Supply Lines with The Source

Newsletter of the NHDES Drinking Water & Groundwater Bureau
on the web at www.des.nh.gov

Fall 2013

ADMINISTRATOR'S COLUMN

Promoting the Value of Public Drinking Water in Your Communities

Sarah Pillsbury, DWGB Administrator

According to a recent study on infrastructure needs, approximately $857 million dollars will be necessary to invest in our drinking water infrastructure in New Hampshire over the next 10 years. That figure is associated with approximately 2,500 public water systems regulated by DES, but will primarily affect larger municipal systems due to the extent of aging pipes—some over 100 years old.

When many of the public water systems in New Hampshire were first built, groups of investors, engineers, and innovators came together in a community with the shared commitment to improve public health, provide a means to fight fires, and support industry. Many communities benefit from the foresight of these pioneers and the clean drinking water service they promoted. My purpose in writing this is to get water suppliers thinking about the importance of promoting tap water and to suggest a new tool for gaining local support for investment in drinking water infrastructure.

Those "making" the water are keenly aware that public water and wastewater systems are critical to the success of our economy and our health and well-being. However, because the cost of water service to consumers is relatively inexpensive in most communities and the infrastructure is mostly out of sight, communities have often under-valued and in turn under-invested in this critical service. With competing priorities for community dollars, too often warrant articles to fund water infrastructure improvements are voted down. Another challenge for water suppliers is a common perception that tap water is less safe or less convenient than bottled water.

One way that's been used successfully to promote the value of drinking water infrastructure and tap water is to install water bottle filling stations in well-traveled public places (town halls, libraries, arenas, airports, etc.). The brief time that users spend filling up their water bottles can be used as a "teachable moment" to inform them about the importance, safety, and value of public drinking water in general and the local water system in particular.

DES, in partnership with the City of Concord has put these stations in the DES headquarters in Concord. The response has been terrific, with conversation around the water fountain often now actually being about water! If you like the idea, be sure to have me or a staff member show you what we've put in place the next time you are in our building. We have a lot of information to share about costs, manufacturers and advertising campaigns. We can also provide you with contact information for the University of New Hampshire, Plymouth State University, and others that have made bottle filling stations a part of their overall sustainability campaign. We are poised to help interested water systems get started with your own project to remind your customers and your community about the value of safe and reliable public drinking water. •

NHDES Commissioner Tom Burack and Phil Bilodeau, Deputy Director of General Services, City of Concord

SPOTLIGHT ON SALEM

Lake Conservation Corps Helps Protect Canobie Lake!

by Robie Parsons, New Hampshire Lakes Association

The New Hampshire Lakes Association (NH LAKES) brought its Lake Conservation Corps Program to southern New Hampshire this summer by hiring a crew of Windham High School students and a teacher to install lake-friendly landscaping projects along the shoreline of Canobie Lake. Since 1903 Canobie Lake has served as the primary drinking water source for the town of Salem, and today Salem's municipal system serves approximately 18,000 residents. Interstate 93 provides easy access to Canobie Lake Park, a regional recreational destination, making Salem an attractive place for commuters to live and a destination for summer fun. Over time the watershed has become more intensively developed, including more development along the lake's shoreline. One of the major water quality threats to the ecology of the lake and the quality of the drinking water is stormwater runoff that can transport nutrients, sediment, and other contaminants from developed areas into the lake.

The Crew from the left: Karalyn Gauvin, Chris Munroe, Awais Hussain, Aaron Leclair, Matt Carbonello and Chris Salamme

Residential development (houses, rooftops, patios and driveways) is associated with 38 percent of all impervious cover within Canobie Lake's watershed. According to the Canobie Lake Watershed Management Plan (2011), "Residential properties present an opportunity to disconnect the impervious cover by infiltrating stormwater onsite through best management practices such as rain gardens, vegetated swales, and buffer areas."

Toward that end, the hard-working students completed work on three residential shoreline properties, installing seven stormwater best management

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Drinking Water Expo Coming in October

The N.H. Drinking Water Exposition and Trade Show will be held on October 30, 2013 between 8:00 am and 4:00 pm at the Grappone Center in Concord. This annual event, organized by the N.H. Water Works Association and DES, includes 15 technical seminars and a large exhibit area that will include between 50 and 60 exhibitors. Certified N.H. Water Works Operators attending the seminars will receive between 1 and 1.5 Technical Contact Hours (TCHs) per seminar that can be applied toward fulfilling continuing education requirements. Seminars this year will include: Emerging Contaminants of Concern in Surface Water and Groundwater; Extreme Weather Events – What's Happening and How to Prepare; The Reduction of Lead Act; Locks and Basic Security Measures for Your Water System; and Legal Authority and Management Approaches to Minimize Contamination Risks and Protect Groundwater in N.H.

Admission is $45 for pre-registration or $55 at the door. Flyers that include a registration form will be in the mail by mid-September and registration can be completed by mail or online at www.nhwwa.org. •

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practices (BMPs) that not only beautify the landscape, but also filter out contaminants and reduce the total volume of runoff discharged into the lake. The BMPs slow down and soak up runoff from nearby roads, driveways, and rooftops and include infiltration steps, waterbars, vegetated buffers, and rain gardens. Two rain barrels were also installed to capture roof runoff water for domestic purposes – a practice that not only reduces runoff volume but also helps to conserve the local water supply! The students also conducted storm drain stenciling, a job that included painting a "No Dumping – Drains to Drinking Water Source" message on the road surface near storm drain openings. Storm drain stenciling projects aim to dissuade people from dumping chemicals and waste directly into drainage systems and also help raise residents' awareness regarding the connection between runoff and water quality in the lake. NH LAKES and the Canobie Lake Protective Association (CLPA) are continuing to work with a local Boy Scout troop to stencil storm drains in the watershed.

Installation of a stone infiltration area will treat road runoff and reduce direct discharge to the lake.

The BMP projects will be showcased to the Canobie Lake Protective Association membership, watershed residents, and the NH LAKES membership community during the coming year through a variety of outreach efforts, including guided tours. In addition, NH LAKES, in conjunction with CLPA, will publish a lake-friendly living guide for the watershed.

This two-year project was funded by a Local Source Water Protection Grant from NHDES.

To learn more about the NH LAKES Lake Conservation Corps program, visit www.nhlakes.org/Lake-Conservation-Corps, email info@nhlakes.org, or call 603-226-0299. NH LAKES is the only statewide nonprofit organization dedicated to protecting all of New Hampshire's lakes and their watersheds. •

Recent DWGB Staff Changes and Summer Interns

Key staff changes have taken place within the Drinking Water and Groundwater Bureau (DWGB) since our last newsletter. This includes the departure of Adam Torrey, who oversaw asset management programming for the Engineering and Survey Section. Adam has left DWGB (and the continent) and is now working in Dubai, United Arab Emirates for True Sojourners, a non-profit organization focused on providing greater access to clean water. Alicia Carlson, former Aquatic Education Coordinator in the Planning, Protection and Assistance Section accepted a position with UNH Cooperative Extension in Durham. Jennifer Rowden, a Program Planner within the Planning, Protection and Assistance Section, who helped support the Water Sustainability Commission and assisted with rulemaking and a variety of source protection projects is now with the Rockingham County Planning Commission. Good luck Adam, Alicia and Jennifer – you are all missed!

With summer now in the rearview mirror, we must thank our dedicated group of summer interns. This year the DWGB employed three interns. Greg Cummings survived many hours in the field helping to improve the accuracy of location information for nearly 200 public water supply well points through the use of a GPS unit. Bethann McCarthy produced a Climate Change Resiliency Plan for DWGB. Jake Geddes worked to update the DWBG Water Use database and performed field visits at facilities that are registered water users. A heartfelt "thanks and best wishes" to our interns who accomplished great things for the Bureau this summer. •

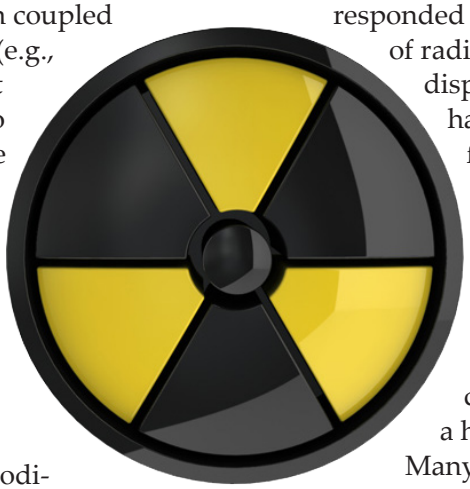
Operator Certification Goes Global

In June 2012, Chip Mackey had the honor to speak at the Arab Countries Water Utilities Association (ACWUA) 5th Annual Best Practices Conference in Muscat, Sultanate of Oman. Representing the Association of Boards of Certification (ABC), in his role as president, at the request of the U.S. Agency for International Development (USAID), who arranged for and funded the trip, Chip spoke on the importance and value of certification and training for drinking water and wastewater operators to representatives from over 15 Middle Eastern and North African countries. Congratulations to Chip on this once in a lifetime experience! •

Water Treatment Systems and Radiation Safety

Over the last several years, approximately thirty small community water systems in New Hampshire have had to upgrade their drinking water treatment systems to remove radium 226/228, uranium, and gross alpha-emitting radionuclides in order to comply with federal drinking water standards. Some of these water systems are very small, such as an apartment complex where the water treatment equipment is housed within an apartment building.

The removal of these naturally occurring contaminants results in the concentration of radionuclides in filter media that can create a radiation field that exceeds natural background levels. Based on measured radiation levels to date, when coupled with variables that affect exposure (e.g., time and distance), water treatment systems removing radionuclides do not seem to pose a health risk to the public or workers. Nevertheless, there are additional safety measures that can be employed, such as shielding treatment vessels with lead, regenerating filter media more frequently or changing out filter media on a more frequent basis.



Since 2008, DWGB staff have periodically measured radiation levels in some water treatment buildings using a Geiger counter. The monitoring consisted of measuring and recording radiation levels at the time of the site visit. Representatives from Radiological Health Program of the Department of Health and Human Services (HHS) accompanied DES on some of these site visits and also measured radiation using an array of more sophisticated instruments. Radiation levels within a few feet of the treatment vessels were often detected above background levels, but not at levels that posed a risk to health.

In 2012, with substantial assistance from the Radiological Health Program, DES improved its radiation monitoring methods by deploying dosimeters in work spaces that are relatively close in proximity (approximately five feet) to water treatment vessels. These dosimeters measure and record cumulative exposure to radiation over time. The dosimeters were deployed for approximately 90 to 120 days so that continuous long-term radiation levels were measured. The results of this monitoring effort showed that the radiation levels recorded by a dosimeter at several systems likely exceed 100 mrem per year above background. However, actual exposure to radiation is well below 100 mrem per year because of the limited amount of time that workers are actually in the treatment building. Additionally, radiation fields decrease in proportion to the inverse of the distance from the source squared, which means most areas of a typical treatment building as you move away from a treatment vessel exhibit background radiation levels.

The issue of drinking water filters being a source of radiation is not new to New Hampshire. Staff of the Radiological Health Program at HHS have responded to the detection of higher levels of radiation at numerous solid waste disposal facilities over the years and have often found expended filters from residences as being the source of the elevated radiation. At this time, limited data exist regarding the levels of radiation that can occur in household settings due to water treatment filters, and often suppliers of the filter media do not provide information on how a homeowner can manage this risk. Many professional water treatment companies are aware of this risk and install appropriate treatment systems to prevent the generation of high levels of radiation. •

Background Radiation and Regulatory Exposure Limits

The annual average radiation dose a person receives from all natural and man-made sources is about 350 millirems (mrem) but it is not uncommon for any of us to receive more than that in a given year, largely due to medical procedures. To protect health and safety, the U.S. Nuclear Regulatory Commission (NRC) and the State of New Hampshire have established standards that allow exposures of up to 100 mrem per year for members of the public in addition to the radiation received from natural background sources. Adults working with radioactive material can be exposed to up to an additional 5,000 mrem per year under federal guidelines.

Twenty-Eight Community Water Systems Receiving Leak Detection Surveys in 2013

DES has contracted with a leak detection consultant, M2 Service Group, to perform a third round of acoustic leak detection surveys at community water systems across the state. DES is providing the service through the use of "set aside" funds associated with the Drinking Water State Revolving Loan Fund.

During the previous two rounds of surveys, 27 water systems were surveyed resulting in the inspection of 568 miles of pipe. That's the equivalent of a pipe running from Nashua to Pittsburg, New Hampshire three times! Those surveys resulted in the identification of 123 leaks with a total estimated loss rate of 841 gallons per minute. That adds up to 1.2 million gallons per day or enough water to serve the town of Exeter.

The water savings will continue to add up as M2 Service Group completes the current round of surveys. As of August 2013, 47 leaks had already been identified with an estimated loss rate of 1,032 gallons per minute (1.5 million gallons per day). DES will contract with a leak detection consultant to perform a fourth round of surveys in 2014. The application period for community systems seeking leak detection surveys for 2014 has closed. However, DES hopes to continue providing financial support for surveys beyond 2014. If your community water system is interested in taking advantage of this opportunity, look for the announcement next year in your inbox – DES issues the announcement each summer to all community water systems.

For more information related to the DES Leak Detection Program, contact Derek Bennett at (603) 271-6685 or via e-mail at Derek.Bennett@des.nh.gov. •

2013 Leak Detection Survey Recipients

- Aquarion Water Co.
- Belmont Water Department
- Dover Water Department
- Colebrook Water Works
- Eagle Brook Community Water System
- Eastbluff Highlands Condos
- Glencliff Home for the Elderly
- Goffstown Village Precinct
- Gunstock Acres Village District
- Hopkinton Village Precinct
- Indian Mound Golf Club / Lakes Region Water Co.
- Lakeland / Lakeland Management Co.
- Lazy Pines Mobile Home Park
- Littleton Water & Light Department
- Locke Lake / Pennichuck East Utility
- Merrimack Village District
- Milford Water Utilities Department
- Newport Water Works
- Ossipee Water Department
- Paradise Shores / Lakes Region Water Co.
- Raymond Water Department
- Rosebrook Water Co.
- Rye Water District
- Sanbornville Water Department
- South Weare Water Association
- Stone Gate Acres Association
- Wolfeboro Water & Sewer Dept.
- White Rock Water Co.

Fractured water pipe resulting in a major leak thought to have worsened as a result of a small earthquake in September 2012.

Source Water Protection Related Legislation Passes in 2013

Two bills signed into law during the current legislative session could help bolster source water protection efforts.

Salt Applicator Certification

The intent of the new law is to avoid the over-use of road salt by addressing the concerns of property owners and contractors with respect to the possibility of being sued for injuries such as slips and falls.

Legislation, *continued on page 6*

Legislation, *continued from page 5*

The law limits the liability of certified salt applicators and landowners who hire them for claims related to winter hazards as long as the applicator is using best management practices. As part of DES's salt reduction efforts in the salt-impaired watersheds of the southern I-93 corridor, DES partnered with the UNH Technology Transfer Center to create a voluntary certification and training program for snow removal contractors and public works employees. The first training courses were held in 2011 and there are now approximately 300 certified applicators under the Green SnowPro program (see http://www.t2.unh.edu/green-snowpro-certification). This year, the Salt Applicator Certification Option, RSA 489-C, was passed into law as part of House Bill 2, and is effective on September 26, 2013. For more information, please contact Eric Williams at 271-3458 or Eric.Williams@des.nh.gov.

Shoreland Water Quality Protection Act

Known as the Comprehensive Shoreland Protection Act until its name was changed in 2011, this law limits the subdivision of land, clearing of vegetation, building of structures, and other land cover changes within 250 feet of the state's larger waterbodies. A number of changes were enacted this year by House Bill 513 and took effect August 27, 2013. Among those changes, the definition of "ground cover" is now limited to what was previously called "natural ground cover" - natural, native, non-invasive plant cover. Such ground cover must be largely undisturbed in the "waterfront buffer" within 50 feet of the water. Keeping it intact is no longer a way to partially satisfy the requirement for vegetative cover in the waterfront buffer. The bill restores limits on the cutting of trees and saplings in the waterfront buffer to a level closer to that required in 2008. The bill also clarifies the performance standard for stormwater management systems that enable a property to exceed the limit of 30 percent impervious cover. Finally, the bill improves the ability of DES staff to enforce the law. For more information, please contact Jay Aube at 271-4056 or Jason.Aube@des.nh.gov. •

Drinking Water Week

To celebrate Drinking Water Week this year over 350 fourth grade students from the Concord School District and elsewhere assembled on May 8th in Concord for this year's Drinking Water Festival and Science Fair. Organized by the New Hampshire Drinking Water Coalition and hosted by the City of Concord's Water Department, not even the rainy weather could dampen the students' enthusiasm during the day's activities.

The New Hampshire Fourth Grade Water Science Fair was one of the main events that took place in the morning. Students from Manchester, Keene, and Marlborough presented their projects to a panel of judges. The awards were presented by DES Commissioner Tom Burack, DES Assistant Commissioner Vicki Quiram and Director of General Services Department for the City of Concord, Chip Chesley. Congratulations to Sarah Fung from Manchester, who won first prize; Mia Anger from Keene, who took second prize; and Samantha Baron from Manchester who won third prize. The trophies for the winners were donated by the New England Interstate Water Pollution Control Commission.

Exhibits provided by public water systems, consultants, scientists, and government agencies were on display at the festival and featured information on water conservation, water testing, water safety, groundwater pollution, and keeping water clean. Students participated in a variety of hands-on activities to learn about water. A drinking water tasting contest matched several municipal water supplies against each other to compete for the title of best tasting water. The winner, as chosen by the students and their teachers, was Manchester Water Works. Steve Schuch of Night Heron Music, a story teller and song writer from Hillsboro, performed songs with water themes.

The Water Festival is supported by volunteers and donations from many organizations, including: N.H. Water Works Association, DES, Concord Water Department, Keene Department of Public Works, Manchester Water Works, Merrimack Village District, RCAP Solutions, American Ground Water Trust, Granite State Rural Water, New England Interstate Water Pollution Control Commission, Underwood Engineers, N.H. Rivers Council, Plymouth State University, N.H. Department of Transportation, Merrimack County Conservation District, Art for Water, U.S. Forest Service, U.S. Army Corps of Engineers, and Dartmouth Toxic Metals Research Program. •

The Scoop on Loans and Grants

Infrastructure Improvement Grants

The Drinking Water State Revolving Loan Fund (DWSRF) recently received 55 pre-applications requesting a total of $45.3 million in funding for infrastructure projects. Approximately $32 million will be available for projects in fiscal year 2013. DES expects to enter into loan agreements in the fall once the fiscal year 2013 DWSRF capitalization grant of $8.4 million is received from EPA.

Several pre-applications for loans involved infrastructure projects of $50,000 or less to make improvements at very small systems serving populations of 100 people or fewer. Disadvantaged water systems that meet affordability criteria will be eligible to receive significant subsidies in the form of principal forgiveness on loans for infrastructure improvements to replace failed infrastructure or infrastructure that is beyond its useful life. DES anticipates funding up to eight projects involving very small systems.

Out of the 55 pre-applications received, DES plans to offer DWSRF financing to 45 projects including:

- A new well, storage tank, pump house, and other important upgrades at the Errol Water system;
- Replacement of water mains and blow-off valves at the Emerald Lake Village District;
- Drinking water treatment upgrades at the Bethlehem Village District;
- Water main replacement at the Colebrook Water Department; and
- Infrastructure upgrades at several small systems, including Terrace Condominiums, Foxy Terrace, Midridge Condominiums and Shady Lane Apartments.

For more information on the DWSRF, visit DES's website at www.des.nh.gov and click on the A to Z list, then click on "Grants & Loans" or contact Daniel Dudley at (603) 271-2953 or Daniel.Dudley@des.nh.gov.

Asset Management and Record Drawing Grants

DES will be accepting applications for asset management grants sometime this fall. Matching grants of up to $15,000 are available for community water systems, serving a population of 500 or greater, to develop and implement an asset management program and financial plan. Systems that have already begun to develop or expand a plan may apply. DES will fund part or all of the development of any eligible efforts that are on-going at the time of application. Keep a look out for the announcement.

Matching grants are also still available for record drawings. Grants of up to $1,500 matching funds are available to community water systems serving fewer than 500 people. These grants may be used to prepare or update system record drawings to accurately reflect the location of critical system infrastructure, especially underground facilities. As of April 1, 2012, community systems that do not have a record drawing are being cited with a significant deficiency.

For more information, contact Johnna McKenna at (603) 271-7017 or Johnna.McKenna@des.nh.gov.

Local Source Water Protection Grants

Applications for Local Source Water Protection Grants for 2014 will be due November 1, 2013. To download the application, visit DES's website at www.des.nh.gov, then click on the A to Z List and then click on "Grants & Loans." Grants are available to public water suppliers, municipalities, regional planning agencies, nonprofit organizations, educational institutions, conservation districts, and state agencies. Grantees can receive up to $20,000 (no match required) to protect public drinking water sources through improved watershed planning, delineation of protection areas, assessment of threats to water supply sources, implementation, and source security. Descriptions of past projects that received funding are posted online at the DES grant program page. For more information or if you have questions, contact Pierce Rigrod at (603) 271-0688 or Pierce.Rigrod@des.nh.gov or Paul Susca at (603) 271-7061 or Paul.Susca@des.nh.gov. •

USGS Report: Multiple Factors Affect a Well's Vulnerability to Contamination

Delineate the area that may contribute water to a well (the wellhead protection area). Identify the activities in that area that have the potential to release contaminants to the ground. Manage those activities to minimize the risk of releases. Those three steps summarize the approach to wellhead protection promoted by DES for all wells and are required for the approval of new community wells. The type of water system and the type of well determine the amount of effort that DES requires water systems to invest in new well approval, with large wells for community water systems having to do the most in terms of site-specific investigation and protection (management) measures.

The value of site-specific investigation to understand the factors that affect a well's vulnerability to contamination is underscored by a new report from USGS, Factors Affecting Public-Supply-Well Vulnerability to Contamination: Understanding Observed Water Quality and Anticipating Future Water Quality. The four key factors are (1) sources of recharge (where the water is coming from), (2) geochemical conditions encountered by groundwater traveling to a well, (3) the ages of the different waters that mix in a well, and (4) preferential flow pathways within the aquifer. The site-specific investigations required by DES for new community wells, involving pumping tests and the modeling of groundwater flow, are designed to provide information about these factors.

The report also describes measures that can be used to determine which factor (or factors) plays a dominant role at particular well. The report can be downloaded at http://pubs.usgs.gov/circ/1385/. •

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