Troubled Water Systems Acquired by Lakes Region Water Co., Inc.

System	Customers (as of 7/28/2015)	Order No.	Date	Notes
Wentworth Cove	55	14116	3/10/80	Transfer for $1. Prior owner/developer sought to discontinue service because the "water system did not produce adequate revenues to make further operations profitable."
Waterville Gateway aka White Mountain Resort/Gateway (Al Moulton)	84	16795	12/7/83	"The owner/[developer] of the water system testified that he does not wish to continue operating . . ."
Waterville Gateway aka White Mountain Resort/Gateway	84	18549	1/27/87	Purchased from Chapter 11 bankruptcy sale.
Deer Run	59	20334	12/12/91	Purchased after Commission investigation because the owner/developer resides in Florida and "Staff was concerned about his ability to operate the company."
Echo Lake & Woodland Grove	Echo Lake: 44 Woodland Grove: 74	20144	6/5/91	"LRWC has better financial, managerial and technical expertise than Demers."
Brake Hill	47	21475	12/22/94	Customers, Commission had "been working with Ms. York for some time to bring the water system into compliance with applicable statutes." Ms. York was the original developer of the system.
Tamworth Water Works	101	21943	12/12/95	Lakes Region had met with NHDES and PUC Staff "to discuss the system's deficiencies" and the need to make system improvements.
Lake Ossipee Village	232	23288	8/23/99	Owner/developer David Sands sanctioned by PUC numerous occasions. See also Order No. 24,376.
Hidden Valley Shores, 175 Estates	HV: 119 175Estates: 44	23901	1/7/02	Two water systems serving only 26 and 42 customers.
Gunstock Glen	54	24104	12/23/02	Gunstock Glen had been dissolved. After receiving Order Nisi, Pennichuck declined to purchase. LRWC purchased per Order No. 24,502.

Lakes Region Water Co., Inc. & Wildwood Water Company, Inc.

Docket No. DW 17-176

RESPONSES TO Staff Data Requests Set 1

Date Request Received: 02/02/2018 Date of Response: 02/09/2018

Request No. 1-6 Witness: Leah Valladares

REQUEST:
Please provide LRWC's 5-year Capital Plan and Budget for Wildwood.

RESPONSE: Below is an estimated 2018 Budget based on Wildwood 2017 Income/Expenses. Salaries and Insurance was based on Wildwood sharing 3% of LRWC cost.

Ordinary Income/Expense	
Income	
460 · Unmetered Sales to Gen. Cust.	$ 25,578.00
Total Income	
Expense	
400 · Water System Operation	$ 2,000.00
620 · Field work/well house maint.	$ 250.00
623 · Power Purchased for Pumping	$ 2,500.00
641 · Chemicals-Potassium Carbonate	$ 3,300.00
623 · Power Purchased for Pumping	$ 2,500.00
920 · Admin & General Salaries	$ 12,200.00
927 · Franchise Requirements	$ 300.00
932 · Accounting Fees	$ 3,200.00
933 · Insurance	$ 1,000.00
950 · Maintenance of General Plant	$ 500.00
408 · Taxes Other Than Income	$ 900.00
Total Expense	$ 27,750.00
Net Income	**$ (2,172.00)**

LRWC will run the Wildwood System for six (6) months to one (1) year to determine what will be needed for any major upgrades and then will be able to create a 5 yr plan.

Some known items that will be upgraded in year one are as follows;

(2) 2" M-2000 Badger Meters $2,100 each
(1) GS-400 Generating Solutions RTU $4,200
(4) Transducers $ 300 each

Totaling $9,300.00

Lakes Region Water Company
DW 19-135
Data Request Staff Set 5

Date Request Received: 04/24/2020 Date of Response:05/08/2020
Request No. Staff 5-1 Witness: Leah Valladares

REQUEST Staff 5-1

Please provide full, updated comment on the company's view of the current need for, and level of urgency of, replacement of the Wildwood facilities in light of the company's operational and other experience with the system since acquisition. In this regard, please include:

a) What factors currently contribute to the need for the proposed work (pump station, storage, treatment, etc.);
b) What factors currently contribute to the level of urgency of the proposed work;
c) How the degree of urgency compares to that of other company systems or facilities needing upgrade such as Far Echo and 175 Estates (see response to Staff 4-4 d);
d) Could the Wildwood upgrades wait for one year? Two years? Five years? Please explain;
e) Could short-term fixes buy additional time? Please explain.

RESPONSE

a) The following factors significantly contribute to the need for the proposed work in order to provide reasonably safe and adequate service to customers:
    i. Pressure - There is low pressure at the top of the hill, especially during peak hours of use. PUC 604.03 (a) and Env-Dw 405.32 (b) require that each utility shall maintain normal operating pressures of not less than 20 psi. The Company has observed pressures at 59 Wildwood Rd (at the top of hill) from 6-25 psi. At another location, 55 Tabor Circle (lower end of the development – next to the pump station), the customer has emailed when seasonal residents arrive and reported that water pressure is very low.
    ii. Treatment- The current treatment is not adequate and needs to be replaced; it is functioning at about 25% and there is not enough room in the current pump station to support the required upgrades. A customer at 55 Tabor Circle emailed inquiring about improvements to remove the orange coloration from high iron. Other customers have verbally expressed the need for improvements.
    iii. Pump station integrity- The current station structure is rotting.

b) There is no immediate urgency other than the need to improve water quality and service to Wildwood customers. However, the age of the system does increase the risk of failure and interruption of service which would adversely impact customers.
c) Far Echo Harbor is a higher priority due to water source issues in that system. 175 Estates compares to Wildwood in the send of urgency and is lower the Far Echo Harbor- it needs the same pump station upgrade. LRWC believes it is better for customers to be proactive rather than reactive.
d) The Wildwood upgrades could wait one year, two years or five years. LRWC could continue to replace thing as they fail-essentially band aiding the system until a

Lakes Region Water Company
DW 19-135
Data Request Staff Set 5

Date Request Received: 04/24/2020 Date of Response:05/08/2020
Request No. Staff 5-1 Witness: Leah Valladares

catastrophic failure occurs. However, the age of the system does increase the risk of failure and interruption of service which would adversely impact customers. As noted in Lakes Region's proceeding to acquire the system in DW 17 – 176, Exhibit 3, there are multiple components of the system that are at risk of failure due to their age – life expectancy.

e) See response above.

Lakes Region Water Company

DW 19 – 135

Staff Set 3

Date Request Received: 1/14/2020 Date of Response: 2/21/2020

UPDATE: October 1, 2020

Request No. Staff 3 – 20 Witness: Leah Valladares

The petition in DW 19-135 indicates the Wildwood project is "expected to start in 2019 and be completed in 2020" (p. 2). The response to Staff 1-12 (b) in that docket states the "anticipated date for substantial completion … is June 30, 2020." In this regard please indicate the current status of the following:

a) Project design;

b) Project approvals (NHDES, town, other);

c) Project construction.

RESPONSE (2/21/2020):

Plans for upgrades to the Wildwood system are on hold pending PUC review and approval in this proceeding. The design, approvals or construction plans will be finalized based on approval in this proceeding. See Response to 3-21, below.

UPDATED RESPONSE (10/01/2020):

This response is being updated to comply with Rule Puc 203.09 (k).

After the Company's February 22, 2020 Response above, the Company continued to receive customer calls and reports of discolored water and low pressure. *See e.g. customer comments to NHPUC, attached*. As a result, the Company became increasingly concerned that the system did not meet its standards for service or the 'just and reasonable' standard.

On June 2, 2020, Staff informally advised the Company during the Technical Session in Docket No. 19 - 177, that it intended to issue a report recommending approval of the proposed financing. On June 30, 2020, the Company submitted preliminary plans to NHDES and the Town of Albany. *See Attached*. On August 14, 2020, Staff submitted its report recommending approval.

Due to the need to improve service to customers, the Company decided to move forward with construction based on Staff's August 14, 2020 report and recommendation. As of this date, construction is 25% complete. However, the Company's plans to finance the project have not changed. Upon approval, the Company will use the financing to refinance the project with debt.

Lakes Region Water Company

DW 19 – 135

Staff Set 3

Date Request Received: 1/14/2020 Date of Response: 2/21/2020

The lower cost debt will reduce the costs to customers and improve the Company's capital structure. In addition, it will make cash (equity) available for improvements to other systems, including one system (Far Echo) that requires additional supply wells to alleviate water shortages that have been exacerbated by extreme drought conditions. *See Response to Staff 5-1*.

To Whom it may concern,

We have lived at #55 Tabor Circle for 14 years now and the water has always been bad. We put a WaterSoft Filter system in 2013. On top of that we use a Brita Filter for drinking water. We have always noticed the pressure being low around the holidays and over the summer when rental houses are full.
The biggest issue we have had is the orange in the hot water. It used to turn the water in bath orange when the kids were little, and riun white clothes in the washer. The iron has started to stain our sinks and showers orange over the years regardless of what I use as a cleaning agent. Right now the pressure has been ok at our house. It does turn brown and murky during the day but it's on random days. I will try to send pictures.
Sincerely,

Heather Odell
#55 Tabor Circle - Albany

To Whom it may concern,

I've been at 35 Tabor Circle in Albany for over 20 years now and the water has been an issue on and off for as long as I can remember. At times totally brown and unusable, staining fixtures and ruining loads of laundry. After my complaints, our previous water company eventually began posting on our doors when they would work on the water as a forewarning, so we could prepare, wouldn't destroy entire wardrobes before we realized what was happening. They would also flush the system after work was performed and advised us to do the same from an exterior source on the house. This helped to mitigate the damage as every time the water was worked on, the brown rust would worsen and be at its darkest. It would take a while for it to be useable, even for washing. Lugging water periodically was the norm. The time I refused to pay the bill for a span of 3 months when my water was completely unusable, my water was turned off, forcing me to pay for unusable (outside of flushing toilets, but you couldn't even bath in it) water. By the way, I had paid for all other quarters, even when it was yellowish, just not the quarter I had to replace clothes, use the laundromat and purchase drinking water.

Improvements were made over the years and things got better for longer periods of time, with issues on and off. I know many of my neighbors complain of pressure issues, but that has never been an issue for us. It was until we remodeled a few year ago and replace yellow bathroom fixtures with white ones that even when it was "good" it wasn't that good. Yellow against white shows up when yellow against yellow does not.

Recently we have had to haul water again, as the water is yellow/brown in color and tastes terrible even though being filtered inside the house. This has been going on for several weeks. We did see the water company at the water house at one point not long ago, during which time the water became darker brown/yellowish. The color then lightens, making one think it's on the mend and then, surprise, it darkens again.

Since the switch over of water companies we have never received notice that the water will be worked on and subsequently change in color and taste, and it doesn't get "flushed" at outside sources. A warning would be appreciated, but really what I'd be after is a permanent solution.

I'm finally writing in for help because we're not getting any younger and water is so heavy to carry. We're tired of lugging it in. I would like to see the water we always have to pay for be usable for all things at all times (outside of needed maintenance). Hope that's not asking for too much.

Thanks for your attention to the matter,
Colleen Cormack
35 Tabor Circle
Albany, NH

To Whom It May Concern:

Why is each household in the Wildwood development (Albany, NH) paying for water that is brown, smells of iron, tastes strange, stains the bathtub and shower, and turns our light-colored clothes orange??????? Please have the courtesy to provide me with an answer.

I have to pay for water to drink and laundromat costs, not to mention how exhausting it is to scrub and scrub and scrub with the hopes that this time the orange stains on my shower and bathtub will come out.

Lisa L
Tabor Circle
Albany

---------- Forwarded message ---------
From: **Lisa L** <sunsparklingsnow@gmail.com>
Date: Mon, Jun 15, 2020 at 7:57 PM
Subject: Wildwood water
To: <lrwater@lakesregionwater.com>

Good evening Justin,

I wanted to share with you that over the past several days I have noticed the water has a very metal / iron taste.
Also, the color has changed from clear to brown often. This metal taste is coming through my Brita and was not there before. The smell of the metal is very strong from shower/faucets.
Is there an update you can provide us? Thank you very much
Lisa

Good Afternoon!

To whom it may concern,

I wanted to say thankyou for taking our communities input and for preparing to put in a new system/improving it for our neighborhood here at
Tabor Circle in Albany, NH.
My husband and I have been living here since 2007 and have noticed a significant difference in the water over the years. I am grateful for this new company and really hope we see improvements.

Changes we have noticed with our water over the years:

Less Water pressure~Way less!
Brownish red water that stains everything
Poor taste in water
Constantly needing to change water filters

Be Well!

Sincerely,

Jamie Webb
72 Tabor Circle

Justin Richardson

From: Leah Valladares <leah@lakesregionwater.com>
Sent: Tuesday, June 9, 2020 10:00 AM
To: Brogan, Doug; robyn.descoteau@puc.nh.gov; steve.frink@puc.nh.gov; Goyette, David; Justin Richardson; jayson.laflamme@puc.nh.gov; Leah Valladares; anthony.leone@puc.nh.gov; amanda.noonan@puc.nh.gov; discovery@puc.nh.gov; ocalitigation@oca.nh.gov; mary.schwarzer@puc.nh.gov; christopher.tuomala@puc.nh.gov
Subject: 21 Wildwood

Good morning,

Below is an email from one of the Wildwood Customers sharing their experience with their water.

I have been reaching out to those customers and will be forwarding the emails to the Discovery list as they come in.

Leah Valladares|Utility Manager
Lakes Region Water Company, Inc.
420 Gov. Wentworth Highway|PO Box 389
Moultonborough, NH 03254
Direct # (603) 707-0644
(O) 603.476.2348 (F) 603.476.2721
www.lakesregionwater.com

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www.lakesregionwater.com

From: Brian Hargraves <brykris28@yahoo.com>
Sent: Monday, June 08, 2020 7:14 PM
To: Leah Valladares <leah@lakesregionwater.com>
Subject: Re: rusty water

On Monday, June 8, 2020, 7:13 PM, Brian Hargraves <brykris28@yahoo.com> wrote:

i wanna say thank you for responding again to a on going issue that we continue to have we bought this house on 21 wildwood road Albany NH in 2015 and the water conditions seem to be getting worse brown or rusty water and the lack of water pressure i have been using water filters that are supposed to last 6 months and having to change out in three and we continue to hear that it's been corrected and hopefully it will be soon

Thank you Brian and Kristen Hargraves

Justin Richardson

From: Leah Valladares <leah@lakesregionwater.com>
Sent: Tuesday, June 9, 2020 10:02 AM
To: Brogan, Doug; robyn.descoteau@puc.nh.gov; steve.frink@puc.nh.gov; Goyette, David; Justin Richardson; jayson.laflamme@puc.nh.gov; Leah Valladares; anthony.leone@puc.nh.gov; amanda.noonan@puc.nh.gov; discovery@puc.nh.gov; ocalitigation@oca.nh.gov; mary.schwarzer@puc.nh.gov; christopher.tuomala@puc.nh.gov
Subject: 18 Wildwood Ave

Email from yesterday.

Leah Valladares|Utility Manager
Lakes Region Water Company, Inc.
420 Gov. Wentworth Highway|PO Box 389
Moultonborough, NH 03254
Direct # (603) 707-0644
(O) 603.476.2348 (F) 603.476.2721
www.lakesregionwater.com

From: Ashley Benes <ashley@lakesregionwater.com>
Sent: Monday, June 08, 2020 1:38 PM
To: Leah Valladares <leah@lakesregionwater.com>
Subject: FW: Water issues

From: Lakes Region Water Co.
Sent: Monday, June 8, 2020 8:50 AM
To: Justin Benes (justin@lakesregionwater.com) <justin@lakesregionwater.com>; Richard Dearborn <rick@lakesregionwater.com>; Brandon Smith <brandon@lakesregionwater.com>; Richard Dearborn <rick@lakesregionwater.com>
Subject: FW: Water issues

From: Bethlynn Wilson <bethlynn.wilson@yahoo.com>
Sent: Saturday, June 6, 2020 10:39 AM
To: Lakes Region Water Co. <lrwater@lakesregionwater.com>
Subject: Water issues

Hi Justin,

I live at 18 Wildwood Rd, Albany.
Our water turned brown this morning and we have had terrible water pressure for three days now. My neighbor heather Odell said this was the appropriate way to notify you of our issues?

Thank you,
BethLynn Howard

Justin Richardson

From: Leah Valladares <leah@lakesregionwater.com>
Sent: Thursday, October 1, 2020 10:39 AM
To: Justin Richardson
Subject: FW: Wildwood - New Water Storage / Pump House
Attachments: image001.jpg; ATT00001.htm; Wildwood Preliminary Plan View Layout 05 02 19.pdf; ATT00002.htm

Leah Valladares|Utility Manager
Lakes Region Water Company, Inc.
420 Gov. Wentworth Highway|PO Box 389
Moultonborough, NH 03254
Direct # (603) 707-0644
(O) 603.476.2348 (F) 603.476.2721
www.lakesregionwater.com

From: Leah Valladares
Sent: Tuesday, June 30, 2020 10:07 AM
To: Klevens, Cynthia <Cynthia.Klevens@des.nh.gov>; Thomas.Willis@des.nh.gov
Cc: Tom Mason <Tom@lakesregionwater.com>; Justin Benes <justin@lakesregionwater.com>; Bruce Lewis <lewis.h2o@comcast.net>
Subject: FW: Wildwood - New Water Storage / Pump House

Good morning Cindy and Tom,
Attached is the design submitted to the Town of Albany for the building permit.

Any questions please direct them to Tom Mason.

Sincerely,

Leah Valladares|Utility Manager
Lakes Region Water Company, Inc.
420 Gov. Wentworth Highway|PO Box 389
Moultonborough, NH 03254
Direct # (603) 707-0644
(O) 603.476.2348 (F) 603.476.2721
www.lakesregionwater.com

From: Justin Benes <justin@lakesregionwater.com>
Sent: Tuesday, May 07, 2019 9:22 AM
To: Leah Valladares <leah@lakesregionwater.com>
Subject: Fwd: Wildwood - New Water Storage / Pump House

Sent from my iPhone

Begin forwarded message:

From: "lewis.h2o@comcast.net" <lewis.h2o@comcast.net>
To: "'Tom Mason'" <lrwh2oserv@yahoo.com>, "'Peter Hilton'" <pwhilton99@gmail.com>, "Justin Benes" <justin@lakesregionwater.com>
Subject: Wildwood - New Water Storage / Pump House

Good afternoon:

Attached please find a preliminary plan view layout for Wildwood, based on Peter's and my visit and conversation, along with additional information provided from your office. The overall building will be about 16' x 26', with the end of the tank / outdoor hatch extending 5'6" or so beyond the walls.

Please review and comment.

Thanks,

Bruce W. Lewis, Manager
Lewis Engineering
44 Stark Lane
Litchfield, NH 03052
Office 603-886-4985
Cell 603-493-1619
lewis.h2o@comcast.net

Please read & consider saving electronically & not printing this email
John 3:17

1/15/2021 Wildwood Pump Station
9:41 AM 2020

Account	CWIP 105		
101.02 Source/Pumping			
304.02	Structures Improvements	$	89,573.46
310	Power Generator Equip	$	23,418.12
311	Pumping	$	13,800.43
320	Treatment	$	12,673.38
339	Misc Equip	$	3,298.58
101.04 Transmission & Distribution			
330	Tank	$	29,190.00
334	Meters	$	-
TOTAL CWIP	**Total**	**$**	**171,953.97**
LRWS Estimate		*$*	*260,000.00*
	Remaining	$	88,046.03

CPRS

New Hampshire Water Resources Primer

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

December 2008

Chapter 8
Drinking Water

NEW HAMPSHIRE DEPARTMENT OF
Environmental Services

Overview

New Hampshire has an abundant supply of clean drinking water. There are challenges, however, for the public water systems that serve 64 percent of New Hampshire's population and for the remaining 36 percent of residents that rely on private, household drilled or dug wells (NHDES, 2008a). Drinking water from public water supplies is highly regulated to protect public health, but aging infrastructure and the cost of treating drinking water and otherwise meeting ever increasing regulatory requirements are significant issues for public water suppliers. Few public water systems in New Hampshire charge the true cost of providing water or have adequately planned to maintain and replace infrastructure that is decades old. Also, as our ability to detect and evaluate contaminants in drinking water has increased, so has the need to address more contaminants to protect public health. A recent example of this phenomenon is the presence of trace amounts of personal care products and pharmaceuticals in some water supply sources. The wisdom of treating all water to drinking water standards, water which is then used for non-drinking water purposes, is being addressed elsewhere in the country and needs to be considered in New Hampshire as well. Because of New Hampshire's rural nature, there is a large proportion of very small community public water systems, many of which are hard-pressed to meet the same requirements as larger systems, but with far fewer resources.

For both private well owners and public water systems that use wells, naturally occurring contaminants such as radon and arsenic are significant health concerns. Unlike public water systems, there is no requirement for private well water to be tested or treated, and many people in New Hampshire are unknowingly drinking water that exceeds health-based contaminant limits.

Finally, New Hampshire is a nationally recognized leader in protecting the groundwater and surface water that are the sources of drinking water. Still, landscape change has the potential to degrade our sources of drinking water by contributing contaminants and changing hydrology as described in Chapter 1 – Introduction and Overview.

8.1 Description and Significance

8.1.1 Drinking Water Is Critical to Health and Quality of Life

Human life depends on water. The average human can live 40 days or more without food, but only three to five days without water (Kendall, 1991). Drinking water is also used for food production and preparation, sanitation, outdoor irrigation, industrial processes and for many other activities.

The importance of drinking water and its protection was recognized 400 years ago at colonial Jamestown, Va., (see sidebar) and has been an acknowledged public health priority for centuries in the U.S. Unlike in developing countries, fewer than 1 percent of U.S. residents lived without complete indoor plumbing by the year 2000 (Rural Community Assistance Partnership, n.d.). As a result, diseases caused by unclean water supplies are much rarer in the U.S. Waterborne disease

outbreaks, however, continue to occur in the U.S. and the endemic waterborne disease burden is significant. Recently, an expert panel of scientists from the Centers for Disease Control and Prevention and the U.S. Environmental Protection Agency estimated that 5.5 million to 32.8 million cases of acute gastrointestinal illness per year are attributable to community drinking water systems in the U.S. (Messner et al., 2006).

"There shall be no man or woman dare to wash any unclean linen, wash clothes, ...nor rinse or make clean any kettle, pot or pan, or any suchlike vessel within twenty feet of the old well or new pump. Nor shall anyone aforesaid within less than a quarter mile of the fort, dare to do the necessities of nature, since by these unmanly, slothful, and loathsome immodesties, the whole fort may be choked and poisoned."

- Governor Gage of Virginia, 1610
(Source: Virginia Dept. of Health, 2007)

8.1.2 New Hampshire Water Supply: Where Do We Get Our Drinking Water and How Is It Tested?

Private Wells

An estimated 36 percent of New Hampshire residents obtain their drinking water from private wells with roughly 4,700 new wells constructed each year. There are two main types of private wells in New Hampshire: bedrock wells and shallow dug wells. The type of well used is largely dependent on local soil types and water availability on the property. An estimated 90 percent of all new wells are bedrock wells, which can be from 100 to 700 feet deep, depending on where an adequate supply or yield is reached (NHDES, 2008c).

Since 2000, private wells have had to meet statewide design criteria for construction and placement (We 100-1000), but there are no clear state requirements for minimum well water quality or quantity. The State Plumbing Code requires that only potable water sources be connected to domestic plumbing systems, but this requirement is not uniformly applied, in part due to confusion about the meaning of "potable" and the absence of specific water quality standards. When homes are sold, the owner must disclose information about both the water supply system and the wastewater disposal system, including the date of the most recent water test and whether the seller has experienced a problem such as an unsatisfactory water test (RSA 477:4-c), but there is no requirement to do a test. As a result, private wells are usually only tested when the buyer chooses to do so, when a lender requires it at the time of sale, when a homeowner has a new well drilled by a contractor who recommends a test, when problems with water quality are noticeable, or in those few towns where a private well water test is required for a certificate of occupancy or for property transfer. There are also no state standards in regards to treatment of water from private wells.

Public Water Systems

A public water system is defined as "a piped water system having its own source of supply, serving 15 or more services or 25 or more people, for 60 or more days per year" (RSA 485:1-a). Public water systems must meet all the requirements of the federal and state Safe Drinking Water Acts. These requirements have increased over time.

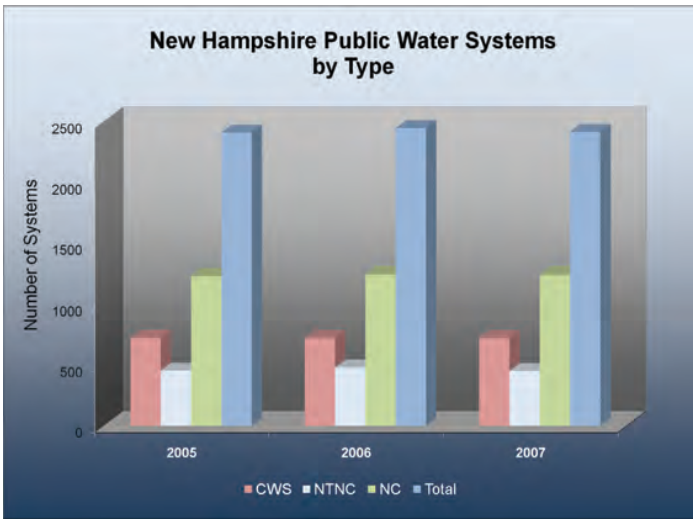

Figure 8-1. New Hampshire public water system profile: Community water system (CWS); non-transient/non-community (NTNC); transient/non-community (NC). *Source: NHDES, 2008a.*

There are three types of public water systems: community water systems; non-transient/non-community systems; and transient systems. Depending on the type of system, the requirements vary, with more stringent requirements for larger systems and for those serving residential populations. Figure 8-1 shows the number of New Hampshire's public water systems among these categories. Each is described briefly below.

In 2007 there were 721 community water systems (CWSs) serving a combined resident population of approximately 849,905 (average size: 1,179) (NHDES, 2008a). These include municipalities, apartments and condominiums, mobile home parks, and single family home developments. Ninety-five percent of the CWSs in New Hampshire are small systems serving fewer than 3,300 residents. There are also 36 medium CWSs that each serve between 3,300 and 50,000 people, and two that are classified as large systems serving more than 50,000 each – Manchester Water Works and Pennichuck Water Works in the Nashua area (Figure 8-2) (NHDES, 2008a). The largest systems primarily use surface water for their source of supply, while the majority of small systems use groundwater.

The largest community systems are required to do the most comprehensive monitoring and treatment. Currently community systems must monitor for over 100 contaminants on a relatively frequent basis.

In 2007 there were 451 non-transient/non-community water systems (NTNCs) in New Hampshire (NHDES, 2008a). Typical NTNCs include non-residential schools, day cares, office buildings, commercial and industrial buildings, and

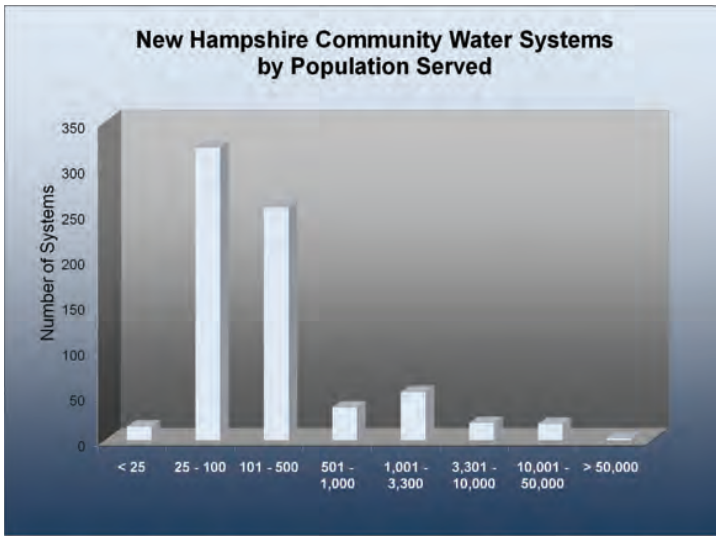

Figure 8-2. Of community water systems, the majority (82%) serve relatively small populations that have fewer than 500 customers. *Source: NHDES, 2008a.*

businesses with permanent employees. Nineteen percent of New Hampshire's public water systems are NTNCs. This is larger than any of the other New England states and is a reflection of New Hampshire's rural nature. On average, these systems only serve about 200 people each, so there is often little economy of scale compared to community water systems.

All of New Hampshire's NTNC systems use groundwater for their source of water. The system operator is required to monitor for bacteria, lead and copper, nitrate, nitrite, inorganic contaminants (metals), volatile organic compounds or VOCs (solvents and hydrocarbons), and synthetic organic compounds or SOCs (pesticides). However, the sampling frequencies are less than for community systems and the compliance schedules for various treatment needs and monitoring are usually delayed until after community systems have complied.

In 2007 New Hampshire reported that there were 1,244 Transient/Non-Community Water Systems. Typical transient systems include restaurants, motels, hotels, ski areas, beaches and camp-grounds (NHDES, 2008a). All but one of these transient systems rely on groundwater for their source of water. Transient systems are only required to monitor for bacteria, nitrate and nitrite.

As indicated in Figure 8-3, 38 percent of the population served by CWSs is served by systems using only groundwater, 39 percent by systems using only surface water, and 23 percent by systems using both groundwater and surface water sources.

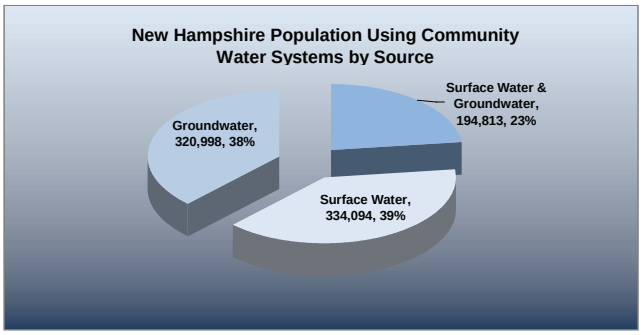

Figure 8-3. Population served by New Hampshire's community water systems. ***Source: NHDES Drinking Water and Groundwater Bureau.***

8.1.3 Drinking Water Uses and Statistics

Between 1950 and 2000 the U.S. population nearly doubled, but during the same period public demand for water more than tripled. Americans now use an average of 100 gallons of water each day, even though only two or three gallons might actually be consumed or used in cooking (U.S. Environmental Protection Agency [USEPA], 2008b). Indoor use varies but is typically around 70 gallons, nearly half of this for toilet flushing and clothes washers. That leaves nearly 30 gallons as outside water use for lawns, gardens and car washing (American Water Works Association, 2008). A recent study of the New Hampshire Seacoast estimated that each person uses an average of 75 gallons per day, although usage varied greatly among communities (Horn et al., 2008). A number of public water systems in New Hampshire report a doubling of customers' water use in the summer months due to irrigation. (See also Chapter 7 – Water Use and Conservation.)

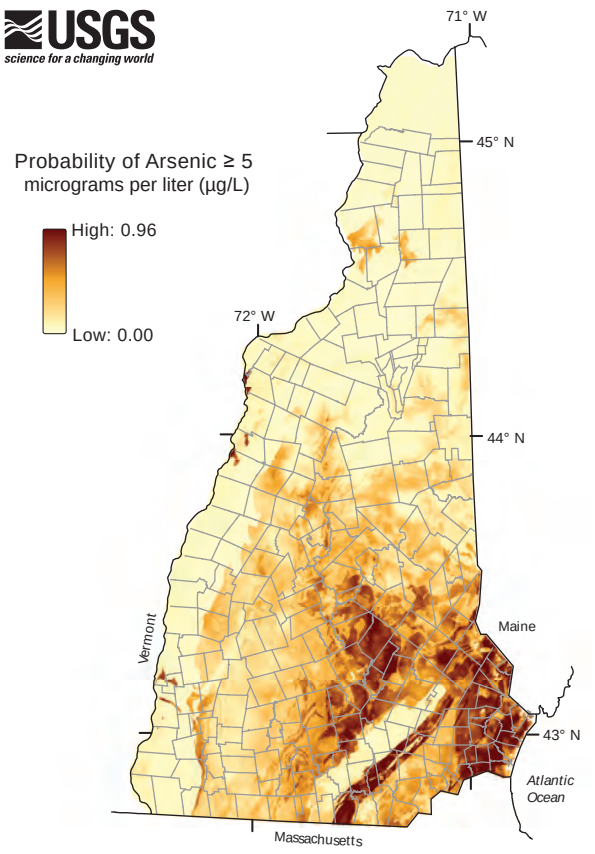

Figure 8-4. Probability that wells in each area of New Hampshire are likely to have water with arsenic concentrations exceeding 5 micrograms per liter (µg/L). *Source: Ayotte et al., 2006b.*

8.1.4 Estimates of Naturally Occurring Contaminants in New Hampshire Well Water

New Hampshire's geology lends itself to certain common, naturally occurring contaminants, the most predominant being arsenic and radon. There are also iron and manganese deposits that can create common aesthetic concerns such as unpleasant taste and odor and unwanted staining. Our understanding of naturally occurring contaminants in well water is largely derived from the testing required at public water systems, the voluntary testing of private wells, and a number of scientific studies by USGS and others. It should be noted that many private wells are never tested.

Arsenic in well water is fairly widespread in New Hampshire (Figure 8-4). It is estimated that 20 percent of the state's private wells exceed the recently revised standard of 10 parts per billion of arsenic, which public systems must not exceed (Moore, 2004; Ayotte et al., 2006a). Although most of the arsenic in groundwater is likely of geologic origin, some of it may also be from historic pesticide use on apple orchards and other crops or from ash disposal (Robinson & Ayotte, 2006). Arsenic is a known carcinogen.

Radon gas is a byproduct of the radioactive decay of radium in certain rocks such as granite, so it is naturally common in the Granite State (Figure 8-5). Radon is a carcinogen. The major pathways to people are via migration of the gas through the soil and into homes where it may be inhaled, through groundwater entering the home as drinking water and then released as a gas, such as when showering or running water, and through ingestion of drinking water. The greatest exposure is through the first pathway.

Drinking water standards for radon have been quite controversial, with an initial proposal from U.S. Environmental Protection Agency of 300 picocuries per liter (pci/L), a limit that would have been exceeded by an estimated 95 percent of all New Hampshire wells. That standard was never finalized and it is unclear when a federal standard will emerge. Some New England states have set standards ranging from 4,000 – 10,000 pci/L and DES recommends that treatment be considered if the levels in well water exceed 2,000 pci/L. Nearly 40 percent of New Hampshire's wells

are estimated to exceed 4,000 pci/L (NHDES, 2005). Other, less predominant naturally occurring contaminants found in some areas of the state include other radionuclides, fluoride and beryllium. Manganese at very high levels has also emerged as a health concern.

8.1.5 Water Supply System Components and Costs

Infrastructure in private water supply systems is minimal, consisting typically of a well, a pump, piping to the home, and a pressure tank. If there are water quality problems, the homeowner may have a point-of-entry device that treats all of the water entering the home, such as for radon. Alternatively, some homeowners are able to use point-of-use devices under the sink that treat only the drinking water coming from the tap, such as for arsenic. Older plumbing within the home may contain lead solder and fixtures that can leach lead and copper into the water. As previously noted, there is no uniform set of private well testing requirements or standards for treatment in New Hampshire, leaving it up to the homeowner to test their water and deal with the quality issues.

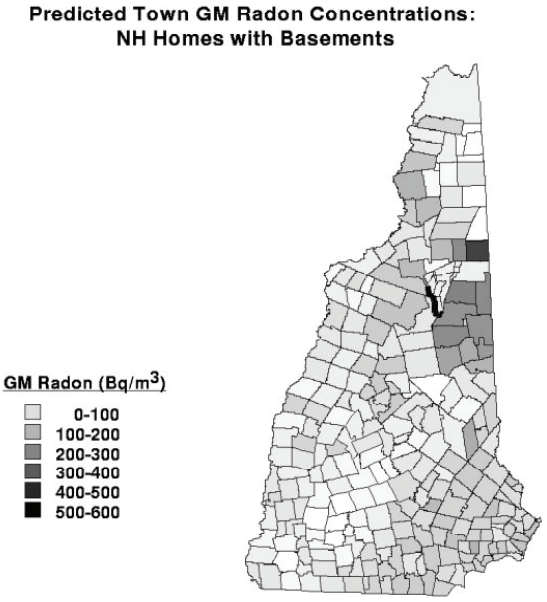

Figure 8-5. Predicted geometric mean (GM) concentrations of radon in homes with basements, by Town. *Source: Apte et al., 1999.*

Almost all private and small community water sources are wells, either dug or bedrock as previously described. As the number of customers increases, it can become difficult to meet demands through wells. As a result, larger systems most often rely on surface water sources or a combination of surface and groundwater.

The infrastructure for public water systems includes additional components such as treatment, storage, pumping and distribution. Typically, the larger the system, the more complex the system components, with surface water systems generally requiring significantly more treatment than groundwater based systems. For many of New Hampshire's municipal systems, the infrastructure is decades if not centuries old. Therefore, routine and long-term maintenance of treatment and water distribution systems are important.

The sophistication of system monitoring and management also varies greatly. Generally, the larger systems can afford to have computerized monitoring and control systems and multi-level staffing, while smaller systems often struggle to cover the costs of basic treatment, monitoring and maintenance.

8.1.6 Multiple Barrier Approach to Safe Drinking Water

As regulations under the Safe Drinking Water Act have become more and more inclusive and stringent in response to new information about contaminants and their health impacts, water systems that once needed only basic treatment have had to implement more complex processes. Treatment,

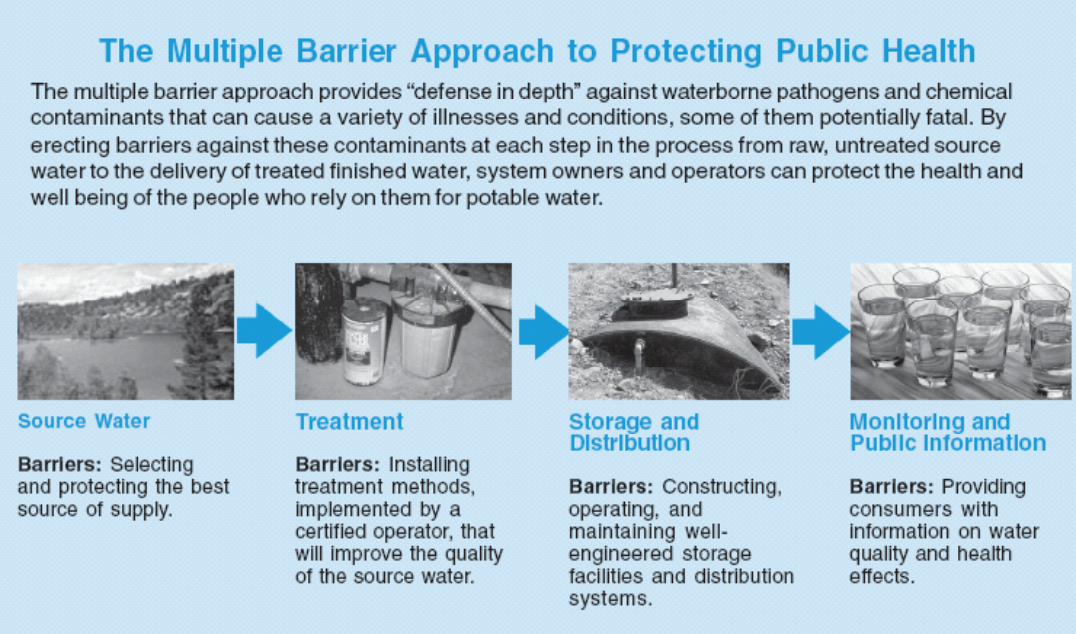

Figure 8-6. Multiple-barrier approach to safe drinking water. ***Source: USEPA, 2003.***

however, is only one element of an overall approach to ensuring safe drinking water that has been adopted over time by both the EPA and the water supply industry. The multiple barrier approach is now firmly established as the preferred way to ensure safe drinking water, although many water systems have employed the elements of this approach for many decades.

The multiple barrier approach may be slightly different for each type of system, but in general it includes steps that go all the way from the source of the drinking water to the tap. For example, a typical surface water multiple barrier approach includes watershed protection focusing on managing land uses and water-based activities, possibly optimization of the intake(s) to draw water from the location where water quality is optimal, a series of chemical and physical treatment steps including filtration and disinfection, protected storage of the treated water, monitoring steps, distribution system operations and maintenance, ongoing operator training, and additional tap water monitoring. Each of these provides a partial barrier to pathogens and chemical contamination, and together, public health is well-protected. Figure 8-6 shows the multiple-barrier approach graphically.

The multiple barrier approach can also be used for private wells. The steps are simpler but no less important, and may include using a reputable contractor to construct the well, locating it properly to avoid exposure to sanitary waste or other contaminants, keeping harmful materials away from the well, avoiding the use of nitrate fertilizers and pesticides nearby, disinfection of the piping to the house, testing of the well before use and every three years thereafter, installation and maintenance of appropriate treatment if indicated, and the use of backflow prevention devices wherever irrigation connections occur.

New Hampshire has embraced this approach and has promoted protection of the sources of our drinking water as an important tool in ensuring safe drinking water. The state supports local land use planning consistent with protecting both the quantity and quality of drinking water and many municipalities have adopted ordinances to protect their drinking water.

8.2 Issues

8.2.1 Private Well Users at Risk

Although about 36 percent of New Hampshire residents use private wells for their drinking water supply, the water quality of many of these wells is unknown. Currently there are no statewide monitoring or treatment requirements for private wells. Private wells are not covered by the Safe Drinking Water Act and are rarely regulated in towns or other states. New Hampshire has required a well construction report for private wells since the year 2000; however, there may be no records for wells constructed before then. Further, while New Hampshire encourages private well testing, it is unclear how effective the educational efforts have been.

As previously described, estimates suggest that a significant proportion of New Hampshire's private bedrock wells are contaminated with arsenic and/or radon, two naturally occurring contaminants. Recent studies have also increased concern about the health risks of elevated manganese and fluoride in some areas (Rocha-Amador et al., 2007). Dug wells are often at risk for pathogen entry if they are improperly maintained or constructed, or if wells are located where contaminants might enter due to flooding, nearby animal pens, manure piles, etc. In addition, there are other less common contaminants such as radionuclides other than radon, fluoride or beryllium, which can occur at unsafe levels in particular geographic areas. Salt from roads or salt piles is also a common problem in many areas of the state.

8.2.2 New Hampshire Has a High Proportion of Struggling Small Community Systems

Even large community water systems find the Safe Drinking Water Act regulations difficult and costly to meet, so it is no surprise that it is much more difficult for small water systems. Figure 8-7 depicts the many challenges that small water systems may encounter as they provide safe drinking water. New Hampshire has a large proportion of small systems which are widely distributed and often impossible to interconnect. Per customer costs may be dramatically different than those associated with large systems. These small stand-alone systems require fairly sophisticated operations, yet they cannot afford to hire full-time staff that specialize in drinking water. Some small municipal water systems may have to share one part-time staff member with the highway department, the fire department and others.

Conversely, larger systems benefit from economies of scale and can afford to hire highly educated, specialized staff teams with in-depth knowledge of treatment, distribution, and other aspects of drinking water provisions. As a result, customers of the smallest systems often pay the most for

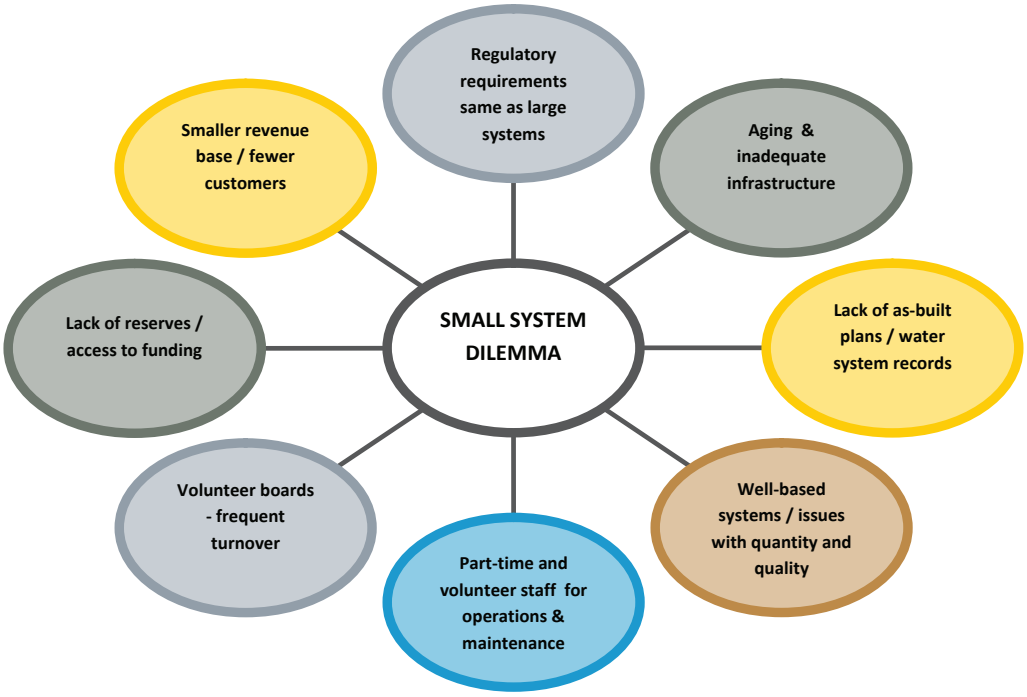

Figure 8-7. Challenges for small community water systems in New Hampshire.

the least in services. It is also important to note that providing water supply is a highly capital intensive mission where even the largest systems struggle to maintain and replace their aging infrastructure.

8.2.3 Aging Water Supply Infrastructure Is Widespread: Funding Insufficient

Much of the drinking water infrastructure in New Hampshire's cities and towns is 50 to100 years old. The infrastructure can include some or all of the following: dams for reservoirs, intakes, wells, pumps, transmission lines that take the water supply to treatment facilities, treatment facilities, water storage tanks, distribution networks, pump stations, meters, and electronic monitoring systems. Nearly all of these are costly to maintain or replace. Without regular capital improvements, more water leakage can occur and drinking water can become more difficult and costly to meet community needs.

A few of the largest systems are able to develop and implement long-term capital improvement plans, making infrastructure improvements over time. But for the most part, typical municipal systems are unable to keep up with the capital improvements that are needed to keep their systems up to date and operating efficiently, since they lack larger systems' economies of scale. Most water systems do not charge enough to cover all of the costs associated with providing water.

In 1996 a Drinking Water State Revolving Fund was established by Congress to, in part, help public water systems address aging infrastructure. New Hampshire receives approximately $8 million each year to loan out at reduced interest rates to our public water systems. In 2005 the 20-year projected demand for this funding in New Hampshire was $595.6 million (USEPA, 2005). Each year projects are prioritized based on severity of public health threat but demand consistently far exceeds supply. Because of the extensive process involved in receiving these loans, needy small public water systems rarely apply.

8.2.4 Population Pressures and the Purity Paradox

Treatment standards under the Safe Drinking Water Act are geared solely for the cost-effective protection of public health. Yet these stringent and costly standards are used to treat the entire water supply even though only a very small proportion of that water supply is actually used for drinking water. A considerable amount of water supply treated to drinking water standards is used to do laundry, flush toilets, irrigate lawns, put out fires, and clean streets.

Water systems expand to meet the peak demand of all uses, whether for drinking, lawn watering, or sanitary uses. Wells are drilled and re-drilled, surface water sources are expanded, and treatment capacity is increased to accommodate demand. Yet only a small portion of the total water used really needs to be of such high quality. There is a potential for both water and energy savings if non-drinking water uses could be satisfied by sources that are not treated to drinking water standards. Water from sinks and clothes washing (grey water) could be used for toilet flushing. Stormwater could be used to irrigate lawns with only minimal treatment in most cases. Until water costs much more, however, the savings associated with recycling grey water and stormwater will not outweigh the cost of separate conveyance systems.

This issue is likely to become more important in the future as population growth strains available supply and the cost of treatment continues to climb. As noted in Chapter 4 – Groundwater, continued growth and development also severely limits the ability to develop new municipal wells in many areas. Emerging contaminants that could drive the increase in treatment costs include pathogenic viruses, toxic algae, and pharmaceuticals and personal care products, e.g., prescription and over the counter therapeutic drugs, veterinary drugs, fragrances, cosmetics, sunscreen products, diagnostic agents and vitamins.

8.2.5 Climate Change May Have Implications for Public Health and Infrastructure

Some researchers are concerned that the rise of extreme precipitation events linked to climate change (see Chapter 1 – Introduction and Overview) will worsen U.S. waterborne disease outbreaks in the future. A 2001 article in the Journal of Public Health reported evidence that 68 percent of the waterborne disease outbreaks in the U.S. from 1948-1994 were preceded by the largest precipitation events (Curriero et al., 2001). It has not been determined whether this association holds true in New Hampshire. However, the predicted increase in frequency and intensity of storm events is a concern in terms of flooding at public water systems.

8.2.6 Water Supply Policies May Help or Hinder Smart Growth

Generally, land use patterns that concentrate growth in or near existing population centers and that involve compact development in newly developed areas are more protective of water resources and other aspects of environmental quality (air quality, energy use, consumption of other resources). There are several ways in which water supply policies on both the local and state levels may promote or hinder such "smart growth" land use patterns. First, as noted in section 8.2.4 and in Chapter 4 – Groundwater, attention should be given to the protection of future community well sites to enable growth of municipal systems in or near their existing service areas. Without this attention, these well sites will continue to be choked out by nearby development. Second, policies that address the expansion of service areas can either promote or hinder smart growth objectives, depending on the extent to which they encourage infill or compact development. Finally, the regulatory and financial demands on small community water systems may present an obstacle to compact development (as an alternative to large-lot development) outside existing service areas.

8.3 Current Management and Protection

8.3.1 Public Drinking Water Program

The New Hampshire Public Drinking Water Program implements the New Hampshire Safe Drinking Water Act (SDWA), which includes the requirements of the federal SDWA, which have expanded over the years (Figure 8-8). The federal SDWA was reauthorized in August 1996. New Hampshire has received "Primacy," the official designation by EPA for a state to implement the provisions of the federal SDWA. Approximately 90 percent of the funding for New Hampshire's Public Drinking Water Program comes from EPA, the remaining 10 percent comes from fees paid by water systems. Consequently, much of the work of DES's Drinking Water and Groundwater Bureau is dictated by the federal SDWA, including maximum contaminant levels (MCLs), monitoring schedules, and water system inspections. These requirements are designed to protect public health and were created at the national level in response to concerns expressed to the U.S. Congress regarding the need for

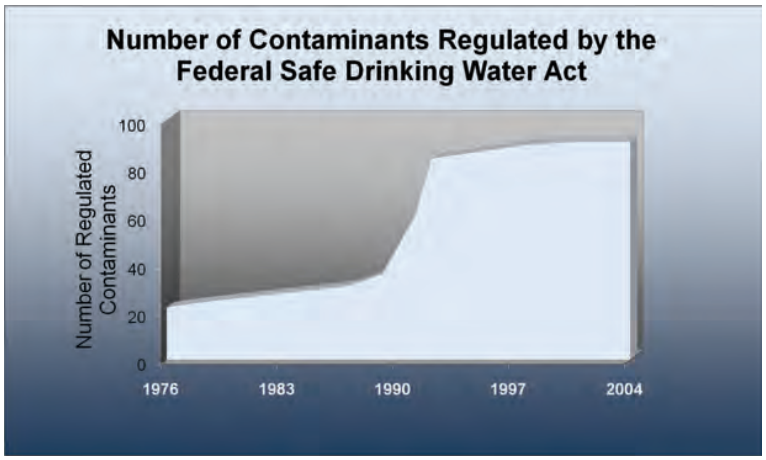

Figure 8-8. The number of contaminants regulated by the federal Safe Drinking Water Act has increased substantially over the past three decades. While compliance with the drinking water standards for so many contaminants proves to be difficult, this Figure does not account for regulatory standards that have changed to further limit a specific contaminant. *Source: USEPA, 2008a.*

strict standards in the drinking water industry. Overall, New Hampshire's drinking water program includes design, operation, and monitoring requirements for public water systems as well as protection of the sources of drinking water. In addition to DES, two public water system member groups have active roles in safe drinking water issues and provide significant training for public water system operators: New Hampshire Water Works Association and Granite State Rural Water Association. Finally, the Rural Community Assistance Program also provides assistance to public water systems in rural areas of the state.

8.3.2 Private Well Initiative

In 2000 DES and EPA launched a private well testing initiative, encouraging users of private wells to test their water more often and for a broader range of contaminants than before. DES enlisted the help of local health officers to blanket the state with posters and flyers urging homeowners to "Protect Your Family – Test Your Well's Water Quality Today." Health officers were asked to display the flyers in high-traffic locations in their municipalities. Public service announcements were produced and distributed to radio stations. A web site was developed containing pertinent fact sheets about contaminants of concern, lists of licensed well drillers and accredited laboratories, wellhead protection information, checklists, and other information for private well owners (NHDES, 2008e). Outreach to realtors and homeowners continue on a limited basis due to funding constraints.

8.3.3 Water Well Construction and Driller Licensing

Water well contractors and pump installers are licensed under RSA 482-B, which also establishes a Water Well Board to oversee licensing and the filing of well completion reports. The Water Well Board also adopts and enforces standards for the construction of wells and the installation of pumps. The board maintains records of over 112,000 wells constructed throughout the state since 1984 (NHDES, 2008d). The information is available for easy access through the internet, and is used frequently by homeowners, professionals such as hydrogeologists, and other interested parties.

8.3.4 Local Source Water Protection and Private Well Testing Ordinances

While a significant number of New Hampshire municipalities have taken steps to protect their important groundwater resources from contamination by human activities, very few have adopted regulations to protect private well users through mandatory testing. Seventy-five municipalities have adopted ordinances to protect aquifers, public wells, or other groundwater resources. Seventy of those ordinances rely on land use restrictions, while 27 incorporate a requirement for potential contamination sources to use best management practices. Twenty-one municipalities have adopted ordinances similar to the model groundwater protection ordinance developed by DES and the New Hampshire Office of Energy and Planning (NHDES, 2006), incorporating both land use restrictions and BMP requirements.

In contrast, only five municipalities have adopted ordinances that require testing of private wells for a prescribed list of contaminants, either in connection with real estate transfers or certificates of occupancy. An additional 44 municipalities report that they have a private well testing require-

ment, apparently in reference to the state plumbing code, which requires that water supplies connected to domestic plumbing systems supply potable water. However, the code does not define "potable" in terms of specific contaminants, so there is no assurance that the water is tested for common contaminants such as arsenic and radon.

8.4 Stakeholder Recommendations

8.4.1 Increase Private Well Protection

In spite of the major efforts towards protecting private wells by licensing contractors and drillers and requiring standards for well construction, there are no clear water quality or testing standards for private wells. There are also no mandatory state standards for vendors installing treatment for private wells. Since a large percentage of private wells produce water that exceeds health-based contaminant limits, additional steps are needed to improve the effectiveness of programs to inform and protect private well users.

8.4.2 Improve Capacity of Small Systems

New Hampshire has many small drinking water systems that are often unable to provide the same level of public health and safety protection as larger systems due to a lack of economy of scale and the difficulty in finding certified operators to assist them. Their capacity for financial management is critical, including training of water commissioners and understanding how to charge the true cost of water to customers. They also need technical assistance and managerial capacity to help deal with complex Safe Drinking Water Act regulations and critical drinking water operations. Where possible, regionalization is one option to assist small communities in meeting their obligations. Another option is to assist them through funding and technical assistance to develop better technical, financial, and management capabilities. Drinking Water State Revolving Funds should be made more accessible for small systems.

8.4.3 Maintain and Upgrade Drinking Water Infrastructure

As treatment facilities, water tanks, pumps, and water mains age, their tendency to fail increases, sometimes dramatically. However, few water systems, even the largest, can afford to pay for all of the capital improvements required to get their systems up-to-date. A significantly greater funding level is needed to protect public health and safety; the long-term economic and public health costs of not upgrading the infrastructure are too great.

8.4.4 Improve Local Protection Efforts

Although the state provides siting criteria for certain potential contamination sources, such as above ground and underground storage tanks and landfills, local planning and zoning boards have a much greater role in restricting the siting of activities that present a risk of contamination. Municipal governments need to improve their capacity to protect their own water supplies from the negative impacts that can result from development (see description of landscape change in Chapter 1 – Introduction and Overview). In addition to water wise local ordinances, more permanent pro-

tection of critical water supply lands through conservation is needed. Finally, in lieu of a statewide approach to ensure private wells are tested, municipalities should be encouraged to adopt ordinances to ensure that well testing and disclosure is occurring.

8.4.5 Track Emerging Contaminants

Although the provision of drinking water is already highly regulated, new contaminants and po-tential contaminants are identified every day. For example, using MTBE (Methyl tertiary-Butyl Ether) in gasoline to improve air quality turned out to be a mistake from the standpoint of groundwater protection, and this highly soluble contaminant has been found in many areas of New Hampshire (Ayotte et al., 2008). Although MTBE is no longer used in New Hampshire, other contaminants may threaten our drinking water quality in the future. For example, pharmaceuticals and personal care products are now being found at trace levels in groundwater and surface water in many parts of the country. Whether these will be found in New Hampshire, whether they will have human health effects, and the extent of their ecological effects, remain to be seen, but New Hampshire must continue to track research and health assessments to make sure that appropriate water quality health standards are developed when needed.

8.4.6 Water System Security and Interconnection

The water sector continues to be a concern as a target for terrorism. Preparedness for natural disasters is also necessary. DES and EPA have provided funding to help harden public water systems and to promote emergency interconnections between municipal systems. The state also encourages public water systems to join New Hampshire's Public Works Mutual Aid Program so that water systems can assist one another in the event of an emergency by enabling a prompt and effective response. Although emergency plans are required for community water systems, more emphasis in emergency preparedness is necessary including improved communications and coordination with local first responders and funding for backup power.

8.4.7 Prepare for Climate Change

Water systems need to understand climate change (see Chapter 1 – Introduction and Overview) and prepare adaptation strategies. The state should assist with identifying the anticipated impact of future climate change for the state's large, municipal water systems. The Drinking Water State Revolving Loan Fund program should take this information into consideration when making infrastructure investment decisions. It should also address drinking water impacts overall in future versions of the New Hampshire Climate Change Action Plan (NHDES, 2008b).

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The State of New Hampshire
Department of Environmental Services

Thomas S. Burack, Commissioner

October 7, 2011 Via email

Mr. Jeffrey Butensky
Drinking Water Quality and Protection Unit
USEPA - New England
One Congress Street, Suite 1100 (CDW)
Boston, MA 02114
butensky.jeff@epa.gov

Re: NH Capacity Development FY 2011 and Governor's Report FY 2009 – 2011

Dear Jeff:

In accordance with Section 1420 (c) of the 1996 Amendments to the Safe Drinking Water Act, we are hereby submitting New Hampshire's Annual Capacity Development report to EPA, and our Triennial Report to the Governor. These are available on our "Small Public Water System Help Center" web page at www.des.nh.gov, A to Z List.

These reports include EPA's required information regarding activities and control points for capacity assurance for new and existing systems in our state. Some key messages from this period are:

- New Hampshire's principal capacity development need (Section II) is to reduce Total Coliform violations at very small systems serving <250 people;
- New Hampshire is committed to continuing access to DWSRF funding to address the infrastructure needs at the very small, privately-owned systems; and
- For the next reporting period, we are implementing basic asset management planning and the requirement to submit a simple capital improvements plan for small systems applying for funding assistance through the DWSRF.

Please contact our Capacity Development Program Coordinator at Cynthia.Klevens@des.nh.gov (603) 271-3108, for any additional information or questions on these reports.

Sincerely,

Sarah A. Pillsbury, PG
Administrator
Drinking Water and Groundwater Bureau

Encl.

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R-WD-11-23

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES

TRIENNIAL REPORT TO THE GOVERNOR AND USEPA WITH HIGHLIGHTS FOR FY 2011 ON NEW HAMPSHIRE'S CAPACITY DEVELOPMENT PROGRAM FOR PUBLIC WATER SYSTEMS FY 2009 TO FY 2011

July 2009 to June 2011

Prepared by Cynthia Klevens, P.E.

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September 30, 2011

TABLE OF CONTENTS

FIGURES & TABLES

I. INTRODUCTION

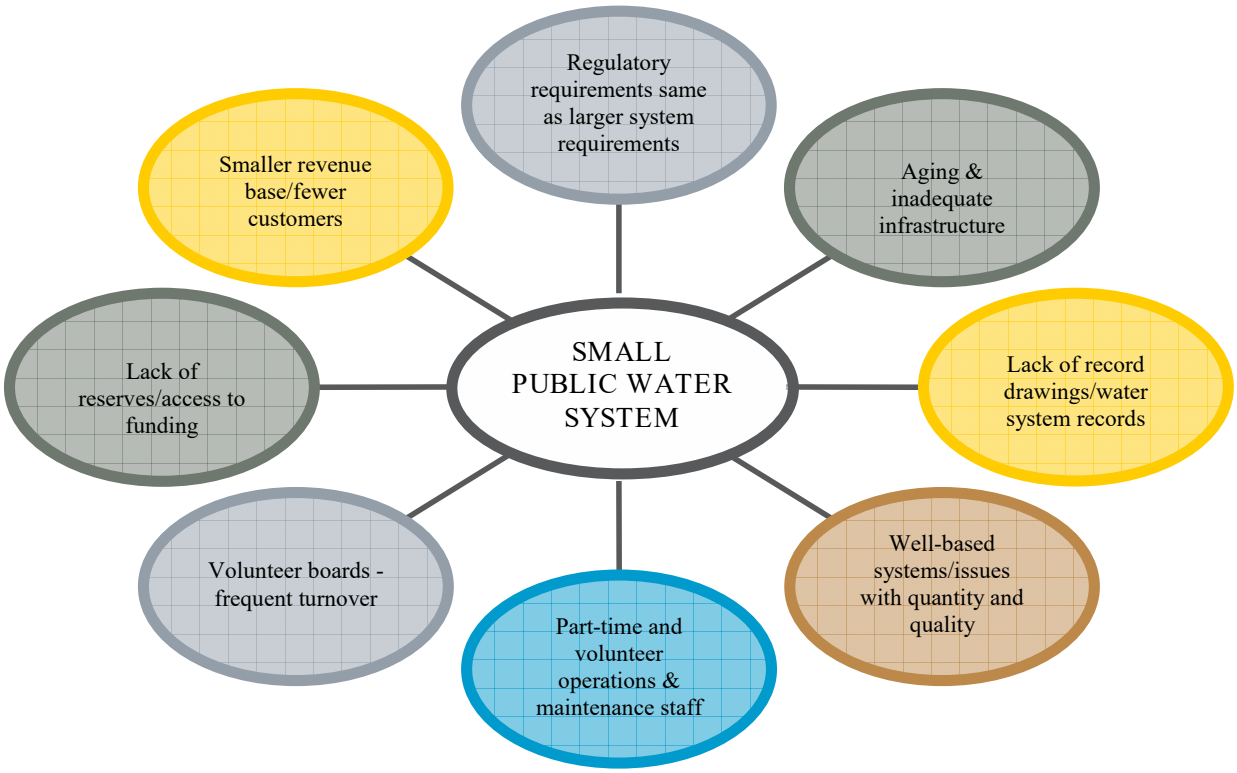
1. BACKGROUND

Under the 1996 Amendments to the Safe Drinking Water Act (SDWA), Section 1420(c), states 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 water. States failing to comply with these requirements are subject to withholding of up to 20 percent of their Drinking Water State Revolving Loan Fund allotment.

This report is structured in accordance with reporting criteria developed by EPA, to provide more consistent state reporting. Activities for this reporting period are organized into those provided for new PWS (Section B) and those for existing PWS (Section C).

The overall goal of capacity assurance is to improve the rate of compliance and long-term sustainability of community (CWS) and non-transient non-community (NTNC) public water systems. New Hampshire's program is administered through the Department of Environmental Services Drinking Water and Groundwater Bureau (DWGB). Based on the non-compliance trends from the past few years, we have focused more technical assistance efforts on the very small water systems (<250 service population), and on specific contaminants such as bacteria, arsenic, uranium, lead and copper. Figure 1 depicts some of the reasons that the very small systems require continued assistance and enforcement to maintain compliance with the SDWA.

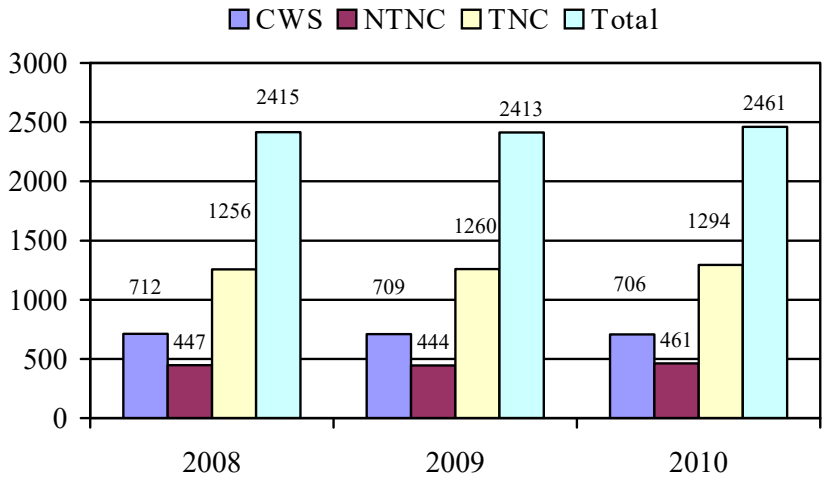
Figure 1 – Small Water System Challenges



2. PROFILE OF NEW HAMPSHIRE PUBLIC WATER SYSTEMS

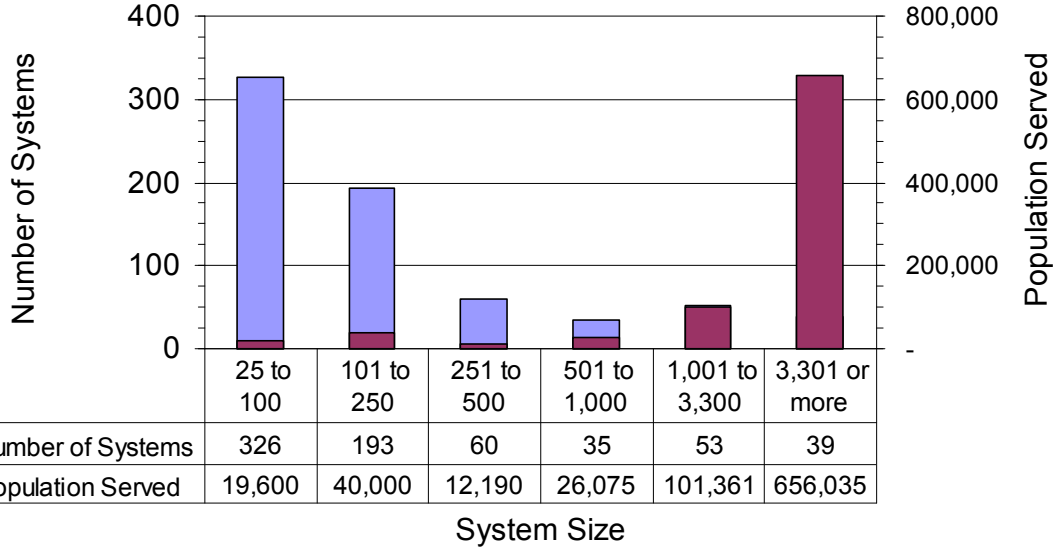
The capacity assurance program applies to non-transient water systems only, which comprise about half (47%) of the 2,461 water systems regulated by the state under the federal and state SDWA (Figure 2). About 60 percent of the state's residential population is served by public water systems. The remaining 40 percent is served by private wells.

Figure 2 - NH Active Public Water Systems



It is important to note that the majority (74%) of New Hampshire's CWS serve fewer than 250 people (Figure 3), and thus face significant financial, managerial and technical challenges to maintain compliance with the SDWA requirements.

Figure 3 NH Community Water Systems by Population Served

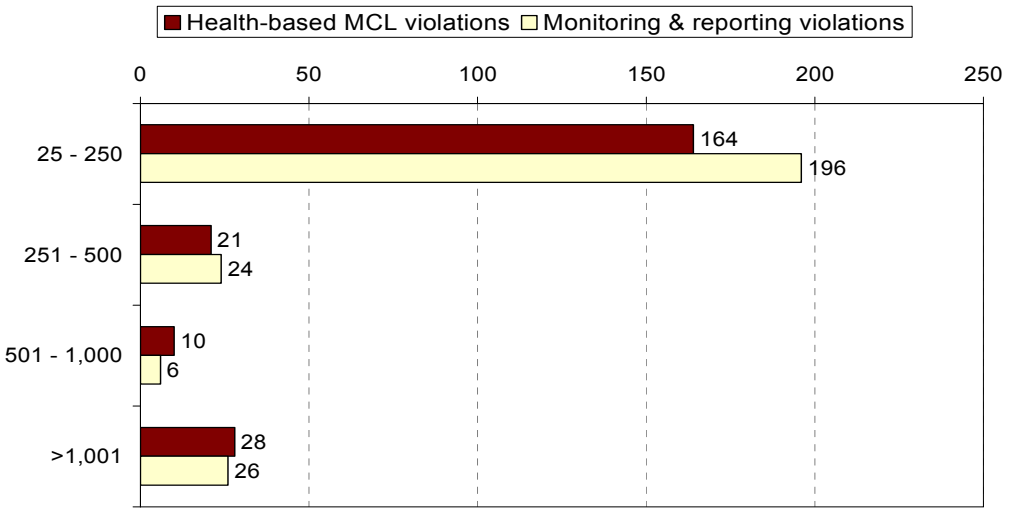


II. STATEWIDE CAPACITY NEEDS IDENTIFIED THIS PERIOD

1. VIOLATIONS BY SYSTEM SIZE

Review of the number of violations in the past fiscal year (Fig 4) reveals that the highest number of violations, both for health-based standards as well as for monitoring and reporting (failure to sample or provide public notice), are incurred by the very small systems (<250 people).

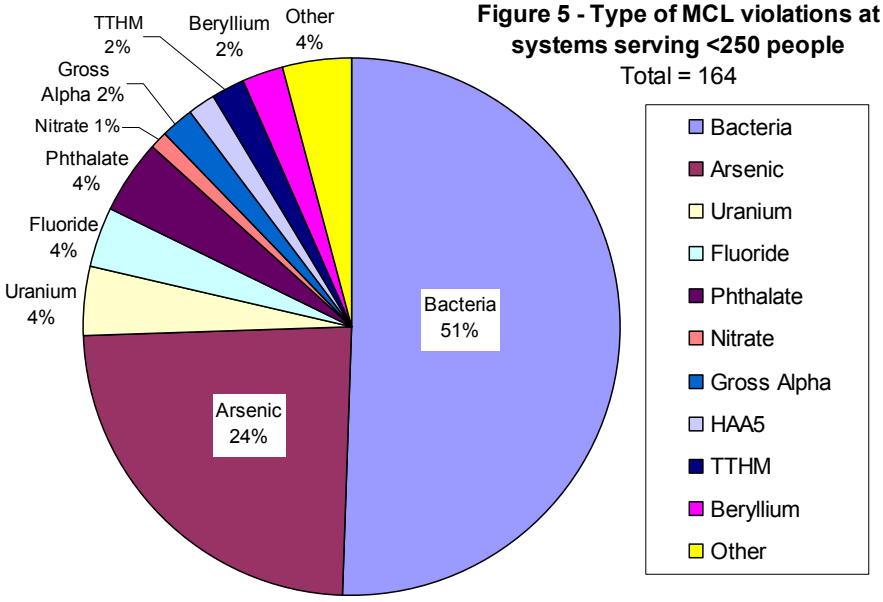
Figure 4 - Number of Violations by System Size
(July 2010 to June 2011)



2. VIOLATIONS BY CONTAMINANT

More detailed review of the health-based maximum contaminant level (MCL) violations at the very small systems (Figure 5), shows that the most important issues are total coliform bacteria (51% of violations) and arsenic (24%).

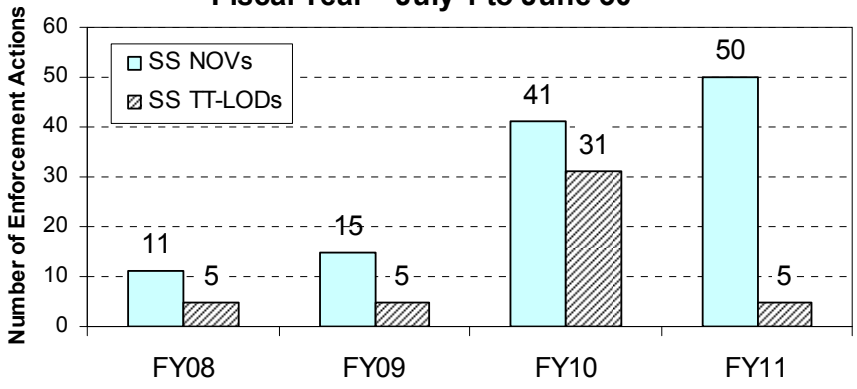
Figure 5 - Type of MCL violations at systems serving <250 people
Total = 164



3. SANITARY SURVEY DEFICIENCIES

In FY2010 and in conjunction with state implementation of the new Groundwater Rule, New Hampshire reinforced its sanitary survey enforcement and outreach to address outstanding deficiencies that could impact system reliability and operations. Figure 6 shows the results of these efforts as depicted by the number of state-level Notices of Violation (NOV) and subsequent Treatment Technique/Letters of Deficiency (TT-LOD). NOVs are issued if the deficiency is not corrected or does not have a state-approved Corrective Action Plan (CAP) by 30 days of the survey visit. TT-LODs are issued if the deficiency is still outstanding or does not have an approved CAP by 120 days of the survey citation. Technical assistance on possible corrective options is provided at the time of the Sanitary Survey, as well as follow-up email/phone correspondence to address any questions or problems prior to the TT-LOD enforcement.

Figure 6 - Sanitary Survey Enforcement
Fiscal Year = July 1 to June 30



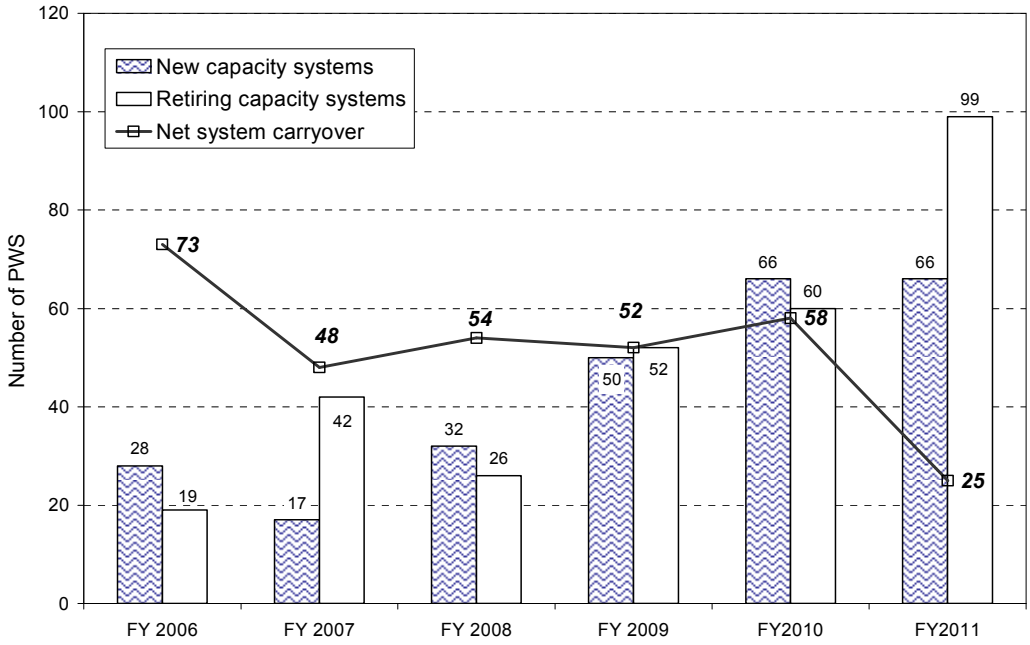
4. IDENTIFICATION AND PRIORITIZATION OF SYSTEMS IN NEED OF ASSISTANCE

Systems in need of targeted 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, and repeat violations/enforcement lists. A rolling capacity development "priority list" is maintained by the Capacity Development staff wherein each system is assigned a lead "TA contact" from the Bureau, to identify root causes and solutions with the system representatives and consultants.

A chronological work log is opened to track general interactions and progress for each water system on the priority list, and is closed when the system has returned to compliance and is deemed to be stable. The assigned TA leads meet as a group twice per month, to review system progress or lack thereof. When needed, the Bureau Administrator personally attends meetings or conference calls with water system commissioners, owners, or board members to review the deficiencies and agree on a suitable work plan and timeline for resolution.

Quarterly tracking measures include "new capacity systems" and "retired capacity systems". Figure 7 shows the carryover from each fiscal year of active systems on the priority list. This past fiscal year shows a high number of "retirees" based on increased and continued contacts from DES with system representatives, for both technical assistance and enforcement. This resulted in the lowest carryover of troubled systems (25 total) into FY 2012.

Fig 7 - Capacity Development "Priority List"



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. The capacity assurance program for new systems includes regulatory requirements and control points to verify that new approvals are issued only to systems that have demonstrated these capabilities.

1. CHANGES IN STATE REGULATIONS FOR CAPACITY ASSURANCE

There were no changes in the Capacity Assurance state regulations in fiscal year 2011.

2. MODIFICATIONS TO THE STATE'S CONTROL POINTS FOR CAPACITY ASSURANCE

New Hampshire's main control point for capacity assurance is the water system Business Plan. The business plan is a tool for the system to document its managerial and financial assets, and to improve its ability to provide effective and reliable service to its customers over the long term. There were no changes to the business plan in this reporting period.

3. NEW PWS APPROVALS VS. ENFORCEMENT TARGETING TOOL (ETT) LIST

On average, around 10 new non-transient water systems are approved or "found" per year in New Hampshire (Figure 8). A few are also deactivated either because they connect to a larger system, or they no longer meet the definition of a PWS. The names of non-transient water systems added to our inventory over the past 3 fiscal years are listed in Table 1. Of these, Sunset Villa in Fitzwilliam (PWS 0823010) and Epsom Medical Center in Epsom (PWS 0775020) have been listed on the federal Enforcement Targeting Tool (ETT) due to repeat violations. An Administrative Order was filed against the Sunset Villa owner and they returned to compliance in Q3 2011. Epsom Medical Center was provided technical assistance for maintenance of its arsenic treatment and returned to compliance in Q1 2011.

Figure 8 - New Non-Transient Public Water Systems FY07-11

Fiscal Year = July 1 to June 30

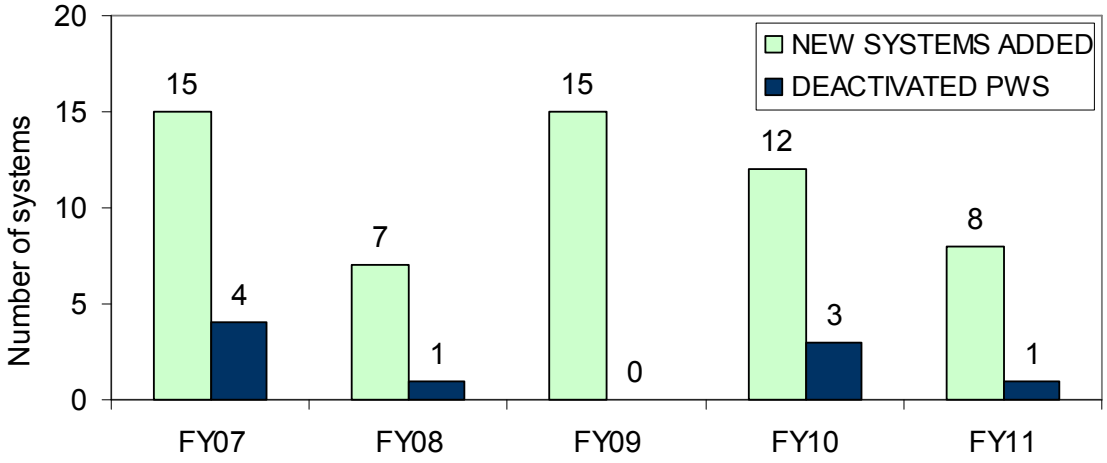


Table 1 - New Non-transient Systems FY2009 to FY2011

EPA ID	TOWN	PWS NAME	TYPE
FISCAL YR 2009 (JULY 1 2008 TO JUNE 2009)			
0025010	Albany	White Mountain Waldorf School	NT/NC
0265050	Bow	Bow Youth Center	NT/NC
0275080	Bradford	NFI North School	NT/NC
0666030	Dublin	Dublin Village Park	NT/NC
0775020	Epsom	Epsom Medical Center - ETT Q2 2010, closed Q1 2011	NT/NC
1625020	Nashua	Second Nature Academy	NT/NC
2545100	Windham	Windham High School	NT/NC
2546200	Windham	Cyr Lumber	NT/NC
FISCAL YR 2010 (JULY 1 2009 TO JUNE 2010)			
0116040	Atkinson	Palmer Gas	NT/NC
0346030	Campton	USFS WMNF Administrative Complex	NT/NC
0605010	Deering	Robin Hill Farm/Blue House	NT/NC
0823010	Fitzwilliam	Sunset Villa Park - ETT Q3 2010, closed Q3 2011	CWS
1462040	Madison	Silver Lake Landing Sr Housing	CWS
1685020	Newfields	Gateway to Learning Preschool	NT/NC
1936300	Plaistow	Barons Condos	NT/NC
2236160	Stratham	Lindt and Sprungli Buildings (3 systems 6160, 6170, 6180)	NT/NC
2546210	Windham	Granite Oaks	NT/NC
FISCAL YR 2011 (JULY 1 2010 TO JUNE 2011)			
0286060	Brentwood	Rockingham County Courthouse	NT/NC
0872020	Fremont	Blackrocks Village	CWS
1045050	Hampton Falls	RCA Head Start	NT/NC
1852100	Pelham	Boulder Hills	CWS
1992070	Rindge	Payson Village	CWS
2306050	Swanzey	Honda of Keene	NT/NC
2306060	Swanzey	Toyota/Hyundai of Keene	NT/NC
2546220	Windham	Five Industrial Dr	NT/NC

CWS = community public water system NTNC = Non-transient non-community public water system
ETT = EPA Enforcement Tracking Tool

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 assistance.

1. GRANTS AND LOANS

- Hired a contractor to have generator needs assessments completed at over 80 water systems throughout the state.
- Awarded 8 Local Source Water Protection grants for a total of $116,067 for various drinking water protection projects.
- Awarded 9 Record Drawing grant match funds totaling $6,340.55 to assist very small community water systems in developing or updating their record drawings. This grant program was developed in FY 2009 and offers 50 percent match of eligible costs up to $1,500 per water system. The grant will remain open until funds have been depleted. Monthly outreach consists of email or letter notices to systems cited the prior month for lack of record drawings during regular sanitary surveys, with links to the grant application and drawing guidance.
- The Drinking Water State Revolving Loan Fund (DWSRF) awarded a total of $7.2 million for 16 infrastructure project loans in 2009 (FY2010), of which nine projects (56%) were for systems serving <500 population (Table 2). All of the 2009 projects have continued work into FY2011, and are expected to be completed in FY2012. In August 2010, a total of $11.6 million were awarded for funding of 17 new projects including Green Infrastructure. However, three small systems on the 2010 project priority list declined the DWSRF award due to excessive debt service (two systems), or a better loan/grant package with USDA-Rural Development (Pittsburg Water Dept).

Table 2 –DWSRF awards to systems serving <500 people (2009 and 2010 priority lists)

PWS ID	PWS Name	Popu-lation	Project Description	Initial Funding Request	Projected DWSRF Amt
2009 DWSRF Project Priority List					
0831010	Francestown Village Water Co	150	Well 2 deepen, PH rehab, As trt, access road	$ 207,000	$ 100,000
1431010	Lyme Water Association	83	Infrastructure improvements	$ 770,770	$ 300,000
1852080	Pelham Old Lawrence Road	25	PS/trt upgrades incl. new brine discharge	$ 242,000	$420,000
1992040	Rindge Hampshire Court Condos	50	PH/trt upgrades including VFD's	$ 61,034	Same
0512060	Conway Forest Edge Water Co	118	PH upgrades, blending fluoride, VFD pumps	$ 126,000	Declined
0413010	Charlestown, Blueberry Hill MHP	75	IC Charlestown, match for CDBG funding	$ 500,000	$250,000
0882170	Gilford, Country Village way	100	New PH and controls	$ 97,400	$76,000
0151010	Barrington, Swains Lake Vlg Wtr	150	New GW Supply and WTP rehab	$1,050,000	Same
0512240	Conway Rockhouse Mountain	250	New well source and booster station	$ 65,000	$230,000
2010 DWSRF Project Priority List					
1901010	Pittsburg Water Dept	198	New well source, PH, piping and storage	$2,562,623	Declined
0993020	Greenville Estates Village Dist	480	Distribution system improvements	$500,000	Declined
0803040	Exeter Beech Hill MHP	70	New well source, PH and distribution	$273,500	Declined
TOTAL DWSRF AWARD TO SYSTEMS <500 POPULATION				$6.4 million	Est $1.4 million

2. PUBLICATIONS

- Prepared and issued biannual newsletter "Supply Lines with the Source," which is emailed to all community water system contacts.
- Published monthly e-newsletter to promote source water protection activities in the Salmon Falls watershed.
- Published article in New Hampshire Town & City magazine regarding economic benefits of water supply land conservation.
- Reviewed and posted updates to 46 Drinking Water fact sheets on a variety of topics including Source Protection, Water Efficiency/Conservation, Water Quality, and Emergency Planning, available at www.des.nh.gov Quick Links, Publications/Fact Sheets.

3. SOURCE WATER PROTECTION & EMERGENCY PREPAREDNESS ASSISTANCE

- Published Model Water Use Restriction Ordinance for Water Systems Owned or Operated by Municipalities or Village Districts.
- Implemented annual tracking and mapping of known water use restrictions in New Hampshire.
- Began a new series of regional workshops to train local and regional planners in source water protection basics.
- Conducted annual Drinking Water Source Protection Workshop (largest in New England).
- Outreach to systems who conduct inspections of potential contamination sources in their source water protection areas, offering refresher training in conducting inspection programs. We provided training to 23 local inspectors during the past FFY.
- Notified water systems with source water protection areas where household hazardous waste collection events were being held and provided them with materials to promote those events (46 events during the first three quarters of the FFY).
- Developed and implemented more efficient system to contact and assist most vulnerable water systems in areas affected by natural disasters.
- Conducted 53 outreach events during the first three quarters of the FFY.

4. TOTAL COLIFORM BACTERIA PWS ASSESSMENT PILOT

In an effort to address our Number 1 compliance issue (51 percent of all health-based violations, as shown in Section II – State Capacity Needs, Figure 5), a new PWS "assessment" checklist is being sent with every Total Coliform Rule MCL violation letter since January 2010. The PWS assessment form was modeled after the federal, proposed Revised Total Coliform Rule (RTCR) "Level 1 Assessment," and is being piloted for evaluation with EPA's RTCR workgroup.

The purpose of the assessment is to assist the PWS to systematically evaluate the system from source to distribution, to sampling collection and handling, to identify and prevent future causes for the bacteria contamination. Systems are required to return the assessment form (or an equivalent evaluation report) after incurring a second MCL violation within 12 months. A review of the effectiveness (or not) of this tool will be performed in FY2012.

5. LEAD AND COPPER OUTREACH

Small system compliance with the Lead and Copper Rule has improved significantly in the past year thanks in part to increased verbal and written communications to (a) complete treatment

installations by the required deadline, and (b) review ongoing water quality results and make adjustments to treatment accordingly.

In addition to improvements in compliance, we adopted the new federal revisions as Env-Dw 714, Control of Lead and Copper in February 2011. Two stakeholders meetings were held to review the new steps and approach, aimed at achieving compliance in a more timely manner.

6. Evaluation of Lead Levels in Daycares served by Municipal Water Systems

In September 2010, DES received an EPA grant for $10,000 to evaluate lead levels in drinking water at daycares and preschools served by larger municipal water systems. The work plan included outreach and education to prevent lead in drinking water, and the collection of samples from 56 daycares or preschools located in five municipal water systems. Sample collection was performed between June to September 2011. Data analysis and a final report is planned to be completed by year-end 2011.

7. Seasonal Water Systems Annual Operations and Maintenance Training

Since 2009, DWGB staff coordinate annual training workshops for campgrounds and other seasonal systems, along with staff from Granite State Rural Water Association (GSRWA) and the New Hampshire Department of Resources and Economic Development (DRED). For FY2011, training sessions were held in North Conway (10 attendees), Hancock (eight attendees), Meredith (25 attendees), and Raymond (16 attendees). Training topics included:

- Water cycle and groundwater flow.
- New Hampshire geology and naturally-occurring drinking water contaminants.
- Well construction and water quality.
- Storage, distribution and treatment system construction and maintenance.
- Seasonal start-up and shut-down practices.
- Bacteria problems – causes and cures.
- Wastewater system considerations.
- State inspections – what to expect.

8. ARRA Set-aside for Leak Detection

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 FY 2010, DES issued a request for proposals and hired a professional leak detection firm through a set-aside of the American Recovery and Reinvestment Act (ARRA) to perform leak detection surveys at community water systems in New Hampshire. The surveys were completed during the summers of 2010 and 2011. The contractor was on site with the systems for almost 150 days at a total cost of $110,000.

Of the 27 systems surveyed, eight serve less than 500 people. Approximately 12 miles of pipe were surveyed at the small systems resulting in the discovery of seven leaks totaling 16 gallons per minute. This rate equates to roughly 8.4 million gallons per year or 675,000 gallons per year per mile of pipe surveyed.

The 19 systems serving more than 500 people had 116 leaks in the 550 miles of pipe surveyed. Although the total leak rate was much higher (825 gallons per minute or 434 million gallons per year), the rate per mile was similar to the smaller systems at 780,000 gallons per year per mile of pipe.

9. Operator Certification Program Outreach

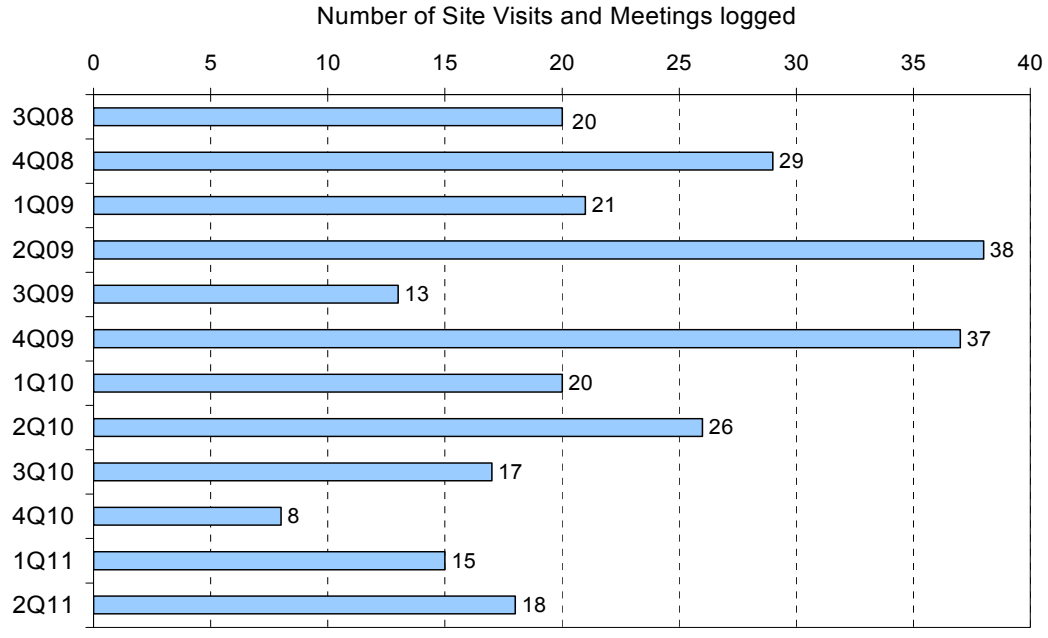
The Operator Certification program funds a number of outreach and training activities through the Operator Expense Reimbursement Grant, to advance the skill and knowledge of small water system operators and board members. Highlights for FY11 included:

- Request for proposals and subsequent contract with F.X. Lyons Inc., Intervale, for the design and construction of a pump station training mock-up at the DES Franklin Training Center in Franklin. The new center was completed in Spring 2011 and is scheduled for a public inauguration/ribbon cutting in October 2011.
- Contract with the New Hampshire Water Works Association (NHWWA) to coordinate the October 2010 NH Drinking Water Tradeshow and Exposition in Concord, featuring a full day of technical seminars (three parallel sessions, 17 presenters, 5 CEUs). This event is our main opportunity for outreach to very small system operators as it regularly attracts attendance by over 250 certified drinking water operators.
- Contract with the NHWWA to provide operator training for the Small Water Systems, Grade IA courses (Fall and Spring of each year), two basic math courses, one "advanced" water treatment seminar, and two Grade II treatment review courses.
- Two stakeholder meeting with Contract Operators and water system representatives from large, medium and small water systems for comments on the re-adoption of Env-Ws 360-361 Operations and Maintenance Rules (new Env-Dw 503-504), to be adopted in FY 2012.
- Annual outreach table and participation at Granite State Rural Water Association Operator Field Day (September of each year).

10. One-on-One Technical Assistance

DWGB technical staff provide ongoing technical assistance to small water systems to assist with source capacity issues, bacteria troubleshooting, and financial and managerial planning. Quarterly technical assistance site visits and meetings (2T and CM codes) attended by DWGB staff for FY09 to FY11 are shown in Figure 9. These site visits are in addition to standard sanitary surveys, permitting inspections, or special investigations performed by DWGB staff.

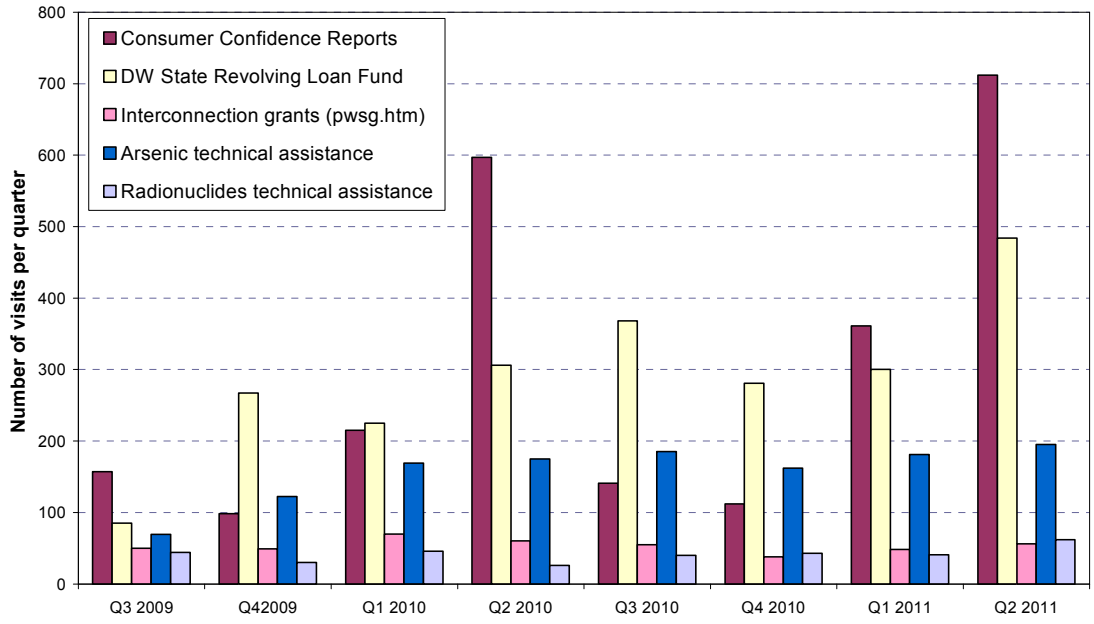
Fig 9 - Technical Assistance Visits & Meetings by DWGB Staff



11. Small Public Water Supply Help Center

New Hampshire's "Small Public Water Supply Help Center" (www.des.nh.gov, A to Z List) provides fact sheets and guidance to help small systems with the most pressing compliance issues. Web visits are tracked quarterly to identify most popular topics (Figure 10).

Figure 10 - Small System Help Center Webpage visits
Most popular pages FY2010 and FY 2011



V. STATEWIDE REVIEW OF IMPLEMENTATION PROGRESS

Review of the capacity program implementation progress consists of weekly meetings by the lead TA contacts, quarterly meetings with all small and large water system technical staff, and quarterly measures tracking through the statewide Measures Tracking and Reporting System (MTRS). Current tracking measures are:

- Number of TA site visits by DWGB staff.
- Number of new systems added to the active capacity development list.
- Number of systems retired from the capacity development list.
- Number of visits to Small System Help Center/Capacity Assurance webpage.

Annual review of the program progress is provided via our annual reports to EPA, and triennial reports to the Governor.

VI. MODIFICATIONS TO CAPACITY DEVELOPMENT STRATEGY

For FY 2012, the existing systems strategy is proposed to be enhanced by the following:

- Basic asset management planning and development of a simple capital improvements plan (CIP) for small systems to be funded through the DWSRF.
- Quarterly review and matching of outreach activities to number and types of violations.

In addition, we will continue close coordination with other local and regional technical assistance and training partners, including:

- Continued participation in the National Capacity Re-energizing Workgroup and alignment of state priorities and measures with national program strategies.
- Continued collaboration with the Water Technical Assistance Center (WTTAC) at the University of New Hampshire–Durham, on projects targeting public water system compliance issues such as Disinfection Byproducts control.
- Continued collaboration with US Dept of Agriculture–Rural Development to provide the best loan/grant funding of drinking water infrastructure improvements for water districts and municipalities.
- Continued collaboration with other TA providers including: Granite State Rural Water Development (funding through USDA–RD), RCAP Solutions Northeast Rural Community Assistance Partnership, New England Water Works (NEWWA), New Hampshire Water Works Association (NHWWA), and the New England Interstate Water Pollution Control Commission (NEIWPCC).