NH
WATER POLLUTION CONTROL ASSOCIATION
THE COLLECTOR

Share Your Thoughts

From Primary to Advanced Treatment in One Project: Portsmouth's Peirce Island WWTF Upgrade Project

Terry Desmarais, P.E., Peter Conroy, Erik Meserve, P.E., and Jon Pearson, P.E.

The City of Portsmouth's Peirce Island Wastewater Treatment Facility (WWTF) was originally constructed in 1964 and consisted of primary treatment and disinfection. The WWTF serves a combined collection system dating back to the 1800s. In 1991, it was upgraded with a new aerated grit system, new primary clarifiers, a gravity thickener, and sludge dewatering. In 2005, chemical storage and feed systems were added to provide Chemically Enhanced Primary Treatment (CEPT). Four years later in 2009, the US Environmental Protection Agency issued the City a Consent Decree requiring the City to conduct a wastewater facilities master plan process with the intent of identifying the proposed upgrades to meet secondary treatment levels at the Peirce Island WWTF. In 2012, the Consent Decree was modified to require secondary treatment and total nitrogen (TN) removal to 8 mg/L on a monthly average basis from June through October and to 8 mg/L on a seasonal monthly average basis between May and October. At the time of the 2009 Consent Decree, the WWTF's average daily design flow was 4.8 MGD with a peak flow of 22 MGD. In 2021, an upgrade from chemically enhanced primary treatment to secondary treatment with nitrogen removal was completed, the single largest public works project that the City has ever undertaken.

Aerial view of the WWTF shortly after construction began

Aerial view of the WWTF after construction

As its name implies, the WWTF is located on Peirce Island in Portsmouth, NH. Peirce Island is a small island near the mouth of the Piscataqua River and close to historic downtown Portsmouth. The WWTF encompasses 3.7 acres on

In This Issue

Editor's Words

Stephanie Somersworth WWTF

The purpose of the last newsletter was to get people excited for the Trade Fair, and now it's time to get excited for the Winter Meeting. In Portsmouth! Wow! Y'all must have already read the cover article about the Portsmouth facility. There's enough information in that article to make any NH wastewater operator want to take a tour.

I'd love to be there, but I'll be in South Carolina. December 10th is the day that my son will be arriving in the States for my daughter's wedding. I haven't seen him in over three years...#THANKSCOVID... I'm going to be staying in South Carolina for a couple of weeks. I only have one daughter, so this wedding is a big deal. And she's graduating from college a few days before the wedding so I'll be there for her graduation. And the weather will be glorious in South Carolina. I've rented a house with a fenced in yard so I'll have room for out-of-town guests and my floppy-eared mutt.

Here is Somersworth, as part of our latest upgrade, we have a new secondary clarifier. The official name for our new clarifier is Clarifier #3, but we call it the "Big Clarifier". It's not really that big, but our two other clarifiers are pretty shallow. If there was a wastewater edition for the America's Funniest Home Videos show, I'm pretty sure that I could have won a prize if somebody was filming me using a sludge judge in the Big Clarifier. My first try, I somehow managed to wear what felt like most of the contents of the sludge judge. My second try was a little smoother, until I tried to put the sludge judge down and got the rope tangled up in the light-pole.

One of my favorite things to do at our NHWPCA meetings is to talk with everybody and share stories – I'm betting that there's lots more "America's Funniest" moments out there. I'd like to say that I'll be thinking about y'all having an awesome time at the Winter Meeting, but I'll be spending time with my son and finalizing last-minute wedding details with my daughter. Please smile when you see a camera pointing at you so I can enjoy the photos. Speaking of photos, keep on reading and you'll find plenty of fun photos from the Trade Fair.

Upcoming Events

Go to **www.nhwpca.org** for live links to online registration

Winter Training Classes —— Check NHWPCA.org for details

NHWPCA Winter/Annual Meeting —— Friday, December 10, 2021
Sheraton Portsmouth & Pierce Island

NEWSLETTER COMMITTEE

Stephanie Rochefort, Mary Jane Meier, Steve Clifton, Rick Nash, Ryan Peebles, **YOUR NAME HERE.**
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.

Editor: Stephanie Rochefort

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the southeastern tip of the island. The island is a heavily used recreational area with a popular public pool, a network of heavily used walking trails and an off-leash dog walking area and has an important archaeological history. It is also close to the popular recreational and tourist resources in the historic downtown, the Strawbery Banke Museum, and the 10-acre waterfront Prescott Park. Because of the popularity of the remainder of the island, the City decided that the upgraded WWTF needed to fit within the fence line of the existing WWTF. Thus, the City's Final Wastewater Master Plan (November 2010) recommended high rate, small footprint treatment technologies to provide secondary treatment. Because these high rate technologies have limited full scale installations, the technologies were piloted to determine the most applicable technology for upgrading the WWTF. Based on the results of the piloting program, the use of a two-stage Veolia Water Technologies BIOSTYR™ Biological Aerated Filter (BAF) was recommended. The first stage of the BAF accomplishes both carbon oxidation and nitrification while the second stage is designed for denitrification.

Construction at the Peirce Island WWTF took place in two phases. During the first phase, the two 76-ft diameter primary clarifier mechanisms, which were over 20-years old, and one gravity thickener mechanism, were replaced. This work was done in advance to mitigate the risk of primary clarifier failure during the larger, second phase of construction. Slide gates at the primary clarifier influent distribution box were also replaced during this phase with appropriate provisions for the second phase of the upgrade. Construction of this upgrade phase was completed in 2014 by Methuen Construction at a cost of approximately $1.3 million. Design and construction engineering services were provided by AECOM.

The second phase of the WWTF upgrade began in September 2016 and was also completed by Methuen Construction, which submitted the lowest of three bids for construction of the project and was substantially completed in April 2021. Final completion was reached in the Fall of 2021. AECOM also provided the design and construction engineering for this phase. During this phase, approximately half of Peirce Island was closed to public access to provide contractor staging and laydown areas for construction as well as for public safety. Construction of this phase cost approximately $76 million. The upgraded facility is sized for an average daily flow of 6.13 MGD and a peak flow of 22 MGD. The upgraded treatment process now consists of mechanical screening followed by aerated grit removal and primary clarification. After primary clarification, wastewater is pumped via a new pump station to the two-stage BAF for secondary treatment and nitrogen removal. BAF effluent is then disinfected prior to discharge. Biosolids from the BAF are co-settled with primary sludge in the primary clarifiers and then pumped to gravity thickeners for thickening. After thickening, biosolids are dewatered with new screw presses.

Flow enters the facility in a new headworks building. The building houses two channels with front rake, front return, chain and rake mechanically cleaned screens each capable of screening 11 MGD. Each screen discharges to a dedicated wash-press which transports washed and compacted screenings to a dumpster. A carbon adsorber odor control unit scrubs foul air from the headworks as well as several other spaces on-site. As this was the first facility to go online by design, this building houses the WWTF's SCADA servers. It also has a propane fired condensing boiler for heating both the headworks building and the existing grit building.

The existing grit building underwent a complete renovation. In addition to architectural improvements such as a new roof and new doors, all of the existing mechanical and electrical systems were completely replaced.

A new electrical room was created for the building's new ethernet connected Motor Control Center (MCC), and new HVAC and plumbing equipment was installed throughout. The two existing aerated grit chambers were rehabilitated with two new grit screws, three new 250 gpm recessed impeller grit pumps, three new 10 HP positive displacement grit blowers, and a new grit classifier. Stainless steel baffles were added to the grit chambers, and the existing diffusers and slide gates were replaced. Aluminum covers were installed for odor control. A new chemical storage and feed system for ferric chloride and polymer for CEPT (intended to be used under wet weather conditions) and co-settling of BAF biosolids was also installed, including two new 4,600 gallon insulated ferric chloride storage tanks, six new metering pumps, and four new polymer blend units. The upper level of this building also includes two new 125 gpm plunger-style thickened sludge pumps that pump thickened sludge from the nearby gravity thickener to sludge storage tanks.

The new secondary influent pump station is located in the new solids building. The pump station has three 4,350 gpm dry-pit submersible pumps and one 2,500 gpm dry-pit submersible pump that pump primary effluent to the BAF. Primary effluent flow in excess of the capacity of the BAF overflows a weir in the primary effluent distribution box, is disinfected and combined with disinfected BAF effluent prior to discharge.

The largest building on-site is the new BAF building. The building is approximately 50-feet in total height with half below grade and half the facility above grade and an overall footprint of 230 feet long by 100 feet wide. It houses six first-stage treatment cells and six second-stage cells. The first-stage, or CN cells, provide carbon oxidation and nitrification while the second-stage, or DN cells, provide denitrification. Each of the CN cells has an area of 1,267 square feet and a media depth of 11.5 feet, while the DN cells have an area of 304 square feet and a media depth of 8.2 feet. Air is provided to the BAF for treatment and air scour during backwash by four 200 HP rotary screw blowers. Compressed air is provided to operate the 62 pneumatic valves with two, 20 HP compressors. Backwash from the

BAF Gallery

cells is routed to two mudwells located beneath the cells and pumped via six submersible solids handling pumps to the primary clarifier influent distribution box. A new Micro-C storage and feed system provides a carbon source to the DN cells via a flash mix system. The building also houses a new propane fired boiler system which provides hot water for heat to the BAF building and solids building.

The new solids building includes numerous pumping systems, two inclined screw presses, and two truck bays besides the new secondary influent pump station. Three primary sludge grinders and 280 gpm rotary lobe pumps, two 125 gpm plunger-style thickened sludge pumps, three screw press feed grinders and 150 gpm rotary lobe pumps, and two 10 HP positive displacement sludge blowers are housed in the building's lower level. Upstairs, two inclined screw conveyors dewater thickened sludge. Dewatered sludge is transported via five shaftless screw conveyors to a truck bay with space for two dump trailers. Two 47,000 gallon aerated sludge tanks are attached to the building. The building also contains a sodium hydroxide (caustic) storage and feed system, four polymer blend units, and a potassium permanganate feed system.

The new operations/lab building was the last building to be completed. The structure for the lower level of this building is the structure from the original sludge processing building. The upper level of the sludge building was demolished and a new upper level constructed.

Screw Presses

The new upper level now houses the control room, offices, laboratory, break room and locker rooms for the City's operators. The lower level of this building houses new sodium hypochlorite and sodium bisulfite pumps as well as three 100 gpm ring section plant water pumps and two 525 gpm horizontal solids handling thickener dilution water pumps and a maintenance garage bay.

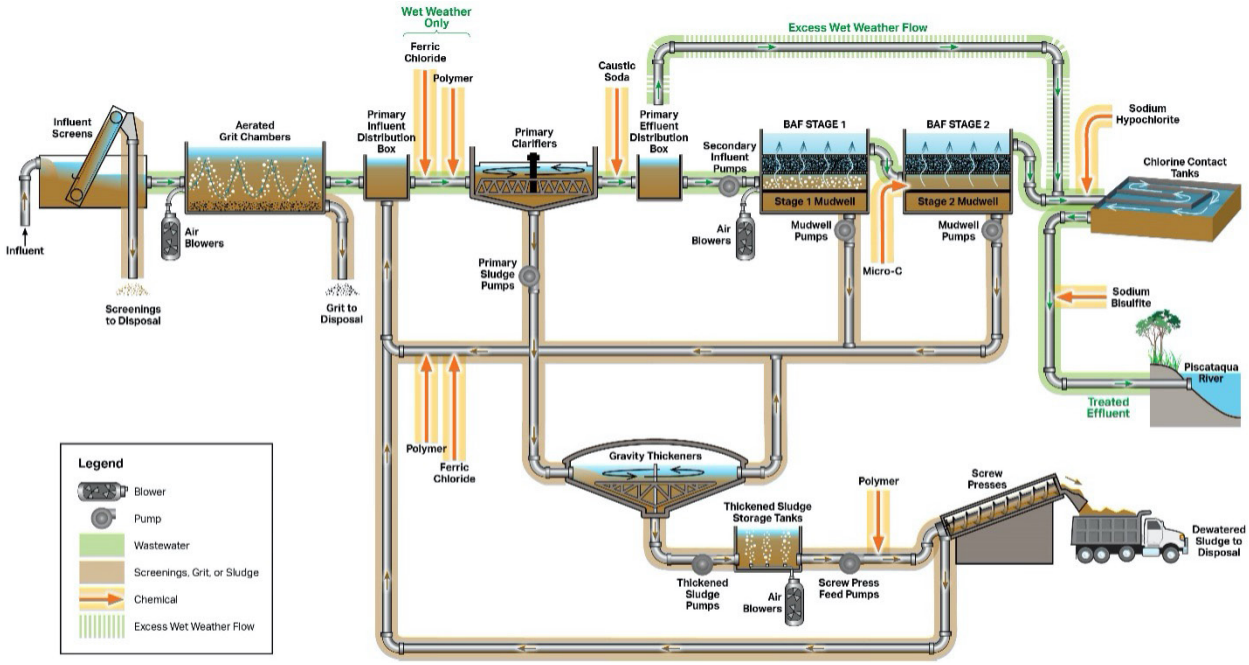
The second phase of the upgrade also included the construction of a new 40-foot diameter gravity thickener with an aluminum dome cover. Four hundred gallon per minute submersible chopper scum pumps were also added to the primary clarifiers and gravity thickeners.

A new, underground electrical service was also installed on Peirce Island to replace the existing aerial service that crossed onto Peirce Island overwater from nearby Shapleigh Island. Also installed was a new utility transformer, 4,000 Amp switchgear and 1.5 MW diesel standby generator with 5,700 gallon belly tank. New underground electrical ductbanks replaced the existing ductbanks.

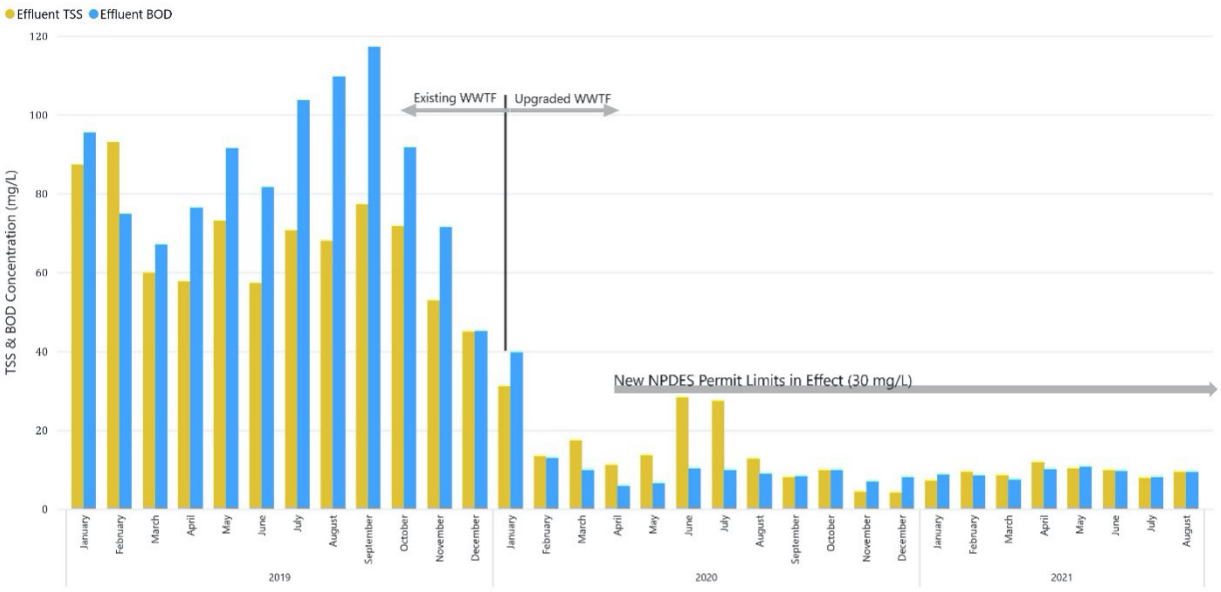
The project also included a number of sustainable features designed to reduce energy use and decrease stormwater runoff. Among these design elements are a solar wall at the headworks building to pre-heat ventilation air using solar energy, radiant heating in select floors in the headworks building and solids building, a solar hot water system in the operations/lab building, numerous skylights and solar tubes to reduce daytime interior lighting needs, and a rain garden for site stormwater treatment.

The upgraded treatment process was put into service in early 2020. After startup and stabilization of the biological process, the BAF underwent a successful one-month performance test to simulate maximum month design conditions at minimum design wastewater temperatures. The effluent TN from the BAF during the performance test averaged less than 3 mg/L, successfully meeting the test requirement.

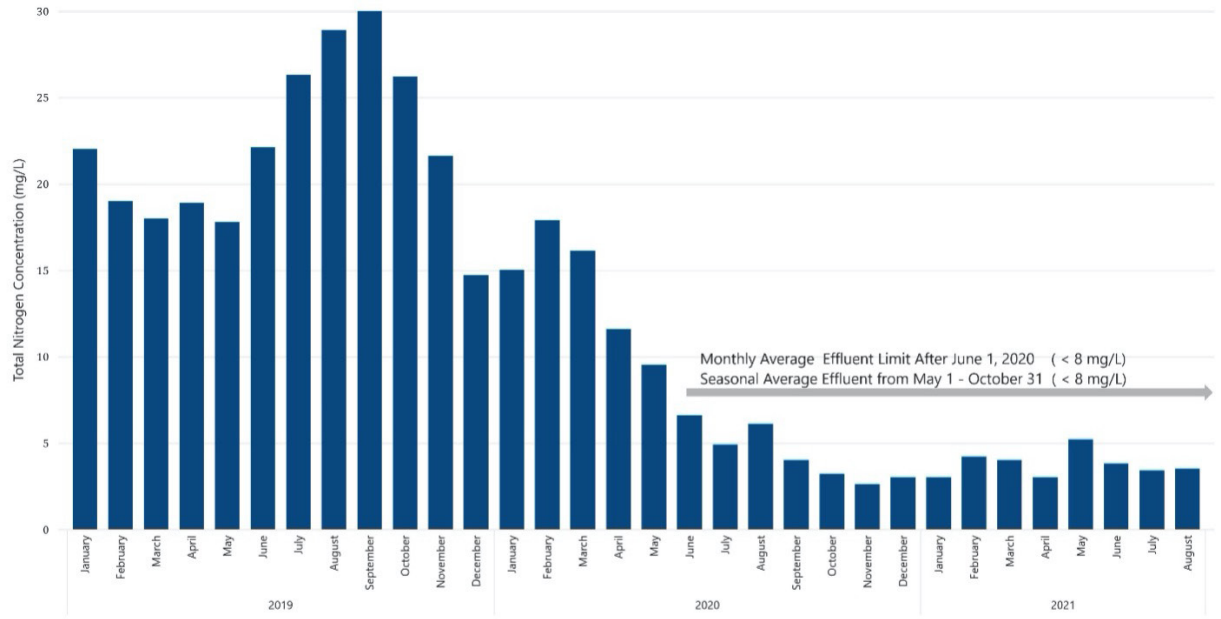
The facility has met all Consent Decree



Peirce Island WWTF Process Flow Diagram



Pre- and Post-Construction Average Effluent BOD & TSS



Pre- and Post-Construction Average Effluent TN

milestones, and the effluent from the upgraded WWTF has met the required effluent limits in the Consent Decree and the City's NPDES permit. When compared to the effluent quality from 2019, TSS removal has improved by 88%, BOD removal has improved by 90% on an annual basis and TN removal has improved by 84% as seen in the graphs below.

A tour of the upgraded facility will be offered as part of the 2021 Winter Meeting. Please stay tuned for further details.

Thanks to these sponsors of NHWPCA's 2021 Winter Meeting:

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NEWEA Certification Program updates

The NEWEA certification examination programs for Lab Analysts and Collection System Operators have been updated to offer greater access to those seeking certification.

Following a year and a half of diligent work by NEWEA's Certification Committee, we are proud to announce NEWEA's partnership with PROV, allowing us to now conduct exams online for all grades of the NEWEA Collection Systems and Lab Analyst Certification Program.

Individuals will now complete online exam applications for review by NEWEA's Certification Committee, who will confirm applicants meet education and work experience requirements. Once reviewed, applicants will be notified on the status of their application and how to register online for the exam.

In-person exams will also be available at prescribed locations at a later date due to the COVID-19 pandemic and will be listed on the NEWEA site. For more information, please go to the NEWEA Web link https://www.newea.org/careers/certification/

For future training, the NEIWPCC and NEWWTA trainers will continue to offer and schedule courses- either in-person (with class limits) and/or by virtual means. The Spring 2022 course schedules will be available at the www.nhwpca.org , www.newwta.org and www.neiwpcc.org

Who's New at Your Facility

Tell Us About Your New Hires!

Hey Collector-fans, we need your help to celebrate our newest additions to the wastewater treatment field in NH. It's time to start understanding "Who's New?" and filling the roles of all the recent retirees. Please email your new hire's name and certification grade, and plant name, etc. to info.nhwpca@gmail.com and use the words in the Subject line 'New WW Hires'.

Breaking News!

American Rescue Plan Act (ARPA) Grants Are Coming Your Way!

You may have heard by now that New Hampshire Department of Environmental Services (NHDES) has received significant funding through ARPA. We hope you submitted pre-applications for projects in June 2021 since that list will drive our first round of ARPA grants. The only change to our typical wastewater and stormwater infrastructure projects will be additional subsidy on loans. There are bigger changes, however, for our planning, asset management, energy audits, and energy audit implementation programs! These programs, at least while ARPA funding is available, will be run as grants instead of loan forgiveness programs! So what does that mean for our communities? That means, as long as your community has the authority to accept grants, you can move forward with applying for the grants! Wow! No need to get the authority to borrow through town meeting!

What are the caveats?

The big caveat, as with infrastructure projects, the initial round of grants will be held for those communities that submitted pre-applications in June 2021. We will give those communities a pre-determined amount of time to move forward with a grant application. Then, after that date, we will open up the grant funding for additional applicants. So stay tuned!

What does the funding look like? How much are we talking about?

For asset management, at this time, the funding levels remain the same as they have been. $30,000 per community for stormwater asset management and $30,000-$180,000 for wastewater asset management. Wastewater funding depends on the size and complexity of your wastewater system. We have a new, updated guidance document and informational training sessions coming your way soon if yours is one of those communities that submitted a pre-application in June 2021. We also will be rolling our all new Asset Management Handbook

And Toolkit to help you get up to speed.

For energy audits, these will continue to be provided at no cost and no paperwork for the community. We will be increasing the amount of technical assistance available as part of the energy audit to help you move those easy to implement measures forward quickly.

Now...for the really exciting news...for energy audit implementation...and yes, we really want to get these projects implemented! We are offering up to $250,000 in grant funding for implementation of the energy audit findings. This is after you have secured incentives from the electric/natural gas utilities (NHSaves). This doubles the amount of implementation funding previously available through our loan forgiveness program! So let's start saving energy NOW!

Ok, that's all great news, but are there any new programs?

I am so glad you asked that! As a matter of fact, we do have a brand new program getting ready to roll out! To take a few of your asset management programs to another level, we are in the process of hiring a contractor to conduct climate change vulnerability assessments for a few selected wastewater and drinking water systems.

How do you qualify for these vulnerability assessments? Initially, the selected communities will have:

- both wastewater and drinking water infrastructure;
- vulnerabilities to flooding and/or drought;
- an active asset management program; and
- a desire to make their wastewater and drinking water infrastructure more resilient.

Have more questions? Call or email Sharon Nall, P.E. NHDES WWEB Planning, Protection and Assistance Section (603) 271-2508 or Sharon.L.Nall@des.nh.gov

Public Works First Responder

By Peter Goodwin, P.E., Tata & Howard

Over the past few years, we have seen a growing number of large-scale disasters in the United States: hurricanes, wildfires, floods, and major snow and ice storms. They all seem to be growing in scale and frequency. When most people think of the term "first responder" rarely does the role of public works come to mind. However, when these disasters happen it is rare that public works is not one of the first agencies to respond and many times the last to leave. Whether the task involves clearing roads of debris for access, or re-establishing fresh water supply to the areas affected, public works professionals are always prepared and ready to spring into action. To put it simply, during natural disasters, without public works, the security, health and safety of residents would be jeopardized.

On the federal level, the role of public works as a first responder was formally recognized when President George W. Bush issued Homeland Security Presidential Directive 5 (HSPD-5), Management of Domestic Incidents in 2003 stating that all agency types must work to operate under the same National Incident Management System (NIMS).

In addition, HSPD-8, regarding National Preparedness, includes the following:

The term "first responder" refers to those individuals who in the early stages of an incident are responsible for the protection and preservation of life, property, evidence, and the environment, including emergency response providers as defined in section 2 of the Homeland Security Act of 2002 (6 U.S.C. 101), as well as emergency management, public health, clinical care, **public works**, and other skilled support personnel (such as equipment operators) that provide immediate support services during prevention, response, and recovery operations.

More recently, In May of 2019, the United States Senate passed ***Concurrent Resolution 15*** which designates October 28 as an annual day to honor the 4.6 career and volunteer professionals as "First Responders Day". The resolution clearly identifies First Responders as Law Enforcement, Fire and Rescue Services, Emergency Medical Services, Emergency Management, and **Public Works**.

Our hope is that legislation within the State of NH can be established which recognizes the important role of public works' professionals during times of major and minor disasters, by formally recognizing their role as First Responders, as has already been done by the Federal government.

In 2020 the New Hampshire legislature passed HB 1494. This bill clarified that public workers (water, sewer, highway, parks, solid waste, etc.) could receive death benefits if their life was lost while performing their essential work.

Unfortunately, some late amendments were added and Governor Sununu vetoed the bill.

The sponsors of HB 1494 have recently submitted HB 536 for the 2021-2022 session. We believe it is similar to HB 1494. We will be following this bill and will certainly submit testimony if it gets to a public hearing.

The New Hampshire Public Works Association with support from NHWWA and NHWPCA have been evaluating how to approach legislative efforts that recognize public workers as first responders. Working with support from NHMA, NHPWA is pursuing additional legislation to modify the language of NH 21-P:39 Local Organization for Emergency Management. Senator Cavanaugh is sponsoring a bill which words public works to the definition of first responders. Once the SB number is issued we will track and support this.

Senator Cavanaugh is also submitting a request for Legislature and Governor to issue the NH Proclamation:

Establishing the designation of October 28, annually, as "Honoring the Nation's First Responders Day."

Whereas, according to a 2017 compilation of data on the Emergency Services Sector in the United States by the Department of Homeland Security, "The first responder community comprises an estimated 4.6 million career and volunteer professionals within five primary disciplines:

Law Enforcement, Fire and Rescue Services, Emergency Medical Services, Emergency Management, and Public Works.";

Whereas first responders deserve to be recognized for their commitment to safety, defense, and honor; and whereas October 28 would be an appropriate day to establish as "Honoring the Nation's First Responders."

We hope this is supported by the Legislature and Governor. Please feel free to reach out to your local representative or senator to share your support.

Be on the Lookout for NHWPCA Renewal notices with revised Membership Rate Structure

At the end of November, renewal notices will be going out as the dues year runs from January - December. For 2022, group rates will be available—the more people you sign up, the greater the discount.

Not to worry, individual rates are still available. In addition, if you volunteer to be on one of the many committees you are eligible for a discounted membership too.

To get the group rates, the supervisor of the facility (or someone designated at the facility) must be the contact for the facility. The contact person will put together the list of employees at the facility who will be included under the group rate and will work with the NHWPCA office to be sure the list is established. The facility may pay for more memberships than named individuals and use those toward member pricing at trainings and events.

EX: XYZ WWTF pays for 15 memberships at $30 each, however they only give 12 named individuals. Those individuals will be full voting members. The other 3 memberships can be used to send 3 non-named employees to trainings and events at the member pricing. This allows the facility to take advantage of member pricing for any three people they choose at each of the trainings and events in that year.

The following are the Membership Rates for NHWPCA (beginning 2022)

Active Membership (Voting member):

Includes individual subscription to the collector and member pricing for all association events and training.

GROUP Memberships:

- 2 to 5 people - $35.00 per person
- 6 to 10 people - $33.00 per person
- 11 to 15 people - $30.00 per person
- 16 or greater - $28.00 per person

Individual - $40

Individual/Committee Volunteer - $30

Retiree - $30

Affiliate (Non-Voting):

- Provider of products and services - $425 Cap at 10 people at the membership price for meals and events.
- Covers newsletter sponsorship, receives Affiliate booth price at Trade Fair, logo on the website with working link to their page.
- Does not include ads in newsletter or voting rights.

If you have any questions, please contact Dee at the office: 603-228-1231 or info.nhwpca@gmail.com.

Extreme Weather Events: Being Prepared for both Flooding and Drought!

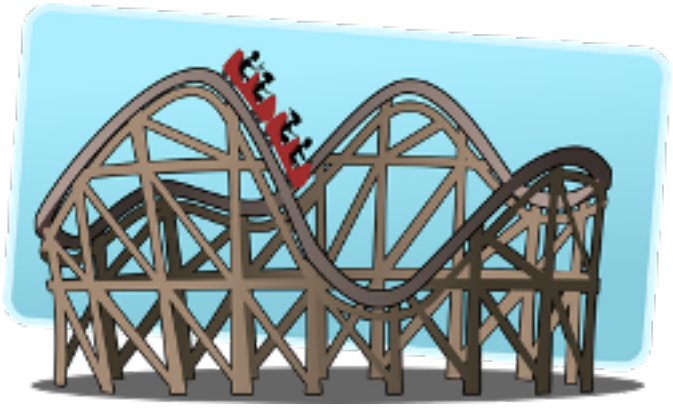
By Sherry Godlewski, NHDES WWEB and DWGB

President Biden declared Major Disasters for the State of New Hampshire for the flooding that occurred in Cheshire County on July 17-19, 2021 and in Cheshire and Sullivan Counties on July 29 and 30, 2021. This declaration entitles New Hampshire to federal funding for recovery from the Federal Emergency Management Agency (FEMA). These disaster declarations are becoming more common due to our changing climate.

Scientists can now connect the extreme weather events we are experiencing to the increase of carbon dioxide in our atmosphere from the burning of fossil fuels. Not only are we having major disaster declarations, we are also experiencing more extreme events, that impact our infrastructure, and these are not 'disaster declarations'. These impacts are very expensive from which to recover and can interrupt the essential services our communities depend on.

Saving money is not always about the short-term fix; it is typically more related to the long-term investment.

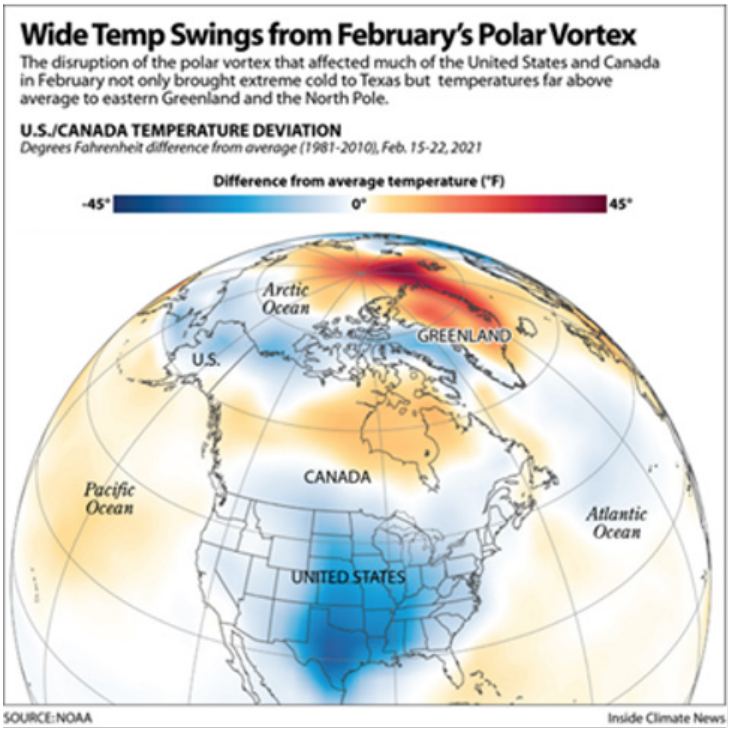
NHDES wants to assist wastewater systems and drinking water systems to become more resilient to these extreme weather events. To help jump start this effort, I recently joined the team and hold a shared position with both the Wastewater Engineering Bureau (WWEB) and the Drinking Water and Groundwater Bureau (DWGB). Both groups are interested in assisting wastewater and drinking water systems to better prepare for future impacts. I come with over 20 years of experience with NHDES (I started when I was very young!). I have been focusing on climate change adaptation and resiliency since 2008. Having me come on board provides the third leg to the stool we have been working to build. We want to tie asset management, energy efficiency, and resiliency together so wastewater and drinking water systems can implement a holistic and sustainable approach to their operations and maintenance. Saving money is high on everybody's list. We want to make sure that wastewater and drinking water system owners and operators have the tools they need to make cost effective investments to improve energy efficiency, asset management, and resilience to extreme weather events. Saving money is not always about the short-term fix – it is typically more related to the long-term investment.



Summer 2021: a roller coaster of extreme weather events!

This past summer showed us the need to be prepared for extremes. We experienced record heat, drought, record rainfall, flooding, and crushing humidity, all in a matter of just two months!

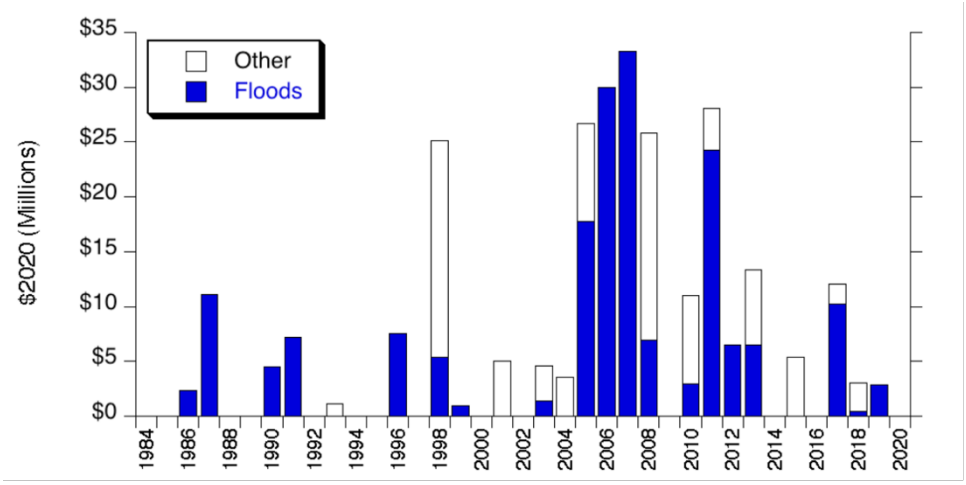
Future climate change projections indicate that this is not going to change. We are going to continue to experience these extreme events. Our atmosphere continues to warm and a warmer atmosphere holds more moisture—about 7 percent more per 1.8°F (1°C) of warming—and scientists have already observed a significant increase in atmospheric moisture due to the air's ability to hold more moisture as it warms. Storms now occur with increased atmospheric moisture and produce heavier rain and snow. Research indicates that the increase in atmospheric moisture is primarily due to human-caused increases in greenhouse gases from the burning of fossil fuels. Rising temperatures also lead to earlier snowpack melt, increased evaporation from streams and lakes, and increased evapotranspiration from soils and plants. These conditions are what set us up for periods of drought. In 2020 we had very little snowpack and very low precipitation. And it was very warm, which led the entire state to be in drought, with some areas being in extreme drought, which lead to water restrictions in many communities. The 2020 drought lasted through June 2021 and only the extreme rains all during July brought most of the state out of drought. So as we all witnessed, we went from drought to flooding almost overnight!



As we approach winter, we may see deep cold blasts and big snow storms, and these are signs of a changing climate too! The warming of the Arctic, caused by climate change, has increased the number of polar vortex outbreaks, when frigid air from the far north bathes the central and eastern United States in killer cold and lots of snow. The jet stream normally keeps icy air trapped in the Arctic. But as the arctic warms, this warm air causes the jet stream to wobble and allows it to stretch and wander south, bringing arctic blasts to us and warmer air to Alaska and other high latitude regions. The number of times the jet stream has weakened per year has more than doubled since the early 1980s. Remember last winter when Texas froze? So we have to be ready for extreme weather events and the unexpected!

> *"It is counterintuitive that a rapidly warming Arctic can lead to an increase in extreme cold in a place as far south as Texas, but the lesson from our analysis is to expect the unexpected with climate change"*
>
> Judah Cohen, a winter storm expert for Atmospheric Environmental Research

NHDES is working to keep you up to date on future climate conditions and wants to continue to provide assistance to ensure you



Federal Expenditures in NH for Presidentially Declared Disasters and Emergency Declarations

and your infrastructure are resilient to these extreme events. Coupling resilience with energy efficiency and asset management is where we want to focus our work moving forward. We want to assist you, your operations, and your infrastructure in becoming as cost effective and resilient as possible! Make sure you read the Breaking News article on American Rescue Plan Act (ARPA) funding to see how we can help.

Have a Happy Holiday Season!

2020 NEWEA and EPA Awards

Several NH professionals were honored with NEWEA and EPA awards in 2020 but were unable to be presented their awards in-person… #thanksCOVID. We were finally able to honor our own by re-presenting these awards in-person at NHWPCA's winter meeting. Fred McNeil moderated and awards were presented by NEWEA President Virgil Lloyd.

New Hampshire EPA Award Winners

2020 Regional Wastewater Treatment Plant Excellence Award - **Woodstock Wastewater Treatment Facility**

2020 Regional Industrial Pretreatment Program Excellence Award - **City of Somersworth's Industrial Pretreatment Program**

2020 Regional Wastewater Trainer of the Year Award - **Mike Caso of Nashua**

2020 Regional Wastewater Treatment Plant Operator of the Year Award - **Jim Pouliot of Epping**

New Hampshire NEWEA Award Winners

Alfred E. Peloquin Award
Ray Gordon, Concord, NH

Asset Management Award
John Vogl, Salem NH

Operator Award
Ray McNeil, Rollinsford, NH

Past President's Plaque and Pin
Ray Vermette, Dover, NH

E. Sherman Chase Award
John Esler, Enfield, NH

And our glasses were raised in memory of **Kate Biedron**, Manchester NH for the Committee Service Award.

KATE BIEDRON MEMORIAL FUND

Established in May 2020 in partnership with CDM Smith, the Kate Biedron Memorial Fund honors the memory of Kate Biedron, an active NEWEA and industry leader, professional engineer, mentor and friend. This memorial fund will sustain initiatives that Kate supported and promoted throughout her career, including environmental education, academic mentorship and scholarships, and advocacy for diversity and inclusion in the water sector.

Kate was a dedicated water professional and longtime NEWEA member and leader. She graduated from UMASS Amherst, earned her Civil/Environmental master's degree from UMASS Lowell, and spent her 15-year career with CDM Smith. Within NEWEA, Kate was an active member and sought-after leader on many committees, serving as the Chair of the Public Awareness and Registration Committees and as the Director of the Meeting Management Council.

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Operator Exchange – New Hampshire to Rhode Island

By Dylan Delisle

As August comes to an end and New England slowly transitions into autumn, the state of Rhode Island prepares to hold its annual wastewater trade show, and what better time of year? As a relatively new operator I was honored to have spent a few days in Rhode Island touring a

variety of wastewater facilities, and getting to know fellow wastewater operators from the same region as myself. During my time in Rhode Island I was accompanied by an excellent host, Scott Goodinson, the active superintendent of the Narragansett Wastewater Treatment Facility, and Past- President of the Rhode Island Clean Water Association (RICWA). Scott was a wealth of knowledge during my time learning of Rhode Island's wastewater treatment methods.

My first tour during the Operator Exchange program was with the Warwick Sewer Authority (WSA) which was hosted by Superintendent Dana DiScuillo, and Assistant Superintendent Michael Bedard. As I toured the facility I was interested to learn that WSA operated and maintained a staggering 49 pump stations which were distributed throughout the City of Warwick. Like many activated sludge facilities, WSA achieved a level of biological nutrient removal (BNR) in their aeration basins, but what was unique about WSA compared to facilities located in New Hampshire was their addition of alum after the secondary settling process. It was interesting to see this 7.7 MGD maximum capacity wastewater treatment facility use the chemical addition of alum to achieve phosphorus removal to near non-detect limits. This level of nutrient treatment is not necessary for many NPDES permits assigned in New Hampshire.

Next in my travels I stopped to visit the Cranston, Rhode Island Wastewater Treatment Facility, another activated sludge facility which discharges to the Pawtuxet River. Cranston was one of two facilities that I toured in Rhode Island which were contract ops, meaning the municipality owns the wastewater treatment facility, but a private company operates the facility. Being an activated sludge facility, Cranston's wastewater treatment process did not vary much from WSA, again achieving biological nutrient removal, mainly in the form of nitrification in their aeration basins, and phosphorus removal by the addition of metal salts. Although the treatment process is similar in nature to WSA, the design flow of Cranston is much larger at 20 MGD. What was intriguing about the Cranston facility was their ability to operate and incinerate their own sludge on site, as well as generate income by incinerating sludge from other wastewater treatment facilities in the region.

After visiting Cranston and stopping for lunch, Scott and I made our way to the West Warwick Regional Wastewater Treatment Facility, yet another plant which discharged to the Pawtuxet River. Although West Warwick's receiving water is the same as Cranston and Warwick, the treatment process varied considerably. West Warwick utilized a Biological Aerated Filter (BAF), which was a great example of how differing processes can achieve similar outcomes. Jeff Chapdelaine conducted my tour and explained how the BAF

unit is an efficient and compact way to achieve BOD, TSS and nutrient removal. This process allows for wastewater to flow upward through a bed of media while simultaneously being aerated, thus promoting a zoogleal film to grow that is pertinent for high removal rates. Unlike the facilities I had toured previously in the day, West Warwick used ultraviolet light to disinfect their final effluent. West Warwick concluded my first day during my stay in Rhode Island.

The following day Scott and I met up and toured the Narragansett Wastewater Treatment Facility. Scott conducted the tour as he is the current superintendent of the facility, which is located right on the beautiful Rhode Island Sound. Narragansett is a small facility, treating an average of 0.6 MGD with a maximum capacity of 1.4 MGD. Similar to the activated sludge process, Narragansett utilizes an oxidation ditch. This wastewater treatment process starts with a preliminary screening procedure but skips primary settling. Rather than enabling influent flow to enter a primary clarifier, flow is instead diverted directly to a series of tracks called the oxidation ditch. It is here that return activated sludge is mixed with the incoming raw wastewater where it is allowed to mix and aerate over an extended period of time for treatment. Effluent from the oxidation ditch is sent to a secondary clarifier for settling before it is chlorinated for disinfection, dechlorinated and then discharged to the Atlantic Ocean.

As our day progressed Scott and I headed over to South Kingstown Regional Wastewater Treatment Facility to visit Kathy Perez and her operations staff who treat a maximum capacity of 5.0 MGD. South Kingstown is another activated sludge facility which is also located in the town of Narragansett within very close proximity to the Narragansett facility. Similar to WSA, I was interested to see the use of rectangular primary clarifiers which use a flight and chain mechanism to remove scum from the surface of the clarifier as well as remove primary sludge from the bottom. Although rectangular clarifiers are common throughout wastewater facilities, I had not seen one in operation yet in my career. During the tour I appreciated learning about how South Kingstown treats a high volume of wastewater for the Narragansett facility, especially during heavy rain events such as September 1st, where Rhode Island received over 7 inches of rain in one night. The Narragansett facility would have been inundated with heavy flow, but Scott and Kathy worked closely together that night to assure a smooth operation, proving that wastewater operators truly have a strong alliance.

After another great lunch, Scott and I drove down to Westerly to visit another activated sludge plant that is privately operated by Jacobs, similarly to Cranston which is operated by Veolia. Adam Federau provided the tour of the wastewater facility which treats a maximum capacity of 3.3 MGD and discharges to the Pawcatuck River. Along with WSA, Cranston, and West Warwick, Westerly achieved biological nutrient removal by nitrification. The nitrification process in Westerly is assisted by the use of integrated fixed-film activated sludge (IFAS) technologies which allow for the greatest possible nutrient removal within a relatively small plant footprint. Effluent from the aeration basins is then chlorinated and then dechlorinated before being discharged. The Westerly facility completed my second day of tours during this year's operator exchange program.

As day three started, the annual Rhode Island trade show was being prepared and I had one final facility to tour. During the morning of September 2nd, I met with Paul Desrosiers to tour the Narragansett Bay Commission's (NBC) Field's Point Wastewater Treatment Facility, in which Paul is the Technical Advisor of Operations. As I approached the facility I felt as if I was entering a small town run by wastewater personnel. I personally operate an activated sludge facility, but Field's Point is of much greater proportions, treating a maximum capacity of nearly 80 MGD. What I found most fascinating about NBC's Field's Point facility was its stormwater collection system, a 3-mile-long underground tunnel which has the capacity to collect and store nearly 65 million gallons of wastewater for subsequent treatment. Furthermore, the facility utilizes three, 1.5-megawatt wind turbines which are able to produce nearly 50% of the electrical demand needed to operate the facility. Aside from underground storage tunnels and

massive wind turbines, Field's Point operates as a standard activated sludge facility, even using IFAS to achieve biological nutrient removal in their aeration basins.

After my final tour of NBC's Field's Point facility, I made my way over to Rhode Island's annual trade show, where I was able to reconnect one last time with many of the great wastewater personnel that I had met during my visit. It was also a great opportunity for me to meet sales representatives and learn about many of the up and coming technologies which are being used in the wastewater industry. As an operator, this provided me with great information regarding my career field and was a fantastic opportunity to learn and progress. The operator exchange experience is an excellent way for operators to compare and contrast the differences in wastewater treatment processes and permits via hands-on and visual learning experiences, and I would recommend it to anybody interested in furthering themselves in this field.

Dylan Delisle is a wastewater operator employed by the City of Concord, NH

Operator Exchange – Rhode Island to New Hampshire

By Jack Gafney

This letter is in regard to my experience with the NEWEA/RICWA Operator Exchange Program, which I attended in New Hampshire September 29 – October 1, 2021. The first two days consisted of tours of four different wastewater treatment plants, guided by Michael Theriault, PE of Wright-Pierce and 2nd Director of NHWPCA. The third day was the NHWPCA annual trade show.

The plants we visited included Portsmouth, which recently underwent a $92M upgrade, guided by Peter Conroy. It uses a process I had never heard of before and still have much to learn about, called BAF (biologically active filtration system). Exeter, guided by Steve Dalton, recently underwent a transition from a lagoon system to a 4 or 5 stage Bardenpho process (also new to me). Manchester, guided by Robert Robinson, which at the time of the tour was having its odor control media replaced, had recently had an upgrade on its aeration basins, and most notably, has its own incinerator and ash lagoon, neither of which I had ever seen before. Last was Nashua, guided by David Boucher and Matt Collins, which has a dedicated wet weather facility to handle runoff from rain events, and most impressively, a sludge digester. All of these plants were combined sewer overflow facilities, which was also new for me.

The trade show was the first I have been to for the wastewater industry, and I was able to meet some of the representatives behind the products we use at the plant at which I work. I was also able to meet some of the other board members of the NHWPCA (Michael Carle, Robert Robinson, David Mercier, Mario LeClerc). They were welcoming and friendly hosts. Mario went out of his way to print out some Rhode Island trivia questions to ask me at dinner, my knowledge of which was actually less than my knowledge of wastewater.

The experience was educational, fun and definitely worthwhile. Thank you to my hosts and tour guides for having me, and hopefully we meet again soon!

Jack Gafney is a wastewater operator employed by Jacobs at the Westerly WWTF in Westerly, RI

President's Corner

Mike Carle, NHWPCA 2021 President

As I sit here composing my final (yeah!) column for the Collector as President, the weather has turned a hard corner into Fall and the leaves have changed to gold and russet. This year I think we have all started to settle into what we were calling the "New Normal". Actual in-person meeting has become the exception to the Zoom get-together and no one looks twice when encountering a masked man. I can only hope this sense of normalcy continues as we try to get back to our regular schedule of events next year with a Spring trade fair, Summer outing, and Fall and Winter meetings.

For me, this year was a course in civics. I learned a lot about the ins and outs of the legislative process: from crafting and introducing a bill,

to testifying before committees, to watching the bill pass -- I found the whole process fascinating! This year the Association was involved at the state level in several pieces of legislation, including reducing the fees charged municipalities for shore land permits, changing the RSA's to allow for alternative fecal coliform testing methods, and most recently making sure SAG funding would have its place in the budget process. At the National level, I was able to meet with representatives of the NH delegation to voice our concerns on COVID funding, PFAS and Infrastructure. A big thank you to the Government Affairs Committee; they put in a lot of hard work to make sure wastewater infrastructure is a priority in the state.

This year the Membership Committee (a committee of one - Aaron Costa) came up with a new Group Membership option for larger organizations and an Associate Membership for vendors. I'm excited for this new structure and hope it will bring in more members.

When we were finally comfortable gathering in larger numbers again, Fred McNeil came through with another successful golf tournament which was followed by our postponed "Spring" trade fair. I am also looking forward to touring the new plant in Portsmouth for our winter meeting.

What seemed at the outset like an unusual year has turned out to be "business as usual" year with many opportunities to grow the mission of our association. I have been honored to serve as President and I am excited to see where the next year will take us.

Retiree Rave

We continue our salute to the wastewater and drinking water operators and administrators who are now enjoying retirement. Our newsletter committee would appreciate hearing from our readers to expand this list so we can recognize our loyal, hardworking associates and friends. Perhaps we can develop Association activities based on the retiree interests, too. Please email your ideas and information to info.nhwpca@gmail.com and use the words in the Subject line 'Retiree Rave Information'

Peter Fistere

Peter Fistere retired November 1, 2021 after 26 years of wastewater treatment operations service in NH. He began his career as a Utility Worker at the Dover WWTF in 1995. Peter was employed by the City's contract operations firm, Operations Management International, when the Dover plant was in its fourth year of operation. In 1999, he moved with OMI to operate the Somersworth WWTF. The City of Somersworth took over the WWTF operations in 2008 and the staff became City employees. Now, 13 years later, Peter is taking his well-deserved retirement.

Two major upgrade projects were completed during his tenure at Somersworth. The latest project, substantially completed in October 2021, has been very challenging. The staff persevered amid the onset of the COVID restrictions, a delayed project start, and supply chain shortages...The Show Must Go On!

In Peter's words, the need to continue operations and treatment during the construction phasing has kept him and the staff very busy. While maintaining the plant's existing footprint, the upgrade involved new headworks, treatment trains, piping, pumps, blowers, control panels, a clarifier, and more. The upgrade also included a vast amount of new instrumentation along with SCADA. The Somersworth team has pulled together with their hearts and minds focused on completion.

Peter has held his NH wastewater certification and NHWPCA membership for 25 years. Noteworthy to mention here, Peter advanced from a Grade 1

to a Grade 4 certified operator, passing each of the exams between 1996 and 2000.

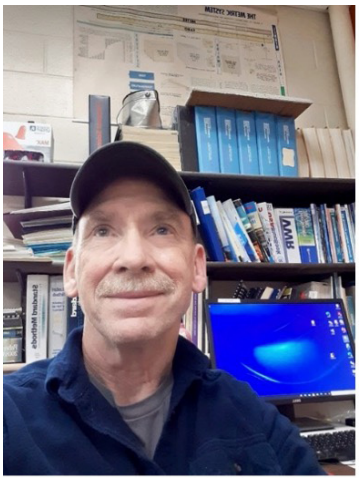
When asked about his future, he plans to continue working part-time, as he explained, "If you rest, you rust!" In the near term, he's looking forward to deer season without being limited to weekend trips, tackling the home project list, and preparing for the Holidays with family. He also earned a new honor in July when he and his wife were blessed with a grandson. Looking into bright young eyes and a happy countenance offers a sense of renewal. We wish you the best Peter, and welcome you to continued participation with the NHWPCA in the years to come.

Ted Miller

Ted Miller will be joining the Retiree Ranks at the end of December with nearly 20 years of service at the Berlin Pollution Control Facility. His career path led to the wastewater treatment field after the Berlin Pulp and Paper Mill closed in 2001. A friend suggested Ted look into taking some science courses on wastewater treatment offered locally at the VocTech, later named the White Mountain Community College. And that's where he met Sheldon Towne, also known as 'Trainer Extraordinaire'. Ted completed the Water and Wastewater Technology course certificate in May 2002. Along with prior related work experience he qualified for and passed the NH Grade 2-OIT WW certification exam. He also earned his Grade 2 Drinking Water certification. In August 2002 he began working as a WW operator for the BPCF, within one year of leaving the mill.

Ted continued his studies and earned his Associates degree in Water and Wastewater Treatment. He continued to advance his WW certification up through the Grade 3 and 4 examinations. In January 2008, he was promoted into his laboratory position.

Over his career, the BPCF has undergone significant upgrades and expansion. Located in the beautiful Androscoggin River Valley, the facility receives seasonal surge flows from sudden rainfall events and runoff from snowmelt in surrounding areas. Pump stations deliver the collected influent by piping across the river to the BPCF headworks. Over the last fifteen years, as some industries closed, others moved in, which includes the new federal prison, bringing changes to the influent characteristics and loading. Projects to upgrade and replace pump stations, control I&I, improve power delivery, and upgrade the entire activated sludge processing system components were built. And finally, the laboratory was air conditioned!



Ted is an 18-year member of the NHWPCA. We hope to see him at our upcoming events and partnering with him on some committees, too. Now sharing Ted's words: "As the days wind down to my retirement date near the end of December, I often reflect on the 19 years I've worked for BPCF. This has been an experience with many rewards. Over the years, I've helped make the environment cleaner and healthier. When people would ask me what I do, I'd tell them I take dirty water and make it clean. I've enjoyed being able to work with several highly skilled professionals and have had a lot of fun doing that. I've also had the pleasure of meeting many dedicated professionals at trade shows and training events through the years."

"Twenty years ago, I lost a job. One year later, I found a career. There have been exciting times. There have been some challenging times. There have been a lot of fun times. I'm proud to have known each and every one of you and to have worked with you as a 'front-line fighter in the War on Pollution' (Professor Sheldon "Coot" Towne). Ted Miller – former turd-herder and lab rat signing off."

Pretreatment Tales

By Stephanie Rochefort, City of Somersworth IP Coordinator

The New England Regional Industrial Pretreatment Coordinators Association (NERPCA), along with support from EPA New England, hosted its 23rd annual conference October 26-28. This virtual conference had 241 attendees. All six New England States were represented along with a large group from EPA region 2 (New York and New Jersey). In all, 14 States were represented, surpassing numbers from the 2020 virtual conference.

The beginning day of the conference was a highly attended specialty training called Pretreatment 101. New IP Coordinators were quickly educated on all aspects of the exciting field of industrial pretreatment (without constantly quoting 40 CFR regulations). There was an excellent dialogue about "exfiltration" versus "infiltration".

The next conference day coincided with National American Beer Day. It was bittersweet to not be celebrating this day in-person at the traditional networking reception. People were logging into the conference using generators for power and cell phone hot spots for internet connection after a fall nor'easter brought heavy rain and high winds to much of New England. NERPCA held its annual business meeting and then Jay Pimpare from EPA presented updates from EPA and all the New England States. Attendees got a sneak-peek at which programs will be audited in the coming year.

An exciting part of the conference is always the announcement of EPA Industrial Pretreatment

SAVE THE DATE

"Data in the Water Industry" Asset Management Workshop

Asset Management Workshop for Water Infrastructure

- Drinking Water
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- Stormwater

December 16, 2021
ALL DAY EVENT

Location: Edward Cross Training Complex
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Registration information and agenda will be sent at a later date. Contact hours will be available. **Lunch will be provided.**

Award Winners. This year there were two winners – the City of Brockton, MA and our own Town of Milford, NH! Congratulations!

Conference attendees learned A LOT about PFAS! There were fascinating talks about the NHDES PFAS program and the VTDEC PFAS program. Then, we learned about the latest on industry treatment trends for PFAS from Patrick McKeoun (ECT2). We learned that the five most common treatment methods are Granulated Activated Carbon, Adsorptive Clay, RO, Ion Exchange and Foam Fractionation. These methods fall into three categories – media, membrane, fractionation. I'm going to be looking for places to use a new vocabulary word, "foamate"!

At this virtual conference, we weren't just sitting and listening. There was the opportunity to ask questions in the Q&A box that were answered either live or in writing. There was also a Chat Box that really blew up during the talk about proper PFAS sampling techniques! We've been hearing about clean sampling techniques for several decades now. Well, the dinosaur IP Coordinators like me have been anyway… I first remember learning how to use these techniques to collect mercury samples, then aluminum samples. Well, the clean sampling techniques to collect PFAS samples are enough to send the calmest person's anxiety levels through the roof!

We continued learning some inspection tips and tricks with a panel discussion from three NERPCA members, Kerry Britt (NBC), Sharon Lawson (Upper Blackstone) and Marc Sexton (TeTon Environmental). Sharon shared a training video that was developed to safely train personnel during COVID. Sharon also gave an update on Upper Blackstone's progress with implementing the dental amalgam rules. A great part of the NERPCA conference is the opportunity to learn from each other.

The last day of the virtual conference began with the opportunity to learn from three EPA speakers - Jay Pimpare, Sarah Connors and Jack Melcher. We brushed up on our knowledge of how to calculate SNC and understanding pretreatment requirements in NPDES permits. Jack Melcher shared an enforcement case study. When Sarah introduced herself, she stated right away that her name is similar to a famous character. The Chat Box jumped on that, and in case you were wondering, the first Terminator movie was released on January 11, 1985.

The rest of the day consisted of the older topics of high strength waste (one gallon of BEER is equal to about 0.5 pounds of BOD) and FOG inspections and the newer topic of electronic reporting. The bottom line was that dealing with paper takes time away from our goal of protecting the environment and it's not a question of if, or even when, but how quickly we'll all move to a digital platform for our programs.

NERPCA is looking forward to returning to an in-person conference in 2022. Until then, be sure to check out NERPCA.org for copies of this year's presentations. And google: Naples, algae, wheel to learn about a fascinating new technology.

Residuals Report

The Residuals Management Section (RMS) has been very busy this year with its PFAS investigation. RMS was able to get out in the field and sample every Sludge Quality Certificate holder for PFAS, and continue the conversations with the generators centric to sludge disposal options and the impacts PFAS standards may have on a biosolids recycling program in New Hampshire. NHDES is working with the United States Geological Survey on a PFAS soil and sludge leaching study. This study will produce partitioning coefficients that NHDES will be able to use in soil modeling programs to determine a PFAS soil leaching standard, which will assist in the development of a biosolids PFAS standard for NH. At this time, NHDES is not sure which compounds will be regulated in soil and sludge. Currently NHDES has drinking water MCLs and Ambient Groundwater Quality Standards set for PFAS (PFOS, PFOA, PFHxS, and PFNA). This study is slated to be complete in the spring of 2022. Soil modeling will begin shortly after this study is complete.

RMS has also been actively involved in the

Northeast Biosolids Improvement Program (NEBIP), which is a regional workgroup of industry professionals. NEBIP has generated two outreach brochures to educate the public and industry operators on the impacts PFAS has on biosolids and wastewater management programs. These brochures also offer some guidance to the public on how they can help reduce their PFAS loading into the wastewater collection systems or private septic systems. These brochures will be ready for distribution this fall (2021). If you or your municipality is interested in distributing these brochures in your community, please reach out to Anthony Drouin of RMS at anthony.f.drouin@des.nh.gov. The NEBIP has created .pdfs of these brochures that can be shared virtually or printed for distribution.

Also, the NEBIP has drafted a sampling analysis plan for municipalities to sample their collection system for PFAS. The NEBIP has created a volunteer collection system PFAS sampling program that RMS will help assist and pay for. Samples will be taken per municipality at manhole and pump station locations. Two municipalities that are participating in this program have sampled their collection system for PFAS in the past. Their experience in this type of sampling is a big benefit in establishing this sampling plan. Our goal is to obtain test reports that are accurate and precise over time to help these municipalities identify where PFAS may be entering into their collection system. Each sampling event will also have a sampling point within it that is strictly residential inputs. This will help us learn more about the domestic impact vs industrial impacts. These sampling events are not required for any of the SQC holders, but it serves as another tool for the WWTF to use in better understanding how PFAS conveys through their treatment works.

If you have any interest in joining the Northeast Biosolids Improvement Program, please reach out to Anthony Drouin at anthony.f.drouin@des.nh.gov.

Safety Corner

Are you prepared for a DOL inspection?

By Patty Chesebrough, NHWPCA Safety Committee

In NH, safety in the private sector is regulated by the Occupational Health & Safety Administration (OSHA). Safety in the public sector – including all public wastewater facilities – is regulated under the NH Department of Labor (DOL). The DOL Safety & Training Division is responsible for administering and enforcing the following NH safety-related laws:

- Safety Programs and Joint Loss Management Committees (RSA 281-A:64)
- Safety & Health of Employees (RSA 277)
- Toxic Substances in the Workplace (RSA 277-A)
- Lab Safety Programs and Joint Loss Management Committee (NH Administrative Rule Chapter 600)
- Lab Safety and Health of Employees (NH Administrative Rule Chapter 1400)

This collection of laws essentially mirrors OSHA requirements but is intended for the public sector. It also provides DOL with authority to inspect and enforce these rules.

I Just Received Notice of a DOL Inspection, What Do I Do?

If you receive notice of an upcoming inspection, don't panic! The primary goal of the inspection is to increase your awareness of safety and health issues. It also provides an opportunity for you to identify and address hazards in your workplace before they result in an accident. This doesn't mean that you shouldn't prepare for the inspection to the best of your ability. With help from some operators who have experienced DOL inspections, I put together the following ways that you can prepare for an inspection:

✓ **Read:** The DOL provides tons of information and resources on their website at: https://www.nh.gov/labor/inspection/safety-training.

htm. They will also provide you with a "Safety Inspection Compliance Instructions" document that describes the inspection process. Take the time to review an understand what is covered by the laws and what inspectors will be looking for. Highlight and document sections that are particularly relevant for your facility, and even requirements for which you find compliance difficult.

✓ **Inspect:** After you have educated yourself about what inspectors will be looking for, do your own inspection of your facility. Walk the entire property, inside and out, using the same hyper-critical eye that you would use if YOU were the inspector. You know what a hazard looks like. Document any/all hazards you observe. Fix the little things you can along the way, but still include them on your "inspection report", so that you can ensure that these hazards don't reoccur. After his inspection, one operator with which I spoke said the DOL was "nitpicky about everything, but everything they pointed out was totally obvious. We just needed to have been doing our own walk-arounds on a regular basis."

After you complete your inspection, ask an employee or two, or even every employee at the facility, to perform their own safety inspection. Make sure you have them document their observations as well. "Safety is everyone's job" said one of the operators I interviewed. Albeit cliché, having each staff member participate in safety inspections increases both hazard awareness and identification.

✓ **Correct:** Take action to correct what you can, especially low-hanging fruit. Develop and document a plan and schedule to correct those hazards that require more time and/or money. Follow up to ensure corrective action is taken. Document all corrective actions completed. During your DOL inspection, don't hide hazards that were identified and corrected (or are scheduled for correction); rather, show off this written documentation. These are success stories and demonstrate a commitment to safety.

✓ **Document:** Note my use and highlighting of the word document throughout the text above. Documentation is a critical component of a good safety program and is specifically stated by DOL as one of two parts that your DOL inspection includes. It is not sufficient to say that you have taken actions, you must be able to prove that you took those actions by producing written documentation. "They got us on a lot of missing paperwork; we were doing most things right, but we didn't have the paperwork to prove it," reported one operator I interviewed. I was always taught, "if you didn't write it down, you didn't do it." Document, document, document!

During your DOL inspection, don't panic! Try to avoid the natural tendency to become defensive or resentful. Instead, approach the inspection as a learning experience and a way to make your facility safer for all your employees. Remember that is DOL's goal.

After your DOL inspection, you will receive a notice of the violations and a deadline for corrective action. Again, don't panic! Correct what you can and document it. If there are violations that will require additional time and/or money, develop a plan and schedule, and document it. Sound familiar? Send your corrective action documentation (required response letter) to DOL by the stated deadline and continue to implement the corrective actions in accordance with your plan and schedule.

That's it. No need to panic!

In closing, I'd like to say that **the** most important thing you can do to prepare for a DOL inspection is … don't wait until you receive the notice to take the steps above. Start now. Not only will you be better prepared for a DOL inspection when the time comes, but you will increase safety awareness at your facility, and identify and eliminate hazards. You might even prevent a workplace injury/fatality and **that** is our ultimate goal!

This article is brought to you by the NHWPCA Safety Committee. We are still seeking Near Miss ideas. If you or someone you have had a Near Miss, please let us by sending the incident to Patty Chesebrough at pchesebrough@neiwpcc.org. All submissions are confidential. We just want to keep a Near Miss from becoming an accident. Thank you in advance for your submissions.

Thoughts from the Bench

By Stephanie Rochefort, Somersworth WWTF

It could be said that pH is the simplest measurement that we perform in our WWTF laboratory. It's easy to calibrate a pH meter and then simply put the electrode into our samples and press "read", or whatever is in the instructions for our meters. And we all have a pretty good understanding of pH. High numbers are basic, low numbers are acidic and 7 is neutral. We know what our NPDES permit limits are for pH and we know what pH we typically see in our effluent. We know what pH our bugs like the best. And we know what pH in our influent means start investigating for a toxic load!

Depending on who I'm talking to, I may describe pH as simply a measure of how acidic or basic a liquid is. Vinegar, tomatoes, soda, and black coffee are all acidic. Milk of magnesia is basic. That all makes sense.

If I'm talking to somebody who loves math, I may describe pH as a measure of hydrogen ion concentration. This can lead to confusion. Acids are made up of a lot of hydrogen ions, but a higher amount of hydrogen ions does not mean a higher number for pH. That's because the real definition of pH is the negative log of the hydrogen ion activity.

Have you ever wondered who invented pH? Well, I did and so I did a little research. Wikipedia tells us that " The concept of pH was first introduced by the Danish chemist Søren Peder Lauritz Sørensen at the Carlsberg Laboratory in 1909 and was revised to the modern pH in 1924 to accommodate definitions and measurements in terms of electrochemical cells. In the first papers, the notation had H• as a subscript to the lowercase p, thus: pH•."

So, what the heck does the "p" stand for in pH? Sorensen never explained why he used it! There's a lot of guesses. Sorensen described a way to measure pH using potential differences. If we go to the full math definition, we could say it represents the negative power of 10 in the concentration of hydrogen ions. The letter p could stand for the French puissance, German potenz or Danish potens – all words for power. Or maybe the Latin terms pondus or potentia hydrogenii (quantity or power of hydrogen). Often, experimental chemists will label a test solution as "p" and a reference solution as "q".

I dug a little further into Sorensen's original articles when he introduced pH and found this on pg. 134 of Die Größe der Wasserstoffionenkonzentration … und die Bezeichnung für den numerischen Wert des Exponent dieser Potenz benütze: " The magnitude of the hydrogen ion concentration is accordingly expressed by the normality factor of the solution concerned, based on the hydrogen ions, and this factor is written in the form of a negative power of 10. By the way, as I refer [to it] in a following section (see p. 159), I just want to point out here that I use the name "hydrogen ion exponent" and the notation pH for the numerical value of the exponent of this power." Hmmm, it sounds like he's using "p" for "power". Or maybe he just chose the letter p because of his middle name?

Another thing that we all know about pH is that it's a scale of 0 to 14. But there's more to that simple explanation of the pH scale. Sodium hydroxide solution can have a pH of 15 and concentrated hydrochloric acid can have a pH of -1. And then there's superacids! George Andrew Olah was a Hungarian chemist who was awarded a Novel Prize in Chemistry in 1994 for his contribution to carbocation chemistry. He is known for developing fluoroantimonic acid, which has a pH of -25. Wow, I'm glad that I don't have to deal with any superacid manufacturers in my City! And I just have to slip in a bit of beer trivia. The beer that we drink is acidic. Different brands and types of beer have different pH values, but they're all acidic enough that we shouldn't allow beer to enter our treatment facility. Never mind how wasteful that would be! Brewery wastewater is also slightly acidic, but the cleaning process makes for spikes from 2 to 12 on the pH scale.

Who's New

We are happy to present the first of our featured operators who recently joined the legion of NH wastewater treatment professionals. We hope our readers will respond to our call for information on their new hires, as well. Please email your new hire's name and certification grade, and plant name, etc. to info.nhwpca@gmail.com and use the words in the Subject line 'New WW Hires'.

The Berlin Water Pollution Control Facility is proud to report Christopher Walters has joined their team. Chris brings 20 years of experience in structural welding. His trade required extensive travel throughout New England with the Boiler Makers on assignments at various industries that varied between 6 weeks to 2 years duration. Having grown up west of Springfield MA he has always loved the essence of old New England. When his work brought him to the BioMass project in 2011 he decided to make his home in Dummer, NH. After so many years of travel, he figured out how to "have a life and still make a living" by joining the wastewater treatment professionals.With a nudge from Mitch Dumont, Chris applied in 2019 and was hired for duty at Berlin. As Chris puts it, he accidentally wandered into wastewater!

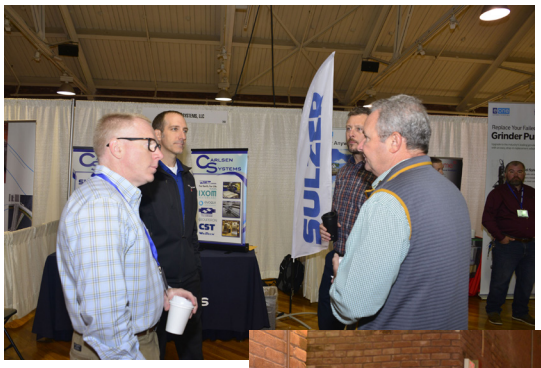
What he enjoys most about his career change is the renewed vigor to learn a new science and Laboratory technologies; the opportunity to strive to do better; the free exchange of information between his co-workers; and working to keep our awesome fishery resources healthy in clean waters.

He looks forward to fishing with his son and carrying forward the traditions he loved as a youngster.

Chris earned his NH Grade 2-OIT certification in 2020 and recently earned his upgrade to a Full Grade 2. Soon he will move into the Laboratory Manager's role in Berlin. As Ted Miller's protégé Chris has an excellent instructor. Chris plans to continue his education in the wastewater field and work his way to the Grade 3 certification as well. We extend a warm welcome to Chris and many happy years in our industry.

Photo Gallery

Fall 2021 Trade Fair














CPe
Service Systems Solutions
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Pumping Technology

FROM START...
...TO FINISH
RMI


PENTAIR
HYDROMATIC

Draft Constitution

The New Hampshire Water Pollution Control Association's Constitution is more than fifty years old! The changes that you can see in the comments by Michael Carle are all updates to make our Constitution work better for us in today's world.

Deleted: ¶

New Hampshire Water Pollution Control Association

CONSTITUTION

Article I: NAME

Commented [MC1]: No Changes in this section

The name of this association shall be the New Hampshire Water Pollution Control Association.

Article II: PURPOSE

Commented [MC2]: No Changes in this section

The purposes of this Association shall be:

1) The acquisition and dissemination of knowledge concerning the nature, collection, treatment and disposal of water-carried wastes and the design and operation of wastewater systems and their residuals.
2) The promotion of good public relations and sound legislation relating to wastewater control systems.
3) The advancement of the status of personnel engaged in the practice of wastewater treatment.
4) The improvement of wastewater collection and treatment and thereby the quality of New Hampshire's water resources.

Commented [MC3]: Added residuals

Commented [MC4]: Changed from Water Pollution to wastewater treatment

Article III: MEMBERSHIP TYPES

Commented [MC5]: Defined Honorary member vs. Lifetime.
Added Affiliate membership

Members of this association may be considered Active, Honorary, Lifetime, or Affiliate. Only Active members may vote or hold office.

1) Active members shall include the following:
   a) Personnel directly involved with the collection and/or treatment of wastewater and its residuals in New Hampshire.
   b) Personnel directly involved in the direction or administration of the collection and/or treatment of wastewater and its residuals in New Hampshire.
   c) Personnel directly involved in education in the wastewater field.

d) Personnel directly involved in supplying or engineering the wastewater field.
e) Any other persons interested in wastewater treatment whether or not they are residents of New Hampshire.

2) Honorary members shall include the following:
   a) Any person chosen by the association's awards committee and approved by the Board of Directors to receive this special distinction.
   b) An Honorary member shall receive membership benefits without payment of annual membership dues for one year.
   c) Honorary members shall be considered Active Members for voting purposes.
3) Lifetime members shall include the following:
   a) The Board of Directors shall set the criteria based on:
      i. Contributions to the association
      ii. Longevity in the field of wastewater
   b) Any member nominated by the association's members and approved by the Board of Directors to receive lifelong membership benefits without payment of annual membership dues.
   c) Lifetime members shall be considered Active members for voting purposes.
4) Affiliate members shall be eligible for the following:
   a) Member discounts at events.
   b) Subscription to the Collector.
   c) Any other benefit voted by a majority of the Board.

Article IV: DUES

Commented [MC6]: Refined timelines for setting fees and payments

1) The Board shall determine the cost of Dues for the following year at the November meeting.
2) Dues are payable on January first of each year.
3) Anyone who is in arrears after more than 90 days shall have all rights and privileges in the association suspended.
4) Reinstatement shall be automatic upon payment of dues in arrears.

Article V: BOARD

Commented [MC7]: Removed the initial 3 year term from the inception of the association.

1) The Officers shall consist of active members as President, Vice President, Secretary, and Treasurer.
2) The Board of Directors shall consist of the officers and five active members designated as: 1st Director, 2nd Director, 3rd Director, and two (2) Directors at-large who shall all have voting privileges.
   a) The immediate past President shall be a director ex-officio, without voting privileges.
   b) The Board of Directors may consist of up to three members representing consulting engineers and/or equipment vendors.

c) The 1st, 2nd, and 3rd Directors shall serve one year terms and then proceed up the leadership organization yearly progressing ultimately to the office of President.
d) The two directors at-large shall serve two (2) year terms.
e) Should any Board of Director position become vacant, the Officers shall be empowered to appoint any active member of the Association to complete the remainder of the term.

3) The term of office for each Officer shall be one year.
4) Certification Committee members representing the association shall hold current New Hampshire wastewater treatment plant operator certification consisting of one operator holding a grade II, or lower and one operator holding a grade III, or higher certification.
a) The Certification Board members shall serve a minimum term of two (2) year terms.
b) Should any Certification Board position become vacant, the Officers shall be empowered to appoint an active member of the Association to complete the remainder of the term.

Commented [MC8]: Changed the license requirements for serving on the committee to reflect the 4 levels (as opposed to the old 5 levels)

Article VI: ELECTIONS

1) All elective officers, directors and certification board members representing the association will be elected at the annual meeting, which will be held in December of each year.
2) The nominating committee shall consist of the three most recent active past Presidents.
3) Nominations will also be accepted from the floor.

Article VII: MEETINGS

1) The annual meeting will be held in December of each year.
2) No less than two additional meetings will be held during the Spring, Summer, or Fall months.
3) Special meetings may be held at the call of the Board of Directors.
4) All meetings will be held at such time and places as the Board of Directors may determine and notice will be sent to all members at least five days prior to such meeting.

Commented [MC9]: Changed wording

Commented [MC10]: Changed from "mailed" to allow for all delivery methods.

Article VIII: QUORUM

Commented [MC11]: Clarified what is considered a quorum

1) For the purposes of the Annual Meeting a quorum shall consist of a simple majority of the Board of Directors and at least seven active members.
2) For the purposes of Business Meeting a quorum of the Board of Directors shall consist of a simple majority. Meetings of the Board may be called by the President upon reasonable notice.

Article IX: AMENDMENT PROCESS

Commented [MC12]: Clarified that a 2/3 vote of RESPONDING ballots
Added wording to allow for alternative ballot distribution (electronic voting)
Established a time limit for receiving votes.

1) This Constitution may be amended by ballot of 2/3 vote of all responding voting members in good standing.
2) Copies of proposed amendments will be distributed to all active members at least 30 days prior to the voting deadline set by the Officers.
3) No ballots received from voting members in good standing will be counted if received after the voting deadline set by the Officers.

Article X: DISBANDMENT

1) In the event that the membership of this association at some future date should vote to disband, all monies remaining after payment of all outstanding debts shall be donated to the New England Water Environment Association.

End of Constitution

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