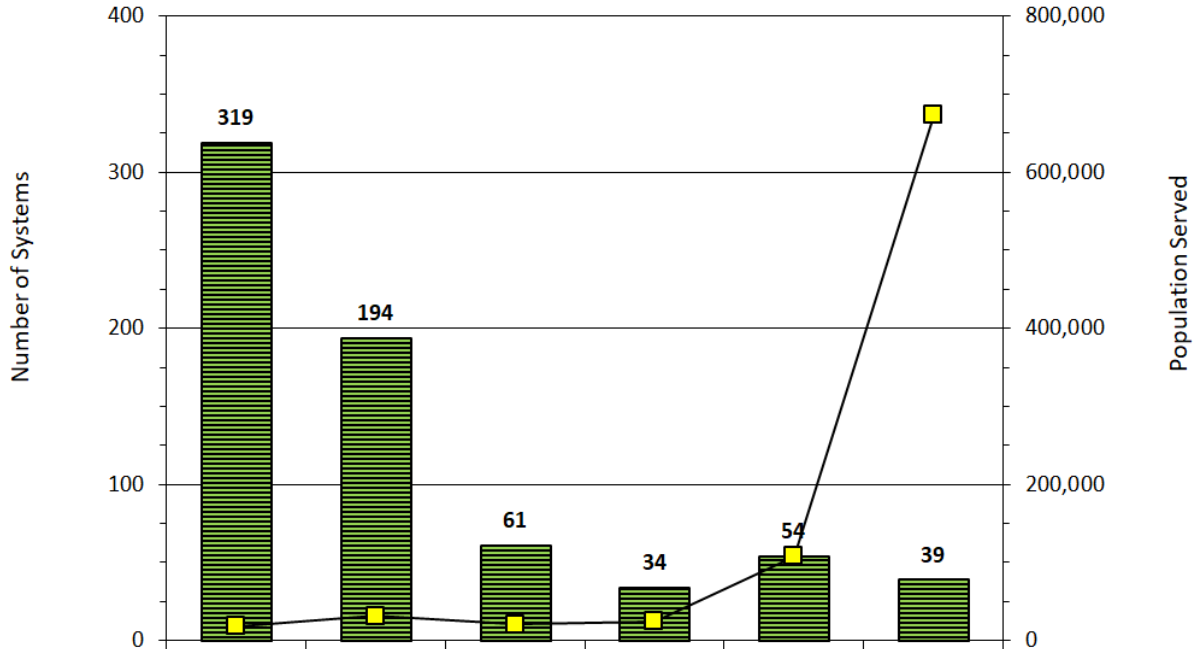
In Calendar year 2018, New Hampshire's approximately 2,500 public water systems consisted of about half (46%) non-transient systems, serving residential communities, schools and businesses. The remaining 54% serve transient populations such as hotels, restaurants and campgrounds (Figure 2). It is important to note that this report addresses public water systems only which serve **54%** of the state's residential population. The balance **46%** of residents are served by **private wells** which are not regulated under the Safe Drinking Water Act.

Figure 2 - Active Small Public Water Systems in NH



Further breakdown of New Hampshire's public water system inventory shows that **73%** of our residential *community* water *systems* serve 250 people or less, representing about **6%** of the community water system *populations* served (Figure 3). This bracket has the highest rate of non-compliance, underscoring the need to target capacity assistance efforts to this system size.

Figure 3 - Community Water Systems by Population Served in Calendar Year 2018



System Population	25 - 100	101 - 250	251 - 500	501 - 1,000	1,001 - 3,300	3,301+
# of Community Systems	319	194	61	34	54	39
Total Population Served	18,459	31,199	20,916	24,569	107,605	673,244

II. STATEWIDE CAPACITY NEEDS IDENTIFIED THIS PERIOD

1. VIOLATIONS FOR MONITORING AND REPORTING

Monitoring and reporting violations are predominantly incurred for failure to sample or report sample results on time. Figure 4, includes monitoring and reporting violations for bacteria, disinfection byproducts, sampling for other chemicals, lead and copper, but does not include violations for failing to submit Consumer Confidence Reports, provide Lead Education, and other 'paper' violations. As shown in Figure 4, the *number* of violations issued to systems serving up to 250 persons is over three times higher than those issued for all other system sizes, due to the number of very small systems in the state but also their higher rate of non-compliance.

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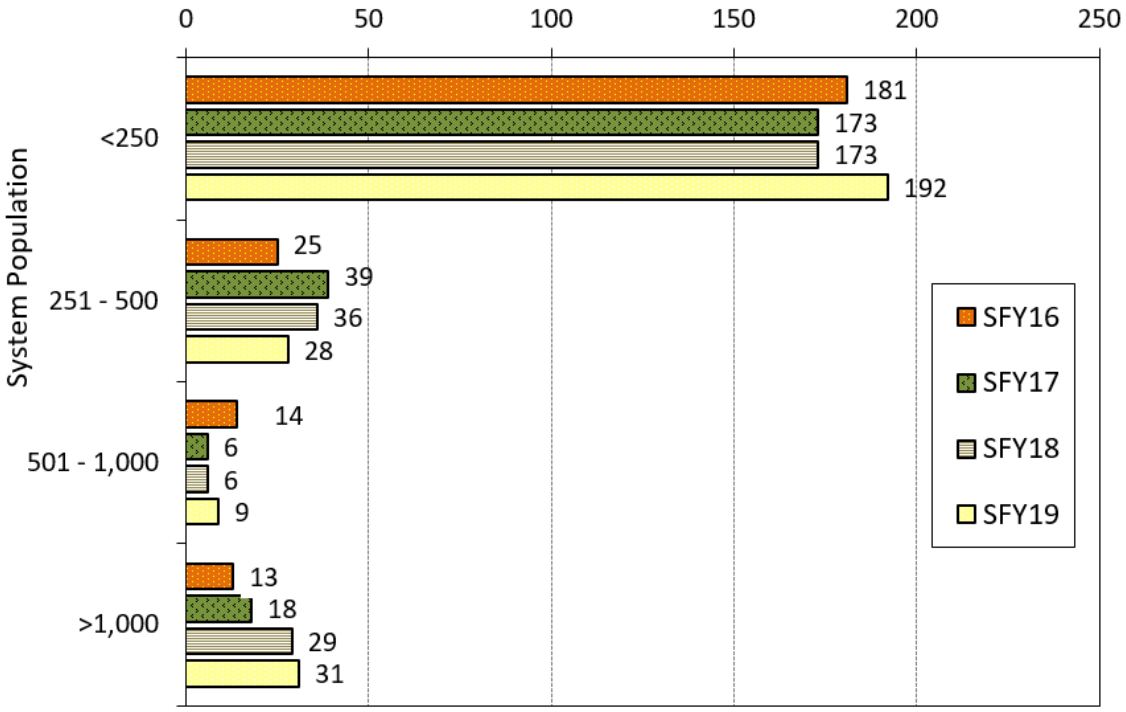
Figure 4 - Monitoring and Reporting (M/R) Violations by Non-Transient System Population
(by State Fiscal Year [July - June])



Note: Increase in number of missed chemical samples by two systems in 2018 and number of missed Stage 1 disinfection byproduct samples in 2019 caused jump in violations for systems with populations > 1000

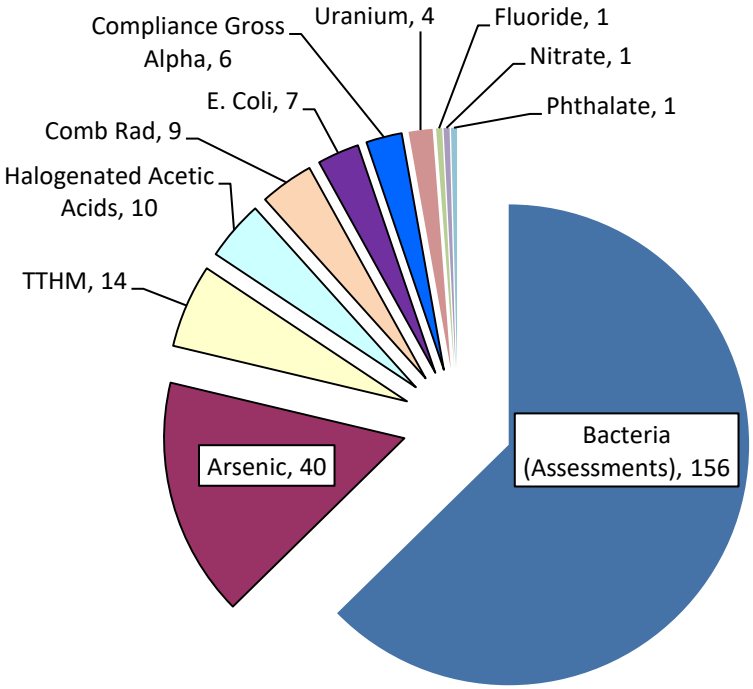
SFY 2019 monitoring and reporting data for transient systems (584 violations) and for non-transient systems (260 violations) show that transient systems incurred about twice the number of non-paper monitoring and reporting violations. Direct outreach to transient systems is discussed in Section III.2.

2. VIOLATIONS FOR WATER QUALITY

Violations are issued for exceedances of health-based, maximum contaminant levels (MCLs) for

E. coli bacteria, chemical parameters, disinfection byproducts and radionuclides. We also include Level 1 and Level 2 Assessments for Total Coliform Bacteria in this evaluation. A breakdown per contaminant for the past state fiscal year (Figure 5) shows that Bacteria and Arsenic continue to be the focus of outreach and assistance. Systems with populations of 25 to 250 incurred 62% of the water quality violations in SFY 2019.

Figure 5 - Chemical MCL Violations and Bacteria-based Assessments for Non-Transient Systems
(SFY 2019, Total MCL exceedences including Bacteria L1 and L2 Assessments = 156)



New Hampshire reinforced its outreach and enforcement along with its early implementation of the RTCR mid-2015, which eliminated bacteria MCLs and introduced the requirement to perform system-wide self-assessments to identify and rectify the causes of bacterial presence. As shown in Figure 5, the annual number of assessments is significantly higher than the total annual number of MCL violations for all chemical parameters combined.

3. Non-Transient System Categories with Most Violations

The top categories of systems serving up to 1,000 people incurring state and federal violations in SFY2019 varied according to whether they were ranked by the number of violations in each category (Figure 6A), or by the number of systems incurring those violations (Figure 6B). Small community system Rental Apartments had the highest number of repeat violations, but fell to the lowest of the top seven when ranked by the number of systems incurring violations. Daycares were the highest ranked non-transient, non-community system category, with approximately half of the violations consisting of “paper” violations.

Figure 6A - Number of Violations by System Category

Most violations by non-transient systems (25-1,000 persons), SFY 2019

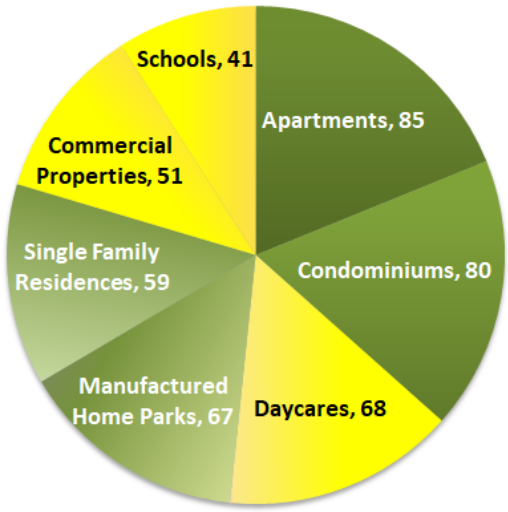
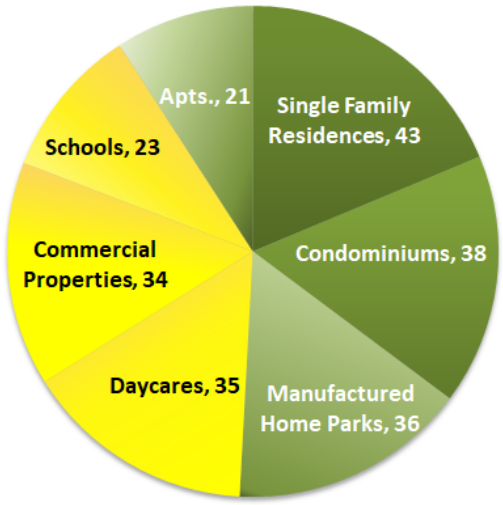


Figure 6B - Number of Violating Systems by System Category

Most violations by non-transient systems (25-1,000 persons), SFY 2019)



Notes: Includes all violation types (state and federal).
Green fill denotes community systems, yellow fill denotes non-community systems.

Although schools were the lowest-ranked of the top 7 violating categories, they contained the highest percentage of non-paper violations, including monitoring, reporting, and disinfection byproducts MCL violations.

4. Deficiencies Noted from Onsite Inspections and Assessments

New Hampshire has defined 51 significant deficiencies within the eight inspection elements of a water system. The top five significant deficiencies (based on numbers cited in CY 2018), identified during 655 sanitary surveys and 156 assessments were: well cap/cover sanitary seal problems (34%), missing source sample tap or downstream check valve (28%), storage tank subject to contamination (13%), design approval required (9%), and record drawings required (8%). Various distribution system deficiencies dropped out of the top five significant deficiencies in CY 2018, but greater attention to system leaking in the upcoming survey season will likely place this category back into the top five most frequently-cited significant deficiencies again.

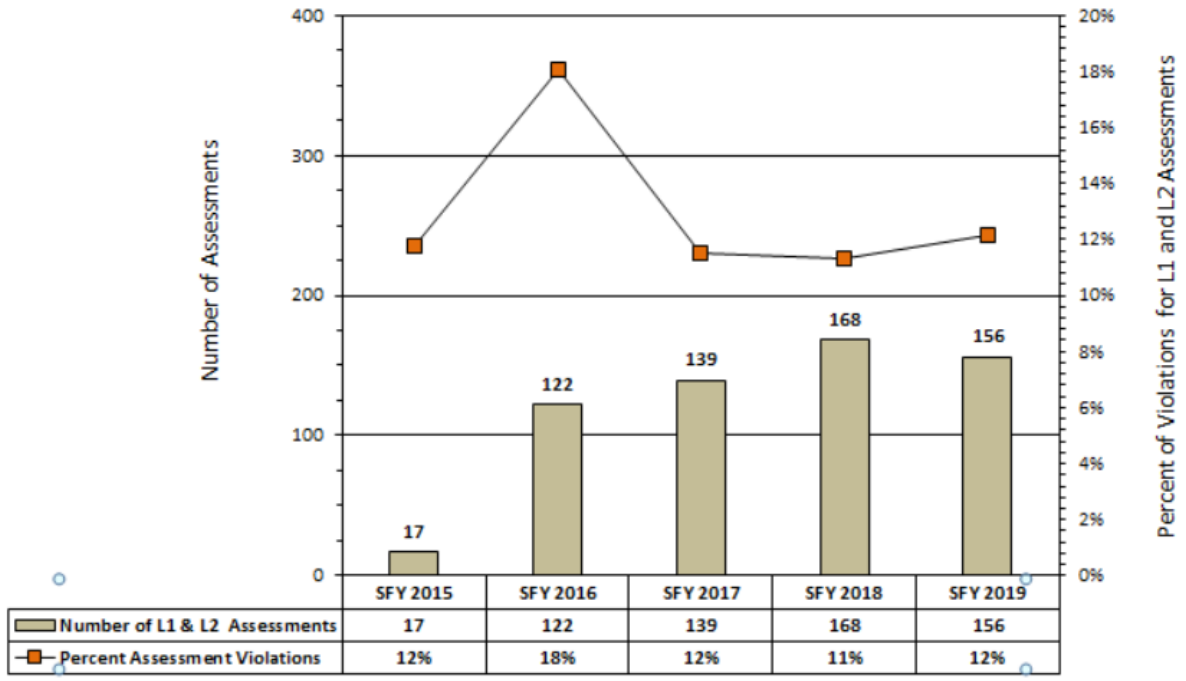
Approximately 150 assessments are triggered each year in non-transient systems (Figure 7). The number of annual bacteria assessments has not yet reached the 201 to 236 annual MCL violations occurring in the five years before the RTCR was implemented. Typically about 2/3 are triggered due to the presence of coliform, while the remaining 1/3 are due to either late sampling or failure to collect repeat samples. Letters are sent following the first total coliform event to better address the sampling requirements and possibly avoid repeated assessments.

Sanitary Survey enforcement in New Hampshire starts with issuance of a state-only Notice of Violation (NOVs) when systems fail to correct a sanitary survey deficiency within the required timeframe, which is generally set at 30 days. If the system still fails to correct the deficiency

after receipt of the NOV, the next level of enforcement is a Letter of Deficiency (LOD). Depending on the type of deficiency and the length of time to correct, the water system may also incur a federal violation and requirement for Public Notice.

The violation rate for incomplete, inadequate, or missing assessments has remained steady around 12% since the first full year of implementation of the RTCR (2016), when New Hampshire started providing additional technical assistance to address the causes of coliform in systems experiencing repeated assessments.

Figure 7 - Level 1 and 2 Assessments and Assessment Violation Rates
(for Non-Transient Systems per SFY)



	SFY 2015	SFY 2016	SFY 2017	SFY 2018	SFY 2019
Number of L1 & L2 Assessments	17	122	139	168	156
Percent Assessment Violations	12%	18%	12%	11%	12%

In-depth evaluation of assessments in CY 2018 indicated that transient systems triggered only 12 percent of Level 1 assessments and 11 percent of Level 2 assessments; and community and non-transient, non-community systems equally triggered the remaining 78% of Level 2 assessments.

5. Identification and Prioritization of Systems in Need of Assistance

Small systems in need of targeted, one-on-one technical assistance through the Capacity Development Program are identified through regular interactions including sanitary surveys, referrals from contract operators, customer complaints, grant and loan application lists, boil order assessments, repeated assessments, bulk water deliveries, enforcement lists, and database queries for accumulated violations. A rolling capacity development "priority list" is maintained wherein each system is assigned a lead "Technical Assistance" contact from the bureau, to identify root causes and solutions with the system representatives and consultants.

In SFY 2019, staff provided *extended one-on-one, in-person* capacity development assistance to 17 non-compliant systems and additional, extended, one-on-one capacity development assistance via office communications to at least 64 systems, for a total of **81 capacity development events**. Systems with repeated technical assistance are also tracked separately. Of these, 26 resolved their deficiencies in SFY 2019, and 24 were added. Nine of the capacity systems active in SFY 2019 applied for funding from the Drinking Water State Revolving Loan Fund (DWSRF).

Technical Assistance and parallel enforcement interactions with systems on the priority list (and others) are documented in water system files. Capacity development efforts often require several months to years to address the core causes of non-compliance. Assistance efforts typically include site visits and meetings, email and phone interactions, coordination with national and state TA partners, and funding assistance via grants and/or the DWSRF. This assistance lowers the number of violations, which focuses enforcement on the least responsive violators.

III. CAPACITY ASSURANCE FOR NEW SYSTEMS

From their inception, new public water systems must be designed to support adequate technical, financial and managerial resources for their long-term sustainability and reliability. This section describes state rules and control points for capacity assurance for new systems.

1. DESIGN STANDARDS AND CAPACITY ASSURANCE REGULATIONS

Capacity assurance for new water systems begins with a detailed review of system water sources and infrastructure design in accordance with state regulations. Applicable standards are established in the following Administrative Rules:

- Env-Dw 301 Small Production Wells for Small Community Water Systems.
- Env-Dw 405 Design Standards for Small Community Water Systems.
- Env-Dw 406 Design Standards for Non-community Water Systems.
- Env-Dw 600 Capacity Assurance for Proposed and Existing Public Water Systems.

New Hampshire's main control point for capacity assurance is the water system **Business Plan**. As established by Env-Dw 602 Capacity Assurance for Proposed Public Water Systems, the business plan documents the water system asset inventory, management structure, and financial assets.

New Hampshire approved 10 new Non-Transient systems in SFY 2019. None of the new non-transient public water systems have been listed on the Enforcement Targeting Tool (ETT) report.

2. CAPACITY ASSURANCE FOR NEW SYSTEM STARTUP

Capacity assurance for new system startup is accomplished through a comprehensive startup Sanitary Survey and issuance of an informative 'welcome packet' to new system owners. Additional outreach is provided for startup of new or reactivated *transient* systems by

performing one-on-one meetings with new system owners at the time of system registration, as these are not required to hire a certified water operator in New Hampshire. Outreach to new owners this fiscal year included site visits to 9 systems, mailing of "New Owner Binders" to additional new owners, and additional outreach via office-based communications.

IV. CAPACITY ASSURANCE ACTIVITIES FOR EXISTING PWS

This section describes the different assistance programs administered by the DWGB to improve the managerial, financial and technical capacity of **existing** PWS. Activities include general and targeted outreach, grants and loans, and one-on-one site visits and capacity meetings for technical assistance.

1. SOURCE WATER PROTECTION & EMERGENCY PREPAREDNESS ASSISTANCE

DWGB programs include regular outreach activities for source water protection and emergency preparedness assistance to community public water systems, especially municipalities and districts. Highlights for the past fiscal year included:

- Conducted three workshops to train land use planners in source water protection.
- Provided introductory and continuing education to 229 water supply, municipal, and non-governmental staff and consultants regarding surface and groundwater protection during NHDES' annual Drinking Water Source Protection Conference.
- Trained 16 local inspectors – water system employees and municipal officials – to implement best management practices inspection programs within their source water protection areas.

2. GRANTS, LOANS AND ASSET MANAGEMENT

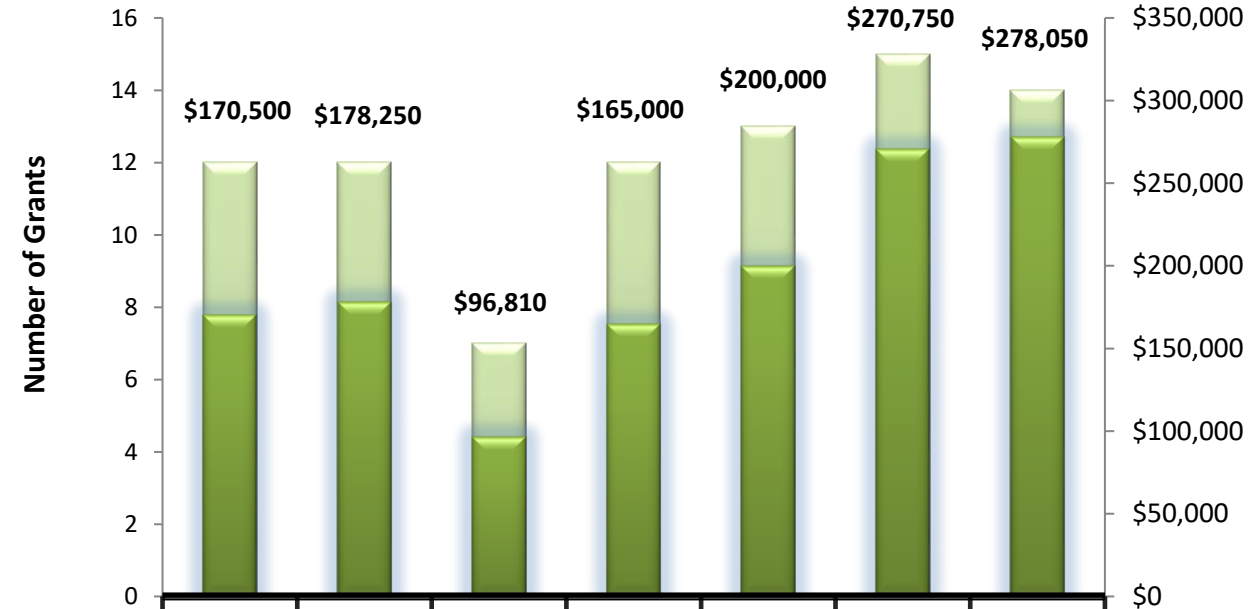
DWGB administers various funding programs to provide financial assistance and incentives for PWS infrastructure improvements and sustainability. Highlights for this reporting period include:

- Award of **$15.2 million** from the **Drinking Water State Revolving Loan Fund (DWSRF)** for infrastructure project loans in FY 2019. For systems serving a population of up to 500, see Table 1 on following page.
- Award of **10 Local Source Water Protection grants** for source security and other source protection projects.
- Award of **14 Asset Management grants** totaling $278,050 to assist communities with the development and/or the implementation of an asset management program. Since 2013 a total sum of approximately $1,359,310 in grants were awarded to 70 communities (Figure 9, following page and Table 2 on page 11).
- The fifth Annual **Asset Management Awareness Workshop** had 105 participants.
- Award of 11 Energy Audits as part of the Asset Management Program.

Table 1 –DWSRF SFY 2019 Loan Commitments to Systems Serving <500 people

PWS ID	PWS Name	Town	Project Description	Loan Amount	Population	Projected Forgiveness
1392070	Midridge Condo Association	Londonderry	Water Line Replacement	$190,000	100	16%
1392130	Stonehenge Apartments	Londonderry	Interconnection with Pennichuck and Internal Water Main Replacement	$420,000	105	22%
2232010	Glengarry Condo Association	Stratham	Water System Improvements	$383,000	171	16%

Figure 8 – Asset Management Grants Awarded SFY 2019



	2013	2014	2015	2016	2017	2018	2019
No. of Grants	12	12	7	12	13	15	14
$ Amount	$170,500	$178,250	$96,810	$165,000	$200,000	$270,750	$278,050

Table 2 – Asset Management Grant Awards SFY 2018

SYSTEMS	TOWN NAME	GRANT AMOUNT
Emerald Lake Village District	HILLSBOROUGH	$20,000
Hooksett Village Water District	HOOKSETT	$20,000
City of Lebanon	LEBANON	$20,000
Sanbornville Water Precinct	WAKEFIELD	$20,000
Town of Lancaster	LANCASTER	$18,050
Littleton Water and Light	LITTLETON	$20,000
Village of Northwood	NORTHWOOD	$20,000
Town of Whitefield	WHITEFIELD	$20,000
Raymond Water	RAYMOND	$20,000
City of Keene	KEENE	$20,000
Town of Exeter	EXETER	$20,000
Rye Water	RYE	$20,000
North Conway	CONWAY	$20,000
Town of Salem	SALEM	$20,000
Emerald Lake Village District	HILLSBOROUGH	$20,000
	Subtotal	**$278,050**
	Grants awarded through SFY 2019	$1,079,310
	Total Amount Awarded to Date:	**$1,357,360**

3. OPERATOR CERTIFICATION TRAINING AND OUTREACH

The New Hampshire Operator Certification program supports numerous outreach and training activities for water system operators, owners and managers. In the past fiscal year, activities included:

- Contracting with the New Hampshire Water Works Association (NHWWA) for two Small Public Water System Operator Grade IA courses (fall and spring), two Basic Math courses, and two Operator Exam Review sessions.
- Contracting with the New England Water Works Association (NEWWA) (an approved IACET training provider) for 20 instructor-led training sessions in New Hampshire specifically targeted for New Hampshire water works operators.
- Coordination with NHWWA to provide six Operator Roundtables throughout the state. These are operator-driven roundtable discussions, which allow industry professionals to relay challenges confronting them and their professions. These forums also allow operators to ask questions of state officials and for the state to discuss anticipated and new regulations.
- Participation on the New England Water Works Operator Certification Committee. This is a regional committee comprised of New England state operator certification officers, EPA representatives and professional water works operators. The committee promotes water works operator certification and initiatives to grow and strengthen the profession.

- Participation in other statewide industry trade shows and training seminars throughout the year with the New Hampshire Water Well Association, New England Water Well Association, Granite State Rural Water Association and other training partners.

Table 3 –Operator Certification Activities

	CY 2015	CY 2016	CY2017	CY2018
Active Certifications	969	1035	972	1011
Exams Administered	151	197	216	208

4. Leak Detection Surveys

Leak detection and repair play a fundamental role in reducing water loss and energy costs related to the treatment and delivery of drinking water. In CY2018, the professional leak detection firm hired through DWSRF set-asides completed surveys for 34 community water systems, spanning approximately 732 miles of pipe. Thirty-two leaks were discovered, totaling approximately 125 gallons per minute. This equates to roughly 66 million gallons per year, equivalent to 1,800 people using 100 gallons of water per day for a year.

In CY2019, SRF set-asides are funding leak detection surveys at 47 community water systems, spanning approximately 962 miles of pipe.

5. Water Conservation Outreach

Promoting water conservation through outreach activities helps communicate the importance of reducing water loss and waste - especially as water and energy resources become increasingly limited. In SFY 2019, NHDES staff gave presentations or provided outreach at four events to promote water efficiency and support the sustainable use of water. Audiences included municipal leaders, water system operators, state employees, elementary school students, and the general public.

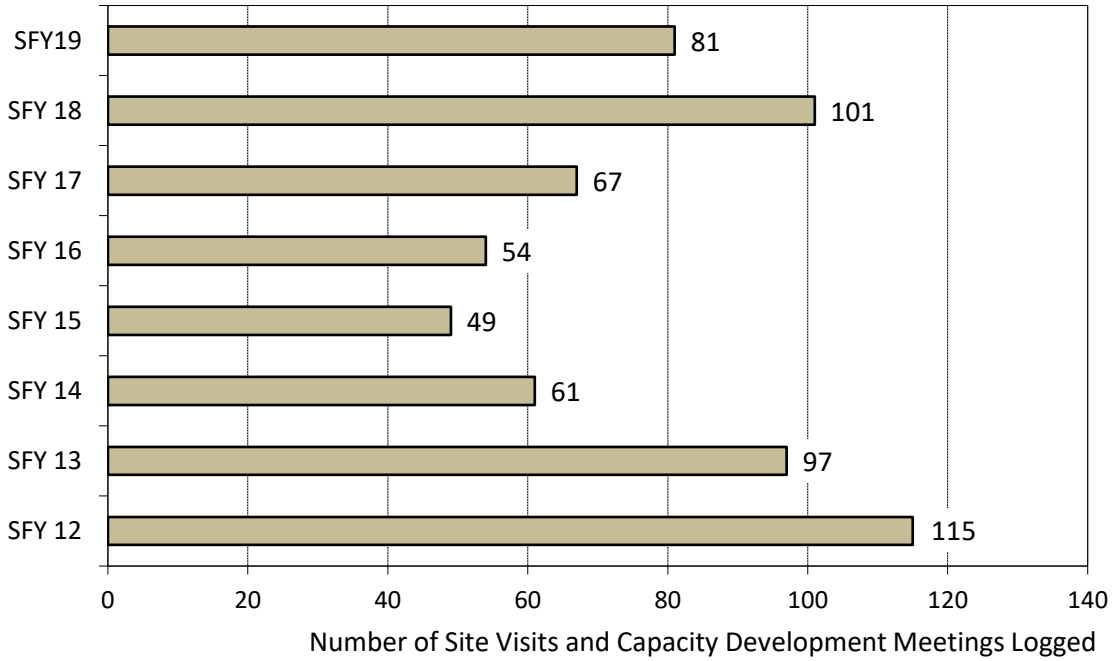
6. One-on-One Technical Assistance Site Visits and Capacity Meetings

DWGB technical staff provides ongoing technical assistance (TA) to small water systems to assist with source capacity issues, bacteria troubleshooting and financial and managerial planning. TA site visits and meetings attended by DWGB staff for SFY12 to SFY19 are shown in Figure 9. These site visits are *in addition* to standard sanitary surveys, permitting inspections, DWSRF inspections, and other special investigations performed by DWGB technical staff. As discussed in Section III, Capacity Assurance for New Systems this past fiscal year included 9 site visits with new transient system owners to review a customized binder (with sampling schedule and forms, instructions for using the PWS online portal "OneStop," and guidance on proper sampling procedures) and discuss their responsibilities as a PWS.

Further one-on-one technical assistance to small systems for business plans resulted in improvements in tracking water system expenses and attention to water rates for responsible fiscal planning. Since SFY 2016, New Hampshire requires a full business plan as a condition for small systems receiving an SRF loan. Targeted technical assistance is provided every year to these small systems to create their own business plan including a detailed asset inventory,

budget review, and discussion of water rates.

Figure 9 - Technical Assistance Visits & Meetings by DWGB Staff



V. STATEWIDE REVIEW OF IMPLEMENTATION PROGRESS

Review of the capacity program implementation progress consists of biweekly meetings by the lead TA contacts, quarterly measures tracking through the statewide Measures Tracking and Reporting System (MTRS), and annual reports to EPA.

VI. IMPROVEMENTS TO CAPACITY DEVELOPMENT STRATEGY

For SFY19, New Hampshire will continue to build and enhance its capacity development strategies for existing systems, including:

- Continued matching grants for small systems serving <500 people for development of Record Drawings and performing Storage Tank Inspections.
- Continued development of water system Business Plans for asset management planning for systems serving <500 population, that also receive funding from the Drinking Water State Revolving Loan Fund and the state Drinking Water and Groundwater Trust Fund.
- Continued one-on-one outreach and assistance to non-compliant systems and those lacking general capacity assurance.
- Continued collaboration with local and national TA providers including Granite State Rural Water Association, RCAP Solutions, Environmental Finance Center Network, New England Water Works and NH Water Works Association.