



SUPPLY LINES WITH THE SOURCE



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

FALL 2014



ADMINISTRATOR'S COLUMN

Sarah Pillsbury, Drinking Water and Groundwater Bureau

There are folks that wanted more heat this summer. I am not one of them. Cool nights with few dry wells and little flooding made this an exceptional summer in my book. Here at the Drinking Water and Groundwater Bureau (DWGB), it was a typical summer filled with sanitary surveys, the occasional boil order, and permitting. Less typical was the number of staff changes that have taken place of late. In the engineering/survey group we've brought on Luis Adorno and Bob Daniel. Luis is a water system operator who will be helping the DWGB to promote asset management (see page 5) and improve system capacity. Bob is a civil engineer who will be reviewing plans and working with the small system surveyors. Also, we welcome back James Tilley as the new lead for Water Use and Conservation Programs. You'll see all the new folks at upcoming meetings and events. Please join me in welcoming them.

Another summer highlight included getting the Revised Total Coliform Rule (RTCR) written and into the administrative rulemaking process. As requested by the industry, New Hampshire will be doing early implementation of the rule. In fact, we'll be first in the nation with an anticipated adoption date of January 1, 2015. Educational sessions are planned to be held in the next few months throughout the state. This accomplishment was only made possible through the participation of water supply professionals. Thank you to those who volunteered their time.

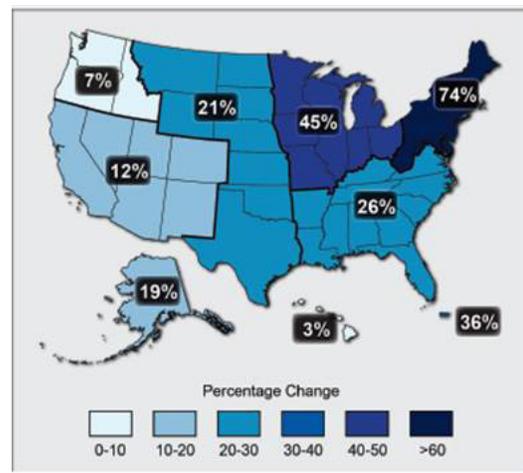
With the end of summer, this year's hurricane season is fast coming to a close. I hope you'll find the article on preparedness particularly helpful - if not for a hurricane this fall, then for the ice and snow storms that are bound to follow. For now though, enjoy these last warm days and all the color and crispness of autumn. ♦

Climate Readiness: Weathering the Storms

Bethann McCarthy, Small Systems Engineer/Climate Resilience Coordinator, DWGB

New Hampshire, along with the northeast U.S. in general, has experienced an increase in average temperatures as well as annual precipitation over the past four decades. Studies performed by the UNH Institute for the Study of Earth, Oceans, and Space indicate that these increases have become more prominent since the 1970s. Higher air temperatures allow more water to be held within the atmosphere, and, when that moisture is released, it results in more intense precipitation events. The map to the right shows the increase in heavy precipitation nationwide, especially in the northeast region of the U.S. (2014 National Climate Assessment).

Intense precipitation events are resulting in more



CLIMATE Continued on page 3...



A Land Conservation Plan for the Merrimack River Watershed in New Hampshire and Massachusetts

Brian J. Hotz, Vice President for Land Conservation, Society for the Protection of NH Forests

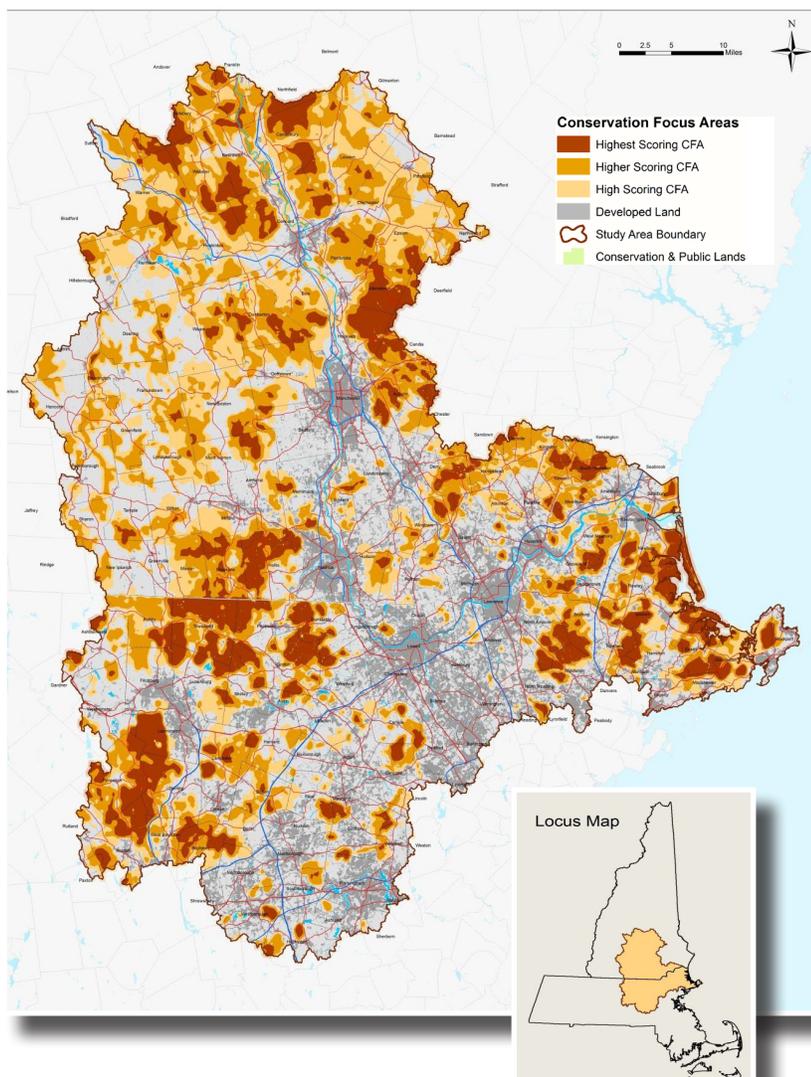
The Merrimack River has a new land conservation plan, developed by conservation and planning professionals representing 33 private organizations and public agencies in New Hampshire and Massachusetts. From its start in Franklin, the Merrimack flows through eight of New Hampshire's ten largest cities, including Concord, Manchester and Nashua. With the City of Nashua using the Merrimack River as a drinking water source, and Manchester making plans to do the same, the river is an important resource in our state.

The land conservation plan integrates the best-available natural resource data with expert judgment to prioritize land conservation, which will serve to protect water quality (especially for drinking water sources) and preserve aquatic and terrestrial ecosystems, among other priorities. The plan's maps and analysis will be used by an array of conservation interests to identify and preserve the watershed's most important natural resources

The full report and executive summary are available for viewing on the Forest Society's website at www.forestsociety.org.

To find these documents on the website, click on the 'Land Conservation' tab, then under 'Major Initiatives,' click on 'Merrimack River Watershed' on the left side of the screen.

For more information about the plan, please contact Brian J. Hotz, Vice President for Land Conservation, Society for the Protection of New Hampshire Forests. Brian can be reached at (603) 224-9945 ext. 316 or bhotz@forestsociety.org.



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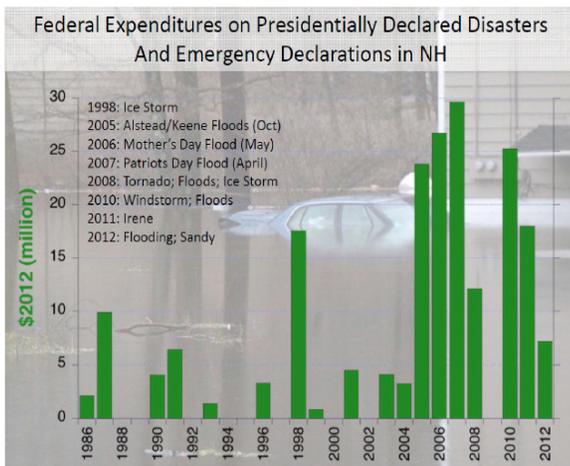
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CLIMATE Continued from page 1...

flooding damage to public and private property and more frequent and extended power loss, sometimes disrupting the availability of service provided by public water systems. To become better prepared to handle these events, it is important to plan ahead and build partnerships with other groups to pool resources and personnel that can help out during emergencies.

There's no question that NH has experienced an increase in extreme weather events over the past few decades. Downpours, ice, wind and heavy snow storms are becoming more common. These events, coupled with increases in impervious areas associated with land development, have caused significant flooding and riverbank erosion in recent years. The figure below demonstrates the magnitude of the increase of weather-related disasters, as indicated by the increase in both the number and cost of presidentially declared disaster events in NH. Climate scientists expect that precipitation, flooding and storm events will continue to increase in coming years, causing more damage to NH infrastructure and environment.

So what does this all mean? It means be prepared to spend more money to respond to these extreme storm events. In earlier issues, this newsletter out-



Data source: FEMA

lined adaptation strategies that public water systems could take to reduce infrastructure damage. Good planning will help to reduce the social and monetary costs associated with future extreme weather events.

Free FedFUNDS Training

EPA has posted a series of short video trainings to help introduce water and wastewater utilities to EPA's tool, Federal Funding for Utilities-Water/Wastewater-in National Disasters (Fed FUNDS). The purpose of the Fed FUNDS website is to provide information tailored to water and wastewater utilities about applicable federal disaster funding programs. This new tool leads the user through a series of "how to" scenarios that may apply in advance of, during or after a disaster. The tool guides the user to the most applicable funding programs; it lists activities to prepare applications for funding; provides forms and photo logs to document the damage during a disaster; covers federal programs from FEMA, EPA, USDA, and others; and includes successful applications, training on funding, and funding mentors. Visit Fed FUNDS online at www.epa.gov/fedfunds.

Some actions that water system owners and operators should take to be ready to weather the next storm include:

- Develop interconnectivity to an adjacent water system.
- Large water systems should have back-up power for all critical infrastructures.
- Small water systems should install a power transfer switch to readily accept a generator when necessary.
- Consider a rental agreement for items such as generators to ensure availability when demand is unusually high.
- Identify reliable sources for obtaining generator fuel and treatment supplies in an emergency.
- Update your Emergency Plan to include contact and material availability information so the information is there when it is needed.
- Make sure that personnel understand the importance of preparedness and actions they will need to take in response to site specific situations.

Another important step in storm and flood preparedness is to become a member of the NH Public Works Mutual

Aid Program (NHPWMAP). This network of public water systems and municipalities assists one another during emergencies through partnering agreements. The annual fee of \$25 is an affordable investment that provides peace of mind when problems arise. Flooding and power outages often only affect a portion of our state. Being a member of the NHPWMAP gives you access to much needed equipment, materials and personnel – as well as the opportunity to help out other communities in need. For more information, turn to page 8 of this newsletter and/or visit the NHDES Mutual Aid website by visiting www.des.nh.gov and typing 'Water System Mutual Aid' into the search box.

For more information on climate change, risks to water systems and adaptation strategies, visit EPA's Climate Ready Water Utilities website or contact me at (603) 271-2949 or bethann.mccarthy@des.nh.gov. ♠

Utility Security Tools: Resources and Updates

Johnna McKenna, Emergency Planning and Security Program Coordinator, DWGB

Water Sector Cybersecurity Guidance and Tool

The American Water Works Association (AWWA) published its Process Control System Security Guidance for the Water Sector, which is intended to complement the National Institute of Standards and Technology (NIST) Cybersecurity Framework. This document provides utility owners and operators with consistent and repeatable courses of action to protect their process control systems from cyber-attacks. The guidance document is accompanied by the Cybersecurity Guidance Tool that generates a prioritized list of recommended controls based on the specific characteristics of a utility. The guidance document and tool are available for free at www.awwa.org. Find them by visiting the site and searching 'Cybersecurity' ♣



ICS-CERT (Incident Command System Computer Emergency Readiness Team) Launches "Cybersecurity for Industrial Control Systems"

Department of Homeland Security ICS-CERT has launched "Cybersecurity for Industrial Control Systems," an online web-based version of its instructor led training. The course covers many aspects of cybersecurity for industrial control systems. The course introduces students to the basics of industrial control systems security, including a comparative analysis of IT and control system architecture, security vulnerabilities, and mitigation strategies unique to the control system domain. In addition, the course provides technical instruction for using offensive and defensive methods to protect industrial control systems. Students will understand how cyber-attacks could be launched, why they work, and mitigation strategies to improve the cybersecurity posture of control systems. Visit www.ics-cert-training.inl.gov for more information about this online course. The ICS-CERT has many other resources on its website, such as a self-assessment tool, fact sheets and multiple best practices documents. ♣

EPA Releases New Video: Secure Your Utility

The recently released video highlights the importance of developing a security culture at drinking water and wastewater utilities. It describes how Pima County Regional Wastewater Reclamation Department (in Tucson, AZ) implemented some Key Features of An Active and Effective Protective Program and how the utility benefited from its enhanced security. The "Key Features" Program originated as an outcome of a National Drinking Water Advisory Council Water Security Working Group in 2005 to assist owners and operators of drinking water and wastewater utilities in preventing, detecting, responding to, and recovering from adverse effects of all hazards, including terrorist attacks and natural disasters. To view the video visit www.water.epa.gov and search 'Key Features.'

Emergency Plan Submittal Coming Soon - March 2015

Johnna McKenna, Emergency Planning and Security Program Coordinator, DWGB

Almost six years has gone by since community water systems were required to submit their emergency plan to NHDES. Next spring community systems will need to once again submit their current plan. This will be the third round since the rule (Env-Dw 503.21, Emergency Plans for Community Water Systems) was adopted in 2009. This time around should be easier since all community systems have an existing plan on file. If you haven't been updating your plan, now is the time to go through the plan, update and improve it. Maybe you used your plan during a recent emergency and realized it needs some work. If you like to get things done early, the DWGB will accept plans for the 2015 submittal any time after Jan 1, 2015.

More guidance and information about the March 2015 deadline to submit updated plans will be sent out directly to systems later this fall. If you have any questions or need assistance please contact me at (603) 271-7017 or johnna.mckenna@des.nh.gov. ♣



Asset Management: Maintaining Service at the Lowest Cost

Luis Adorno, Environmental Program Manager, DWGB

The U.S. drinking water industry faces many key challenges in the 21st century, such as replacing aging infrastructure, addressing security concerns and complying with new regulations.

According to a 2013 study by the American Society of Civil Engineers, the nation's drinking water infrastructure is in extremely poor condition and could require up to \$1 trillion dollars in capital investments just to replace aging water lines. Wright-Pierce Engineering conducted an assessment of New Hampshire's water infrastructure in 2010 and found that \$830.5 million dollars will be necessary over the next twenty years to invest in water distribution/transmission and an additional \$668.3 million for water treatment.

It is going to take a culture change from all closely involved individuals, including system operators, owners and local decision makers to help with the daunting task to address this crisis and make the necessary investments in water infrastructure.

The Drinking Water and Groundwater Bureau (DWGB) supports asset management (AM) because AM programs strategically plan future capital investments in order to maintain a desired level of water service at the lowest life-cycle cost. The Bureau has created a new online resource: the Drinking Water and Wastewater Asset Management web page. On this website managers can find AM tools, forms, publications and other materials useful for developing an AM plan or to keep your AM plan up to date. Please visit our website by visiting www.des.nh.gov and searching for 'Asset Management Index' for more information.

Over the last two years, the DWGB has been working toward the goal of having every community water system adopt some form of AM by providing Asset Management and Financial Planning Grants. The first two grant rounds provided funding to 25 community water systems to undertake this task and move a step closer to making AM part of their everyday decision making. Most of these community water systems did not have an AM Plan when they began their journey, but now they can testify to the great benefits of having such a plan. The DWGB is currently accepting applications for the next AM grant round. Applications are due by November 28, 2014 and are available on the new AM webpage. Also, the DWGB is preparing a number of workshops this fall that will provide a forum for AM grant recipients to share their experiences, including their approach to creating an AM plan. The first workshop is scheduled for Oct. 23, 2014 at NHDES in Concord. The agenda includes presentations from water systems that have gone through the AM program development process. The workshop agenda and registration form are available on the AM website.

Be on the lookout for a series of articles in upcoming issues related to asset management that will answer common questions among the drinking water industry such as: What is asset management? Who should practice asset management? Why should our system practice asset management? When should asset management be adopted?

Feel free to contact me at (603) 271-2472 or at luis.adorno@des.nh.gov if you have questions about asset management or if you are looking for help on how to get started with developing an AM program. ♦



Luis Adorno

New to DWGB as an Environmental Program Manager overseeing the Bureau's Asset Management Program. Luis formerly worked for the City of Laconia's Water Works Department.

Land Conservation Grants Available within the Southern I-93 Corridor and Lake Massabesic Watershed

Holly Green, DWGB

NHDES has just over \$2.4 million in federal funds available for the conservation of critical drinking water supply lands in the Lake Massabesic watershed and Interstate 93 corridor communities of Salem, Windham, Derry, Londonderry and Manchester. This includes portions of Auburn, Hooksett, Candia and Chester. The funding will better protect public water supplies within the I-93 corridor, including Lake Massabesic, which serves 160,000 people in the Manchester area.

These grants are administered by the NHDES Water Supply Land Protection Grant Program. Municipalities and non-profit land trusts may apply for grants to cover up to 50 percent of the cost of purchasing land or conservation easements critical to the quality of their public drinking water supply.

The funding is available through an agreement between NHDES and the New Hampshire Department of Transportation to help offset impacts to wetlands associated with the widening of I-93 between the Massachusetts border in Salem and the I-93/I-293 interchange in Manchester.

Eligibility applications are due November 1, 2014. Grants will be awarded based on priority ranking and availability of funding. A map of the eligible areas, copies of application forms and other information are available online or by contacting Holly Green at (603) 271-3114 or holly.green@des.nh.gov. ♦



Prime wetlands preserved by NHDOT as part of their wetland mitigation package. Photo provided by NHDOT and taken by Maureen Rose of Derry.

Granite State Rural Water Welcomes A New Source Water Protection Specialist



We've all heard the saying "an ounce of prevention is worth a pound of cure." Granite State Rural Water Association's new Source Water Specialist, Andrew Madison, can help find the "ounce of prevention" that will help protect local sources of drinking water. Andrew is a New England native from Monson, Massachusetts with a B.S. in Geography from Salem State University, an M.S. in Environmental Science from Indiana University, and five years of water quality management experience in academia, non-profit and federal agencies. He'll be working with municipalities, lake associations, non-profits, state agencies and stakeholder groups to help rural New Hampshire communities protect their drinking water resources at their source. This is accomplished through the creation of a detailed source water protection plan that identifies important drinking water resources, potential sources of contamination, risk management methods, and contingency plans. Currently, Andrew is working on plans for Walpole and Hillsborough, New Hampshire. If you think your community could benefit from improving local source water protection, please contact Andrew at (603) 756-3670 or amadison@granitestatewater.org. Andrew looks forward to working with the wonderful communities that make up this great state! ♦

2014 Revised Total Coliform Rule Trainings:

10/2 - Littleton
10/9 - North Conway
10/23 - Plymouth
10/30 - Hinsdale
11/6 - Concord
11/13 - Derry
11/20 - Newmarket

The Total Coliform Rule, which governs the collection of bacteria samples at public water systems and the required follow-up, has been revised by the EPA. NHDES intends to begin implementing these changes in 2015. NHDES staff will explain these changes and answer questions at trainings throughout the state, coordinated by the Granite State Rural Water Association, beginning in October. For more information on these and other trainings offered by GSRWA please visit their website at www.gsrwa.com then click on 'Upcoming Classes' on the left.

E. coli - How Bad Can It Be?

Keith Harrison, Trainer, Delaware Office of Drinking Water

Escherichia coli, or E. coli, is one form of bacteria that gets a lot of attention when it is found in food or drinking water. Just ask the residents of Walkerton, Ontario. In May 2000, farm runoff from a five-day rain storm leaked into the town's only functional well. Unfortunately, the runoff was contaminated with the fecal coliform bacteria E. coli. There are many species of E. coli, most of them are harmless, but this one was the deadly form, 0157:H7.

As a result of the E. coli contamination in Walkerton, seven people died and about half of the town's 5,000 residents were sickened with bloody diarrhea. Now, more than a decade after the incident, some survivors continue to suffer from the lingering effects of the illness.

Most people infected with E. coli 0157:H7 recover in a week or two, although full recovery may take several months. Some people, particularly children under the age of five infected with E. coli 0157:H7, may develop hypertension, heart disease or kidney problems leading to the possible need for a kidney transplant later in their lives. An E. coli infection is an acute illness that may have long-lasting effects.

Each year in the U.S., millions of water samples are retrieved from public water supplies and analyzed for bacteria (as mandated by the Federal Total Coliform Rule). Interestingly, most of those water samples are not analyzed for E. coli. Instead, the water is analyzed for total coliform bacteria. Coliform bacteria are abundant and very hardy. Coliforms live in our environment and are found in soil, on plants (fruits and vegetables), in surface water, and on your body as well as in your body! In fact, you have about 10 times as many bacteria and other microorganisms in your body as you do human cells. The average adult carries about five pounds of these very tiny bacteria in their gut (source: National Institutes of Health).

So, why are many water samples analyzed for total coliform bacteria and not E. coli? First, some water samples are analyzed for E. coli. When the lab gets a positive test result for total coliform, they will then test the sample for E. coli. However, it is not practical

to test every water sample for E. coli because E. coli are usually not as abundant as total coliform. Make no mistake, E. coli are a subgroup of total coliform bacteria, so the presence of total coliform indicates the possible presence of E. coli. But the absence of total coliform means the absolute absence of E. coli.

The Total Coliform Rule was created to improve public health protection by reducing fecal pathogens, including E. coli, in drinking water. Adherence to the rule costs time and money, but it prevents incidents such as the Walkerton tragedy. ♦

Private Well "Water Test Day" Events Offered

Kelsey Vaughn, DWGB

From Monday, July 21 through Friday, July 25, residents from the Town of Windham, New Hampshire had the opportunity to purchase water test kits at the Windham Community Development (WCD)



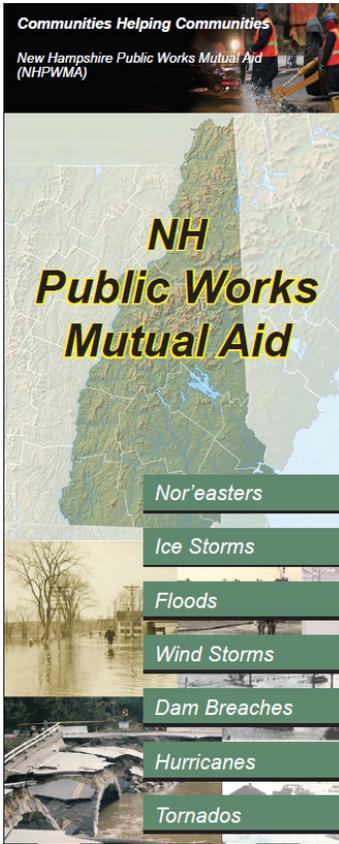
Office. These test kits were made available at a 20 percent discount by Nelson Analytical Lab in Manchester, New Hampshire, which offers testing for a range of contaminants commonly found in New Hampshire groundwater. Residents received a pricing sheet with their kit and information about groundwater contaminants to help them consider their water testing and analysis options. On Friday, July 25, approximately 50 kits had been returned to the town offices, and Nelson Analytical Lab officials transported the samples to their laboratory. WCD Director Laura Scott noted that it was a convenient option for Windham residents and provided a great opportunity for residents to test their water. This testing event is part of a wider effort by Nelson Analytical Lab to offer water test days in a number of municipalities. The

lab is emphasizing the importance of water testing and hopes the discount and convenience will allow more well users to test their water. Water testing days are also held in the Town of New Boston on September 10, the Town of Salem on September 22, and the Town of Auburn on October 6. If your municipality is interested in participating in a water test day through Nelson Analytical Lab, please contact Kelly Dark at Nelson Analytical Lab (603) 622-0200. ♦

E. coli in New Hampshire

Chip Mackey, DWGB

In NH, public water systems experienced an average of 1,325 positive total coliform tests each year for the past three years. Each year about 25 of those "hits" tested positive for E. coli. Fortunately, most E. coli species, especially those living in our intestines, are harmless. And what about the deadly 0157:H7? There has not been a recorded outbreak of E. coli 0157:H7 in NH.



Are You a New Hampshire Public Works Mutual Aid Member?

Johnna McKenna, Emergency Planning and Security Program Coordinator, DWGB

The New Hampshire Public Works Mutual Aid Program (NHPWMAP) is a network of communities that assist each other during emergencies; currently the network has over 160 members statewide. There are many benefits to being a member. Membership offers an easy and inexpensive way to improve your emergency response capabilities (membership is only \$25 per year). Membership provides prompt access to equipment and personnel appropriate for the job, the ability to request aid for small events that are not declared disasters, and FEMA reimbursement aid provided during declared disasters. NHDES, with funding from EPA, is sponsoring the final round of free memberships for 2014 and 2015 (a \$50 value) for any new community water system member or municipal public water system. Additionally, the "Refer-A-Friend" program will cover the cost of next year's membership for an existing member that assists a new community water system member to sign up.

If you are already a member, it is strongly recommended that you check the member list at www.t2.unh.edu/ma to make sure you are still listed as a member. The NHPWMAP has changed to a new management services company and some members may have been removed from the list in error. To become a new member or for more information, contact me at (603) 271-7017 or johnna.mckenna@des.nh.gov. Information about the program along with the mutual agreement can be found online at www.t2.unh.edu/ma. ♣

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