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Submission Deadline: Summer 2020 – April 9, 2020

NC Currents is produced by the Communication Committee.
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Vice Chair: John Rutledge - W.K. Hile Company

Editorial Subcommittee:
Tom Bach - City of Concord; Marrianna Boucher - McKim & Creed; Jonathan Ham - City of Raleigh; Steve Hilderhoff - Dewberry; Marco Menendez - KCI Associates; Jenn Moore - Hulsey McCormick & Wallace, Inc.; Mark Panny - Carollo Engineers; Sydney Potter - Willis Engineers; John Rutledge - W.K. Hile Company

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This is the second of a three-part discussion that focuses on the updated strategic plan. The three-year plan outlines expansions within NC AWWA-WEA, primarily focusing on three major categories: membership engagement, professional development, and training and education. In the Spring Edition of NC Currents Chair Jeff Coggins discussed membership engagement. For this issue he was originally going to review professional development, but the conversation veered toward the more timely topic of training and education in the time of the coronavirus.

“I hope everyone is safe and in a position where they can work and prosper and spend time with family,” Jeff said at the beginning of our conversation. “At this time of the coronavirus pandemic, it’s so important to maintain a healthy life and work experience. I want to give a special shout-out to our operations and maintenance members. As the time of this discussion, North Carolina is still under stay-at-home orders; only essential workers should be out and about. Most definitely our healthcare workers are essential, but I don’t know of any other profession more essential than our operations and maintenance professionals. They are the ones who are making sure we have safe drinking water and wastewater treatment during the pandemic. Many are sequestered at our treatment facilities and are sacrificing themselves and their families for our communities. I am extremely grateful to all of them. Thank you.”

Jeff went on to explain how the coronavirus is impacting our Association staff. “Our Association staff are all working from home and are very, very busy. As a result of this pandemic, they are focusing on things that weren’t even on their radars two months ago. We had to cancel or postpone everything planned from March through May, including all our educational schools, workshops, GROW events, and the Spring Symposium. Now we’re discussing what June through August looks like and trying to determine how best to operate in this time of uncertainty.” Instead of planning and organizing, our staff is canceling or re-negotiating venue contracts, issuing...
refunds, understanding virtual certifications opportunities, and evaluating future events through the lenses of this pandemic.

Then there are the people who took the time to prepare presentations for the Spring Symposium. Their efforts won’t be wasted, Jeff emphasized, because the staff and the board are looking at opportunities to transition to virtual platforms. “At a conference you have to pick from concurrent sessions, but if we do those presentations virtually, then you could conceivably attend every session. Keep your eyes open for schools and spring conference virtual workshops,” he said.

And speaking of virtual communications, Jeff’s goal of creating more personal engagement opportunities for Association members has definitely taken a turn. Engagement is still very much at the forefront of his leadership agenda. Jeff shared he is “figuring out ways to make virtual interactions more personal and connects frequently with his teams, clients, and staff.”

“We may not be able to sit across the table from each other during this time, but we are building skills and habits that help us personally connect under different circumstances,” he explained. One thing is for sure: neither he nor the board is stepping back from creating engagement opportunities and connections; they’re just focusing on improving their virtual options during this challenging time.

On the training and education front, Jeff informed tremendous effort and progress has been made through the first quarter of 2020, particularly with the Academy program. The Academy is transitioning toward leadership development and will focus on the softer and non-technical skills needed in our industry to help our operations and maintenance professionals transition to leadership roles in their organizations. “While developed to fill an educational gap for our operations and maintenance professionals,” Jeff added, “the leadership development program will be teaching skills that every Association member can benefit from.”

Prior to the social distancing protocols, Jeff and other board members were meeting with utility leaders across the state to encourage increased engagement in the Association and to garner support for the Academy and the leadership development curriculum. The goal of the meetings was threefold: 1) get input into the types of training opportunities utility leaders would most strongly support for their teams, 2) get commitments from utility leaders to participate in the development of the training materials, and 3) get commitments of utility leaders to send their professional to the training sessions.

“The Association is committed to building the Academy to meet the educational needs of our members,” said Jeff. “We want to customize the leadership development program with the direct involvement of our utility leaders so the educational offerings meet the industry’s needs.” The results from these meetings so far have been resoundingly positive. At the time of this discussion, more than 10 utilities across the state had agreed to support our Association’s training and education efforts.

Jeff concluded this “Chat with the Chair” column by saying that the accomplishments made so far give him hope for what the rest of the year will bring. Even though the world has changed considerably since that column was written, Jeff is still confident about what the Association can accomplish and hopeful about what the year will bring. “We still have momentum, we are still focused on the strategic plan, and we still have tremendous support going forward for our training and education initiatives. I am extremely grateful.”
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Solving Infrastructure Challenges

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Over the past 50 years, AUC has completed more than 1,500 wastewater treatment plants across the US and Latin America, ranging in capacity from 100,000 gallons per day to over 1,500,000 gallons per day. Four years ago, AUC Group started offering its solutions coast to coast, with a focus in the Carolinas.

While AUC has in-house manufacturing and engineering services, the company also partners with local consulting engineers and suppliers. “It helps streamline the process for private utilities as well as developer markets,” notes Croom. “For municipalities, it offers a one- or two-point contact from a manufacturer’s standpoint.” In North Carolina, AUC has partnered with Heyward to offer local sales and service.

“We are committed to focusing our efforts in support of the North Carolina market as a whole,” says Croom. AUC Group was proud to be one of the sponsors of the Water For People Benefit Concert held in Raleigh on March 7, 2020.

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The lease option is also attractive to private developers, with AUC acting as manufacturer and provider of the wastewater treatment plant and partnering with engineering firms to support permitting. “This program allows them to attain wastewater utility in a timely fashion, while utilizing capital for parks and recreation and amenities to attract people to the community,” says Croom.

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- Activated Sludge Process
  - Extended Aeration
  - Single State Nitrification
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  - Complete Mix
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- Membrane Bio Reactors (MBR)
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AUC can provide bypass wastewater treatment solutions. “This makes it possible to maintain compliance and treat the average daily flow to the permit limits during construction,” says Croom. AUC Group offers a fleet of portable, modular components to meet temporary treatment of flows up to a million gallons per day.

**FIELD ERECTED PLANTS**
Designed to treat larger volumes of wastewater with a smaller footprint, AUC provides field-erected plants that can achieve more stringent limits, including reuse quality, while being cost-effective.

**BYPASS WASTEWATER TREATMENT**
One of the fastest growing markets for AUC is our bypass treatment program. When major maintenance is required for remote plants, (whether it be a complete or portion of a plant, or those without redundancy or additional capacity onsite),
Terry Rolan still recalls attending his first NC AWWA-WEA annual conference in Wilmington as a “Student Member” of both AWWA and WPCF (WEF). It was 1973 and attendance was between 200 and 300. Seven years later, he found himself volunteering to be Secretary & Treasurer for NCAWWA-WEA – the last person to hold both positions at once. Part of his duties involved processing registrations for the Annual Conference, as the Association had no paid staff at the time. “I did it myself with the help of my first wife and my three boys,” says Rolan.

This is just a small example of the volunteerism that characterized a lifetime of service to the water and wastewater industry. Over the span of three decades, Rolan served on countless committees and boards with the American Water Works Association (AWWA), the Water Environment Federation (WEF), and the local Section and Member Association, including a term as NC AWWA-WEA chair and a term as AWWA president.

“I volunteered my life away” is Rolan’s tongue-in-cheek commentary on his many contributions to the water and wastewater industry. In a speech he delivered while president of the AWWA, he also noted, “you get much more from volunteering than you ever put in.”

“I used to tell people when I was president of the AWWA, you can’t outgive it. The more I gave of my time, the more I got out of it.”

Rolan had long been interested in these natural methods. In fact, from 1972 to 1974, as a masters student at the University of North Carolina at Chapel Hill (UNC), he devoted some of his research to the potential of clay minerals for adsorbing phosphorus. Other research focused on the effect of discharging residuals to trickling filter wastewater treatment plants. “One of my professors, James C. Brown, encouraged me to present a student paper at the NC AWWA-WEA annual conference in 1973,” recalls Rolan.” Jim Brown also gave me two membership applications when I first came to work for him as a graduate assistant at the UNC Wastewater Research Center in 1972. He told me if I intended to be a professional in water and wastewater, then I needed to join both AWWA and WPCF (WEF) as a student member. This was the very beginning of my volunteering for both organizations.”

At the time, Rolan was enrolled in the School of Public Health Department of Environmental Sciences and Engineering at UNC Chapel Hill. His undergraduate degree is a BS in Chemistry, which he obtained from Berry College in his home state of Georgia. After graduating from Berry, Rolan worked briefly as a lab technician in a paper mill, researching how to treat waste resulting from the production of kraft paper.

While he was there, he worked for another graduate of UNC, Billy Turner, who eventually became President of WEF. It was Turner who encouraged Rolan to attend UNC. But first the young husband and father had to complete his volunteer service as an Officer in the US Navy Reserve. So the following year, he packed up the family’s 1969 Volkswagen beetle and drove with his wife and one-year-old son, over 4,500 mile – including 1,500 miles on a gravel road called the “ALCAN” highway – to Kodiak, Alaska, where he served from 1969 through 1971.

The family then relocated to Durham so Rolan could pursue graduate work on a Masters of Public Health, in Environmental...
Member Portrait

Chemistry and Biology. While attending UNC, he joined the City of Durham, Division of Water Resources in December 1971, as a Sanitary Engineer I in the Industrial Waste Control Division. The rest, as they say, is history.

Rolan rose through the ranks at the City of Durham, becoming Assistant Director, Division of Water Resources in 1975, then Director, Department of Water Resources in 1982. By the time he retired as Director of the Department of Water Management in September 2007, he had planned for and managed the construction of major water and wastewater facilities improvements that totaled over $300 million. “There was never a day I didn’t want to work,” he says of his more than 30-year career.

During that time, he emerged as a leader, not only for the city, but also at state, national and international levels. Over the years, he has served on numerous NC AWWA-WEA committees, as well as chairing the Finance, Government Affairs, Fuller Award, and Archives and History committees, as well as the Building Task Force. “The City of Durham was really good to me,” recalls Rolan. “Their support allowed me to work for many organizations during my years of service to the City.”

Starting with his first Officer position as Secretary-Treasurer, 1980-1982, he became a board trustee and eventually, Chairman of the NC AWWA-WEA in 1987-1988. “The Association was really starting to grow,” he adds, “So eventually we had to get paid staff.”

The scope of Rolan’s service had started to grow as well. Over the next two decades, he served on the Board of Directors for AWWA, WEF, and the International Water Association and on the Board of Trustees of the Water Research Foundation. After serving on AWWA’s Sludge Disposal, Dependable Yield and Surface Water committees, he sat on the Water Utility Council (WUC) from 1990 to 1996, serving as Regulatory Committee Chair, and Vice-Chair of the WUC from 1993 to 1995.

“Eventually on WUC had email, which helped us get the Safe Drinking Water Act reauthorized. Eventually all of AWWA came on board and began to communicate by email instead of fax.”

Technology was becoming increasingly important to the work of the AWWA, no more so than to the QualServe Peer Review Program, a continuous quality improvement program for utilities. As a Peer Review Team Leader, Rolan participated in the first peer review of a private water utility at BHC/Aquarian in Bridgeport, CT and the first QualServe multi-utility peer review for the Ohio American Water Company in Marion, OH. Eventually, the process also became a key part of his efforts to have the City of Durham Utility become an industry leader in North Carolina and North America.

It was around this time that Rolan also became involved in professional activities at the international level. In 1993 and 1995, he served on one of the first assessment teams working for the United States Agency for International Development (USAID), through the US EPA and WEF, to help the wastewater utilities of Krakow and Katowice, Poland. In his position as Director of Water Resources for the City of Durham, he also participated in a technical and cultural exchange with Durham’s Sister City in Toyama, Japan. But it was during his term as AWWA president that he had the largest impact on the international scene.

Rolan joined the AWWA Board of Directors in 2000, serving on the Strategic Planning and the Distinguished Public Service Award committees, as well as on the Young Professionals Committee, which he also chaired. He was elected Vice President of AWWA, serving from 2001 to 2003, and was elected President Elect in 2005. He served as President of AWWA, 2006-2007.

“I was an unusual AWWA president because early in my career, I was involved as a volunteer more on the wastewater side than the water side,” Rolan points out.

“There was never a day I didn’t want to go to work,” he says of his more than 30-year career.
“I also had the privilege of being the first Director from NC to ever be elected VP of AWWA and the first person from NC in over 100 years to serve as President of AWWA, since Charles H. Campbell in 1902, almost 20 years before the NC AWWA Section was formed in 1921. The broad sharing of both water and wastewater treatment expertise was a recurring theme during his term as president. His address to the opening general session of AWWA’s ACE 2007 annual conference reflects this passion: “You don’t have to brave a hurricane like the water workers in New Orleans to be a hero in this profession. You just have to share what you know with a world that’s thirsty for the knowledge. There’s no better way to do that than through AWWA’s committees, publications, seminars, and conferences.”

Rolan played a seminal role in sharing that knowledge beyond the borders of the US. In September 2006, he attended the International Water Association meeting, as a member of their Board, during the Biannual Conference in Beijing, China. The following February, he was the keynote speaker at the Indian Water Works Association (IWWA) in Mumbai. “I was the first president of AWWA to go to the IWWA meeting in India,” he notes. Following the meeting, Rolan signed a memorandum of understanding with the president of IWWA at ACE 2007, to increase cooperation between the two associations.

For this work and his many other contributions to AWWA, Rolan was made an honorary member in 2000 and then a life member, after 30 years of membership, in 2002. In fact, over the years, Rolan’s service to the industry has been recognized with numerous awards. He is a charter member of North Carolina’s Select Society of Sanitary Sludge Shovelers and a recipient of the George Warren Fuller Award from the NC AWWA as well as the Arthur Sidney Bedell Award from NCWEA.

Three criteria for the latter are organizational leadership, administrative service, and membership activity. Rolan more than fulfills all three. Accordingly, he was nominated by the NC Section of AWWA for the prestigious John M. Diven Medal for Outstanding Service to AWWA, which he received at ACE 2014.

Not only has he been a dedicated volunteer in so many facets of the water and wastewater industry, he has also been a passionate proponent of volunteering. One of Terry’s favorite quotes is from Col. Jimmy Doolittle who once said, “There is nothing stronger than the heart of a volunteer.”

“We must look for the opportunity as individuals, section leaders, educators, and employers to make a difference in the future of our new members by providing and supporting opportunities for volunteer involvement,” said Rolan in his speech as incoming AWWA president on June 14, 2006. He has certainly made full use of opportunities in all these categories during what constitutes nothing less than a lifetime of service.
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When Arthur White describes the water and wastewater industry, he says, “You can never get complacent because it’s always changing.” While he certainly has seen plenty of change during his 40-year career, what has never changed is his passion for learning. “You solve a problem today, but then someone will find evidence that the source of the problem is different than what you thought it was,” says the former Superintendent of Plants for Greensboro. “Not only do you have to keep learning, but you have to look for better solutions all the time.”

While White always enjoyed learning – particularly math and science – he did not always like school. After graduating from high school in his hometown of Fayetteville, he went to work at the local Veterans Affairs hospital. However, he quickly realized that there would be no future for him there without a higher level of formal education.

So, on the last day of registration at Fayetteville Technical Community College, White showed up at the admissions office to register for the civil technology program. As fate would have it, the class was full. Instead, the college suggested that White sign up for their new Sanitary Engineering Technology program. “I was part of that first class,” he confirms. “We studied those plants – both water and wastewater – inside out.”

Not long after, a friend in Greensboro happened to mention White’s name to that city’s Water and Sewer Department Chief Engineer Don Knibb. “He was looking for a young person with an engineering background to mentor and bring up through the ranks,” recalls White. “After first year, I went up and interviewed with him. He told me that once I finished my program, they would have a job for me in Greensboro.”

At the time, the young student was also a newlywed. To support himself and his wife, he worked at the Fayetteville Technical Community College before and after class. He was a lab assistant, helping to set up and clean up the labs and collect water, wastewater, and stream samples. When he went to the plant to collect samples, he would go see the guys in the field. Says White: “They would show me what they were doing and were happy to share their lab data.”

“He continued to learn on the job, working on everything from the raw water reservoir to distribution and from collection to discharge. He would go to one of the plants or field operation centers to see what they needed, then come back to the office and consult with sales representatives.”

He also had the opportunity to use the school’s hydraulics lab, gaining exposure to things civil engineers would never have had the chance to do. In fact, the program in which he was enrolled had been designed by a sanitary engineer who recognized that the industry needed people with a wide range of technical skills. “At the time, you were either an engineer or an operator,” notes White. “There wasn’t anybody in between.”

Graduating with a unique skill set, augmented by an operator’s license that he obtained that summer, White was well prepared to start his work in Greensboro as an Engineering Aide. The mentoring began almost immediately. Anytime Knibb met with salespeople to talk about equipment, he would always invite his young protégé to go with him. “He wanted me to get involved,” recalls White, “to find solutions to problems such as overflowing sewers. I had to do drafting and plotting of new water and sewer lines, but when I was done with that, I could work on other projects like finding solutions to problems. I really enjoyed the business and I was always in learning mode. You learn a lot if you keep your eyes and ears open.”

But soon White realized that despite all the listening and the opportunities for learning onsite, he still needed to continue his formal education if he wanted to continue to advance. He decided to enroll in Guilford College’s Adult continuing education program to pursue a Bachelor of Science degree in Physics.

At the same time, he continued to learn on the job, working on everything from the raw water reservoir to distribution and from collection to discharge. He would go to one of the plants or field operation centers to see what they needed, then come back to the office and consult with sales representatives on various options and specifications for equipment that needed...
Member Portrait

replacing. Knibb gave him increasingly complex projects and, even when the Chief Engineer already had a solution to a problem, he would ask White to tackle it as well, so that they could compare notes. “He taught me that it doesn’t matter how good you are, you need someone who you can count on to review your work,” recalls White. “That still applies today, especially for quality control on big projects. In this business, if you make a mistake you don’t need to be defensive. Instead, you should be happy someone found it.”

Knibb also encouraged him to become involved with the NC AWWA-WEA. White’s first experience involved volunteering for the Local Arrangements Committee, even before he was officially a member. Then, he worked with Knibb, who was very active in the NC AWWA-WEA, and was on the Collection and Distribution Certification Committee.

“I would help him review exam question and create an answers database,” recalls White.

Long before the advent of the official national pipe tapping event, the local cities held tapping competitions at their meetings in different cities. The host city would offer tours of their maintenance facility, equipment, and meter shop. Then there were the tractor rodeos, to see who could load the most eggs into the back of a truck with a backhoe – without breaking them of course! “When you are digging out a broken water line you do not want to damage the pipe any more than necessary while uncovering the break, so you want your tractor operator to have a very sensitive hand,” explains White.

Networking with the NC AWWA-WEA also exposed him to innovations that he could implement at work. “We were always looking for better ways to solve difficult problems and meeting and talking to good sales representatives was a very valuable asset,” recalls White. “They allowed you to test their product or equipment for no charge, so we tried a lot of equipment. Sometimes the manufacturer was right and sometimes we would need to look some more but we would both learn from the test.

“I recommended that Greensboro purchase the first continuous sewer jet rodder and then the combination Vactor rodder,” he continues. “Before that, they had still been using the little push donkeys to clean pipes.” We were always looking for more effective ways to clean the sewers.”

The city also started using skids, mounting a 35mm camera to take a photo at every foot inside the pipe, from manhole to manhole, before switching to CCTV when it became available. “We soon realized that some of the failures in our system were from pipes that had not been installed correctly,” notes White. “By doing a CCTV inspection of the pipes before the one-year warranty mark, they could make the contractor fix the problems, which was good incentive for contractors to have their A team on the job.”

Greensboro also became an early adopter in the use of McBee System punch cards to record service request dispatches and repair results for operations and maintenance. They used knitting needles to sort the cards and identify the most common problems, their frequency, and their location.

Another initiative was prompted by something White learned in his night school classes at Guilford College. At the time, the billing department was the only part of utilities using computers. Before graduating with his Bachelor of Science Physics in 1976, White had to complete a calculus class in which the professor insisted the students learn how to program, using remote terminal units and BASIC computer programming language. As a result, the City developed a computer program that would identify system inadequacies, then size the pipe and estimate the cost to correct the problem.

While working his way up the Water and Sewer Department ladder to the level of Engineering Technician II, White worked on many projects, including water tank maintenance and inceptions, water and sewer system expansions, and water and sewer pump station operation, design, and monitoring.

When he was promoted to Wastewater Treatment Superintendent, he realized that, although the knowledge acquired in the first 15 years of his career was a solid foundation, there was still much more to learn.
“In our business we are always in a state of change or improvement,” says White. “Otherwise, we are falling behind.”

Right out of the gate, the new superintendent had to deal with two overloaded treatment plants: one to be replaced within five years and the other, upgraded. “I called on all my friends, coworkers, consultants, sales representatives and manufacturers to help solve the many problems that arose,” recalls White. “It is good to have support from neighboring cities across the nation when you need potential solutions.”

Upgrades to the North Buffalo WWTP were completed in 1981, including nitrification, dissolved oxygen control, and one of the first central computer control systems. This was followed by the replacement of the South Buffalo Plant with the T.Z. Osborn WWTP, which was brought online in 1983. The plant featured state-of-the-art two-stage nitrification with a distributed computer control system, belt dewatering press, and a multiple hearth incinerator. The treatment plants were always undergoing construction due to changes in regulation, increased inflow, upgrades in equipment technology, or repairs.

As technology evolved, so did White’s professional involvement as a volunteer. After chairing the North Piedmont Section of the Professional Wastewater Operations Association, he went on to chair the NC–AWWA–WEA’s Membership Program, Plant Operations, and Micro Computer committees. Over the years, he served as unofficial treasurer on the board and twice as a Water Environment Federation (WEF) Director, once representing the North Carolina section (1987-90) and, another time, on behalf of the Southeast Zone (1992-94). He also served on the Association of Boards of Certification.

White was also one of the 25 charter members for the North Carolina chapter of the Select Society of Sanitary Shovelers (5S) and he continues to teach at the annual wastewater schools. “After you get involved in the Association, you want to get more involved,” he explains.

“I enjoyed going to operators meetings and visiting plants to see what they were doing. The Association allows us to share solutions. It’s all about the people.”

Except for a brief sabbatical in the early 1981 to 1984 when he worked in sales, White spent the majority of his career with Water Resources for the City of Greensboro. While working in sales, White was able to travel quite extensively in Virginia and become involved with both the Virginia WEF and South Carolina WEF. He enjoyed getting to visit many plants and meet the people that worked in them.

White retired from the City in 2005. He then considered going back into sales, but chose to work for Hazen and Sawyer part time instead. He has enjoyed continuing his journey – but at a much slower pace. He says: “When I stop learning it is time to stop working. I have had the privilege to meet so many great people at home and all across the country and look forward to meeting many more.”

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In 2009, Charlie Willis turned over the reins of Willis Engineers to his son Charles (Chuck) Willis, after a successful 50-year career in the industry. By that time, Willis Engineers had long been a well-known name in the water and wastewater industry across North Carolina. After graduating with a Bachelor of Civil Engineering degree from NC State in 1958, Willis was called up for a brief active duty tour with the US Army Artillery. “I decided I wanted to go back to graduate school,” he notes. When Willis returned to Raleigh to put these plans in motion, his advisor offered to get him a job with the State Stream Sanitation Committee (SSSC) of North Carolina. The SSSC was a regulatory agency charged to eliminate water pollution of the State’s rivers and streams. The committee encouraged municipalities and industries to build wastewater treatment plants. “At the time, every textile mill in the country discharged their dye waste into the rivers without treatment,” explains Willis, “and many of the major municipalities did not have any sewage treatment either.”

In 1959, he joined the SSSC staff and started graduate school, simultaneously. As office engineer, he was tasked with reviewing plans for new facilities and making sure that grant money was being spent appropriately. His boss, a former chair of the NC AWWA-WEA, also encouraged him to join the Water Pollution Control Association. “Most of the members were older than me by a generation or so,” recalls Willis. That fall marked his first yearly attendance to the annual conference, a tradition he continued until he retired from active participation in the NC AWWA-WEA in 2015.

He also sat on the Executive Committee of the Water Environment Federation (WEF), when the organization was planning to open its headquarters in Alexandria, VA. Willis was selected to lead the North Carolina portion of the fundraising for the new building.

“We had engineers, operators, and regulators as members, but as an association, we had no voice to deal with state legislators and federal regulators who were making the rules and regulations they were imposing on us.”

In 1962, Willis launched a consulting engineering office in Charlotte for the firm of O’Brien & Gere based in Syracuse, NY. Willis and his local associates subsequently purchased the office and over the years changed its name. Willis maintained a role as Director of O’Brien & Gere for the next 43 years. Willis Engineers focused its efforts on designing water and wastewater facilities across North Carolina. Willis found himself traveling through the same areas he had visited when working for the regulatory agency. “I knew the people who were operating the wastewater plants and who might need to hire an engineer,” he recalls.

The firm’s first project was an industrial wastewater treatment plant for the Town of Mooresville, funded by North Carolina’s first sewer revenue bond. “We sold the bonds to Burlington Industries and spent the proceeds to build the treatment plant for them,” recalls Willis. Over the years, he designed several wastewater treatment systems for Burlington and other textile mills. The firm was involved with many wastewater facilities across the Carolinas, Delaware, Virginia, and several other states.

Wills also designed a number of water facilities, including one that takes water from the Cape Fear River above the tidal estuary and pumps it to the Wilmington area. Another significant achievement was designing the first water filtration plant built right in the mountains to serve the City of Asheville as well as most of Buncombe County. Over the years, he estimates that he worked on projects for approximately 140 communities and industries.

Meanwhile, he continued to be involved with the NC AWWA-WEA, taking a leadership role on several committees and serving as Chair of the Board of Directors in 1975-1976. Not long afterward, he spearheaded the formation of the Government Affairs Committee (GAC), and became its first chair. “We had engineers, operators, and regulators as members,” recalls Willis, “but as an association, we had no voice to deal with state legislators and federal regulators who were making the rules and regulations they were imposing on us.” GAC would gather on a monthly basis to counter what was sometimes an overreaction on the part of regulators and come up with more realistic solutions.
Member Portrait

“You have to know your client and their needs, and your client has to trust you and your solutions. The broader the background you have, the more successful you can be in serving your clients well. That’s what it’s all about.”

In those early years, when the Environmental Protection Agency was just a fledgling organization, NC AWWA-WEA continued to have a very active GAC that not only represented the concerns of North Carolina but also provided advice to WEF. “I am quite proud of having a hand in the creation of that bond among all those working in the field,” says Willis.

Other highlights include being a charter member of the NC Select Society of Sanitary Sludge Shovelers (5S) and being recognized for sewer design and development by the National Clay Pipe Institute. Along with his involvement with NC AWWA-WEA, Willis also served as the president of both the American Academy of Environmental Engineers and the Council of Engineering and Scientific Certification Boards.

He notes that his involvement in professional associations was a tremendous asset to his work. “It exposed me to knowledgeable people with whom I could exchange ideas and learn,” says Willis. “You have to know your client and their needs, and your client has to trust you and your solutions. The broader the background you have, the more successful you can be in serving your clients well. That’s what it’s all about.”

It’s a philosophy he has passed on to his son, Chuck who has followed in his father’s footsteps in many ways, including inspiring his son to pursue a career in engineering – although not in the field of water and wastewater. All three generations of engineers attended NC State University.

Like his father, Chuck is committed to nurturing strong professional ties across the industry and is an active member of the NC AWWA-WEA. Among the many accomplishments that punctuate the career of Charles Willis Sr., perhaps his most significant legacy is passing on a deep appreciation for the importance of collaboration and mutual support.

“My success has reflected the efforts of many friends and associates from NC AWWA-WEA” says Willis Sr. “You don’t do anything alone.”

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“My success has reflected the efforts of many friends and associates from NC AWWA-WEA” says Willis Sr. “You don’t do anything alone.”

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Five members representing North Carolina’s AWWA-WEA Students and Young Professionals Committee (SYPC) attended this year’s Young Professionals (YP) Summit in Anaheim, CA starting Sunday, February 23. The summit is an annual event co-hosted between AWWA and WEF and is always paired with the Utility Management Conference. Three of the travelling delegation currently serve in various capacities at the SYPC in Raleigh, Winston-Salem, and Charlotte, as well as the student chapter presidents from the University of North Carolina at Charlotte and North Carolina State University. The Summit is geared towards inspiring the newest members in the water field to become involved.

A beach cleanup event was held Sunday morning. The group partnered with the City of Long Beach to pick up trash that had run off onto the beach, and quickly filled up all 150 bags that the city provided; this left the beaches much less littered and more attractive than how they found them!

Then, the SYPs had the opportunity to take a tour of Orange County’s Groundwater Replenishment System and learn more about the largest water purification system for indirect potable reuse. This 100-mgd plant takes treated wastewater and runs it through microfiltration, reverse osmosis, and ultraviolet light disinfection. After that, 30 mgd of the purified water is pumped into a seawater intrusion barrier, while the rest is pumped into the groundwater recharge basins. The tour also included a discussion of social challenges of direct potable reuse in areas where water is scarce, and the group got to drink directly from the finished water produced.

On Monday, two separate workshops were organized by AWWA and WEF. The AWWA YP Leadership Training workshop gave the SYPs insight on current trends in our industry that have developed from solutions of previous water challenges stateside and internationally. Activities allowed them to practice solving hypothetical water problems and brainstorm how to reassure and communicate with the public that is impacted. Past AWWA and WEF national officers led small discussion groups in workshops about how to be a water leader, develop skills useful to be successful in one’s career, and the importance of being an influencer in the community and the water industry. The SYPs further discussed methods regarding how to grow the AWWA community within their own regions not only in number, but also in diversity.

The WEF Emerging Leadership Workshop focused on developing communication skills for SYPs in their academic or professional setting, or within their respective member associations and nationally. Training focused on realizing each individual’s personal communication style, how to recognize other people’s communication styles, and
“Everyone should be encouraged to get involved and to ask their employers to support them by providing the time off and the funding to attend events that will develop their skills, networking, and career path.”

how to anticipate and avoid any potential clashes between these different styles. Real life conflict resolution scenarios were also discussed and practiced in smaller groups.

Tuesday was a big day full of activities, where the summit officially kicked off at 8:00 am and went all the way to 5:00 pm. The summit’s opening remarks were delivered by AWWA and WEF leadership, including North Carolina’s own Jackie Jarrell who shared an inspiring story of how teamwork and cooperation can help push you through the biggest challenges.

The bulk of the summit included sessions put together by Erin “Pink” Mosley and Tom Kunetz. The sessions blend Tom’s improv and discovery-by-doing expertise with Erin’s approaches in personal and executive coaching. Together they open new ways for participants to awaken personal creativity, inspire innovative solutions, and build successful teams. The summit also included presentations by Rogue Water about storytelling and communication, and how to translate those skills in your everyday professional and personal life, as well as a presentation by Dianna Crilley of the USGS in which she shared her expertise in communicating science and data to the public.

In addition to the formal sessions, another benefit of going to the YP Summit is having the opportunity to meet the motivated and inspired peers both from America and around the world. All those who go to this conference leave with an improved sense of purpose and motivation, as well as a support group to help them advance the water industry.

Everyone should be encouraged to get involved and to ask their employers to support them by providing the time off and the funding to attend events that will develop their skills, networking, and career path. All five participants were sponsored through the NC AWWA-WEA SYPC. Another benefit of the event was to enable the SYPs to develop local relationships, something that would otherwise not have been possible due to the unique geography of our state.

In 2021, the SYP Committee hopes to repeat the success of the 2019 and the 2020 YP Summit events. The 2021 summit will take place in Atlanta, GA and we hope the close proximity will allow us to send even more North Carolina members next year.

The SYP Committee is in the planning phase, but needs your help! We encourage you to talk with your employees or employer on how to become involved with the SYP Committee, NC AWWA-WEA, and the AWWA and WEF national organizations.

Contact Beau Mackie (mackiebm@cdmsmith.com) and Cassidy Conover (conoverc@bv.com) in Raleigh or Chris Cornett (cornettc@bau.com) and Zach Collins (collinsz@bv.com) in Charlotte to hear about upcoming events. We hope to hear from you soon!

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• Who Positively Embrace Change
• With the Ability to Articulate Effective Ideas

Wastewater Positions:
• Wastewater Plant Maintenance Technicians
• Wastewater Electrical and Instrumentation Technicians
• Wastewater Plant Operator (Non-Level A)

To view the current job postings and apply online go to the following City of Columbia web page:
www.columbiasc.net/hr/employment
100th Annual Conference
November 1-4, 2020

Special Commemorative Pull-Out Section
Bridging the gap between idea + achievement

What will the next 100 years bring? Together, anything is possible.

Proud sponsor of NC AWWA-WEA

hdrinc.com
Kicking off the countdown to our 100th Anniversary with our 100th Conference!

It certainly is an exciting time for all the members and staff of the NC AWWA-WEA, as we launch the countdown to the 100th Year of the organization! While most associations celebrate one anniversary, the NC AWWA-WEA is in the fortunate position of having two important events to commemorate in the next two years. The first conference was held in 1920, a full year before the NC Section obtained its charter. Because the event was cancelled in 1944, we are marking our 100th conference in 2020.

The charter meeting of the NC Section of American Water Works Association (AWWA) was held in Greensboro on December 9 and 10, 1921 at the O. Henry Hotel, with a recorded attendance of 47. That was followed in 1923 with the first joint meeting on November 13-15 in New Bern. This time, attendance was 130. The first Journal was published in 1924 and contained the proceedings of the 3rd Meeting of NCAWWA and the first Joint Meeting with what was referred to then as the Water Purification Association, later called the NC Sewage Works Association, North Carolina Water Pollution Control Association and now North Carolina Water Environment Association.

The Association and the Conference have only continued to expand. The annual gathering has become a multi-day event, with a trade-show floor featuring over 170 exhibitors and an attendance of over 1,400, in 2019. The growth of the conference is a direct reflection of the growth and development of the NC AWWA-WEA.

Mirroring the changes in the water and wastewater industry in the past 100 years, the NC AWWA-WEA has made evolutionary changes and enhancements driving the organization’s main purpose, which, today, is to provide water and wastewater education, training, and service in an effort to protect public health and the environment.

This special commemorative section of NC Currents focuses on some of the specific evolutionary changes and enhancements that occurred during the 100-year period of the organization and the impact our membership has had on the water and wastewater industry, from both a state and national perspective. Industry professionals within the NC AWWA-WEA have a long history of rising to the challenge by making the organization better and stronger, in terms of water and wastewater education, training, and service to its members and the public.
Congratulations on Setting the Standard for 100 years!
Kicking off the countdown to our 100th Anniversary with our 100th Conference!

Membership recruitment has always been important to NC AWWA-WEA. In 1924, the North Carolina Section won the AWWA – Nicholas Hill Cup for the third successive year. The Cup was given to the Section of AWWA having the greatest percentage increase in membership over the previous year. By winning three years in a row, the Section earned the right to retain the Cup permanently. According to H.C. Batty in 1940, “We got rather tired of winning that cup, and while we appreciated the honor, we gave it back to the National Association for re-award.”

To form a new Section in AWWA required at least 20 members living in NC. According to McKean Maffitt, there were 22 charter members of NCAWWA in 1922. The first AWWA Director was W. E. Vest from Charlotte. The first journal was published in 1924 and contained the proceedings of the 3rd Meeting of NCAWWA and the first Joint Meeting of what was referred to then as the Water Purification Association, later called the NC Sewage Works Association, North Carolina Water Pollution Control Association and now North Carolina Water Environment Association.
AUC Group is proud to support NC AWWA-WEA.

Congratulations on your 100 YEAR ANNIVERSARY!

About AUC Group, Inc.
Best known for our flexible, customized wastewater treatment solutions, AUC offers temporary, interim or permanent plants based on individual customer needs. We thrive in situations where moratoriums are placed in development due to lack of capacity, when developers wish to build on land without existing infrastructure and when existing facilities need to be replaced.

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NC Firsts in Water

- First Sanitary Sewage Collection System in NC was constructed under supervision of Col. J. L. Ludlow in the City of Raleigh, NC between 1885 and 1890. *(J.NCAWWA/WPCA, 1953).*
- First Sewage Treatment Plant in NC was constructed in 1902 in Durham near the site of the present Northside Wastewater Treatment Plant. Designed by Col. J. L. Ludlow, the plant consisted of two Cameron Type Septic Tanks followed by two sets of primary and secondary contact filters. *(J.NCAWWA/WPCA, 1947).*
- First activated sludge plant constructed in Gastonia, NC in 1926.
- First engine in America running on sewage sludge gas was installed in Charlotte, NC in 1928. *(Literary Digest, July 6, 1929).*
- First Sewage Works Operator School was held June 6-10, 1949 at UNC-Chapel Hill. *(J.NCAWWA/WPCA, 1950).*
- First resolution by NCAWWA/WPCA, November 15, 1950 in support of our “Stream Sanitation Law for NC.”
- NC AWWA/WPCA adopted a Resolution in support of first voluntary certification program for “Sewage and Industrial Waste Treatment Works Operators in November 1951. *(J.NCAWWA/WPCA, 1953).*
- First Municipal Sewer Use Ordinance (Pretreatment) adopted by City of Charlotte, NC in 1950. *(J.NCAWWA/WPCA, 1955).*
- First Municipal Radioactive Monitoring Program in Durham, NC in 1957. *(J.NCAWWA/WPCA, 1960).*
- First Galvanic membrane dissolved oxygen analyzer developed at UNC-Chapel Hill, Department of Environmental Science and Engineering in 1961. *(J.NCAWWA/WPCA, 1960).*
- First mandatory certification for wastewater operators adopted in February 1976.
- First biological nutrient removal facility.
The employees of Davis • Martin • Powell would like to congratulate NC AWWA-WEA on their 100th Annual Conference Anniversary.

Happy 100th Anniversary

Wishing you many more years of success!

Cheers to 100 years!
NC Firsts in Wastewater

- First Water System in NC was completed in 1779 at Old Salem with first iron pipe installed in 1808. (J.NCAWWA/WPCA, 1952).
- First city to add fluoride to prevent tooth decay–Charlotte, NC, April 25, 1949. (J.NCAWWA/WPCA, 1950).
- First Meter School in NC held April 21-22, 1950 in Winston-Salem. (J.NCAWWA/WPCA, 1950).
- First experimental facility for saline water conversion to drinking water constructed in Wrightsville Beach, NC in 1962.
- First large-scale alum recovery facility in US constructed in Durham, NC, February 1993.
- First water plant approved for a filtration rate of 5 gpm/sf Greenville Utilities Commission.
- First mandatory certification for distribution system operators.
There was no journal published in 1938, 1939 and 1940. Volume 14 of the journal published in 1937 contains the proceedings of the 1936 Meeting and Volume 16 published in 1941 contains the proceedings of the 1940 meeting. There was no volume 15 of the journal.

There was no annual meeting in 1944 at the request of the Office of Defense Transportation. Although a journal was published with papers that would have been presented. Thus, our 74th Conference in 75 years.

CDM Smith

CONGRATULATES

NC AWWA-WEA on Celebrating 100 Years of Sustained Commitment to North Carolina!
Conferences through the years

1921 Greensboro
1922 Gastonia
1923 New Bern
1924 Charlotte
1925 Asheville
1926 Wilmington
1927 Durham
1928 Raleigh
1929 High Point
1930 Hendersonville
1931 Greensboro
1932 Winston-Salem
1933 Statesville
1934 Elizabeth City
1935 Durham
1936 Charlotte
1937 Wilmington
1938 Greensboro
1939 Charlotte
1940 Raleigh
1941 High Point
1942 Durham
1943 Winston-Salem
1944 No Conference
1945 Charlotte
1946 Raleigh
1947 Greensboro
1948 Asheville
1949 Southern Pines
1950 Durham
1951 Winston-Salem
1952 Hendersonville
1953 High Point
1954 Asheville
1955 Winston-Salem
1956 Charlotte
1957 Raleigh
1958 Greensboro
1959 Durham
1960 Winston-Salem
1961 Asheville
1962 Morehead City
1963 Charlotte
1964 Raleigh
1965 Winston-Salem
1966 Durham
1967 Asheville
1968 Charlotte
1969 Raleigh
1970 Winston-Salem
1971 Durham
1972 Greensboro
1973 Wilmington
1974 Pinehurst
1975 Charlotte
1976 Asheville
1977 Raleigh
1978 Winston-Salem
1979 Pinehurst
1980 Charlotte
1981 Asheville
1982 Greensboro
1983 Wilmington
1984 Raleigh
1985 Charlotte
1986 Winston-Salem
1987 Pinehurst
1988 Durham
1989 Asheville
1990 High Point
1991 Greenville
1992 Charlotte
1993 Durham
1994 Asheville
1995 Greensboro
1996 Pinehurst
1997 Winston-Salem
1998 Research Triangle Park
1999 Asheville
2000 Charlotte
2001 Pinehurst
2002 Winston-Salem
2003 Greensboro
2004 Charlotte
2005 Greensboro
2006 Greensboro
2007 Charlotte
2008 Winston-Salem
2009 Raleigh
2010 Winston-Salem
2011 Concord
2012 Raleigh
2013 Concord
2014 Winston-Salem
2015 Raleigh
2016 Raleigh
2017 Raleigh
2018 Raleigh
2019 Raleigh
We understand that there are hundreds of unseen men and women fighting COVID-19 by keeping clean water flowing to our hospitals, homes, and businesses.

For your hard work and dedication during this difficult time we would like to say

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## Past Officers & Directors of the North Carolina Section American Water Works Association and Water Environment Association

<table>
<thead>
<tr>
<th>Year</th>
<th>Chair</th>
<th>Chair-Elect</th>
<th>Secretary</th>
<th>Treasurer</th>
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<tbody>
<tr>
<td>1921-22</td>
<td>J.L. Ludlow</td>
<td>J.C. Michie</td>
<td>Thorncliffe Saville</td>
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<td>1922-23</td>
<td>E.B. Bain</td>
<td>J.O. Craig</td>
<td>Thorncliffe Saville</td>
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<td>1923-24</td>
<td>J.C. Michie</td>
<td>W.M. Platt</td>
<td>Thorncliffe Saville</td>
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<td>1924-25</td>
<td>W.E. Vest</td>
<td>F.B. Godfrey</td>
<td>Thorncliffe Saville</td>
<td>Thorncliffe Saville &amp; H.E. Miller</td>
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<td>1925-26</td>
<td>J.O. Craig</td>
<td>McKean Maffitt</td>
<td>Thorncliffe Saville</td>
<td>Thorncliffe Saville &amp; H.E. Miller</td>
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<td>1926-27</td>
<td>C.M. Grantham</td>
<td>C.E. Rhyne</td>
<td>H.G. Batty</td>
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<td>1927-28</td>
<td>C.G. Logan</td>
<td>J.D. Cochran</td>
<td>H.G. Batty</td>
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<td>1928-29</td>
<td>McKean Maffitt</td>
<td>R.J. Dishner</td>
<td>H.G. Batty</td>
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<td>1929-30</td>
<td>C.W. Smedberg</td>
<td>T.C. Patterson</td>
<td>H.G. Batty</td>
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<td>1930-31</td>
<td>A.S. Lyon</td>
<td>Geo.S. Moore</td>
<td>H.G. Batty</td>
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<td>1932-33</td>
<td>J.H. Bridges</td>
<td>L.L. Lassiter</td>
<td>H.G. Batty</td>
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<td>1933-34</td>
<td>H.L. Shaner</td>
<td>P.W. Frish</td>
<td>M.F. Trice</td>
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<td>1934-35</td>
<td>E.D. Brookard</td>
<td>E.H. Moss</td>
<td>M.F. Trice</td>
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<td>1940-41</td>
<td>A.O. Tice</td>
<td>W.H. Hall</td>
<td>R.S. Phillips</td>
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<td>1950-51</td>
<td>W.W. Atkins</td>
<td>H.F. Davis</td>
<td>E.C. Hubbard</td>
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<td>1951-52</td>
<td>H.E. Davis</td>
<td>J.L. Greenlee</td>
<td>E.C. Hubbard</td>
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<td>1952-53</td>
<td>J.L. Greenlee</td>
<td>W.B. Snow</td>
<td>E.C. Hubbard</td>
<td>E.C. Hubbard</td>
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<td>1953-54</td>
<td>J.M. Jarrett</td>
<td>S.E. Harris</td>
<td>E.C. Hubbard</td>
<td>E.C. Hubbard</td>
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<td>1959-60</td>
<td>R.E. Ebert</td>
<td>L.B. Bloxam</td>
<td>T.Z. Osborne</td>
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<td>1963-64</td>
<td>C.F. Churchill</td>
<td>Morris Tarlton</td>
<td>Max. D. Saunders</td>
<td>Max. D. Saunders</td>
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Past Delegates Water Environment Association

<table>
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<tr>
<th>Year</th>
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<tbody>
<tr>
<td>1942</td>
<td>W.M. Piatt</td>
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<td>1943</td>
<td>H.G. Bailey</td>
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<td>1944</td>
<td>W.M. Franklin</td>
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<tr>
<td>1945</td>
<td>W.M. Franklin</td>
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<tr>
<td>1946-49</td>
<td>G.S. Rawlins</td>
</tr>
<tr>
<td>1949-52</td>
<td>R.S. Phillips</td>
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<tr>
<td>1952-55</td>
<td>P.D. Davis</td>
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<tr>
<td>1955-58</td>
<td>E.C. Hubbard</td>
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<tr>
<td>1958-61</td>
<td>Lee S. Dukes</td>
</tr>
<tr>
<td>1961-64</td>
<td>W.E. Long, Jr.</td>
</tr>
<tr>
<td>1964-67</td>
<td>Frank L. Ward</td>
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<tr>
<td>1964-67</td>
<td>Leonard P. Bloxam</td>
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<tr>
<td>1970-73</td>
<td>Morris Tarlton</td>
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<td>1973-76</td>
<td>Charles Smallwood, Jr.</td>
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<tr>
<td>1976-79</td>
<td>William L. Brown</td>
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<td>1979-82</td>
<td>Charles A. Willis</td>
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<td>1980-84</td>
<td>Frank Styers</td>
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<td>1982-85</td>
<td>John Campbell</td>
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<td>1984-87</td>
<td>Tom Bruce</td>
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<td>1985-88</td>
<td>Ed Morris</td>
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<td>1987-90</td>
<td>Arthur White</td>
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<td>1988-91</td>
<td>Don Francisco</td>
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<td>1990-93</td>
<td>Ray Shaw</td>
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<td>1991-94</td>
<td>A.T. Rolan</td>
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<td>1993-96</td>
<td>Joe Stowe</td>
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<td>1994-97</td>
<td>Linda Vaughn</td>
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<td>1996-99</td>
<td>Bill Mull</td>
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<td>1997-00</td>
<td>Bill Finger</td>
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<td>1999-02</td>
<td>Kasey Monroe</td>
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<td>2000-03</td>
<td>Les Hall</td>
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<td>2002-05</td>
<td>Tiff Mendenhall</td>
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<td>2003-06</td>
<td>Ron Elks</td>
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<td>2004-08</td>
<td>Howard Kimberl</td>
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<td>2005-08</td>
<td>John Murdock</td>
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<td>2008-09</td>
<td>Dave Zimmer</td>
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<td>2009-12</td>
<td>Tyler Highfill</td>
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<td>2010-11</td>
<td>Angela Lee</td>
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<td>2012-14</td>
<td>Jeff Payne</td>
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<td>2013-15</td>
<td>Barry Gilet</td>
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<td>2014-16</td>
<td>Richard Tsang</td>
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<tr>
<td>2016-18</td>
<td>TJ Lynch</td>
</tr>
<tr>
<td>2018-20</td>
<td>Betsy Drake/Chris Belt</td>
</tr>
</tbody>
</table>
L.D. Peeler created Cheerwine in 1917 in Salisbury, North Carolina amid a sugar shortage. His drive to start his own soft drink led him to a salesman from St. Louis who sold him a wild cherry flavor that blended well with other flavors. All the taste sensation needed was a name. With a burgundy-red color and cheery disposition, the name “Cheerwine” simply made sense. The soft drink with a bubbly effervescence and cherry goodness became an instant hit.

In 1953, Dwight Eisenhower became the first President known to enjoy a Cheerwine. After one sip, rumor has it he proclaimed “Ike likes!” That’s a POTUS with great taste.
No Water  
No Cheerwine

While experimenting with soft drink recipes in 1917 during WWI sugar rationings, Cheerwine's founder L.D. Peeler added a unique wild cherry flavoring to the mix. And, just like magic, the legendary taste of Cheerwine was born (delivered back then to the good people of North Carolina by horse, train and wagon).

During the 20th century, Cheerwine became an important part of Carolina culture. The family business continued to succeed throughout difficult eras in American history, including The Great Depression and World War II. From the first Cheerwine vending machine in the 1950s, to the first aluminum...
The 90s

In 1992, Cheerwine celebrated 75 years of success and produced a commemorative bottle. Many of these bottles have become cherished collectibles.

Mark Ritchie became President of Carolina Beverage Corporation and Cliff Ritchie became President of Cheerwine Bottling in 1992.

The #21 Cheerwine racing car, driven by Morgan Shepherd, made its race debut. Vroom Vroom!

President George H.W. Bush, Sr. came to the Salisbury 4th of July celebration in 1992, becoming the second President known to enjoy a Cheerwine.

The 00s

The 00’s marked a period of innovation. In 2002, Food Lion introduced the coolest idea ever: Cheerwine Ice Cream. At the press event, the fifth generation of the Peeler family served samples. In 2006, the Cheerwine logo changed to include cherries for the first time since 1920. That same year, Clifford Peeler was inducted into the Beverage World Hall of Fame. Cliff Ritchie was inducted three years later. Cliff also took over as President of Carolina Beverage Corporation in 2007.

Three years later, Cheerwine teamed up with Krispy Kreme to unveil the Cheerwine Doughnut. Then in 2012, Cheerwine and The Avett Brothers launched an annual “Legendary Giveback” concert series, which has raised over $200,000 for charity.

The company also introduced several new flavors, beginning with Cheerwine Holiday Punch in 2014, Cheerwine Squeeze in 2015, and Cheerwine Kreme in 2016. Cheerwine’s official fan club, Cheerwine Authentic Soda Society, was formed in 2015.

100 Years

In 2017, Cheerwine celebrated its 100th birthday with the start of the annual Cheerwine Festival in Salisbury, Cheerwine also released throwback cans called the Centennial Can Series. In 2018 the tagline Uniquely Southern was introduced, as a celebration of Cheerwine’s history and one-of-a-kind taste.

The company is looking forward to making the next 100 years as great as the last. Cheers!

can of Cheerwine in the 1960s, to the launch of Diet Cheerwine in the 1970s, the brand has grown with the times while still retaining its authenticity and independence.


The 21st century brought fun partnerships with other North Carolina-born icons, including Food Lion (Cheerwine ice cream in 2002), Krispy Kreme (Cheerwine’s Krispy Kreme doughnut in 2010 and the Cheerwine Kreme soft drink in 2016), and folk rock band The Avett Brothers. Together, Cheerwine and The Avett Brothers raised more than $200,000 for several charities through their benefit concerts.

For more information about Cheerwine and its history, visit www.Cheerwine.com.

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VX-Series Rotary Lobe Pumps from Vogelsang handle the toughest wastewater applications

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- FOG, Scum, Septage Receiving
- Digester Feed & Recirculation
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100th Anniversary Conference

Conference Through the Years
Let’s Celebrate NC AWWA-WEA!

Thank you for 100 years of annual conferences to strengthen and develop the professional water community throughout North Carolina.
Flushable wipes are clogging sewer systems across the country, putting treatment plant workers in close contact and in harm’s way when they work in the pit. Vaughan Chopper Pumps easily handle difficult solids like disposable pads, wipes, duster cloths and diapers. No clogs, means no people exposed to harmful materials or diseases. The choice is clear.

- Expedited pumps and parts delivery
- Self-Priming Chopper pump models available
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- Pumps easily maintained with external adjustments
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- Heat-treated and hardened components
- Try and buy program available upon request
- Non-clogging guarantee on all Chopper pumps

Protect your people and wipe out worries. Contact Vaughan for more information.
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Flushable wipes are clogging sewer systems across the country, putting treatment plant workers in close contact and in harm’s way when they work in the pit. Vaughan Chopper Pumps easily handle difficult solids like disposable pads, wipes, duster cloths and diapers. No clogs, means no people exposed to harmful materials or diseases. The choice is clear.

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- Non-clogging guarantee on all Chopper pumps

Protect your people and wipe out worries. Contact Vaughan for more information.

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The NC Select Society of Sanitary Sludge Shovelers was started in 1986 in Winston-Salem, NC. The Select Society of Sanitary Sludge Shovelers began in Arizona in 1940. The purpose of the S S organization is to recognize those members who have contributed their time and energy for the betterment of the NC WEA.

The Water Taste Test was started in 1985.

The Tapping Contest was started in 1987 with Asheville, Fayetteville, and Raleigh as the only winners.
Charles R. Underwood, Inc. not only distributes and provides service for Cla-Val Pump Control Valves but also Cla-Val’s industry standard 90 Series Pressure Reducing Valve; Pressure Relief, Level Control, Surge Anticipation and Electronic Control Valves; Air Release Valves, Check Valves and an extensive line of accessory products designed to significantly enhance the performance of waterworks distribution systems.
Featured product: Cla-Val Pump Control Valves

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NC AWWA-WEA Nominates 
D.M. Williams WTP 
for Landmarks Award

By Vicki Westbrook, Assistant Director – Compliance, Communications & Planning, Department of Water Management, City of Durham

Purpose for Which Facility Was Designed
The D.M. Williams Water Treatment Plant (WTP) in the City of Durham was designed as a new treatment facility to replace the City’s first water treatment plant, which was built on the banks of the Eno River in 1887 and had been continually subject to flooding. The facility was named Durham Water Works at the time of construction; however, it was renamed the D.M. Williams WTP to recognize the contributions of the former superintendent Daniel M. Williams.

The Williams WTP was built in the City of Durham, located adjacent to the Watts Hospital – Hillandale Neighborhood bounded by Hillandale Road and Hillsborough Road. A critical asset served by the new WTP was Watts Hospital, Durham’s first hospital. Watts Hospital opened in 1895 and was located approximately six blocks from the WTP. The facility also served the downtown area’s robust tobacco industry, Black Wall Street, and Trinity College (now known as the East Campus of Duke University), which moved to Durham in 1892.

Originally, the facility treated raw water pumped from the Eno River; however, a series of droughts forced the City to look for a more reliable water supply. A dam was constructed on the Flat River in 1926, followed by additional upgrades to the facility in 1938. An expansion of the facility took place in 1950 to increase the treatment capacity to 11 mgd and again in 1962 to increase the WTP to its current rated capacity of 22 mgd. Throughout the years, additional upgrades have included improvements to add fluoride and corrosion inhibitors. The facility has consistently maintained compliance with increasingly stringent drinking water quality regulations.

There are two distinct styles of architecture at the D.M. Williams WTP. The original 1917 plant was red brick Romanesque revival, whereas the 1932 addition was white brick/stone. The Open Durham website has great photos. For more information please visit: http://www.opendurham.org/buildings/durham-water-works-reservoir
**How Is It Now Being Used?**

The D.M. Williams WTP continues to provide high quality drinking water to more than 282,000 residents of Durham and Durham County, including the Research Triangle Park, Duke University, and Duke Medical Center. The facility supplies approximately 8 to 10 mgd of drinking water to its customers. A sibling treatment facility was constructed in 1979 with a treatment capacity of 12 mgd and has been expanded several times over the years to reach its current rated capacity of 40 mgd.

The terminal reservoir at the WTP was dredged and relined for the first time since the original construction in 2018 (and no, we didn’t find Jimmy Hoffa). Additional upgrades to the treatment processes, including residuals handling are 90% complete.

Because the plan is a designated historic site, all upgrades and improvements must be approved by the Durham Historic Preservation Society. In 2002, the Williams WTP won a Golden Leaf award for Community Appearance recognizing exemplary renovations to the facility and site, while maintaining the historic nature.

To learn more about the AWWA American/Canadian/Mexican Water Landmarks Award, and to check out what other NC Water Landmarks have been recognized over the years, visit AWWA’s website (https://www.awwa.org/Membership-Volunteering/Awards/Water-Landmarks-Award). If you have a suggestion for another nomination for a Water Landmark from our state, please let the NCAWWA-WEA Awards Committee know! You can call or email the Awards Committee Chair, Rebecca Hutchinson, at rhutchinson@merrick.com or the Vice-Chair, Sydnee Potter, at sydnee@willisengineers.com.

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Robert (Bob) L. Carlson was born in Aurora, IL and began his career with Walker Process Corporation as a draftsman and field service technician. He moved to Charlotte in 1951 and in 1962, he formed Robert L. Carlson, Inc., a manufacturer’s representative firm. Bob was the President until his retirement in 1988. Bob passed away in 1994.

Bob studied watercolors and most of his work was in pen and ink. He produced several series of prints of North and South Carolina buildings (churches, colleges, railroad stations and water and wastewater plants) and presented them to customers.

Featured at art shows and group artist shows in the area, he also provided the artwork for Raleigh’s, ‘The Old Morgan Street Water Tower,’ for the cover of the Annual Journal of the North Carolina Section of the American Waterworks Association and the North Carolina Water Pollution Control Association.

Mr. Carlson was President of the North Carolina Section of the American Waterworks Association and the North Carolina Water Pollution Control Association from 1969 to 1970.
I began my career in the water industry 20 years ago. During this time, I have worked with water and wastewater municipally-owned utilities in North Carolina and across the country. In North Carolina, I have seen several utilities evolve into self-sufficient entities. Self-sufficiency has different meanings for different utilities, such as phasing out transfers to/from the general fund; eliminating subsidies between water, sewer, and public work funds; establishing financial policies to achieve best practices; and more. Self-sufficiency has been achieved even as capital costs have increased due to repair and replacement of infrastructure and regulatory requirements, and as per capita water use has declined. The rise of water efficient appliances, conservation focused public service campaigns, and the Great Recession drove water use down. Prior to this recession, it was not uncommon to see household water use in North Carolina of 8,000 gallons per month but now it is closer to about 5,000 gallons per month. All these factors combined have put pressure on water and sewer rates in our state, as well as across the country.

Today’s Rate and Rate Structure Trends
Water rates have been trending upwards on both the regional and national scale. To understand trends in water and sewer rates, data was obtained from both the national rate surveys co-produced by the American Water Works Association and Raftelis, and the North Carolina statewide surveys co-produced by the University of North Carolina Environmental Finance Center and the North Carolina League of Municipalities. Today’s average water and sewer bill for a customer in North Carolina (assuming water use of 5,000 gallons per month) represented approximately 1.5% of the state MHI compared to 1.8% of today’s MHI. Regardless of how each municipality in the state defines affordability of water and sewer service, the trend of water and sewer rates outpacing the rise in MHI creates affordability challenges.

Utilities have modified their residential rate structures over the past two decades to promote various rate structure pricing objectives. Two prevalent pricing objectives that we’ve seen include revenue stability and the promotion of efficient use of water. As shown in Figure 2, both nationally and across the state, water rate structures have evolved over the past two decades from uniform or declining rate structures to inclining rate structures. There are many reasons for this evolution including the cost of providing non-essential water use, the scarcity of water resources, and legislation. However, inclining rate structures can create revenue volatility since water use in higher tiers is charged at the highest rates. To offset some of this volatility, and to provide a steady stream of revenue for fixed costs such as debt service, utilities have focused on increasing the revenues generated from fixed monthly charges and/or implementing additional fees.

Figure 1: Annual Water and Sewer Rate Increases from 2006 – 2016 Compared to Annual CPI and MHI Changes

Figure 2: Evolution of Water Rate Structures

Rate changes represent rate increases from 2006 to 2016, based on the change in median monthly bills for residential customers.
fixed components. For example, some utilities in North Carolina and across the country have implemented fixed monthly charges beyond their existing fixed fees to create a specific revenue stream to fund renewal and replacement of water and sewer lines. As shown in Figures 3 and 4, water and sewer base charges in our state have doubled since 2006, while across the country these charges have almost tripled. It should be noted the fixed monthly fees can either include or exclude a minimum amount of water or sewer flow (typically around 2,000 gallons of water use per month). Fixed fees help mitigate revenue volatility, but they also comprise a larger portion of the total water/sewer bill for customers with low water use, thereby potentially impacting the affordability of water and sewer service.

WHAT WILL THE FUTURE BRING?

As we look to the future and what may impact water and sewer rates, we should take note of what is happening in other industrialized countries. Last May I was asked to speak at an international conference in Cyprus. As part of this experience, I had the opportunity to hear speakers from around the world discuss water tariffs and trends in their respective countries. Their experiences and challenges were not unlike that of any municipality in North Carolina – pricing water to reflect the true cost and value of water, pricing water to promote conservation, and working with stakeholders to obtain buy-in of rate adjustments. Their rate structures were also not uncommon to what we see in the United States and across our state, which includes having tiers to encourage the efficient use of water. However, two themes caught my attention – regionalization and affordability. Many countries have different governance structures, which allows them to regionalize on a national scale, allowing the cost of water to be spread over a much larger base of customers. This approach has helped streamline operations and address affordability issues. Here in the United States and within our state we have more barriers to regionalization because of federal, state, and local challenges. But this doesn’t mean utilities should rule it out especially if it can help address affordability of water and sewer service.

Like the affordability concerns in our country and state, the speakers at the conference also voiced concern about the affordability of water and sewer service and the need to identify ways to establish or increase the application of customer assistance programs.

The current uncertainty surrounding the impacts from COVID-19 will no doubt exacerbate affordability concerns globally and locally and create a greater need for wider-reaching affordability programs. At the beginning of this article, I mentioned that some North Carolina utilities have evolved to achieve self-sufficiency over the past two decades. While these utilities will be in a better position to financially deal with the disruption from COVID-19, no utility will escape the affordability challenges for residents who have lost their means of income. In North Carolina, as well in other states across the country, municipally-owned utilities do not have direct authority to establish affordability programs funded through water or sewer enterprise funds. As a result, they have typically relied on charitable donations or funding from the general fund to create customer assistance programs. Now more than ever, I would expect to see utilities across our state direct their attention at implementing or ramping up their customer assistance programs to address affordability challenges.

ABOUT THE AUTHOR

Elaine Conti is a Vice President with Raftelis focusing on providing financial and management solutions for water and wastewater utilities in North Carolina and across the country. She is based out of Charlotte, North Carolina.

SOURCES:

- 1996 Water and Sewer Rate Survey, Raftelis Environmental Consulting Group
- 2006 American Water Works and Raftelis Financial Consulting, Inc. Water and Wastewater Rate Survey
- 2016 American Water Works and Raftelis Financial Consulting, Inc. Water and Wastewater Rate Survey
- 2019 American Water Works and Raftelis Financial Consulting, Inc. Water and Wastewater Rate Survey
- UNC Environmental Finance Center and NC League of Municipalities An Overview of Water and Sewer Rate Structures and Rate Setting practices in North Carolina, March 2006
- UNC Environmental Finance Center and NC League of Municipalities Water and Wastewater Rate and Rate Structures in North Carolina, March 2016

FIGURE 3: Evolution of Monthly Water Base Charges

FIGURE 4: Evolution of Monthly Sewer Base Charges
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Background: In 2011, Water For People adopted their Everyone Forever model, which ensured a systems-thinking approach to reach a high-level of water and sanitation services for all communities, households, schools, and clinics across a district that would last over time. This was a radical approach at the time when many NGOs were still focused on community-level water and sanitation projects unconnected to the larger system of service delivery. Water For People also set a high bar for accountability with a commitment to building in a monitoring process that allowed visibility on service levels.

SUSAN DAVIS, Global Coordinator, Agenda for Change: When and why did Water For People start thinking about moving from a project approach to a systems approach?

KIM LEMME, Director of Learning and Influence, Water For People: It was less a specific moment and more of a shift over time. The change in our monitoring approach signified the first shift in our work that then facilitated our conversations. We asked ourselves, “What are we going to do about all this infrastructure that is no longer working?” We realized it was time to look at things more deeply rather than just accepting the business-as-usual model. We needed to highlight those specific issues and bring awareness to the sector. Once the awareness was there, it was easier to come up with solutions because there was more of a focused lens on it.

SD: Do you think that your radical monitoring approach was important for bringing awareness to solutions?

KL: I think the commitment to monitoring over the long term was a key part of bringing awareness. Also, the idea that we are not here just to monitor for our own projects, but that we monitor at a district level was an evolution of its own. The process of monitoring for the long term is something that we did early on and was unique to us. Considering that the monitoring was not grant specific, it was not paid for by any one entity or tied to any one project.

SD: Did all that data make it harder for donors, governments, and local actors to ignore what was happening?

KL: The data were harder to ignore because it was right around the same time...
the sector was shifting toward data-driven decision-making. Meanwhile, we were transparently showing the data consistently over time and in the same locations. Our goal was to highlight everything that was happening in and around a district to show what was working and what was not working.

I also think the timing of the Millennium Development Goals may have influenced the process; we were halfway through and the goals were not being met! At the same time, we started changing our conversations with donors to explain that if they didn’t invest in other things (the maintenance, financing, etc.), the pipes and pumps were a worthless investment.

SD: **Water For People didn’t use the term “Everyone Forever” at first, and the systems language has only come in the last few years. Can you elaborate on that a bit more?**

KL: The slogan of Everyone Forever was so simple and relatively easy to understand. As the ideas were talked about more and more, the tag of Everyone Forever stuck as the name of the model we were using for implementation. Partners on the ground picked it up quickly, making it easier to talk about our way of working.

When you are talking about systems and water, sanitation, and hygiene (WASH), some people are still wondering if we are talking about a water system or if we are talking about ecosystems. So, you can lose people quickly. However, I do think those who are in the philanthropy sector are embedded enough in it now in terms of systems thinking.

SD: **Let’s talk about staff at the global and country level. Have there been any changes in the kinds of people you are hiring?**

KL: We still have engineers on staff who oversee and work closely with the technicians at district and national levels, though it is not quite as engineering heavy as it once was. In addition, we have business experts, community mobilizers, and data champions.

We also seek collaboration with people who have lived in the communities where we work; people who have grown up there. Staff who have deep relationships in the context of where we are working are critical in terms of influencing and changing the conversation. You are walking into a meeting understanding the context because you have grown up there and you can read the room a lot better and shift the thinking more easily than if you are coming in with an outsider lens.

SD: **What would you tell an organization that is about to start this shift? Does it take another 10 years?**

KL: Looking at the building blocks of Agenda for Change and determining how those aligned with our workflow was a large part of that journey [for Water For People]. I would advise anyone starting now on a systems-change journey, start with those key building blocks that will inevitably rise on the road to changing a system, like political will, governance, finance, and management. Do not try to figure out how your issues might be unique. Contextual issues are abundant and important to think through, one at a time; however, it all boils down to the same core building blocks. There is a lot to point to as far as evidence across countries and organizations. I would hope it would not be as long of a journey for other organizations.

SD: **How do you know when you are done? Does Water For People go out of business?**

KL: We are looking at exiting in a couple of phases as opposed to disappearing overnight. In San Pedro district in Bolivia, anyone that you asked on the street today would say, “Water For People do not work here anymore” because they have not seen us for quite a while. However, we do keep our finger on the pulse and we are still keeping track of how things are going. The second phase of that will come once the district has been through a few cycles and everyone is comfortable that there is no need for any future intervention.

How the organization knows when we are done is not as clear. It is not just a checklist; it is not just having yellows and greens on a scorecard. We must first ensure that anyone who still lacks service is not being excluded because they are part of an excluded population. The other question is, do we stop or do we keep going in new places? We will be out of business in districts that we exit but I do not know organizationally when we will close the doors. I guess when Sustainable Development Goal (SDG) 6 is reached.

SD: **At what point was there a recognition that you had to work at a national level, and with other NGOs?**

KL: There was always a goal to use the district-level work to scale up to replication at the national level. Starting at the district was the most logical because in most places that is where the responsibility to deliver services lies. The next step was getting all the various stakeholders talking together at the national level, not just at the district level, and having advocacy conversations about issues like planning, monitoring, and funding. Without evidence of systems strengthening work happening in a couple of districts, the national conversation is a more difficult thing to start. In short, I would say the national piece was always there; it just came later in the process.

SD: **Water For People is relatively small, in terms of budget and staff, compared to some of the other, bigger NGOs, yet you seem to have had an outsized influence. You were all very bold.**

KL: And disruptive. Some of those early years were disruptive to business as usual, right? So, even though we were small, through strong partnerships and champions in the governments where we worked, we were able to have a seat at the table to talk through long-term change in the sector. Couple that with the ability for our teams to say, “This is a priority,” and to spend a lot of time influencing how WASH is implemented in their country through this work; those were powerful things. It was less about us, and more a way to shift how things were getting done.

**KIMBERLY SLINDE LEMME** is the director of Program Learning and Influence at Water For People and dreams of the day we are no longer talking about WASH poverty. Before spending the past decade in the WASH sector, she worked in microfinance, education, trade, and economic development. When she is not traveling for work, Kimberly loves to spend time with her family in the mountains.
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Questions provided by the NC AWWA-WEA Wastewater Board of Education and Examiners

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   a) BOD
   b) pH
   c) total suspended solids
   d) scum/floatables

2. If your microscopic exam reveals a predominance of rotifers, what is the condition of your mixed liquor and what should you do?
   a) It’s fine, so make no changes.
   b) It’s too young and you should decrease wasting.
   c) It’s too old and you should increase wasting.
   d) It’s too young and you should increase wasting.
   e) It’s too old and you should decrease wasting.

3. Which cannot be used to safely remove chlorine from effluent?
   a) Sodium sulfite
   b) Sulfur dioxide
   c) Granulated activated carbon
   d) UV light
   e) Sodium metabisulfite

4. What is the optimum dissolved oxygen level to be maintained in the aeration process?
   a) 0.6 mg/L
   b) 1.0 mg/L
   c) 2.0 mg/L
   d) 3.0 mg/L
   e) Whatever you can get.

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Welcome New Members!

The following people became members of NC AWWA-WEA in March, April, and May of 2020 by joining AWWA or WEF and choosing NC as their home state or as an additional membership state, or by joining at the state level with an NC SLAM membership. We welcome these professionals to NC AWWA-WEA and look forward to seeing them at future events and working with them on various projects and committees.

For information on how to join, and the membership options available, please visit www.ncsafeewater.org/page/Membership. Most of NC AWWA-WEA’s work is carried out through committees. To learn more about each committee review the list of active committees online at www.ncsafeewater.org/page/Committees. To express your interest in learning more about a committee, contact the committee chair directly, contact the NC AWWA-WEA office, or complete the online volunteer form.

Sam Beavans, Freese and Nichols Inc.
Patrick Brittain, Appalachian State University Facilities
Ryan Brown, Innovyze
Paul Cassell, City of Eden
Vincent Chirichella, County of Durham
Dustin Covington
Elyssa Darner, Durham County Utilities
Chadwick Darst, City of Eden
Benjamin Davis
Brent Detwiler, City of Hendersonville
Christopher Doherty, Franklin County Public Utilities
Todd Elmore, City of Lincolnton
Joellen Gay, Greenville Utilities Commission
William Gordon, IGM Resins USA
Kimberly Green, Town of Wilkesboro
Heidi Hackett, City of Durham
Bobbi Harris, Smart Water, Smart City
Pamela Irvin, City of Asheville
Thomas Marino
Tony Martin
Jason Nichols, Town of Tarboro
Thomas Payne
Adam Sellers, Brunswick County Public Utilities
Kelsey Sikon
Donna Slachciak, City of Charlotte
Jennifer Smart, City of Durham Department of Water Management
Garrett Smith, Charlotte Water
Charlotte Smith, Witt O’brien’s
Donnie Terrell, City of Durham
Michael Trail, City of Winston Salem
Appalachian State University
Meredith Ward, Charlotte Water
Trent Weber, Greenstory Global
Kristine Williams, City of Greensboro
Buffie Woodard, City of Wilson Water Resources
Hyong Yi, Union County Public Works
John Young, Durham Dept. of Water Management

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# 2020 Schedule of Events

The following schedule is current as of June 19, 2020. For updates or more information, please contact the organization listed with each event. If a listed event does not reference a specific organization, the item listed is an NC AWWA-WEA event. For further details concerning all NC AWWA-WEA events, visit the NC AWWA-WEA website at [www.ncsafewater.org](http://www.ncsafewater.org) or contact the NC AWWA-WEA office directly at (919) 784-9030.

## July 2020
- **7 – 9** Lab Technology Webinar Series  
  Virtual
- **14 & 16** Water Sector Emergency Preparedness and Response Seminar  
  Virtual
- **21** Raleigh Institute Day 1  
  Virtual
- **22** Raleigh Institute Day 2  
  Virtual
- **27** Biological Wastewater Operator School  
  Virtual
- **27** – Aug 3 Maintenance Technologist School  
  Virtual
- **27** – Aug 5 Physical Chemical School  
  Virtual

## August 2020
- **12** Drinking Water Rules and Regulations Seminar  
  Virtual
- **18 – 19** Small Systems Training: Optimizing Performance & Accessing Funding to Improve Small Systems  
  Virtual
- **21** Raleigh Institute Day 1  
  Virtual
- **22** Raleigh Institute Day 2  
  Virtual
- **27** Biological Wastewater Operator School  
  Virtual
- **27** Maintenance Technologist School  
  Virtual
- **27** Physical Chemical School  
  Virtual

## September 2020
- **9** Seminar: 21st Century Solutions to Utility Operations  
  Virtual
- **21 – 25** Collection & Distribution School  
  Virtual

## October 2020
- **3 – 7** WEFTEC  
  New Orleans, LA

## November 2020
- **1 – 4** NC AWWA-WEA  
  100th Annual Conference  
  Virtual
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The editors of NC Currents welcome the submission of all articles related to the water and wastewater industry. Themes serve as general guidance for each issue, but articles are not limited to an issue’s specific theme. Submission of an article does not guarantee publication. The editorial committee will review and select all articles, and authors will be notified of the status of their submission.

### FALL 2020
**Future of the Workforce** (Submission deadline: July 7, 2020)

This issue of NC Currents will focus on the future of the workforce for water and wastewater utilities in North Carolina. With a significant portion of the workforce at or approaching retirement, all utilities in North Carolina will need to plan proactively to avoid loss of institutional knowledge and set up future leaders for success. Articles may cover a broad array of issues on this theme, including preservation of operational knowledge and practices held by managers nearing retirement; optimizing communication throughout various levels of an organization; attracting and engaging a young and diverse workforce, particularly in rural communities; and taking advantage of the unique technical skills held by a younger workforce.

### WINTER 2020
**New Technologies** (Submission Deadline: September 4, 2020)

With new challenges come new technologies to address them. These related innovations can range from small improvements to existing technology that increase efficiency and/or effectiveness to groundbreaking discoveries that revolutionize the water and wastewater industries. Both innovations are important and allow water and wastewater professionals to continue to provide quality services in a dynamic world. Articles within this particular issue themed “New Technologies” will highlight recently developed and still-in-development technologies in the water and wastewater fields that have had/will likely have significant impacts on the industry.

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