

InFlow-Line

The Magazine of the CT Section American Water Works and the Connecticut Water Works Associations

Fall 2022



West Hartford Center Special Accelerated Water Main Replacement

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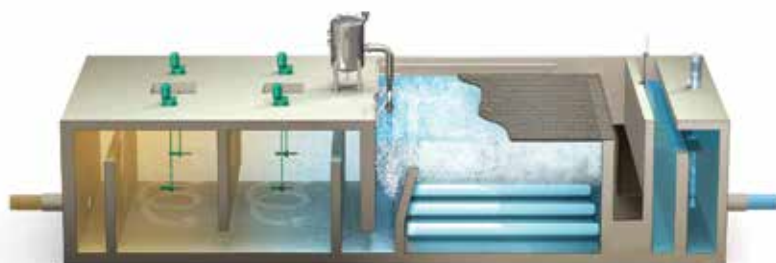


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Silvermine River
Photo by Kathy Fortin.



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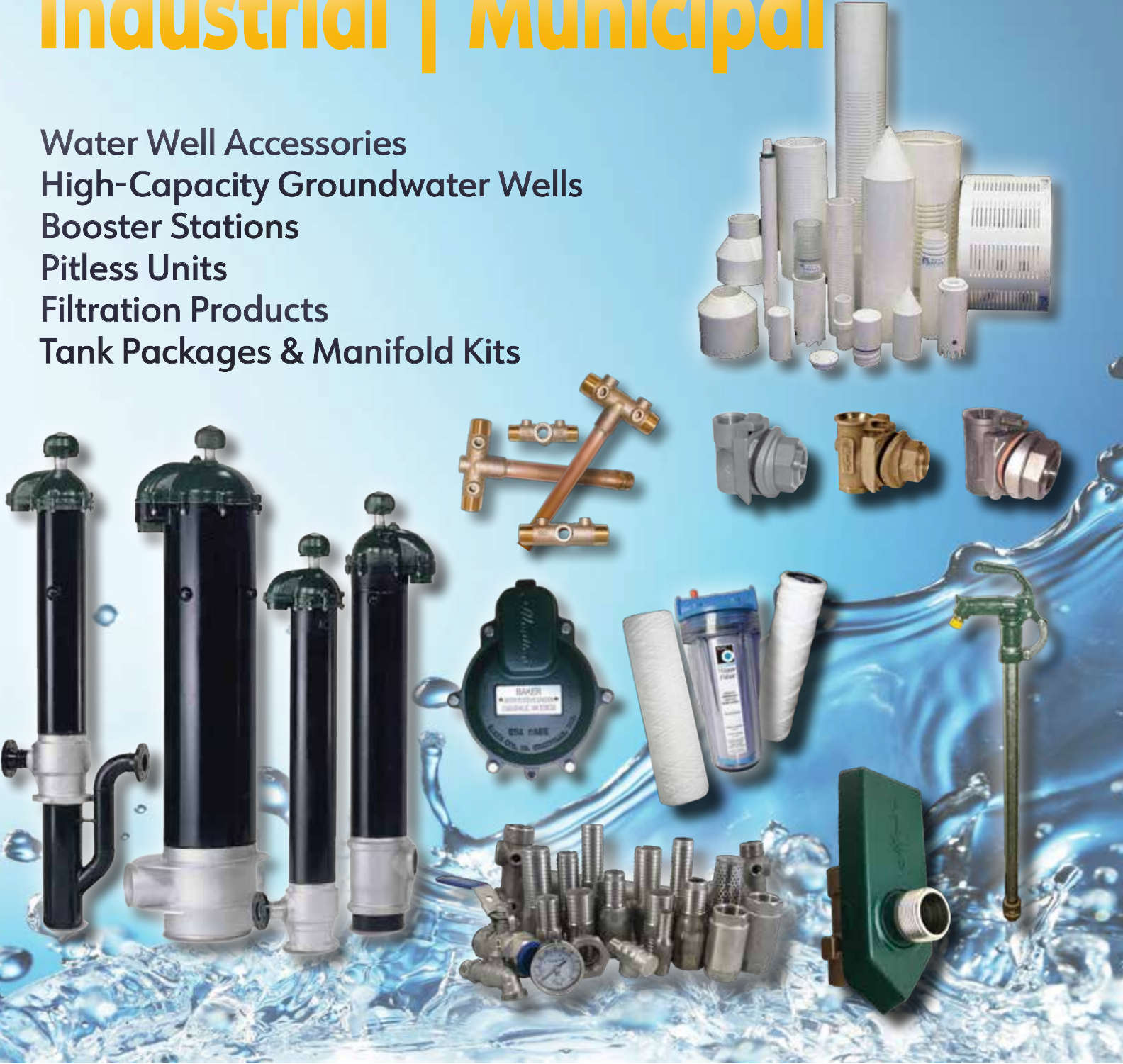
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Learning, Growing, and Staying Connected

Now that the trees are changing, the leaves are starting to fall, the days are getting shorter, and the nights are getting cooler, activities within the Section are heating up. We have many activities on-going or planned for the next few months before the end of the year.

At the end of September, we held our annual Committee Chair Breakfast meeting, where committee chairs were invited to meet with the Board and Council Chairs. We discussed our Affiliation Agreement with AWWA, ways to communicate with the Board and external entities, and ways that the Board could help communities to thrive and grow. It was a great morning of collaboration and information sharing. Thank you to all that participated.

Following the Committee Breakfast meeting we held the first session for the update to our Strategic Plan. The Plan will outline our overall goals for the next five years and will include a framework for achieving those goals. Thank you, Ray Baral, of the MDC and CWWA President, for facilitating the update and those who participated in the first session. We are off to a great start and look forward to our next session! We hope to present the updated Strategic Plan to the membership at our next Annual Conference in May 2023.

This year the Section is the host of AWWA's Region I Regional Meeting of Section Officers (RMSO). Each year a different section hosts members from other sections within Region I. Region I includes sections as far south as Delaware and Maryland (Chesapeake Section) and as far north as eastern Canada (Atlantic Canada and Quebec Sections). This meeting provides section officers and attendees with opportunities to learn, discover new ideas, and resolve challenges through sharing and collaborative discussions.

Following the RMSO, the CWWA/CTAWWA Fall Conference will be held at the Aqua Turf in Plantsville. This is always an extraordinary event filled with

opportunities to learn and connect with friends and colleagues, both old and new. This year's program includes discussions related to the Lead and Copper Rule Revisions, PFAS, and addressing Health Equity in Connecticut.

In November the Section's Water Treatment Plant Operations and Maintenance Committee will host the 8th Annual Water Quality and Treatment Symposium in Norwich. This event offers one of the best educational and networking opportunities in the area for those interested in drinking water quality and supply.

For the events above and many more opportunities to learn, grow, and stay connected, please visit the Section's website at www.ctawwa.org.

Please stay safe, stay connected and encourage new members to join and actively participate in events and committees. For a list of committees and opportunities to volunteer, see our website. Thank you all for your continued support of the Section and our industry. Your leadership, participation, and commitment are the reasons why our little section is the best! 💧

"We hope to present the updated Strategic Plan to the membership at our next Annual Conference in May 2023."



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Infrastructure is a Priority

The events that unfolded back in late August 2022 in Jackson, MI illustrates the fact that there has never been a more critical time than right now to invest in our drinking water infrastructure.

A series of events beginning with torrential rains caused the Pearl River in Jackson, MI to flood significantly impacting the cities' OB Curtis Water Treatment Plant's ability to treat, deliver, and maintain water pressure within their distribution system. The lack of fire protection, no means of flushing a toilet, and no safe potable water to drink is a public health emergency that doesn't get much worse. Certainly, water systems across the country have been

"The mission of the Connecticut Water Works Association, (CWWA) is to promote and achieve effective state policies that assure reliable high-quality water supplies to protect public health."

impacted by weather related events such as flooding, but when you pull back the curtains and look a little closer, operational problems have plagued this water system for many years due to the lack of much needed infrastructure improvements.

Learning that prior to this event, over 150,000 residents of Jackson were

already in a month's long boil water notice and subsequently had many other boil water notices earlier in the year and several others in 2021; the evidence confirms a system in trouble. As a result of this event, there has been a lot of finger-pointing as to how, why and who's the blame inclusive of a lack of leadership within the utility, a lack



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of leadership and oversight at the state level, a lack of qualified employees, and inadequate appropriations of federal and state funding to carry out the necessary capital improvements. Many of these questions will be answered when the Environmental Protection Agency, (EPA) completes their investigation, but make no mistake about it, it will take many years to restore the public's trust. As was the case with Flint, MI, the voices of the Jackson community will now be heard.

The mission of the Connecticut Water Works Association (CWWA) is to promote and achieve effective state policies that assure reliable high-quality water supplies to protect public health. CWWA recognizes that infrastructure improvements are one of the top priorities for water systems throughout Connecticut and the need for adequate federal funding to carry out such improvements is imperative to move projects forward. On September 17, 2022, it was announced that the EPA has awarded the State of Connecticut more than 53 million dollars in funding from President Joe Biden's Bipartisan Infrastructure Law for water infrastructure improvements. This funding is a step in the right direction in helping utilities meet their current infrastructure needs.

CWWA has worked throughout the year on behalf of our membership communicating with Public Health Officials and Legislators on legislative priorities that both have a positive and or negative impact on utilities and the customers that they serve. (See Legislative Update within this edition for an overview). As we move closer to the 2023 legislative session, CWWA will continue to be actively involved and will address any new proposed legislation and or new regulations that may potentially impact our Utility members.

Ray Baral
President, CWWA 

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Are You Utilizing Your AWWA Benefits?

As members of AWWA, we all have access to a tremendous amount of information, but I wonder how many of us are actually taking the opportunities to utilize this information to the fullest extent possible. I would like to take the opportunity provided by this article to encourage all AWWA members to take a few minutes and access the AWWA website and familiarize yourselves with your membership benefits.


If you haven't visited www.awwa.org in a while, you'll see there is a wealth of information and opportunities awaiting you. Opportunities to join committees, involve yourself with current activities, learn more about the

"Allow these readily available tools to not only make your life easier but to also carry you forward as we all continue to grow within our changing industry."

direction of our industry and exercise your learning muscles through any number of educational platforms. Education is a very important aspect of what AWWA delivers to members; we are all familiar with the many great conferences AWWA hosts, but did you realize the availability of webinars, the expansion of e-learning that includes

specifics in the areas of treatment, distribution, emergency planning and cyber, as well as certification programs in areas such as corrosion control? There are professional development opportunities for Operators, Engineers and in Management, and a complete Technical Library accessed through AWWA's recently developed digital platform Envoi, providing round-the-clock online access to the latest versions AWWA Standards and Manuals.

Another area where AWWA spends a considerable amount of time and effort is that of communications. While we all realize the importance of communications, I don't recall a time when the importance of reaching out to consumers and having the information they are seeking has been more challenging in part due to the speed at which changes are occurring. Take a look at AWWA's website area for Communications and Outreach, specifically its recently released tool, "Treading in an Instant." This is a great guide for how to provide consumers with the latest information on a variety of complex topics.

During these times of greater consumer demands, multiple compliance priorities and never enough hours, recognize the benefits of your AWWA membership to assist in easing those stressful and challenging moments and allow these readily available tools to not only make your life easier but to also carry you forward as we all continue to grow within our changing industry. 



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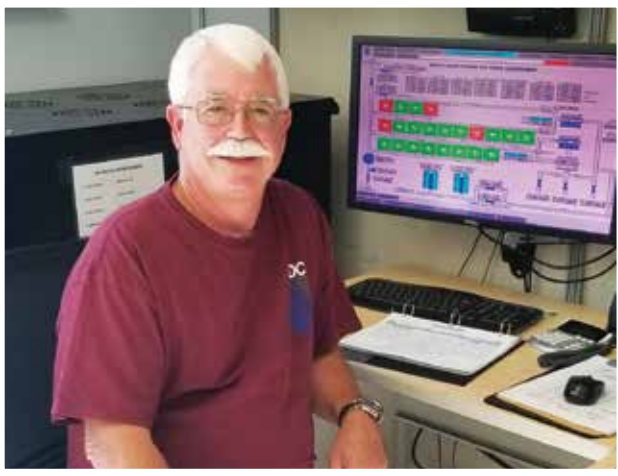
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Richard Coleman



Day Job:

Water Treatment Plant Shift Supervisor
Metropolitan District Commission (MDC)
West Hartford Water Treatment Plant

Career History:

This past May was my 39th year of service at the Metropolitan District Commission (MDC). All of my service time has been at the

West Hartford Water Treatment Facility. I started my career as a Water Treatment Plant Operator in May of 1983 and seven years later was promoted to Crew Leader on the 4:00 pm to 12:00 am shift. After spending six years as a Crew Leader, I was fortunate enough to be promoted to Shift Supervisor. I worked 39 years on this shift until May of this year when we transitioned the treatment plant to a one-shift operation.

Favorite MDC Memories:

While on vacation on the Fourth of July weekend in 1996, I received a phone call from the Water Treatment Plant Manager telling me that I was awarded the Shift Supervisor position. I enjoy training new employees and always learning new things.

Personal stats:

I enjoy watching and going to UCONN women's basketball games. I also love gardening, going on cruises, golfing, and cooking out on my smoker. My wife and I have been married for 43 years and we have three wonderful children and five beautiful grandchildren.

Certification:

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CWWA Legislative Update

CWWA Presents Legislator of the Year Awards

By Elizabeth Gara, Executive Director, CWWA



Rep. Joseph Gresko (D-Stratford) was named one of the Connecticut Water Works Association's (CWWA) Legislators of the Year.



In presenting the award, Maureen Westbrook, President of the Connecticut Water Company said "Rep. Gresko was selected to receive the award in recognition of his advocacy on a wide range of issues affecting drinking water, including efforts to protect water quality by preserving open space and watershed lands, addressing concerns regarding road salt contamination, and supporting efforts to address invasive species. He is also very involved in efforts to address climate change and resiliency."

"In addition, his leadership role in restoring the sales tax exemption for goods and services purchased by public water suppliers is vital to providing safe, high quality drinking water to residents and businesses at a reasonable cost," Westbrook added.

"It's an honor being recognized by CWWA for an issue critical to Connecticut residents' health," said Rep. Gresko. "Clean and safe water is essential – for us to drink and for our ecosystem to thrive. As Co-Chair of the Environment Committee, I'm particularly proud of removing the sales and use tax from Stratford customers' water bills."

This year's other CWWA Legislator of the Year recipient is **Rep. William Petit (R-Plainville and New Britain)**.

In presenting the award to Rep. Petit, Lori Vitagliano, Government and Public Relations Specialist, South Central CT Regional Water Authority, said, "Rep. Petit was selected to receive the award in recognition of his leadership role on public health issues, including issues affecting the quality and safety of Connecticut's drinking water supplies."

"Given the complex nature of issues affecting the treatment and distribution of public water supplies, Rep. Petit's expertise and thoughtful consideration of how proposed legislation may impact the ability of public water suppliers to provide safe, high quality drinking water to customers has been greatly appreciated," Vitagliano added.

"I was honored to have been selected as one of this year's recipients of the CWWA Legislator of the Year Award for my efforts and support of issues affecting our state's drinking water," said Rep. Petit in receiving the award.



The awards were presented to Rep. Gresko and Rep. Petit at the CWWA/CTAWWA Fall Conference held on October 18 in Plantsville, CT.

The Connecticut Water Works Association (CWWA) is an association of municipal, private, and regional water utilities that promotes state policies that assure reliable, high quality water supplies to protect the public health and safety.

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Outdoor dining space along Farmington Avenue.

West Hartford Center Special Accelerated Water Main Replacement

Farmington Avenue is a well-known commercial thoroughfare in downtown West Hartford, CT. This area is a destination for shopping, dining, and entertainment. It also links other nearby towns to downtown Hartford. The Metropolitan District (MDC) owns and operates the water mains in this area and had previously replaced water mains along Farmington Avenue in downtown West Hartford. These prior projects included the areas west of the Walden Street intersection and east of the Trout Brook Drive intersection but excluded the busier West Hartford Center area. Between those two intersections, water service was still provided by two 20-inch unlined cast iron mains more than 140 years old.



The Metropolitan District installing a 24-inch water main.

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In 2019, the MDC began planning for replacement of these aging water mains with 3,000 feet of new 24-inch ductile iron main to connect to the newer existing 24-inch mains located at both intersections. This would complete the replacement of their aging water assets along Farmington Avenue and provide this urban center with reliable water service for years to come.

This project was planned prior to the start of the COVID-19 pandemic for a late 2020 design completion with a traditional bid and construction phase in summer 2021. During summer 2020, West Hartford implemented a successful outdoor dining program in response to the pandemic. Barricades were placed in the road, reducing traffic lanes to create room for outdoor dining space. It was determined early on that extensive excavation for the installation of a 24-inch water main would not be practical with a continued outdoor dining program into the summer of 2021. Therefore, MDC expedited the schedule of design and construction to complete construction prior the next outdoor dining season (approximately April 2021). This was months ahead of the originally anticipated completion date for both design and construction.

MDC modified its customary Design-Bid-Build procedures to meet the need for the accelerated schedule. The project was bid in October 2020 on approximately 30% milestone design documents and followed a unique design approach as construction progressed. Ludlow Construction was awarded the construction contract, and immediately began winter season nighttime construction on the phases of the project that were the furthest

along in design development. CDM Smith, the design engineer, continued to develop the rest of the design as construction activities progressed. CDM Smith and Snyder Civil Engineering also provided support during the construction phase to facilitate the project's completion. The project benefitted from a strong partnership with West Hartford's Engineering Department, who assisted with outreach, plan review, and establishing technical standards.

Apart from the expedited schedule, this project faced many additional challenges complicating the water main design and construction. These challenges included extensive underground utilities along the corridor including existing water mains, sewer, drain, high pressure gas, low pressure gas, telecom, fiber optic, and underground electric service. The water main route also contained concrete road subbase (6" to 10" thick) and rock, which further complicated excavation and installation. Additionally, project phasing and prioritization was critical as water services needed to be transferred from one existing water main to the other to facilitate installation and certain areas were prioritized to expedite a return to outdoor dining.

The project was broken into four phases that could be constructed, disinfected, and put into service individually. Phase 1 between Dale Street and the north and south main streets was phased in a way that it could be "looped" and put into service prior to completion of subsequent phases. Phase 1 contained most of the outdoor dining locations and was the primary driver of the expedited schedule. This phased approach was not the original construction phasing strategy, but it was necessary to rethink phasing due to the expedited project schedule.



The Metropolitan District installing a 24-inch water main.

Construction was completed through the winter season of 2020/2021 to meet the targeted Phase 1 construction completion of April 2021. The portion of the new 24-inch water main directly adjacent to the outdoor dining areas was successfully installed and put into service prior to the start of the 2021 outdoor dining season. Construction of the remaining phases without restaurant direct impacts continued beyond the outdoor dining deadline but the main was primarily constructed at night to alleviate traffic impacts. The entire water main was substantially completed in August 2021. The final construction cost for the project was approximately 12% below the original contract value. The entire water main is currently in service and will provide the town's business center reliable drinking water for decades to come. 💧

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State's Drought Conditions Persist

In mid-August, Governor Ned Lamont announced that at the recommendation of the Connecticut Interagency Drought Workgroup, he is declaring a Stage 3 drought level for New London and Windham counties due to more serious conditions that are emerging in those areas. All other counties in Connecticut (Fairfield, Hartford, Litchfield, Middlesex, New Haven, and Tolland) will remain in Stage 2, as declared on July 14 (www.portal.ct.gov/water/drought/drought-home).

Despite some welcome rainfall in late August and September, the state's drought conditions persist prompting the Connecticut Interagency Drought Work Group to maintain the Stage 3 drought level declaration for New London and Windham Counties and the Stage 2 drought level for the state's remaining counties.

The Connecticut Interagency Drought Workgroup, which makes recommendations to the governor on the state's response to drought conditions, consists of state officials from the Departments of Public Health, Energy and Environmental Protection, Agriculture, Emergency Services and Public Protection, the Public Utilities Regulatory Authority and the Office of Policy and Management. In addition, the National Weather Service and the United States Geological Survey provide technical assistance.

The Connecticut Drought Preparedness and Response Plan (www.portal.ct.gov/-/media/water/drought/20181106statedroughtplanadopted.pdf) establishes criteria for declaring drought stages based on current and forecasted conditions of precipitation, ground water, streamflow, reservoir levels, drought severity, crop moisture index, and the fire danger relative to normal conditions. Under the plan, there are five stages of drought ranging from Stage 1, which represents a preliminary preparedness stage intended to advise state, regional, and local officials, and public water suppliers of potentially worsening drought conditions and to reestablish lines of communication, to Stage 5 which represents the most severe drought conditions.

Stage 3 represents a drought event is well-established across a significant area, with impacts increasing in extent and intensity and potentially including isolated severe impacts. Stage 2 represents an emerging drought event, potentially impacting water supplies, agriculture, or natural ecosystems.

Connecticut water companies serving more than 1,000 persons are required to prepare a comprehensive Water Supply Plan which includes a drought management and response plan. The drought plans outline triggers for water conservation during any water supply issue, including various stages of drought. Triggers are established by individual water companies based on certain system-specific characteristics, such as the degree of surface water vs. groundwater dependence, source capacity, water demand, historical reservoir drawdown levels, and predictive models that forecast water storage under severe drought conditions.

In Connecticut, there can be significant differences in how drought conditions affect a particular water company's water supply capacity. For example, because of the large size of its reservoirs relative to the amount of water typically used, the Metropolitan District's (MDC) reservoirs have maintained capacity above 90%, despite below normal precipitation levels.

“In Connecticut, there can be significant differences in how drought conditions affect a particular water company's water supply capacity.”

In response to the Stage 2 declaration affecting Hartford County, MDC advised that “while water conservation is always prudent, there are currently no mandatory or voluntary water use restrictions being requested of Metropolitan District (MDC) customers.”

Similarly, following Governor Lamont’s announcement that New London and Windham counties were in Stage 3, Groton Utilities advised its water customers that water supplies continued to be at 84% capacity with well over two billion gallons of water available. According to its press release, the Groton Utilities watershed covers 15 square miles and is very resilient, noting that even a minimal rainfall can substantially improve water supply.

Where drought conditions had a more severe impact on available water supply, however, mandatory water use restrictions were triggered. The Town of East Lyme, for example, issued a notice to customers indicating that a mandatory lawn watering schedule would be place until further notice.

Aquarion Water Company also indicated that customers in 13 towns are under a mandatory, twice-weekly irrigation schedule until October 31. Aquarion customers in the Fairfield County towns of Darien, Fairfield, Greenwich, New Canaan, Newtown, Stamford and Westport; the Hartford County towns of East Granby, Granby, and Simsbury; and the New London County towns of Groton, Mystic, and Stonington should continue following the mandatory, twice-weekly sprinkler irrigation schedule.

The South Central Connecticut Regional Water Authority (RWA) called on customers to voluntarily reduce their water

use by 10%, noting that it takes very little effort to help conserve water.

“While we currently have an adequate supply of water in our reservoirs, our request to customers to voluntarily reduce their water use by 10% not only supports the Governor’s appeal, and protects our vital supply of clean, safe drinking water, but it also helps consumers save money on their water bill,” said Larry Bingaman, RWA President and CEO. “Just a few simple steps to conserve 10% of water use will help prolong available water supplies, reduce demand on the system and stress on local water resources as well as on the environment, and lower customer bills.”

Connecticut Water Company also advised customers of the continued need to reduce water use and asked them to consider the following conservation measures:

- Stop lawn watering.
- Utilize mulch to protect the soil's moisture from the drying effects of the sun and wind.
- Cover swimming pools to reduce water lost to evaporation.
- Clean sidewalks or walkways with a broom instead of a hose.
- Check toilets, indoor and outdoor faucets for leaks.
- Turn off the water while brushing your teeth (saves 56 gallons a week per person!).
- Water plants before 9:00 am to reduce water lost to evaporation.

Given the increased frequency of drought conditions, the Connecticut Interagency Drought Group is reviewing ways of better enforcing water use restrictions and communicating with the public more effectively regarding the need to conserve water. 💧

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Collaboration and Innovation Help Restore *Drinking Water Resources* at the Former Pease Air Force Base

By Margaret McCarthy, PE Vice President of Weston & Sampson; Brian Goetz, Deputy Director of Public Works for the City of Portsmouth; and Al Pratt, PE, Water Resource Manager for the City of Portsmouth

The more complex a public sector project becomes, the more important cooperation, negotiation, and collaboration are in creating a path toward a viable long-term solution. These efforts are even more critical when the project involves public health along with stakeholders from federal, state, and local agencies, as well as citizens' advocates.

This need for collaboration was very apparent in the cooperative response to the discovery of per and poly-fluorinated alkyl substances (PFAS) in several drinking water wells near the Pease International Tradeport (Tradeport) in Portsmouth, NH, the former home of Pease Air Force Base. This system, operated by city of Portsmouth staff, is located west of the city and the city's own water system. From the initial discovery of PFAS in the Haven Well in 2014 that caused its shutdown, to the formal dedication of a new state-of-the-art treatment facility during the summer of 2021 that brought the well back online, there were numerous instances of collaborative and innovative efforts that addressed and overcame project challenges. This article discusses the many unique approaches used over the last seven



Pease Water Treatment Facility.

years to ensure the supply of safe, reliable drinking water to the Tradeport during the well shutdown.

History of Pease

Originally established as a municipal airport in the 1930s, the US Air Force assumed control of the Pease Air Force Base from the US Navy in 1951. For the duration of its time as an active-duty installation, Pease served primarily as a bomber base under the Strategic Air Command, housing the B-52 Stratofortress and other aircraft. In 1988, Pease was one of 86 military installations selected for closure by the government and was officially closed in 1991. Since then, the New Hampshire Air National Guard has been using a portion of the former

airfield,¹ and the Pease International Tradeport and Portsmouth International Airport have assumed control over much of the former Pease Air Force Base land for private development.

The site is now home to over 230 tenants that employ over 10,000 people, a commercial airport, the New Hampshire Air National Guard's 157th Air Refueling Wing, a golf course, five secondary education institutions, and various restaurants and daycare facilities. Four of the city's top 10 largest employers are located at the Tradeport and, according to one estimate, the total combined annual wages paid to the people who work at the Tradeport is about \$700 million.



A Brief Primer on PFAS

According to the US Environmental Protection Agency (EPA), PFAS are a group of thousands of man-made compounds that have been manufactured and used in a variety of industries around the world since the 1940s. PFAS are persistent in the environment and in the human body – meaning they do not readily break down and can accumulate over time. Because of this persistence, one commonly used term to refer to PFAS is “forever chemicals.” If PFAS are ingested, particularly long-chain PFAS, they may be absorbed and bioaccumulate in the blood, staying in the body for long periods of time. As a result, as people are exposed to PFAS from different sources over time, the level of PFAS in their bodies may increase to the point where they may suffer from adverse health effects.²

Some of the uses of PFAS have included non-stick cookware; water-repellent clothing; stain resistant fabrics and carpets; food packaging; some cosmetics; products that resist grease, water, and oil; and firefighting foams.³

At Pease, PFAS compounds were found primarily in the firefighting foam that crews used at the fire training center at the north end of the base. During actual or simulated aircraft fires, the crews would douse the flames with a suppressant known as aqueous film-forming foam (AFFF) which contained several PFAS compounds. The excess AFFF leached into the ground and contaminated the aquifer under Pease.

After the base was closed in 1991, the base’s water system was turned over to the Pease Development Authority, the agency that oversees operations of the Tradeport. The following year, the city of Portsmouth took over operation of the water system.

Discovery of PFAS at Pease

In April 2014, the New Hampshire Department of Environmental Services (NHDES) contacted the city of Portsmouth and requested that they sample the Tradeport’s three drinking water production wells (Haven, Smith, Harrison) for the six most common PFAS compounds under the EPA’s Unregulated Contaminant Monitoring Program. This request was due to detections made at the base’s former fire training center and the known historical use of AFFF.



Portsmouth, New Hampshire.

The following month, NHDES notified the city that the levels of perfluorooctane sulfonic acid (PFOS), a PFAS compound, detected in the Haven Well were 2,500 parts per trillion (ppt), about 35 times higher than the EPA’s provisional Health Advisory at the time. The city subsequently shut down the Haven Well and supplemented the lost water with approximately 500,000 gallons per day (GPD) from the Portsmouth water system. PFAS levels in the Smith and Harrison Wells were found to be below the Health Advisory, so they remained in service with monthly monitoring for PFAS. It was at this point that the investigation commenced into viable PFAS treatment options, along with options for additional long-term water supply alternatives.

Proceeding Forward

Based on the high levels of PFAS detected at the Tradeport, the EPA issued an Administrative Order to the Air Force in

August of 2015 requiring them to come up with treatment options for both the drinking water and the underlying aquifer, as they were deemed responsible for the PFAS contamination.

The city of Portsmouth and the Air Force signed an agreement to treat PFOS and PFOA (another PFAS compound) from water supplied by the Haven, Smith, and Harrison Wells. This agreement provided the city with funds to reimburse them for the cost of design and construction of the final treatment system for all three wells. This began a two-year process of evaluating and testing appropriate and effective treatment technologies.

The Technical Response Team assembled included representatives from the:

- City of Portsmouth and their consultants
- Air Force Civil Engineering Center (AFCEC) and their consultants
- Pease Development Authority
- EPA



Representatives from key stakeholders evaluating design alternatives and planning response efforts.



- NHDES (Waste Division, Drinking Water and Groundwater Bureau)
- New Hampshire Department of Health and Human Services
- Agency for Toxic Substances and Disease Registry (ATSDR) Community Assistance Panel
- Federal and State Legislators
- Pease Restoration Advisory Board
- Haven Well Community Advisory Board
- Others, depending on topic

During much of the time the Haven Well was offline, southern NH was experiencing extreme drought conditions. With the city of Portsmouth augmenting the water supply to the Tradeport from the city's own water system, drought conditions made that task much more difficult. Since the city's driving goal was to ensure that they had an adequate supply of safe drinking water for both Portsmouth and the Tradeport, the parties negotiated that the city and their consultant would take the lead in investigating and implementing water treatment options for the wells. At the same time, AFCEC and their consultant would take the lead in monitoring, investigating, and implementing potential remedial options for the PFAS plume in the aquifer itself.

This division of cleanup and treatment responsibilities resulted in an example of collaboration between the federal, state, and local government agencies and their consultants. All parties involved understood that ongoing cleanup efforts of the aquifer would have unknown impacts on the almost simultaneous approach to implement a viable option for drinking water treatment. For example, if a particular remedial option for the aquifer were to result in changes to any of its various geochemical properties and the groundwater's flow within the aquifer, it was unknown at that point what the impacts might be on viable drinking water treatment options.

The Response Team held frequent meetings, initially meeting weekly, and communicated often to plan out this multi-faceted process. They also conducted frequent water chemistry sampling of monitoring wells at various locations in the aquifer to provide additional data on which to base the designs.



Installation of the GAC filters September 2016.

Pease Tradeport Water System

The Tradeport water system consists of three groundwater wells (Haven, Smith, Harrison), two storage tanks, and 30 miles of water main, with demand in the system ranging from 0.4-1.3 million GPD. The system also includes a booster pump that allows water to be pumped from the lower pressure Portsmouth distribution system to the higher pressure Tradeport distribution system. In the 1980s, a water treatment facility was constructed on the base to treat for volatile organic compounds (VOCs). However, this facility was never activated due to low demand (base closure) and steadily improving groundwater quality associated with site cleanup activities. The treatment equipment was removed in 2013.

Well	Flow Rate (gpm)	PFOA+PFOS (ppt)
Harrison	286	0.029
Smith	343	0.012
Haven	534	1.495

Table 1: Summary of well capacities and the average PFOA+PFOS concentrations from the three wells, taken in a 2015 sampling.

Determining Best Available Treatment

At a September 2015 meeting with AFCEC and New Hampshire Congressional members, the city proposed a pilot study using granular activated carbon (GAC) at the wellhead to treat the two active wells, Harrison, and Smith. This was done in part to monitor the effects of GAC on water corrosivity parameters and show that GAC was effective at removing PFOS

and PFOA from the two wells. After successfully completing the pilot study between April and June 2016, the parties involved decided to move to a full-scale demonstration study. The full-scale study served several purposes, including proving that the results of the pilot study could scale, ensuring that proposed treatment would meet future regulatory requirements, and allowing time for the final design and construction of the treatment facility to be completed.

During the treatment technology demonstration process that began in 2016, a vendor approached the city to conduct a side-by-side pilot test of GAC and ion exchange resin on the higher PFAS concentrations in the Haven Well. Initial results showed that the resin technology significantly outperformed GAC. As pilot testing progressed, it became readily apparent that resin was continuing to outperform GAC regarding the removal of regulated compounds and unregulated short chain compounds. During the almost three years that the GAC demonstration system was in operation, the full-scale filters treated about 425 million gallons of water and showed that GAC worked well for treating the moderate levels of PFAS seen in the Harrison and Smith Wells. A cost comparison of the two media types found that the ion exchange resin, even though more costly initially, would reduce media change out frequencies and long-term operation and maintenance (O&M) costs of the facility. Based on this information, the city's lead consultant designed the final treatment plant using ion exchange resin for the majority of the PFAS treatment, followed by GAC polishing to treat for any legacy VOCs. AFCEC and NHDES reviewed and approved the proposed design.

Keeping the Water Flowing During Construction

Throughout the entire seven years that the Haven Well was shut down, the existing water supply system at the Tradeport needed to remain in full operation. All construction activities had to be efficiently sequenced around that requirement, minimizing the frequency and duration of any water system shutdowns. The solution to maintaining sufficient water flow into the Tradeport



involved phasing construction that required close collaboration and communication between AFCEC, the city, contractors, engineers, and consultants to ensure effectively sequenced construction work.

During construction activities, which spanned two years, from April 2019 until April 2021, city water operators continued to maintain and operate the water system. To manage this requirement and added risk, the lead consultant generated the design plans for three phases of construction. With the full-scale demonstration filters online with Harrison and Smith Wells, they designed a new building addition to house the three new GAC filter units. Once complete, they temporarily diverted flow to the new filter vessels, allowing the old demonstration filters to be removed. They also reworked the existing building to house the twelve new ion exchange resin filter vessels and a



City of Portsmouth water operations staff who ensured that adequate water quality and quantity were maintained throughout the extensive construction activities.

new addition to house the control room and new lab space. They started up the facility with flow from the Harrison and Smith Wells, and once proven out and approved for operation by the NHDES, restarted the Haven Well.

Another important component of project success was that all parties involved undertook an open, honest, and transparent two-way public involvement and outreach campaign throughout the life of the project via public meetings, city advisory committees, press releases, and website updates. The high-profile nature of the project and its potential impact on the lives and health of water system customers meant that community relations were not an afterthought but rather a key component of the response efforts. Those efforts included:

- Press releases
- Public meetings
- Presentations to the Portsmouth City Council and other groups
- Federal and state delegation involvement
- Multiple advisory boards and panels
- "Testing for Pease" Facebook group
- Blood testing (announcing results in public meetings)
- City of Portsmouth website devoted to PFAS (www.cityofportsmouth.com/publicworks/water/portsmouth-water-system-pfas-update)
- Numerous media interviews

This sets an example going forward on how to conduct a complex project with the involvement of many different stakeholders including a highly engaged public on all levels. The entire timeline of this project, from the initial discovery of PFOS, all the way through system design, construction, and completion, was conducted in the public spotlight, including on TV and radio, in the newspapers, and elsewhere.

Formal Dedication Ceremony

The formal public dedication ceremony and press event for the new Pease Water Treatment Facility was held on May 4, 2021. Attendees included US Senators Jeanne Shaheen and Maggie Hassan, US Representative Chris Pappas, AFCEC Program Management Chief Dr. Steve TerMaath, and Andrea Amico, Co-Chair of the Pease Restoration Advisory Board Community. Portsmouth Mayor Rick Becksted and Brian Goetz, Deputy Director of Public Works (DPW), represented the city. Jennifer Miller, acting Secretary of the Air Force for Energy, Installations, and the Environment, who was also present,



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noted that, "The standup of this plant represents not only environmental protection, but also hard work, innovative thinking, and cooperation among many stakeholders, including our federal, state, and local community partners."⁴

"To see this beautiful treatment plant and all of the work that's gone into it is a testament (to) the cooperative effort that everyone has made to identify a problem and then not take no for an answer, figure out a solution, and get it done for the people of this community and it serves as a real model," Senator Shaheen stated, "This has truly been a local, state, and federal project that again sets a model for the rest of the country." The DPW's Brian Goetz lauded the numerous collaborative efforts between the Air Force and the city, noting the cooperative agreements that provided more than \$17 million to add treatment for removal of PFOS and PFOA and retrofit the Pease Water Treatment Facility (WTF).

What's Happening Now

In early August 2021, the city of Portsmouth announced plans to bring the Haven Well back online, seven years after it was initially shut down. The city received permission from the NHDES for the reactivation of the well after testing at the treatment facility showed adequate PFAS treatment performance. A joint press release from the city and AFCEC stated that the city had received a permit from the NHDES that allowed the Pease WTF to "operate at full capacity



Left to right: City of Portsmouth Mayor Rick Becksted; Deputy Director of Public Works Brian Goetz; US Representative Chris Pappas; US Senator Maggie Hassan; Testing for Pease founding member Andrea Amico; US Senator Jeanne Shaheen; Acting Assistant Secretary of the Air Force for Energy, Installations, and Environment Jennifer Miller at the dedication ceremony of the Pease.

with use of all the intended wells, including the Haven, Smith, and Harrison Wells."⁵

"Restoring the Haven Well to the city of Portsmouth water system marks another significant step in the seven year-long incremental plan, working in conjunction with the Air Force's Civil Engineering Center to respond to the presence of PFAS contaminants that were impacting three Pease drinking water wells," said Brian Goetz. "The first milestone this year for the drinking water system was the completion of the Pease Water Treatment Facility upgrade in April. Testing and

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reactivation of the Haven Well is the next. The success we have achieved in filtering the Haven Well restores this supply to the drinking water system."⁶

Dr. Stephen TerMaath of AFCEC's Program Management division called the news of the Haven Well being returned to service a "major achievement for the city of Portsmouth under the leadership of city water officials. The city collaborated with all stakeholders including state and EPA regulators, engaged citizens, and elected officials to design and construct a water treatment system, with Air Force funding, using the best available technology for protection of public health."⁷

Since the dedication ceremony for the Pease WTF in May of 2021, the PFAS treatment system has been operating as planned. In addition, since bringing the Haven Well back online in August, the treatment facility has been in compliance with all current standards, including non-detect levels of PFAS in the plant effluent water.

Summary

Since 2014, the city of Portsmouth has been dealing with two issues challenging its ability to provide reliable drinking water

to its customers – PFAS contamination and drought. City staff worked tirelessly to promote solutions and share information regarding PFAS monitoring, treatment, public education, and drought management response. They worked closely with many stakeholders including engineering consultants, NHDES, EPA, AFCEC, federal and state regulators, and concerned citizens groups in a collaborative manner to ensure that the water remained flowing. Their efforts were recognized in September 2021 when the New England Water Works Association (NEWWA) awarded the city of Portsmouth with the Distinguished Public Involvement Award for outstanding achievements, leadership, commitment, and support of professional, proactive public relations.

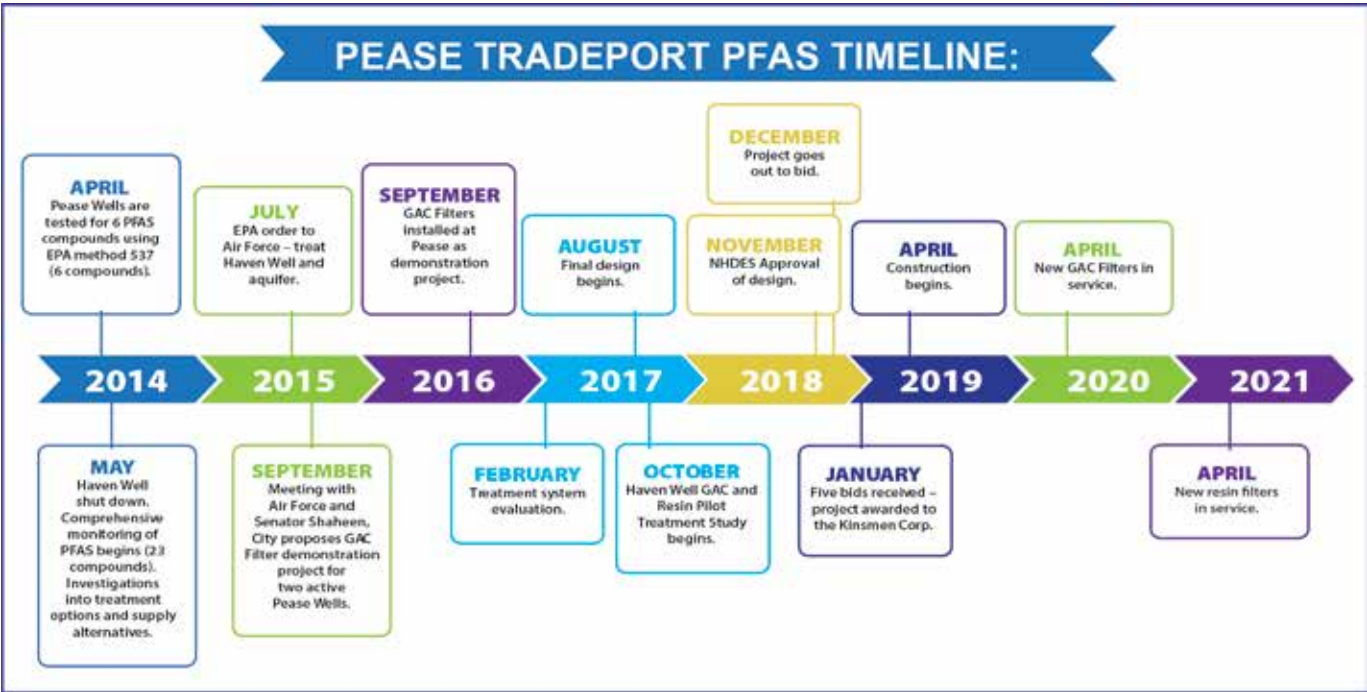
At the award ceremony, NEWWA Vice President James DeCelles and NEWWA Board member Thomas LeCourt recognized the city of Portsmouth "for demonstrative leadership in creating public education and information programs around emerging contaminants and drought management."

The interdisciplinary team of government officials, engineers, scientists, and construction specialists designed and installed a system that meets or

exceeds all desired outcomes. Based on the accomplishments at Pease that were achieved through cooperation, negotiation, and collaboration, the results are well worth celebrating. 💧

References

- 1 US Air Force Civil Engineer Center, Former Pease Air Force Base (BRAC 1988), www.afcec.af.mil/Home/BRAC/Pease.aspx
- 2 US Environmental Protection Agency (EPA), PFOA, PFOS and Other PFAS, Basic Information on PFAS, www.epa.gov/pfas/basic-information-pfas
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- 5 City of Portsmouth, Joint Press Release with US Air Force Civil Engineering Center, "City of Portsmouth Receives Department of Environmental Services Permit to Restore Haven Well to Operation," Aug 2, 2021
- 6 Jeff McMenemy, "Portsmouth's Haven Well to Supply Water Again, Seven Years After PFAS Contamination Found," Portsmouth Herald, Aug. 3, 2021
- 7 Jeff McMenemy, "Portsmouth's Haven Well to Supply Water Again, Seven Years After PFAS Contamination Found," Portsmouth Herald, Aug. 3, 2021



Timeline of major milestones associated with addressing PFAS in the public drinking water wells.



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ATCAVE Format –

The CTAWWA is planning to conduct ATCAVE in person at the Aqua Turf Club in Southington, CT on February 28, 2023. Each presentation will be approximately 40 minutes in length, allowing 30 minutes for presenting the topic and 10 minutes for response to questions. CTAWWA will provide moderators and technological support to assist presenters during the program.

Suggested topics: Innovative Solutions, Sustainability, Resilience and Cyber Security, Efficiency and Water Loss, Asset Management, Hydraulic Modeling, Conservation, Emerging Technologies, Information Technology, Rate Management, Strategic Planning, Plant Operations, Small Systems, Water Treatment, Residuals Management, Engineering, Construction, Maintenance, Regulatory Issues, Distribution, Utility Management, Safety, and Water Quality (including Lead/Copper and PFAS topics).

What to submit: Please complete the information in our online form including presentation title, a short description of the presentation, and names of presenters. Find the online form at www.ctawwa.wufoo.com/forms/ctawwa-abstract-submittal-form.


Criteria for selection: Program Committee members will review the submissions based on the following criteria: Originality, Innovative, Significance of Work, Audience Range, Technical Content, Case Studies, Quality of Abstract, Real-Life Application. Please note that the selection of presentations for ATCAVE 2023 will be made by the CT Section AWWA Education and Program Committee with the presenters being notified by December 31, 2022.

The Education and Program Committee is inviting Young Professionals to participate in the “Fresh Ideas” Competition at ATCAVE

“Fresh Ideas” Young Professionals (YP) competition at ATCAVE is for presenters 35 years or younger. YP presenters will be selected to present a 30-minute presentation during the regular sessions at ATCAVE. From those who present, one winner will be selected and CTAWWA will provide a travel allowance to cover the cost of airfare and hotel during ACE23 in Toronto, Canada from June 11-14, 2023. AWWA will cover the cost of registration for the conference, and the winner’s employer should be asked to cover the cost of their time to attend this prestigious conference and present a poster at the “Fresh Ideas” poster session. Above submission guidelines apply to “Fresh Ideas” contestants.

The water topics will be presented to the CT Department of Public Health for CEU approval for attendees.

If your paper is selected for possible presentation, you will be contacted and requested to prepare a more detailed abstract and biographical sketch of all team members. The additional information must be submitted by January 13, 2023 for inclusion in our program.

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BMG 216	Rates and Revenues	Live Remote Online	Tuesday	5:15-8:05 pm	3
BMG 219	Asset & Infrastructure Management	Live Remote Online	Wednesday	5:15-8:05 pm	3
WMT 102	Special Topics in Water Treatment	Live Remote Online	Tuesday	5:30-8:20 pm	3
WMT 103	Special Topics in Water Distribution	Live Remote Online	Thursday	5:30-8:20 pm	3

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CWWA Regulatory Watch

EPA Proposes Designating PFAS as Hazardous Substances

The US Environmental Protection Agency (EPA) recently proposed a rule designating two of the most widely used per- and polyfluoroalkyl substances (PFAS) as hazardous substances under the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA), also known as "Superfund."

According to EPA's press release, "this rulemaking would increase transparency around releases of these harmful chemicals and help to hold polluters accountable for cleaning up their contamination."

If finalized, the rule would trigger reporting of PFOA and PFOS releases which would provide EPA with better data in addition to the authority to require responsible parties to clean up contaminated sites.

The formal Notice of Proposed Rulemaking, which is expected to be published in the coming weeks, will trigger a 60-day public comment period. According to EPA, they will also solicit public comments in the future regarding designating additional PFAS chemicals as hazardous substances.

Climate Mapping Portal

The Biden-Harris Administration recently launched a Climate Mapping for Resilience and Adaptation portal to allow communities to view extreme weather and

other climate change impacts along with maps projecting how each community may be impacted in the future. The new portal will provide state, local, Tribal, and territorial government officials with the ability to better track real-time impacts associated with climate change. In addition, the portal allows users to access multiple sources of federal information and funding opportunities to assist them in preparing and responding to climate impacts, including resilience funding under the Bipartisan Infrastructure Law. 💧

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Connecticut Water Names Michelle Royce Williams VP, Customer Service and Communications



Michelle Royce Williams has been named Vice President of Customer Service and Communications at Connecticut Water. Michelle has 20 years of experience in communications and customer relations and joined the company's communications team in 2019. She succeeds Arthur O'Neill, who retired from the company earlier this month after a 47-year career.


"We are fortunate to have Michelle ready to lead our customer service and communications efforts given her skills and experience and her enthusiasm about the water profession," said Maureen P. Westbrook, President of Connecticut Water. "Since joining Connecticut Water in 2019, Michelle has made significant positive impact for our customers and communities, communicating on water quality and service and sharing what we do to support the environment. She knows the value of water and how important it is to the quality of life in the communities we serve."

Westbrook added: "We thank Art O'Neill for his 47 years of dedicated service to Connecticut Water. He started on the construction crew in Rockville and took on additional roles and responsibilities until retiring as vice president of customer service. He set the bar high for service to customers and his coworkers and positioned his team well to continue delivering exception levels of service."

Williams stated, "I am privileged to lead the customer service and communications teams. Connecticut Water has a strong record of delivering world-class service to customers, being open and transparent in company communications, and being a force for good in the communities we serve. I am eager to build on that work and find ways to enhance our customers' experience."

Michelle also chairs Connecticut Water's Corporate Responsibility Committee, which focuses on being a force for good on environmental and social issues within the company's service communities. She is a volunteer teacher with the company's award-winning Water Drop Watchers program, a curriculum-aligned lesson on the water cycle and water conservation for third graders. Additionally, she is the chair of Connecticut Section American Water Works Association's communications committee.

Michelle is a graduate of the University of Connecticut with a degree in communications. She also holds a certificate in Corporate Sustainability from New York University's Stern School of Business. She lives in East Lyme with her husband and their two children.

Connecticut Water is a public water and wastewater utility regulated by the Connecticut Public Utilities Regulatory Authority that provides water service to more than 350,000 people in 60 Connecticut communities and wastewater service to 10,000 people in Southbury, Connecticut. 

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Mark Singh, *The Metropolitan District*

Robert Testa, *Connecticut Water Co.*





In Memoriam

WILLIAM M. LARGE

April 27, 1937- March 3, 2022

In memory of Bill Large, born April 27, 1937 in New York City, died March 3, 2022 in Hartford, CT. A great friend and 'ad man' who called Hartford his home; the Connecticut River, Thames River, Long Island, and Block Island Sound, his favorite getaways. As an excellent navigator, he leaves his legacy on the waterways, remembered for motoring along on his boat, first with 'The Mad Dog,' and followed by 'Act III' in his twilight years. Bill leaves many friends, associates and fellow boat mates with great memories; most especially, his best friend and companion, Frances Henderson, and his long-time friend and business partner, Kay Page Greaser. Always at the helm, Bill's legacy flows from the waterways to advertising. Many would consider him one of the rising stars in the ad business. He made great contributions to the banking industry specifically,

in marketing the first ATM machine in the marketplace. His concept, humanizing the machine, and naming it 'Barney,' for Connecticut Bank & Trust Co., was launched in Hartford, CT, in the 1980s. Throughout Bill's career, he gave of his time and talent, serving on local boards and commissions; twice serving as President of the Ad Club of Connecticut. Bill remained creative head and president of Large & Page Communications, in Hartford, until retirement. Bill published and helped develop *InFlow-Line* for the CTAWWA/CWWA. His lightning-sharp mind, blazing wit, and kindness will be remembered by his many friends and colleagues. We all thank him for his talent and his mentorship, of which he gave freely, and bid him a fond farewell. Bill's burial is private, but in his memory, do something you love to do, give to the things that matter most to you, and live life to the fullest. 💧



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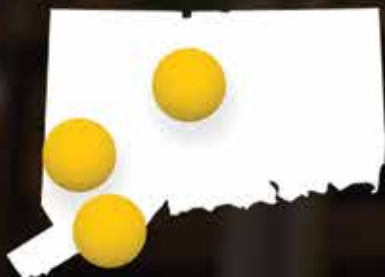
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