The Merrimack Wastewater Treatment Facility (WWTF) was originally constructed in 1970 and treats flow from a variety of commercial, residential, and industrial sources. It is owned, operated, maintained and upgraded by the Town of Merrimack. The WWTF’s largest and most important customer is the Anheuser-Busch brewery located about 1 mile north of the plant. The treatment facility consists of preliminary treatment (commminutor), spill diversion tanks (for equalization), primary clarification, biological activated sludge, secondary clarification and disinfection. The facility also accepts large quantities of septage, which is processed through an automated screen after which it is equalized in three tanks before slow introduction into the process. Waste activated sludge (WAS) is thickened using two rotary drum thickeners. Thickened WAS is stored separately from primary sludge in two sludge holding tanks. Thickened WAS and primary sludge are combined in-line prior to dewatering using a horizontal rotary screw press. Dewatered sludge is composted at a Town-owned and operated agitated bin-style composting facility located directly north of the WWTF.

As a result of Anheuser-Busch installing an anaerobic pretreatment system at the brewery and to address other needs at the then 35 year old WWTF, a Phase I Upgrade occurred in 2005 through 2007. The upgrades included the addition of a third primary clarifier, the installation of two rotary drum thickeners, removal of the existing trickling/roughing filter, upgrades to the activated sludge process to better treat the Town and Anheuser-Busch’s wastewater and assist with biological phosphorus removal and the conversion of existing tanks into septage receiving tanks, to name a few. With the plant upgrade, there was an initial period of determining the best way to operate the secondary process (with wide swings in influent load from Anheuser-Busch), after which the plant produced excellent effluent. However, biological phosphorus removal was inconsistent. After completion of the Phase I Upgrade, the Town conducted a facilities study to establish a capital improvement plan for additional upgrades at the WWTF and the Town’s two major pump stations. The Town has previously conducted a comprehensive evaluation of its composting facility and decided to upgrade the composting facility vs. shutting the facility down and shipping biosolids off-site. Following these studies, preliminary design effort was undertaken to advance the recommendations from the facilities plan, with some additional process modeling and refinement of needs for the Phase II upgrade. In addition to the WWTF upgrade, the Town also elected to move forward with a Compost Facility Upgrade based upon the previous study. These two upgrades were performed as one project, the major components of which consisted of:

- Installation of a new primary clarifier mechanism in one of the two original clarifiers
- Installation of new centrifugal non-clog primary effluent pumps appropriately sized for current flows and the lower head condition of pumping to aeration basins vs. trickling filter

(Continued on page 1)
Editor’s Words

My grandparents passed away before my children were born so they never got to meet their great-grandparents. I’ve worked on keeping their memories alive by passing along some of my favorite stories and quotes. Some of my favorites are R-rated (maybe even X-rated) so I’ll be passing those along when the kiddos are older. I’m betting that most of you readers have a grandparent who would say “many hands make light work”. Well, if you look way down at the bottom of this page under the heading “newsletter committee” you’ll only see six names. Part of me is thinking “yea, us, for doing such an awesome job with only six people!” while another part of me is thinking “this would be a heck of a lot easier with more people on the committee”. Also on the bottom of this page in a larger font you will find a list of “this issue’s contributors”. Notice that these are not always the same people who are on the committee. Sometimes it’s as easy as having an idea about what the readers would like to read about and then we brainstorm about who could write up an article. There’s really no excuse for not dipping your toes into serving on a committee by signing up for the newsletter committee. So call me, email me or just talk to me when you see me. Also ask me to tell you the polar bear story from my grandparents…

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- Operations Challenge 2015
- Blurs, Blurs & More Blurs
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- Safety Corner
- OQS for Design Professionals
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- Retiree Q&A
- Making Your WWTF More Energy Efficient
- Tools of the Trade
- Operator Exchange
- Small Community Mapping
- Know Our NHWPCA Board of Directors

Upcoming Events

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<td>December 10, 2015</td>
<td>NHWPCA Winter Meeting at the Merrimack WWTF.</td>
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<tr>
<td>January 24, 2016</td>
<td>NEWEA Annual Conference at the Boston Marriot Hotel Copley Place in Boston, MA.</td>
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Special Thanks to this Issue’s Contributors


NEWSLETTER COMMITTEE
Stephanie Rochefort, Todd Gianotti, Mary Jane Meier, Steve Clifton, Gene Weeks, Kurt Robichaud. We welcome additional members. We are looking for meaningful articles for the Wastewater Operator in a timely fashion. Send submission articles for THE COLLECTOR to: Stephanie Rochefort via email at srochefort@somersworth.com.

For more information about the NHWPCA visit our website at www.nhwPCA.org

Printed by
155 River Rd. Unit 15, Bow, NH 03304 - 603-225-5529 - evans1@evansprint.com
Installation of two new Aerzen hybrid aeration blowers to replace aging rotary lobe blowers

- Modifications to the existing activated sludge process to double the size of the anaerobic selector and provide flexibility in the location of primary clarifier effluent and RAS introduction
- Installation of new double disc thickened sludge pumps
- Installation of new double disc dewatering feed pump to allow for separate storage and pumping of WAS and primary sludge to minimize re-release of phosphorus in the sludge tanks
- Modifications to the existing chlorination system
- Installation of a new dechlorination system
- Installation of a new plant water system
- Upgrade of the Compost Facility including two new agitators, new control systems and significant building structure repairs and roof replacement
- Upgrade of lighting systems in the Headworks Building and Compost Facility
- Upgrade of the existing WWTF SCADA system
- Modifications to mechanical, control, instrumentation and electrical systems

This project broke ground in September 2014 and is slated to be substantially completed in November 2015. The total project cost for the WWTF and compost facility upgrade will be approximately $7.075 million and the Town received a low interest SRF loan to cover the entire project cost. As a result of these upgrades, the Town of Merrimack has increased the longevity of many of its WWTF processes, greatly improved on the overall plant energy efficiency and positioned itself well to meet the current and future effluent phosphorus limits that will likely be included in future discharge permits to meet the Merrimack River TMDL. Preliminary results show that the total phosphorus in the effluent has dropped from a range of 6 to 12 mg/l after the Phase I upgrade to < 1 to 3 mg/l as a result of the Phase II upgrade.

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ENGINEER
Wright-Pierce

CONTRACTOR
Methuen Construction Company, Inc.

Obituary for Anthony H. Ballance

Hampton, NH – Anthony Harrison Ballance, 59, much beloved son and brother, left us for heaven unexpectedly on October 2, 2015.

He was born in Berea, OH a son of Muriel (Ford) Ballance of Hampton and the late Roy Ballance. He was a former resident of Atlanta, GA, Ocala FL, Hampton and most recently Raymond since 1996.

Mr. Ballance was a New Hampshire state certified wastewater treatment operator and member of the New Hampshire Water Pollution Control Association. He worked over 20 years for the State of New Hampshire Wastewater Treatment Facility System.

Tony was an avid sports fan and could be found on Sundays watching football or baseball, especially if it was his beloved Atlanta Braves or Atlanta Falcons. His knowledge of sports history was unchallenged and he truly enjoyed sharing it with us all, in summers he swam or kayaked in his favorite spot of Glen Cove in Rockport, ME.

In addition to his mother family members include his two dear Aunts Garnet and Kay of Harrison, TN, Alex Ballance of Hampton; niece Britni Ballance of Hampton; sister Kimberly Wells and brothers, John Walker, James Walker and Jeff Walker all of Harrison, TN; his friends the Cousins’ family of Newburyport, MA, especially his dear friend Billy. Not to be forgotten is his dear Felicia Giordano of Raymond, whose heart will be forever broken by his passing.

Tony’s brotherhood, infectious laugh and sense of humor will be missed, but it will live in our hearts forever.

All services will be private.

Submitted by Felicia Giordano, Senior Environmental Coordinator, Schiller Station, Portsmouth, NH 03801
President’s Corner
By Peter Goodwin - 2015 NHWPCA President

I cannot believe that my year as President of the New Hampshire Water Pollution Control Association is now winding down. It has been another exciting year serving on the Board of Directors for NHWPCA as we approach our 50th Anniversary. We enjoyed some fabulous weather over the summer months with warm, sunny and dry conditions extending well into September after the long cold, snowy winter that we all endured in 2014-2015.

I want to thank Fred McNeill for organizing another tremendous Golf Outing in August. Fred has been handling this event for many years and it continues to be our largest fundraiser. Sunny skies again greeted the golfers at Concord NH’s Beaver Meadow Golf Course. Almost 100 golfers attended the Outing and we should thank the many vendors and consulting firms for their continued sponsorship. This event generates almost $15,000 in revenue that allows our Association to continue to keep its membership costs as low as possible and the lowest of the Member Associations in New England.

Our Fall Meeting was hosted by the Hanover NH Water Reclamation Facility on Thursday October 8. The morning weather reminded us that fall and winter are just around the corner. I want to thank Kevin MacLean and the design Team from Underwood Engineers for preparing for and providing the tours and technical presentation. We also hosted Mike Williams, a great young operator from Springfield, MA for the Operator Exchange. Kudo’s to the Merrimack, Manchester, Hanover and Allenstown facilities along with staff from Manchester Water Works for taking time to provide insight and facility tours during his three day Exchange. If you haven’t had the opportunity to take part in the NEWEA Operator Exchange, you should consider it as it is a valuable opportunity for professional growth.

The Board of Directors did not take the summer off and have been working on several potential changes in our operations. In an attempt to increase our membership numbers, we are evaluating membership categories in order to ensure that all of the wastewater facilities in New Hampshire have the ability to offer membership to their entire staff. We have also been evaluating a sponsorship program to allow our supporters (vendors and consultants) to simplify the sponsorship opportunities similar to NEWEA and other State Associations. The goal is to make it more efficient to package sponsorship opportunities for our supporters and simplify the paperwork process. The Board will be evaluating and approving any changes for implementation in 2016.

I was also able to attend WEFTEC 2015 in Chicago where a record 23,000 water professionals convened in order to participate in the Annual Conference. This was the largest attendance for a WEFTEC. The NHWPCA Seacoast Sewer Snakes had an excellent run at Operations Challenge and I commend their efforts.

Finally, I look forward to our Winter Meeting which is scheduled for Thursday December 10 with a tour of the Merrimack NH WWTF’s recent upgrades. The Winter Meeting will be held at the Crowne Plaza.

Thanks for letting me serve you as President of NHWPCA in 2015.

Respectfully, Peter Goodwin

Operations Challenge 2015
By Paula Anania

The 2015 Operational Challenge was held at WEFTEC in Chicago September 28th & 29th. Forty six teams throughout the US, Canada and Germany competed in the two day event. Ten teams competed in Division I with all others, including the New England Teams of New Hampshire, Maine and Rhode Island competing in Division II.

This year’s Seacoast sewer Snakes’ team consisted of Captain Mike Carle, Mike Baker, Patty Chesebrough, Tim Deguglielmo and Coach Paula Anania. The team did very well earning a second place in the Process Exam and finishing in 11 place overall. New England was well represented with Maine finishing in 14th place and Rhode Island in 20th.

The Team would like to thank the NHWPCA, NEWEA and numerous vendors for all their support this year!
Alexis Rastorguyeff became the Industrial Pretreatment Supervisor for the NHDES when George Carlson retired in August of 2014. Over the past year Alexis has been busy carrying the torch while familiarizing himself to all the varied federal and state regulations relating to industrial wastewater pretreatment. After earning a BS in Aerospace Engineering in 1985, he worked in private industry (wastewater and industrial rotating equipment manufacturing) before coming to work at the NHDES in the Residuals Management Section back in 2002. He looks forward to years of assisting municipalities and industrial users in the common goal to protect the environment and wastewater treatment infrastructure, while supporting economic growth.

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Allenstown’s septage by Andrea Martel

Allenstown started taking in septage in 2005. The first year took in 6.5 million gallons. There were many trial and errors to find the right processing method. In 2012 Allenstown took in 19.9 million gallons of hauled waste which includes septage, portable toilet waste, grease and effluent. With that amount of hauled waste coming in a new receiving station was in much need. With the creative ideas by staff a new receiving station was designed and put into operation in 2013. The new station allows up to 4 trucks to discharge at one time. The Septage Receiving Station (SRS) contains 4 custom made sludge holding containers which allow up to 400,000 gallons of hauled waste to be discharged into each of the 4 containers before being dewatered and hauled away. Another important key to taking in hauled waste is the revenue. From 2005 thru 2009 Allenstown WWTF took in over $1 million in surplus that was placed in a Capital Reserve Fund. These funds were used to install a new innovated process, the Bio-Mag system, at no cost to the Town sewer users or taxpayers. The upgrade cost was just under $2 million.

Answer to last issue’s trivia question

In the last issue of The Collector we were looking for the answer to “where is the oldest municipal treatment plant in NH located?” Many thanks to all who got in touch with some really great guesses. However, nobody guessed quite old enough! The oldest municipal plant that is still in operation is Durham which went on-line in 1932 and has been upgraded a time or two since then. Kind of makes sense when you think about the University of New Hampshire being located there since 1893. Similarly, Keene is in second place with a plant that went online in 1934 and Keene State College opened its doors in 1909 as a teacher’s college.

2015 NHWPCA Annual Golf Tournament

By Fred McNeill

88 golfers participated in NHWPCA’s 26th Annual Golf Tournament. The tournament was held at the historical Beaver Meadow Golf Course in Concord. The Association is proud to support the City of Concord’s 119 year old municipal course, one of only two municipal courses in New Hampshire. In return, the Association was treated to a well-manicured course, exceptional services from their hardworking staff, and a delicious meal both before and after our tournament. This year Penta Corporation repeated as champion after recording the low round of the day. After the awards ceremony a raffle was held in which our sponsors’ generous gifts and contributions were shared with our players. Bruins, Patriots and Red Sox tickets were raffled off to lucky winners to help support NHWPCA’s operations challenge team and scholarship fund.

Our golf tournament is way a great way to share fellowship with your professional colleagues and friends from throughout the state. We look forward to seeing you on August 4, 2016 at the “Beave” for the 27th annual NHWPCA Golf Tournament. Lastly, a big thank you to all our sponsors who make this tournament such a huge success!

Thank You to Our Sponsors

Safety Corner
Lessons That Can Be Learned From a NEAR MISS
Submitted by Patricia Chesebrough, PE – NHWPCA Safety Committee

According to the National Safety Council (NSC), a Near Miss is an unplanned event that did not result in injury, illness or damage – but had the potential to do so. But, why do we care about these Near Miss events if no one actually got hurt? Because by recognizing and sharing Near Misses with each other, we minimize the risk of an incident that is waiting to happen. In our treatment plants, collection systems and pump stations, we work in similar conditions and undertake similar activities; therefore, we have similar risks. By stepping up and telling the rest of us about a time where you said to yourself, “whoa, that could’ve been really bad,” you make your coworkers and peers aware of that risk, and minimize the chance that any of them get hurt in the same situation. In reading your Near Miss, the rest of us say, “oh, that could happen to me.”

Right now, you’re saying, “I know that” but yet the NHWPCA Safety Committee still struggles to get its members to report Near Misses. Here are some top reasons found online for why workers do not report Near Misses.

- **Fear of Punishment** – Workers are unlikely to report a Near Miss, or even an injury, if it will result in any form of workplace discipline.
- **Peer Pressure** – Workers are unlikely to report a Near Miss, or even an injury, if it impacts the workplace safety record, and other workers lose out on a reward as a result.
- **Difficulty** – If an organization makes it difficult to report a Near Miss, with lots of paperwork or a convoluted process, workers won't do it.
- **Perceived as Pointless** – If the employer does not use Near Miss reports to assess risk and take corrective action where indicated, workers feel like Near Miss reports are a waste of time.

Research suggests that the following four things are critical to encourage Near Miss reporting:

- **System in Place** – There must be policy/procedure for Near Miss reporting.
- **Education** – Workers need to know about the Near Miss reporting system.
- **Action Taken** – Each Near Miss report must be investigated and necessary corrective action taken. The results of this process should also be reported back to workers.
- **No Penalty** – There should be no disciplinary action associated with Near Miss reporting.

So let’s start reporting Near Misses to keep us ALL safe!

Please send your NEAR MISS stories to Patty Chesebrough (chesebroughp@wseinc.com or 978-532-1900). All reports are confidential.

Please be safe everyone!

Qualifications Based Selection (QBS) for Design Professionals

*What QBS is and why Owners should use it*

By William Straub, P.E., P.G. and Jonathan Halle, AIA, ASLA Co-chairs, NH QBS Coalition

Design and construction projects can be complicated. Public and private owners make significant investments in projects of all types: buildings; site developments; utilities; transportation infrastructure and others. Maximizing value while maintaining project goals is often an owner’s prime objective.

Most projects require design professionals to evaluate and conceptualize alternatives, prepare preliminary and final designs, procure contractors for construction and represent the owner during construction. Among design professionals can be engineers, architects, surveyors and landscape architects. Selection of the most effective and advantageous team of design professionals can be a critical part of a successful project. The team should have experience and background needed for the project, and have good ideas and approaches to project development and completion. They should also have the ability to establish effective working relationships with the owner and other project participants, and to work in an atmosphere of mutual trust and respect.

What is the best way to engage a design team that will best serve the owner’s interests throughout a project, and assure the best value from a total project perspective? For many projects it’s called Qualifications Based Selection, or QBS.

The QBS process focuses on the professional capabilities, (Continued on page 6)
Thoughts from the Bench
By Stephanie Rochefort, City of Somersworth WWTF

My daughter randomly texted me this week to ask how long I’ve been working here. She managed to randomly text me on my anniversary date, which I had completely forgotten about. Honestly, I’m too young to have worked here as many years as I have! If I had begun working here when I was ten years old, maybe…

To write today’s thoughts, I started by looking back on what I had previously written to see what I haven’t addressed. My first thoughts were published in the summer 2010 newsletter. You can do the math. Especially if you’re from a generation that actually learned real math in school and not this “new math” that is so confusing. ANYWAY, I have not written ever, at all, about basic AMMONIA analysis. Guess it’s time, you think?

My first thought was WHY haven’t I written about ammonia analysis? After all, it is a conventional pollutant that has been in my NPDES permit for a long time. The answer is back in Chemistry 407, which was quantitative lab. Ammonia, at room temperature, is a colorless, highly irritating gas with a pungent odor. Ammonia gas dissolves readily in water to form ammonium hydroxide, which is a clear, caustic solution with that same pungent odor. For whatever lab I was doing, I had a glass beaker full of water and a glass beaker full of ammonium hydroxide. I didn’t label the beakers and lost track of which liquid was in which beaker. No problem, I’ll just smell the contents of one beaker and then I’ll know. Yes, I had been schooled in proper techniques for sniffing chemicals. No, I didn’t follow the proper techniques. I just picked up one beaker and stuck it under my nose for a big sniff. Of course, it was the beaker full of ammonium hydroxide. I thought that I had poisoned myself to the point of impending death, but I was too scared of getting in trouble to let on that I couldn’t breathe! Well, I ended up with a “B” in the class, and a hatred of ammonia.

I think we all know that ammonia is in our NPDES permits because even at extremely low concentrations, aquatic life is harmed by ammonia. It does occur naturally in the environment, at nontoxic concentrations. A small amount is actually generated when lightning strikes and reaches earth in rainfall. However, most is produced by bacteria in water and soil as an end product of plant and animal waste decomposition. Oops, that’s what we do, isn’t it?

First stop is of course 40CFR part 136 to see how we’re allowed to analyze for ammonia. There’s several standard methods available. The lousy news is that they all begin with a distillation step. Then you can choose an analysis method. In Somersworth, we have chosen the ammonia-selective electrode method. Most likely that was chosen because of its ease and the fact that it’s applicable over a large range. Or maybe because Hach hadn’t invented their awesome TNT methods that are equivalent to EPA methods yet.

The reason for the preliminary distillation step (besides being required) is that it gets rid of interferences. Direct measurement of ammonia only works well in really clean waters, like drinking water or pristine surface water. I’ve done a distillation study to see the difference and to maybe prove that I don’t really need to distill every sample. It turns out that I consistently measured slightly less ammonia in my distilled samples. After showing that’s what the interferences were doing, it was pretty obvious that I wanted to distill every sample. Back in the dinosaur days, I did a manual distillation of each sample with equipment like in the picture. It was kind of fun for a while. It was like I was back in Chemistry 407 again. (Except for the ammonium hydroxide incident, I really did enjoy that lab.) It was also very time-consuming and I happily use an auto-distiller now.

If I was starting from scratch with a new requirement to analyze for ammonia, I likely would look into one of the newer, easier methods. For right now, the ammonia-selective electrode is working just fine and I love the “mad science” look and sound of my lab when I have the auto-distiller running and volumetric flasks full of standards lined up on the bench!
experience, project design approach, schedule and responsiveness to the owner’s needs. Based on these attributes, the owner ranks firms and identifies the most preferred firm. With the preferred firm, the owner participates fully in the development of the alternatives to the approach for the design project’s scope of work, schedules, and other aspects of the project. When there is a common understanding of the design scope and process, the design firm develops costs for these services, which are negotiated. The QBS process can best balance design costs with design objectives and scopes, recognizing that the cost of design is usually a small fraction of total project and life cycle costs. If an acceptable final contract cannot be established in the owner’s interest and opinion, negotiation with the first firm ends and the owner negotiates with the next ranked firm.

A prime advantage for owners using the QBS process is that the owner maintains maximum control over the design process of the project, and the costs for design services. The costs for services are developed jointly between the owner and designer. When QBS is not used, and selection is made primarily on initial proposed costs (bids), there is often a disconnect between an owner’s expectations and the services actually received, as designers are essentially encouraged to propose the least possible design effort, and not maximizing value over the entire project life. Again, design costs are often a small fraction of total project costs.

Key steps of the QBS process typically include:

- Issuance by the owner of a Request for Qualifications (RFQ) for professional design services. The RFQ will present the project, project requirements and objectives, requirements for responses, and an outline of criteria for selection;
- Submittal of qualifications packages by design teams of experience, capabilities, personnel, project understanding and approach;
- Interviews with most favorable firms (typically 3-4);
- Ranking of firms; and
- Negotiation of project elements, scope, costs and contracts with the selected firm.

Central to the QBS approach are the interests of the owner. With this process, owners are best assured that they are provided with the right capabilities and project approach, responsiveness, good communication, mutual trust, management, quality control and design excellence.

A common comparison to the selection of design professionals is how doctors or lawyers are chosen. If someone required major surgery, or had an important legal problem, would they send out for bids from doctors or lawyers, or would they seek a professional relationship based on capabilities, experience and trust? Few would accept “low-bid surgery”.

The QBS process is required for many projects by federal agencies, and for many state programs that use federal funding. This is because these governmental agencies understand that QBS of design professionals results in the most favorable overall project outcomes.

In New Hampshire, organizations of design professionals participate in the NH QBS Coalition, whose mission it is to promote the use of qualifications based selection, and to educate owners, funding and regulatory agencies on the advantages of the QBS process. Visit the NH QBS Coalition website at www.NHQBS.org. The member organizations of the coalition include the American Council of Engineering Companies-NH (ACEC-NH), the American Institute of Architects –NH (AIA-NH), Granite State Landscape Architects (GSLA), the NH Section of the American Society of Civil Engineers (NH-ASCE), the NH Society of Professional Engineers (NHSPESPE), Structural Engineers of NH (SENH) and the NH Land Surveyors Association (NHLSA).

William Straub, P.E., P.G. (wsraub@cmaengineers.com) and Jonathan Halle, AIA, ASLA (jh@warrenstreet.coop) are co-chairs of the NH QBS Coalition

(Continued from page 4)
Making Your Wastewater Treatment Facility More Energy Efficient

By - Sharon L. Rivard, P.E. NH Department of Environmental Services, Wastewater Engineering Bureau

There are amazing things happening in New Hampshire relative to opportunities for improving energy efficiency at wastewater facilities. Back in March 2015, New Hampshire Department of Environmental Services (NHDES), in partnership with NH Office of Energy and Planning (NHOEP) and the NH CORE Utilities (Eversource, Liberty Utilities, Unitil and NH Electric Coop), applied for a U.S. Department of Energy (USDOE) grant to assist NH Wastewater Treatment Facilities (WWTFs) in becoming more energy efficient. We were recently selected to receive this grant and are currently working out the details with USDOE so that we can move forward with grant acceptance. USDOE will provide up to $300,000 toward our proposed work and the NH CORE Utilities will provide a 20% match (up to $60,000) for the project. This USDOE grant was a nation-wide competitive application process with at least 13 applicants, so NH is very excited about being one of four applications selected for funding. This grant has the potential to significantly benefit the communities involved in the project.

The overarching goal of this three-year project is to identify, on average, 33% energy savings at up to 26 municipally-owned WWTFs. The following graphic illustration can give you an idea of what the environmental and monetary benefits of this project look like:

The following gives a bird’s eye view of the proposed grant work.

**Benchmarking Phase**

As soon as we receive the official word from USDOE that all system are “a go”, NHDES and the NH CORE Utilities will reach out to each NH municipality with a WWTF to explain the upcoming opportunities. We will also be requesting that each municipality release their WWTF’s electric energy use data so that we can maximize the benefits of this project to all WWTFs.

The grant work will start with benchmarking the current electric energy use at all municipal WWTFs. This information will be used in the following ways, at a minimum:

- To quantify each WWTF’s electric energy use relative to million gallons treated;
- To identify how each WWTF’s electric energy compares to other similar WWTFs within NH and elsewhere, when possible;
- To identify WWTFs that are ahead of the pack for energy efficiency as well as WWTFs that may be lagging; and
- As a teaching tool and an opportunity for peer-to-peer learning during an initial round of workshops.

An example of the benchmarking is shown below, based on the City of Keene’s energy use and flow data.
Is your facility up-to date with the most recent “tools of the trade”??

By Ray Gordon, NHDES

Every wastewater facility has its “tools of the trade” which allow us to get our jobs done. Components like pumps, pipes, SCADA systems, computers, lab equipment and much more have all been a part of wastewater systems from the beginning. These tools allow us to fill our core function of making clean water; but does your facility have the latest tools of the trade?

The task of turning dirty water into clean water is a valuable part of modern society, providing many benefits such as public health and preserving our environment. Unfortunately this core task is “out-of-sight” and “out-of-mind” for most people. We occasionally find individuals who make decisions about our staffing levels, funding, rates and upgrades who know little about what we do and why we do it. This makes educating the public as well as our elected officials an essential part of what we do, and there are some valuable tools that we can all use to accomplish this task.

Websites – An up-to-date internet site or page can provide an inexpensive way to foster awareness and education of wastewater management issues in your community. A website can also serve as an information clearinghouse for other educational materials and provide resources and additional links for target groups such as the general public, the development communities and various industries. Web sites can also be valuable tools to save the time of your administrative as they can answer many basic questions about your system, reducing phone calls.

Social media – Social media are computer-mediated tools that allow people to create, share or exchange information, ideas and pictures/videos in virtual communities and networks. Feel free to set up an account for your facility. You can quickly and easily share important information to members of your community using social media.

Email – Newsletters can provide information on service announcements or upcoming outreach events, as well as tips on what not to flush for targeted audiences and the general public. Email is often the least expensive way to reach a larger number of individuals and entities.

Streaming media – Tools such as streaming audio and video, webcasts, online training workshops and other interactive electronic media tools provide additional opportunities for reaching target audiences. Your local cable company or high school may have the tools and expertise to help you create a video, and using sites like YouTube your distribution can be free. Social media can also help you share your videos in your community.

Brochures & Fact Sheets – Brochures, fact sheets and other literature can be for general information or to provide messages and tips specific to a particular topic or target group. Printed materials often complement other education and public awareness activities such as public outreach events, workshops and on-site inspections of businesses.

(Continued from page 7)

Initial Education Phases

Following the benchmarking, NHDES and NH Core Utilities will host a series of workshops developed for various types of wastewater treatment (lagoons, activated sludge, advanced and proposed facilities). We will discuss the benchmark findings and provide opportunities for peer-to-peer learning to prepare participants to find opportunities for energy savings at their WWTFs.

Energy Audit Phase

We will select up to 26 WWTFs to receive FREE energy audits using a competitive process considering criteria such as, but not limited to:

- Commitment and interest;
- Previous audit finding implementation;
- Upcoming upgrade;
- Perceived potential for savings; and
- Actual cost of each energy audit completed.

Technical Assistance Phase

For each of the communities involved in this program, regardless of selection for an energy audit, we will provide one-on-one technical assistance to assist the operator and municipal decision makers identify potential energy savings and develop implementation plans. We will also help communities identify potential funding opportunities for energy projects.

Follow Up Education Phase

Following the technical assistance phase, we will host another round of workshops to share lessons learned, audit findings and plans going forward. We will conduct a second round of benchmarking to show energy savings that have been achieved during the three-year grant period and quantify additional potential savings from projects identified but not yet implemented.

(Continued from page 7)
Bill Inserts – Printed materials can be designed to accompany utility bills or other correspondence to local citizens and businesses. Inserts can include brochures, newsletters, tips on best management practices and events notices. Bill inserts are an excellent way to distribute educational materials without additional postage expenses.

Posters – Wall posters provide a great deal of information quickly to the target audience at a stationary location and can be displayed at locations such as libraries, schools, transfer station, town halls and other public locations.

Display Booth – A display booth or exhibit provides a way to present information and educational messages at workshops and other events. Exhibits may be permanent or portable and can have static displays, videos or interactive features. Portable display boards are often effective for use at events or workshops. A simple display booth can be put together easily. The NH DES/NHWPCA can also help you by loaning out a "What’s Flushable?” display booth, or you can create your own.

Newspaper – Your local paper may be looking for additional stories. Talk to them and see if you can submit articles. If you need ideas on what to write you will find sample articles all over the internet. You can also see if there are articles that you can republish.

If you would like to get started in putting together your tool box please contact Ray Gordon at 271-3571 or ray.gordon@des.nh.gov; I will be happy to share materials that you can use in your community. DES has a variety of resources to get you started. Specifically we have the NHWPCA/DES “What’s Flushable?” display table, a variety of brochures that you can distribute in your community, sample articles and even a couple videos.

Operator Exchange: The State of Massachusetts
by Roger Wadleigh

The operator exchange program is one of the best parts of membership in the NHWPCA. It is an excellent opportunity to get a look at how other communities handle the same problems that we handle every single day. It’s a chance to find that new idea or make, or become, a contact that can make your life, your contact’s life, and/or the lives of your co-workers easier in the future.

My three day exchange with the Massachusetts Water Pollution Control Association (MWPCA) began on Sunday evening by checking in (expenses paid for those who might have let that prevent them from volunteering for the program) at the Fairfield Inn in Auburn, MA. The first item on the itinerary would have normally been a quick meet and greet with the board members of the Mass Association, but I was unable to get to the hotel early enough. It’s too bad, as everyone I met was fun and friendly, it would have been great to get to know more of them.

The first day I met Mike Foisy, a senior operator and Past President of the MWPCA, who took me to his plant, the Upper Blackstone Water Pollution Abatement District Facility in Millbury, MA. Serving several towns, this fifty-six MGD activated sludge plant is clean, odor free, quiet and operates smoothly. They incinerate their sludge in massive incinerators, and only ash leaves the plant in trucks. Their outfall is into a historic canal originally used for shipping. They use several distributed bio-filters the size of eighteen wheeler trucks for their excellent odor control. In-line phosphorus detectors from Hach help them measure their A³ tanks’ biological phosphorus removal process.

After lunch at a small local place with Lynn Foisy, the Executive Director of the MWPCA, and Henry Albro of F.R. Mahony & Associates, we left for two more plants. Henry is also on the board of the MWPCA, and took me to see the opposite end of the spectrum, a 30,000 gallon (.03MGD) amphidrome plant. This ‘distributed facility’ represents the future for many small developments and communities. Essentially it is a miniature activated sludge plant buried under the ground like a septic tank, and discharging into a leach field. The blowers for the plant are the size of a washer and dryer, and they and the plant’s SCADA take up a corner of the development’s maintenance shed. Amphidromes can be sized for up to 100,000 gallons. We visited the Uxbridge facility next, a forty year old, 2.5 MGD aerated sludge plant that would be at home in any New Hampshire community for its upgrade needs; its Superintendent, Jeff Legg, and Chief Operator, Mark Lamontagne, were kind enough to stay after quitting time to give us a tour. I felt very much at home here, and was pleased to see that the problems of NH plants are not ours alone. After visiting the Upper Blackstone and the brand new amphidrome it was good to see something more familiar. I would list their
challenges, but you already know them. They are proud of their plant and their rugged stewardship of it, and rightly so.

The following day I was picked up by Michael Burke, of Unit- ed Water, for a tour of Boston’s Deer Island Facility. Jason Swaine and I, another operator from Holyoke, MA, got a thorough tour. This massive 350 MGD facility can spike to 1.3 BGD in twenty minutes, at which point they begin shunting the overflow into massive tanks to be bled back into the system later. I took in the tour, from their stacked clarifiers (has to be diagrammed to even begin to describe…) to their massive egg shaped digesters with a view of the Boston skyline. But in the end it was an activated sludge facility like any other you’ve seen. What impressed me the most at that plant was a quiet spot at the edge of the oceanfront. There, a small plaque is posted to commemorate the loss of two construction workers to asphyxiation while opening up with a view of the ocean. A small poem, *A Salute To Ordinary Heroes*, reminds us that people lose their lives every day doing what we do, to keep our communities healthy. It gives new meaning to the phrase “Stay Safe” in a way no poster can. Read the book *Trapped Under The Sea* for the rest of the story.

After dinner at Chuck’s Steakhouse (a must-visit), in Auburn with Marcel Tremblay, President of the MWRA (and a frequent teacher at the Franklin Facility), the day wrapped up. The Trade Fair at Wachusett ski area the following day was very informative, and I got a chance to talk to many representatives of odor control systems, new blowers, and a new system designed to replace ladder logic. A good time, although again family concerns forced me to leave before lunch.

I would like to thank the NHWPCA for making this opportunity available. I urge anyone considering it to go. It’s worth the time and I picked the brain of every person I talked to about ideas for our own plant. Everyone was a wealth of knowledge and had helpful suggestions.

Roger Wadleigh has worked in the wastewater field for 2 years. He is currently a Grade 3-OIT operator employed by Allenstown WWTF.

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Small Community Mapping, the Little Town that Could

*EPA New England Water Infrastructure Outreach provides tools, examples, and technical assistance for water infrastructure operators and managers, local officials, and other decision-makers for more effective and sustainable water infrastructure management. For more information see [http://www.epa.gov/region1/sso/toolbox.html](http://www.epa.gov/region1/sso/toolbox.html)*

Background

Gorham New Hampshire’s Water and Sewer Superintendent knew that an accurate and up to date map of the sanitary sewer system was necessary, but was concerned that it would cost tens of thousands of dollars. Like many municipalities, Gorham’s wastewater discharge permit requires that the town have an accurate map of their collection system. However, the Superintendent was interested in not only updating the existing maps, but in creating an electronic map and database of the underground system to capture all the information about the system that he could.

As a small community, Gorham has little money or time to update paper maps which date back to the 1970’s and earlier. In part, the Superintendent’s desire to develop an electronic sewer system map was driven by the need to capture knowledge from soon to be retired staff members. He had recently heard about an EPA Global Positioning System (GPS) loan program, but was initially wary of EPA’s involvement. He decided to take advantage of the opportunity and found that the town could save money by doing some of the work themselves. Gorham derived added benefits when they finished mapping the system manholes very quickly and were able to continue using the GPS to map their water system hydrants as well.

If Gorham could learn how to do the mapping and save money, other small communities could do it too. Historically the Water and Sewer Department maps have been paper maps and with homeowner connection and account information stored in file cabinets. Some of the original maps are more than 35 years old and hand drawn over county tax maps. Some of the sewer system information was stored in Computer Aided Design (CAD) files. While Gorham did know a lot about their sewer system, it was becoming increasingly difficult to manage the information on repairs and additions for the growing community.

Training and Field Work

In January of 2012, EPA staff travelled to Gorham to provide a one day training on collecting GPS data and creating a map from those data points. Gorham Water & Sewer Department staff members were trained on how to collect a GPS reading and associated data in the field. The first part of the training consisted of an overview of the technology followed by hands-on use of the equipment. It turned out that the town did not have a numbering system to identify their manholes which is essential for electronic data management. With guidance from EPA, the group immediately began working on a manhole numbering system that made sense to the staff for their system.

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After lunch, six Gorham staff members and their local surveyor headed outside for the hands-on portion of the training. The surveyor was invited because of their involvement with other town projects and was eventually hired to create the final GIS sewer map. Within a few days after the training, the staff had completed the field work. With all of the sewer manholes located in the field with GPS, the data was uploaded to a computer software program to improve the accuracy. On the computer, surveying staff added the lines to connect the manholes to represent the sanitary sewer system. Detailed Information from past engineering drawings in the CAD system were used to assign characteristics such as size and material to the newly mapped pipes and manholes.

EPA loaned the equipment for one month. The town expected they would be capturing the GPS data in between snow storms, but a stretch of mild weather allowed them to finish collecting the sewer data in just a few days. EPA suggested that they could use the GPS to collect data on their water system, which they did, and located all of their 146 water system hydrants. This data was also incorporated into the water and sewer map created by the surveyor. The total cost for York Land Services to produce the water and sewer map was $3700. The combination of in-house field data collection, borrowing EPA equipment, and support from the local surveyor, allowed Gorham to create their water and sewer system maps with little disruption and at a lower cost than if they had not used loaned equipment and their own field staff.

Opportunity Pays Off
Many small communities are burdened with the same issues as a large community, but with fewer staff and less money. With a little training, some equipment, and a positive attitude, any small community like Gorham can identify and map their water, wastewater, and stormwater systems. The move from paper to electronic maps and databases does have a cost, but the benefits and opportunities to store, access and update data easily helps move a community toward better management.

If you would like to know more about this story or the EPA equipment loan program contact Dave Patry in Gorham NH at 603-466-3302, email dpatrygorhamws@ne.rr.com, or Deb Cohen at EPA New England 617-918-1145, email cohen.deborah@epa.gov

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10 Questions to get to Know Our NHWPCA Board of Directors

Kurt Robichaud
Position on Board: 3rd Director
1. Nobody wants to grow up and work in a WWTP. How did you find yourself in this field? Started off in groundwater remediation and ended up in wastewater.
2. What is your current employer? Town of Henniker, Water Pollution Control Facility.
3. How long have you been in the wastewater field? 10 years
4. What kind of cell phone is in your pocket – Apple or Android? Android
5. What’s your favorite social media – Facebook or Twitter? Facebook
6. What kind of computer is on your desk – Apple or Microsoft? Microsoft
7. What’s the last movie you watched in a theater? Furious 7
8. What’s your favorite book of all time? The outsiders
9. When you’re not working, what are your hobbies? Fishing, Archery, NASCAR
10. What is one thing about our association that you’d like to accomplish/change? Bring young operators into our association.

Kevin M. MacLean
Position on Board: 1st Director
1. Nobody wants to grow up and work in a WWTP. How did you find yourself in this field? I entered this field out of necessity. The birth of a son warranted a change from the construction field into municipal service for benefits, security and a new trade to learn.
2. What is your current employer? The Town of Hanover, NH – Water Reclamation Facility.
3. How long have you been in the wastewater field? I have approximately 19 years of service at four various NH facilities and almost three years additional service working for a land application company
4. What kind of cell phone is in your pocket – Apple or Android? I have an Android. @#*& Apple.
5. What’s your favorite social media – Facebook or Twitter? Neither. I can’t see the sense of it. We are already too far removed from real interactions with one another.
6. What kind of computer is on your desk – Apple or Microsoft? Microsoft at work and home. See #4 above J
7. What’s the last movie you watched in a theater? The Hobbit - An Unexpected Journey. My geekiness is out!
8. What’s your favorite book of all time? Anything by Bill

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9. When you’re not working, what are your hobbies? Anything to do with the outdoors and the elements. Hiking, kayaking, Mt. biking, photography, fishing, home remodeling. Going to attempt gardening this year.

10. What is one thing about our association that you’d like to accomplish/change? I want to see membership increase to > 70% of all licensed NH operators. I want to survive the 50th anniversary too!

Noelle Osborne
Position on Board: Treasurer

1. Nobody wants to grow up and work in a WWTP. How did you find yourself in this field? I was in school at UNH going for my bachelor’s degree in microbiology. One of the generic mailings to the college as a whole included a job posting for a summer lab intern at the Nashua Wastewater treatment plant. Always looking to increase my knowledge, I applied and spent the next three summers working in the Nashua lab. After graduating, I worked in the private sector or 2 years, until a full-time position opened up at Nashua. I returned and have been here ever since.

2. What is your current employer? Nashua WWTF

3. How long have you been in the wastewater field? 10 Years

4. What kind of cell phone is in your pocket – Apple or Android? Apple

5. What’s your favorite social media – Facebook or Twitter? Facebook

6. What kind of computer is on your desk – Apple or Microsoft? Microsoft

7. What’s the last movie you watched in a theater? Paddington

8. What’s your favorite book of all time? This is a hard one for me. I read A LOT. I have to offer several favorites.

Polar Express. A Wrinkle in Time. Outlander series. Basically anything by Robin Cook. Little House on the Prairie series. I know I’m forgetting a ton, but that’s the best I have!

9. When you’re not working, what are your hobbies? Ha, that implies I have free time for hobbies… Reading, playing with kids, crafts…

10. What is one thing about our association that you’d like to accomplish/change? Educational outreach which includes bringing more people into the field.

Fred McNeill
Position on Board: NEWEA State Director

1. Nobody wants to grow up and work in a WWTP. How did you find yourself in this field? As a Peace Corps Volunteer in West Africa I was given a rural water supply program to manage. That was the start of my environmental engineering career.

2. What is your current employer? The City of Manchester’s Environmental Protection Division

3. How long have you been in the wastewater field? Over 30 years

4. What kind of cell phone is in your pocket – Apple or Android? Android

5. What’s your favorite social media – Facebook or Twitter? Picking up the phone and talking

6. What kind of computer is on your desk – Apple or Microsoft? Microsoft

7. What’s the last movie you watched in a theater? Whiplash


9. When you’re not working, what are your hobbies? Golfing, skiing, and refereeing basketball

10. What is one thing about our association that you’d like to accomplish/change? Mentor the next generation of water professionals.