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SAFETY

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love to fish. This summer my family vacationed at Holden Beach, and my sons and I cast our lines as often as we could. One day, my oldest son reeled in a small stingray. I had caught one the previous day and knew it was no big deal; just unhook it and let it go.

But I let down my guard. When I flipped the stingray onto its back to release the hook, I did not move far enough away from the spiny tail and that stingray nailed me. It felt like a cross between a bee sting and an electric current running up my leg. As a reward for my carelessness, I spent the next two hours soaking my foot in hot water, followed by an allergic reaction to the venom.

In the water industry, our jobs are to protect the safety and health of the public. This issue of NC Currents highlights the importance of safety, from developing effective safety programs to creating a culture of safety to the Carolina Star program. From my own experience this summer, I will just add that we always need to be vigilant about safety so we do not get stung by complacency.

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It is hard to believe that my term as chair of this great Association is coming to an end. It has been a phenomenal, life-changing experience. It has truly made me a better person, as I have witnessed the willingness of volunteers to pitch in and give their time, expertise, and talents to make this the great Association that it is. I would like to thank all the folks who have been so supportive throughout the year, including all of the volunteers, committee chairs, council chairs, the board of directors, NC AWWA-WEA staff, McKim & Creed especially my staff in Charlotte and Marianna Boucher, and most especially my wife, Maria, and my sons, Jacob and Will. It sounds like a cliché, but I have truly gained so much more than I have given, and I thank you all for that.

This year we took some risks as we set the bar high, and then higher. The following is a summary of the progress we have made on the Association’s goals. These are goals to be accomplished within the next three to five years, and this year we – and by “we” I mean you – have made significant progress toward reaching them.

Goal #1: Training and Continuing Education: The Association will provide high-quality, affordable training and continuing education that is convenient and of practical value to users.

The Annual Conference is always evolving, and numerous committees are working hard to put on another great event in Winston-Salem November 16-19. As always, the conference will offer plenty of opportunities for PDHs, CEUs, networking, and professional development.

To help meet our objectives of improving cost effectiveness and increasing the number of attendees at all training events, we plan to move the Spring Conference to different cities beginning with Asheville in 2016. We are open to suggestions regarding meeting locations and training topics. Future conferences will provide plenty of hands-on training opportunities.

Another cost-effective training delivery method that we are putting into place is the Institute Program. Utilities choose the topics, provide the location, and then our trainers come to you. We had a successful trial run in Raleigh, and we are continuing to test the program to make sure we get it right before we offer it statewide.

Goal #2: Professional Development: The Association will improve networking opportunities, relevant information exchange, and peer collaboration to enhance participation in the water industry profession.

The GROW (Growing Relationships and Opportunities through Water Resources) program, organized by the Membership and Young Professionals committees, is helping the Association expand networking opportunities at face-to-face events. GROW enables local members to network, socialize, and share information in an informal setting. This year we have held three GROW events – in Charlotte, Asheville, and Greensboro (Raleigh and Wilmington are scheduled for later this year) – and look forward to continuing these successful gatherings next year.

Another professional development initiative I am very excited about is the career ladder program. This will provide a roadmap to help workers within our industry maximize their potential within
their chosen field. The Career Progression Ladders Task Force has been meeting throughout the year and is making great progress. I truly believe this could be a game-changer for our Association. We have already had interest from industry peers who have heard about our endeavor.

**Goal #3: Volunteer Engagement:** The Association will provide appropriate and meaningful opportunities for volunteers. One of the ways we are working to improve volunteer engagement is by developing a succession plan. This initiative outlines the roles and responsibilities – as they relate to the Association’s mission, vision, and strategic plan – of our board of directors, committees, and staff. This will help potential volunteers understand what is expected of them when they consider volunteering with the Association. The initiative should be completed in October.

**Goal #4: Membership:** The Association will be a growing and diverse organization that will provide valuable benefits to our participants.

The Membership Committee has completed a Membership Engagement Plan that identifies the Association’s value proposition and focuses on member recruitment, retention, and engagement. Out of this plan came the GROW program as a way to engage more members in a casual setting.

The Membership Committee is working hard to track membership trends and increase new member onboarding activities. They are marketing membership at various events during the year – with particular emphasis to target-market to diverse groups. There is a branding initiative underway, to evaluate marketing materials and develop new materials as needed. The Membership Committee also serves as a resource to other committees, promoting membership and engagement. They are also active with AWWA and WEF in synchronizing membership activities that dovetail with national associations’ marketing and retention activities. In short, this is a very highly active and engaged group, with lots of responsibility to ensure that we maintain the volunteer-driven character of our organization.

The activities described here represent a tremendous body of work – by a tremendous number of volunteers – that I hope will continue for years to come. Our committees stepped up and did the hard work and heavy lifting. I could not be prouder of this organization and those who willingly take risks and rise to the challenge that is required to make and keep it the leader in educational offerings for our profession.

I am so excited about what is in store for the upcoming year, with our strong board, our talented staff, and our Association filled with enthusiastic and passionate volunteers dedicated to protecting the safety and health of the public. Thank you all for giving me the chance to serve as your chair.

---

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In an industry that faces inherent risk to workers in myriad ways, it is entirely expected that safety be prioritized as an ongoing focus in the water industry: daily safety minutes; regular training – at tailgate meetings, team planning, in classrooms, at conferences. It is and should be an omnipresent awareness for every single person in every utility. Not surprisingly, the safety of water industry workers is therefore subject to unending documentation and inspection and regulation.

Aversion to risk is increasingly institutionalized, not just because we value our own lives and the lives of loved ones, co-workers, employees, but also because the cost of failure to manage risk appropriately has risen. This is true, not just in our own industry, but throughout our society. Old-time playground equipment, including teeter-totters and merry-go-rounds are nowhere to be seen these days. No parent today would countenance the game ‘stay as you land’ that we played as children in the seatbelt-less car, flopping to the floor as parents turned corners. Nor would the safety-conscious parent dream of allowing children out on bicycles without the latest safety headgear. Even our sporting events have changed to include new equipment, rules, and training to identify and address risk. We learn from our losses. In wake of the death of Dale Earnhardt at the Daytona Beach opening season race in 2001, racecar drivers now wear head and neck support (HANS) devices, tethers to prevent head and neck injuries. Even the NFL is looking for ways to improve safety and prevent concussion-related brain trauma, exploring technology like the ‘Shockometer’ or ‘Head Impact Telemetry System’ to measure g-forces experienced by players in hits.

Here, let me pause to reiterate that safety is and should be, a vital priority to ensure that life and quality of life are preserved and protected, particularly in inherently dangerous workplaces like mining, construction, or water treatment. However, we cannot conclude that all risk is bad, or that risk is something to be avoided in all cases. Indeed, risk is an element that can, in the right situation, enhance our joy in life and the quality of that life.
Like salt on a peanut, risk can add to the flavor of life. More than that, risk can lead us to explore uncharted territory, open new vistas and urge us from the complacency of the known. Without risk, there would have been no voyage of discovery, no new world, no space shuttle, no horse-less carriage, no penicillin, and no water or wastewater treatment.

The risks of professional car racing have led to enormous advances in auto safety for the motoring public. The risks to both animal and human guinea pigs in medical trials have lead to medicines, procedures and equipment that prolong life and quality of life. Early pioneers in water procedures and equipment that prolong life in medical trials have lead to medicines, to both animal and human guinea pigs safety for the motoring public. The risks have led to enormous advances in auto water or wastewater treatment.

Today, NC AWWA-WEA requires us to be your infrastructure architect and management team.

So yes, indeed, risk has its place. Today, NC AWWA-WEA requires great courage and considerable risk from volunteers and staff – and the same from our members (the ‘stockholders’ of NC AWWA-WEA), in order to allow our 94-year-old organization to evolve, as it must, to face new challenges, in its second century of life.

At its inception, NC AWWA-WEA provided its training in the form of just one Annual Conference, and an impressive Annual Journal of collected papers. At the time, that was an enormous leap forward for the water professionals of North Carolina. Over time, one conference became two, and seminars, workshops, teleconferences, webinars, e-learning, quarterly journals and bi-monthly e-newsletters have been added. The responsibilities for decision, action, implementation, once the sole preserve of the board of trustees, have been shared over the decades with more than 40 committees and hundreds of volunteers.

At the outset of each year, new work plans were developed to respond to current Strategic Plans, which have successively sought to respond to new challenges in the work place and meet changing needs and requirements of members.

The year 2015 will be no different. The class of baby boomers – 10,000 of them now retiring from work places in the US, each day of the year – is no longer the majority audience in the training rooms of our utilities. Those born into an e-world are rapidly becoming the majority. They learn differently. Once available only from the national organizations and their Sections/Member Associations, singular training is now a smorgasbord of training offered by newer specialty associations, consulting firms, state agencies, and for-profit training entities.

Executive Director’s Report

Risk is relative – the greater risk now would be for us to continue to do things in the same way despite the rapid morphing of the environment in which we live and compete. The avoidance of the perceived risk of change thus becomes the more dangerous course. Although it involves risk, change ultimately seems the preferred and safer course of action.

In 2015, instead of offering the traditional seminar menu, with training agendas developed by committees, we will embark on a venture of tailored, on-demand training agendas for utilities. In this new format, which we are calling ‘INSTITUTES,’ utilities will be reserving dates and providing the training topics and committees, then responding by developing training to meet the needs of utilities.

To ensure that small utilities and individuals not working for utilities continue to have access to the training NC AWWA-WEA develops and offers in the new institute training format, we will reserve a block of seats at each Institute, which will be available for sale to individuals in the same way that seminar registrations have been in the past.

A more structural change in training is also in the works. A Career Ladder Task Force has been at work this year, ‘mapping’ the training needs of utilities in specific disciplines against the current training options NC AWWA-WEA has offered, and determining where new training will be required to augment it. A group of utility directors has provided us with information about their needs, and this will be the basis for the development of much more highly focused and directed training to meet the needs of North Carolina’s water professionals for future excellence.

These are big changes, and surely there is risk. But failing to embark on this journey to make NC AWWA-WEA ready to meet the demands of tomorrow’s work place is an even greater risk. Staying the same course and foregoing change, might seem to be the path of safety. Risk change, I say, and in so doing, ensure that the legacy of learning that NC AWWA-WEA has created can be a baton that we hand off to the next generation of water professionals. That’s the safe thing to do!
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Training Report

By Catrice R. Jones, CAE, NC AWWA-WEA Educational Events Manager

I remember as a young girl how much I loved the thrill of riding a roller coaster. The bigger it was, the faster it went, and the deeper the dips, the more exhilarating it was to me. As I sit here planning a trip to an amusement park with my family, I am amazed and somewhat bewildered by how much my perspective on these same roller coasters has changed. What I once found exciting and fun is now scary and something that I tend to avoid. I understand that most of this fear originated from my change in perspective of my own mortality once I had kids. All of a sudden, once I had this little person depending on me, I said to myself, "It's time to grow up and stop doing risky things!" Now that I'm experiencing those 'wonderful' teenage years as a mother, I'm realizing that this fearful attitude is not the example that I want to set for my daughter. Although, I don't want her to take unnecessary and dangerous risks, I don't want her to be afraid to experience life. There are many changes she is about to experience over the coming years that will help shape her into the person she is meant to be. In order to grow into a responsible and well-rounded adult, she has to be able to take risks and face life with courage and self-confidence.

By now you are probably wondering how this long story relates to you. In a way, one could say that NC AWWA-WEA is the ‘parent or older generation’ and our members and customers are our ‘children or the next generation.’ For years, we have done what is safe and somewhat status quo because we have to be responsible and provide a ‘safe’ environment. While we have gone the extra mile to make changes to provide what we felt was needed to help the next generation grow, we can’t say that we have taken any real risks. We have clung to the traditional and responsible idea of ‘if it ain’t broke don’t fix it.’ What kind of example is that for the young and seasoned professionals in the industry? Not a very good one. We now know that it is more irresponsible to NOT take some risk. We are on the cusp of making changes that show the infinite possibilities that are open to individuals at all levels in the industry. NC AWWA-WEA has a renewed energy and focus to do what the industry needs for the future, instead of maintaining what was needed in the past. We are focused on taking risks that will grow this organization and result in more engaged and informed industry professionals.

Mike Osborne and Lindsay Roberts have already discussed some of the upcoming changes in their messages in this issue. Over the next few months you will be hearing more about the changes that we have planned in 2015 and beyond. These changes will...
2014 Training Review

Below is the final list of the courses that have been offered in 2014 thus far as of 7/23/14. Visit our website (www.ncsafewater.org) for the most up-to-date information on future events or call the office at (919)784-9030.

<table>
<thead>
<tr>
<th>2014 DATE</th>
<th>EVENT</th>
<th>LOCATION</th>
<th>COMMITTEE</th>
<th># ATTENDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 19</td>
<td>Communicating Your Utility’s Financial Position to Your Board and Customers</td>
<td>City of Greensboro Operations Center – Greensboro, NC</td>
<td>Finance &amp; Management</td>
<td>28</td>
</tr>
<tr>
<td>March 10 - 14</td>
<td>Eastern Collection and Distribution School</td>
<td>NCSU McKimmon Center – Raleigh, NC</td>
<td>Collection and Distribution Schools</td>
<td>554</td>
</tr>
<tr>
<td>April 6 - 8</td>
<td>NC AWWA-WEA Spring Conference</td>
<td>Wilmington Convention Center – Wilmington, NC</td>
<td>Spring Conference</td>
<td>407</td>
</tr>
<tr>
<td>April 15</td>
<td>Sustainable Practices in Water and Wastewater</td>
<td>UNC Charlotte</td>
<td>Sustainability Committee</td>
<td>22</td>
</tr>
<tr>
<td>April 28 - May 2</td>
<td>Eastern Biological Wastewater Operators School</td>
<td>NCSU McKimmon Center – Raleigh, NC</td>
<td>Wastewater Schools</td>
<td>149</td>
</tr>
<tr>
<td>April 29 - May 2</td>
<td>Physical/Chemical Wastewater Operators School</td>
<td>NCSU McKimmon Center – Raleigh, NC</td>
<td>Wastewater Schools</td>
<td>62</td>
</tr>
<tr>
<td>June 3</td>
<td>Meeting Tomorrow’s Utility Challenges Today</td>
<td>Neuse River WWTP – Raleigh, NC</td>
<td>Seminars and Workshops Committee</td>
<td>92</td>
</tr>
<tr>
<td>June 5</td>
<td>Topics for Utility Operations</td>
<td>City of Eden – Eden, NC</td>
<td>Seminars and Workshops Committee</td>
<td>39</td>
</tr>
<tr>
<td>June 17</td>
<td>Enhanced Biological Nutrient Removal – Operations and Optimization</td>
<td>City of High Point – High Point, NC</td>
<td>Seminars and Workshops Committee</td>
<td>41</td>
</tr>
<tr>
<td>June 24</td>
<td>Planning Ahead for Future Wastewater Treatment Regulator Requirements</td>
<td>Neuse River WWTP – Raleigh, NC</td>
<td>Seminars and Workshops Committee</td>
<td>37</td>
</tr>
<tr>
<td>June 264</td>
<td>GROW – Highland Brewery Tour</td>
<td>Highland Brewery – Asheville, NC</td>
<td>Membership Committee</td>
<td>17</td>
</tr>
<tr>
<td>July 17</td>
<td>Lessons for Water and Wastewater Utilities from Recent Incidents in NC and Elsewhere</td>
<td>Neuse River WWTP – Raleigh, NC &amp; Online Webinar</td>
<td>Risk Management Committee</td>
<td>19</td>
</tr>
<tr>
<td>July 15 - 18</td>
<td>Western Maintenance Technologist School</td>
<td>Foothills Higher Education Center – Morganton, NC</td>
<td>Plant Operations &amp; Maintenance Committee</td>
<td>118</td>
</tr>
<tr>
<td>July 15 - 19</td>
<td>Western Biological Wastewater Operators School</td>
<td>Foothills Higher Education Center – Morganton, NC</td>
<td>Wastewater Operators School</td>
<td>63</td>
</tr>
</tbody>
</table>

impact our training schedule for 2015, including the one-day seminars that are offered, as well as the timing of our annual schools. (The tentative schedule for 2015 is available on page 110.) As with any change, we know there may be bumps and bruises along the way, but at the end of this journey that we are all taking together, we hope to produce a new generation that will go out into the world and make a positive impact. At the end of the day, isn’t that all any parent could ever hope to do?

If you are interested in assisting with changes in our training programs or want to know how these changes can benefit your organization, contact Betsy Drake at betsy.drake@townofcary.org or Catrice Jones at cjones@ncsafewater.org.
NC AWWA-WEA Board of Trustees 2014

CHAIR, Mike Osborne, PE
McKim & Creed
Phone: (704) 841-2588
mosborne@mckimcreed.com

CHAIR ELECT, Chris Belk, PE
Hazen and Sawyer, P.C.
Phone: (919) 755-8637
cbelk@hazenandsawyer.com

VICE CHAIR, Julie Hellmann
Hach Company
jhellmann@hach.com

PAST CHAIR, Jackie Jarrell, PE, Supt.
Charlotte Mecklenburg Utility Dept.
Phone: (704) 336-4460
jjarrell@charlottenc.gov

SECRETARY, George Simon, PE
McKim & Creed
Phone: (704) 841-2588
gsimon@mckimcreed.com

TREASURER, Crystal Broadbent, PE
Hazen and Sawyer, P.C.
Phone: (704) 357-3150
cbroadbent@hazenandsawyer.com

WEF DELEGATE – 3rd Year, Jeff Payne, PE
CDM Smith
Phone: (704) 342-4546
paynejf@cdmsmith.com

WEF DELEGATE – 2nd Year, Barry Gullet, PE
Charlotte Mecklenburg Utility Dept.
Phone: (704) 336-4962
bgullet@charlottenc.gov

WEF DELEGATE-ELECT, Richard Tsang,
PhD, PE, BCEE
CDM Smith
Phone: (919) 787-5620
tsangkr@cdmsmith.com

AWWA DIRECTOR 2ND YEAR, Steve Shoaf
City of Asheville
Phone: (828) 259-5955
sshoa@ashevillenc.gov

TRUSTEE – 2nd Year, TJ Lynch
City of Raleigh
Phone: (919) 250-7824
tj.lynch@raleighnc.gov

TRUSTEE – 2nd Year, David Saunders, PE
HDR
Phone: (704) 338-6800
david.saunders@hdrinc.com

TRUSTEE – 1st Year, Lori Brogden
Schnabel Engineering
Phone: (336) 274-9456
lbrogden@schnabel-eng.com

TRUSTEE – 1st Year, Jonathan Lapsley, PE
CDM Smith
Phone: (704) 342-4546
lapsleyjs@cdmsmith.com

PROF WW OPS REP – 2nd Year, Chris Parisher
Retired
chrisparisher@nc.rr.com

PROF WATER OPS REP – 1st Year,
Mark Wessel
City of Raleigh – Resource Recovery Division
Phone: (919) 996-3723
mark.wessel@raleighnc.gov

EXECUTIVE DIRECTOR, Lindsay Roberts
NC AWWA-WEA
Phone: (919) 784-3050
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Summary of the NC Section AWWA and NC WEA Board of Trustees Meetings
March 13, 2014 in Raleigh, NC. Chaired by Mike Osborne.

The following actions were taken during this meeting:

1. Accepted Audit and Tax Reports
   presented by Langdon and Company, CPA, with the following highlights:
   • Cash for FY 2013 increased, with $45,000 in contributions and $33,000 in earnings. Reserve balance for FY 2013 is $711,419, of which $602,056 is required to meet the board policy of 50% of expenses.
   • Supporting services expenses (management and general) as a percentage of total expenses is 7.6%, which is excellent – well below the industry standard of 25%.
   • No UBIT was owed.
   • All allocations were well documented and there were no adjustments, which is commendable.
   • Fair value measures are disclosed for the Endowment Fund and Triangle Community Foundation statements confirm account reporting for NC Safewater funds.
   • There is an agreement in place that splits income and costs between NC AWWA and NC WEA on a 50/50 basis, with minor exceptions for activities exclusive to one or the other, such as membership, and in 2013, the purchase of the backflow trailer, which is the property of NC AWWA.
   • The 990 tax forms conform to the financial statements.
   • All required policies are in place.
   • There are no ‘highly compensated’ employees.

2. Strategic Governance Discussion:
   • A strategic plan status report has been developed by staff to show progress in meeting goals.
   • Membership 180 goals have an additional tracking report, reflecting the priority of this goal and the detailed work in progress to meet them.
   • Membership and Young Professionals committees are partnering to put on social events in multiple locations over the course of the year. The first was held on May 8 at CMUD as a lunch and learn.

3. Action Items
   • Grade IV Maintenance Exam: Approved proceeding with negotiations with CWEA to obtain a license for use of the CWEA Grade 4 Maintenance Certification exam.
   • Grant Applications: Approved grant application outreach to the Park and Duke Foundations, with a request to the representatives from the Public Education and Endowment committees to focus on narrowing the scope of applications for grant funds.
   • NCWaterWARN Administrative Support: Approved the allocation of $3,750 for administrative services for NCWaterWARN and the general scope of an agreement that would share administrative responsibility for NCWaterWARN between NCRWA and NC AWWA-WEA.
   • Water For People Run: Approved a one-time contract with Omega Sports for exclusive sponsorship of the Water For People Raleigh 5K; denied a request for exhibit tables at the 5K run; and conveyed the support of the board to Water For People volunteers for their great efforts.
   • Endowment Allocations 2015: Approved the allocation table submitted by the Endowment Committee for total scholarship awards of $11,000 in 2015.
   • Job Ad and Email Policy Revisions: Approved revisions.

4. Chair’s Report:
   • Joint Public Education activities with NCWOA and NCRWA.
   • Career Ladder Task Force progress toward development of a coordinated training academy.
   • Receipt of a letter from Senator Burr in support of HR 3588.
   • Plans for the AWWA Fly-In in Washington DC.

5. Executive Director’s Report:
   • Detection of fraudulent electronic withdrawal of $3,399 in funds from the checking account, investigated and confirmed by the bank, with all funds returned to NC AWWA-WEA.
   • Changes in tracking of dropped members to conform to the same 30-day past due period now used by AWWA, instead of the 90 days previously used. This will allow closer tracking of membership numbers with AWWA.

Consent Calendar:
The following were approved:
   c. Committee reports, as provided to Secretary George Simon, Jr. through March 1, 2014.

Next Meeting:
May 15, 2014, in Greensboro.
Summary of the NC Section AWWA and NC WEA Board of Trustees Meetings
May 15, 2014 in Greensboro, NC. Chaired by Mike Osborne.

The following actions were taken during this meeting:

1. Strategic Governance – Discussion:
   • Data dashboard and Strategic Plan Updates.
   • Reviewed the successful initiation of the GROW social event at CMUD, with additional events scheduled in Asheville in June and then in Greensboro.

2. Action Items – Approved:
   • Resolution honoring Joe Stowe, Jr. upon his retirement.
   • Contract with Measurement Inc. for electronic administration of the Grade 4 maintenance technologists tests.
   • Contract with Crowne Plaza for 2016 Spring Conference in Asheville.
   • Concept of three-year lease with modification of existing office space; final approval to be made by the Executive Committee.
   • Template for committee succession planning with requirement that committees review annually.
   • Nominations for candidates for WEF awards.
   Authorized: The hiring of one additional staff-person.
   Ratified: Two-party MOU with NC AWWA-WEA to provide limited service in developing and maintaining a website for NCWaterWARN.

3. Chair’s Report
   • Utility Directors’ Presentation
     Barry Gullet facilitated a meeting with utility directors where Mike Osborne, Tyler Highfill and Betsy Drake presented information on proposed changes in the educational offerings of NC AWWA-WEA to develop career ladders.
   • Institute Program
     Good progress is being made to reach out to utilities to schedule training for next year around topics selected by utilities. It’s expected that the institute program will replace single topic seminars.
   • AWWA Fly-in Wrap Up

4. Executive Director’s Report
   • Change made in calculating the point at which members are “dropped,” reducing period from 90 days to 30 days in order to make data tracking consistent with national associations’ databases.
   • Regional breakdown of database now possible, using the same seven regions used by the State.
   • Spring Conference financial report - $35,800 income, $3,860 net.

5. Consent Calendar – Approved:
   • Minutes of the board meeting of March 13, 2014.
   • Treasurer’s Report reflecting total assets as of April 30, 2014 of $1,174,047.42 with $1,155,155.50 in checking/savings, of which $325,862.67 is endowment funds. The balance of unrestricted net assets (checking minus endowment) is $829,292.83.
   • Committee Reports as provided to Secretary George Simon, Jr. through May 1, 2014.

Next Meeting: August 1, 2014, in Asheville.
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## 2014 Committee Chairs and Board Liaisons

(This list is current as of 3/3/14)

### Board of Trustees Committees

<table>
<thead>
<tr>
<th>Position</th>
<th>Chair</th>
<th>Company</th>
<th>Phone Number</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominating</td>
<td>John McLaughlin</td>
<td>GHD</td>
<td>(704) 342-4919</td>
<td><a href="mailto:john.mclaughlin@ghd.com">john.mclaughlin@ghd.com</a></td>
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### Conference Coordinating Council

<table>
<thead>
<tr>
<th>COUNCIL CHAIR:</th>
<th>Annual Conference Local Arrangements</th>
<th>Awards</th>
<th>Exhibits</th>
<th>Sponsorship</th>
<th>2014 Spring Conference</th>
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<tbody>
<tr>
<td>Mary Knosby</td>
<td>Courtney Driver City of Winston-Salem</td>
<td>Adrienne Coombes McKim &amp; Creed</td>
<td>Jim Anderson Daparak</td>
<td>Julie Taylor ARCADIS</td>
<td>Kelly Ham McKim &amp; Creed</td>
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<tr>
<td></td>
<td>(336) 747-7315</td>
<td>(919) 233-8091</td>
<td>(704) 323-7031</td>
<td>(336) 292-2271</td>
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<td><a href="mailto:ayecoombes@mckimcreed.com">ayecoombes@mckimcreed.com</a></td>
<td><a href="mailto:janderson@daparak.com">janderson@daparak.com</a></td>
<td><a href="mailto:john.taylor@arcadis-us.com">john.taylor@arcadis-us.com</a></td>
<td><a href="mailto:kham@mckimcreed.com">kham@mckimcreed.com</a></td>
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### External Affairs Council

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<tr>
<th>COUNCIL CHAIR:</th>
<th>Communication</th>
<th>Constitution &amp; Bylaws</th>
<th>Endowment</th>
<th>Membership Services</th>
<th>Public Education</th>
<th>Water For People</th>
<th>Young Professionals &amp; Students</th>
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<tr>
<td>Leslie Jones</td>
<td>Shern Moore</td>
<td>Chuck Willis</td>
<td>Ray Cox Highfill Infrastructure Engineering Inc.</td>
<td>Kelly Boone CDM Smith</td>
<td>Maggie H. Pierce Hazen and Sawyer</td>
<td>Lisa Edwards NC DENR</td>
<td>Derek Dussek HDR Engineering, Inc.</td>
</tr>
<tr>
<td></td>
<td>City of Concord</td>
<td>Willis Engineers</td>
<td></td>
<td>(919) 787-5620</td>
<td>(919) 833-7152</td>
<td>(336) 771-5250</td>
<td>(919) 232-6603</td>
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### Technical Program Council

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<tr>
<th>COUNCIL CHAIR:</th>
<th>Annual Conference Program</th>
<th>eLearning Task Force</th>
<th>2014 Spring Conference Program</th>
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<tbody>
<tr>
<td>Betsy Drake</td>
<td>Chuck Shue McKim &amp; Creed</td>
<td>Betsy Drake Town of Cary</td>
<td>(919) 481-5093</td>
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<td></td>
<td>(704) 841-2588</td>
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<td></td>
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<td>Jonathan Ham Town of Garner</td>
<td>(919) 773-4423</td>
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### SEMINARS & WORKSHOPS COMMITTEES:

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<th>Theme</th>
<th>Chair</th>
<th>Company</th>
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<tbody>
<tr>
<td>Automation</td>
<td>Greg Czerniejewski</td>
<td>CDM Smith</td>
<td>(919) 325-3500</td>
<td><a href="mailto:czerniejewskiga@cdmsmith.com">czerniejewskiga@cdmsmith.com</a></td>
</tr>
<tr>
<td>Finance &amp; Management</td>
<td>Elaine Vasti Conti</td>
<td>Raftelis Financial Consultants</td>
<td>(704) 373-1199</td>
<td><a href="mailto:econti@raftelis.com">econti@raftelis.com</a></td>
</tr>
<tr>
<td>Industrial</td>
<td>Katie Jones</td>
<td>Dewberry</td>
<td>(919) 424-3707</td>
<td><a href="mailto:kjones@dewberry.com">kjones@dewberry.com</a></td>
</tr>
<tr>
<td>Regulatory Affairs</td>
<td>Ron Hargrove</td>
<td>City of Winston-Salem</td>
<td>(336) 747-7312</td>
<td><a href="mailto:ronh@cityofws.org">ronh@cityofws.org</a></td>
</tr>
<tr>
<td>Resource Recovery and Reuse</td>
<td>Jean Creech (co-chair)</td>
<td>Charlotte Mecklenburg Utility Department</td>
<td>(704) 301-4042</td>
<td><a href="mailto:jcreech@charlottenc.gov">jcreech@charlottenc.gov</a></td>
</tr>
<tr>
<td>Risk Management</td>
<td>Barry Parsons</td>
<td>City of Greensboro</td>
<td>(336) 373-7643</td>
<td><a href="mailto:barry.parsons@greensboro-nc.gov">barry.parsons@greensboro-nc.gov</a></td>
</tr>
<tr>
<td>Seminars and Workshops</td>
<td>Erika Bailey</td>
<td>HDR Engineering, Inc.</td>
<td>(919) 785-1118</td>
<td><a href="mailto:erika.bailey@hdrinc.com">erika.bailey@hdrinc.com</a></td>
</tr>
<tr>
<td>Sustainability</td>
<td>Jacob G. VandenBosch</td>
<td>McKim &amp; Creed</td>
<td>(910) 343-1048</td>
<td><a href="mailto:jgvandenbosch@mckimcreed.com">jgvandenbosch@mckimcreed.com</a></td>
</tr>
<tr>
<td>Wastewater Collections &amp; Water Distribution</td>
<td>Michael Kirby</td>
<td>Woolpert</td>
<td>(704) 525-6284</td>
<td><a href="mailto:michael.kirby@woolpert.com">michael.kirby@woolpert.com</a></td>
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### Schools Council

<table>
<thead>
<tr>
<th>COUNCIL CHAIR:</th>
<th>Collection &amp; Distribution Schools</th>
<th>Plant Operations &amp; Maintenance</th>
<th>Professional Wastewater Operators</th>
<th>Wastewater Board of Education &amp; Examiners</th>
<th>Wastewater Laboratory Analyst</th>
<th>Wastewater Schools</th>
<th>Water Board of Education &amp; Examiners</th>
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<tbody>
<tr>
<td>Steven Drew</td>
<td>Troy Perkins Greenville Utility Commission</td>
<td>Dell Harney City of Greensboro</td>
<td>Tony Mencome Heyward</td>
<td>David Wagoner CDM Smith</td>
<td>Debra Collins City of Wilson</td>
<td>Billy Allen Charlotte Mecklenburg Utility Department</td>
<td>Daniel Williams Town of Morehead City</td>
</tr>
<tr>
<td></td>
<td>(252) 551-3301</td>
<td>(336) 373-7900</td>
<td>(980) 395-3926</td>
<td>(704) 302-3301</td>
<td>(252) 399-2494</td>
<td>(704) 553-2124</td>
<td>(252) 726-6853</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:perkinmt@guc.com">perkinmt@guc.com</a></td>
<td><a href="mailto:dharney@greensboro-nc.us">dharney@greensboro-nc.us</a></td>
<td><a href="mailto:tmenco@heyward.net">tmenco@heyward.net</a></td>
<td><a href="mailto:wagnerdl@cdmsmith.com">wagnerdl@cdmsmith.com</a></td>
<td><a href="mailto:dhcollins@wilsonnc.org">dhcollins@wilsonnc.org</a></td>
<td><a href="mailto:ballen@charlottenc.gov">ballen@charlottenc.gov</a></td>
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Schools Council
When talking to members or student groups about NC AWWA-WEA and what it offers, Steve Drew likes to quote Benjamin Franklin: “Tell me and I forget, teach me and I may remember, involve me and I learn.”

As the chair of the Schools Council keeping people involved is what Drew strives to do. The role of the councils is to facilitate and enhance communication between the board and the many committees that carry out the bulk of the Association’s work. The Schools Council coordinates with the following committees: Collection & Distribution Schools, Plant Operations & Maintenance, Professional Wastewater Operators, Wastewater Board of Education & Examiners, Wastewater Laboratory Analyst, Wastewater Operators Schools, and Water Board of Education & Examiners.

The council provides a forum for committee chairs and school leaders to put common ideas and challenges on the table for discussion and potential collaboration. Tenured members and newer members share perspectives and experiences as to what has worked and not worked in furthering the Association and in particular the schools’ missions. The role of the Schools Council chair is to provide one point of contact and facilitate assistance, such as conference calls, plugging someone into resources, or simply acting as a sounding board. Also in attendance at the School Council meetings is the board liaison – currently Lori Brogden – who provides trustees with needed information and perspective, shoring up their support for committee initiatives.

In his role as chair, Drew draws from his active involvement in the industry and with the Association. Professionally, he worked his way up from plant mechanic and electronics technician of water resources for the City of Greensboro to his current position as director. He has served on the NC AWWA-WEA Board of Trustees and was one of the founding members of the Maintenance Technologist School, which falls under the Plant Operations and Maintenance Committee.

“I owe so much of my success and enthusiasm for my profession to the people who have mentored me and shared their time with me over the years,” says Drew. “I think that best describes what the Association is about. Operators and maintenance professionals are rubber-meets-the-road kind of folks who appreciate and want educational experiences that matter and are useful to them. Their employers appreciate that as well. It’s the better part of our mission to deliver what they need. This committee and its instructors are comprised of so many of these plant, distribution and collection folks. Who better to mentor you than someone who knows and has done your job?” The Association anticipates that 1,725 students will have attended its schools before the end of 2014.

Collection & Distribution Schools Committee
The committee is responsible for the establishment of annual schools for collection, distribution, backflow/cross connection and meter. This includes development of curricula in support of the educational goals in the “Needs to Know” manuals and of the Board of Education and Examiners’ mission to improve the certification program.

At least six weeks before each of the three annual schools, the committee meets to develop curriculum and class schedules in conjunction with coordinators and instructors. Special attention is paid to ensuring that a certain amount of time is allocated for each subject so that industry professionals can meet specific contact hour requirements.

Schools are advertised several months ahead of time. The committee is also responsible for any other details related to the schools, including preparation and communication of detailed information to instructors, as well as making arrangements for the student luncheon.

Instructors are always welcome to participate on the committee in a coordinating capacity – all the members of the committee have taught in the schools at one point or another. The committee has a history of producing strong leaders including Thurman Green who has served on the Career Ladder Task Force, and Angela Lee who is a current nominee for vice chair of the Association.

Plant Operations & Maintenance Committee
The Plant Operations and Maintenance Committee (POMC) continues to pursue its mission of bringing quality training, as well as information on advances in treatment plant operations, to water quality professionals. “Maintenance technologist schools in Raleigh and Morganton have resulted in a new wave of Class 1, 2, and 3 certified technologists,” notes Dell Harney, the chair of the committee.

He adds that, because of new CEU requirements implemented in 2014, Maintenance Technologist certification holders must now document six hours of continuing education units approved by the state of North Carolina for both drinking water and wastewater treatment.

Looking forward to 2015, the committee has ambitious plans for other developments. The highlight will be the rollout of the fourth, and final, level of Maintenance Technologist Certification. Through the Association, POMC has teamed up with the California Water Environmental Association to use CWEA’s existing Class 4 Mechanical
Maintenance Technologist exam. “We will be working hard to integrate our Class 4 curriculum with the knowledge, skills, and abilities that are the hallmark of the CWEA program,” explains Harney. “It has been three years since we certified our first group of Class 3 technologists, so there is a backlog of folks waiting for the Class 4 to happen. We expect the first Class 4 school to be our highest attended to date.”

In this same spirit of collaboration, two other states have demonstrated interest in obtaining the NC AWWA-WEA’s Class 1 and 2 certifications in a packaged training format. Although there are still many details to work out, the committee looks forward to the partnership, and is working hard toward a finished product that meets the needs of plant operations and maintenance professionals in North Carolina and beyond.

Both the Maintenance Program Oversight and the Curriculum Development subcommittees have been heavily involved in this process. Maintenance Program Oversight conducts regular reviews of the certification program policy for content and consistency with current committee practices. Meanwhile, Curriculum Development reviews the curriculum and “Needs to Know” manuals for content and consistency with the Maintenance Technologist Certification Program. The subcommittee coordinates teams with specific assignments in the development and improvement of these documents.

In total, POMC has six active subcommittees. Communication facilitates the use and maintenance of the committee’s webpage on the Association’s website and provides material for NC Currents. The subcommittee is also responsible for promoting communications among committee members and between the Association and the committee.

The Instructor Support Subcommittee facilitates the Maintenance Technologist Schools through a team of class and school coordinators who schedule, train, and support individual instructors as needed. The team reviews and edits presentations and also conducts post-school reviews and workshops as part of a process of continuous improvement.

Another subcommittee solicits and processes nominations for the Safewater Maintenance Technologist of the Year Award. Selection is made using standardized methodology, with the award presented at the individual’s workplace and the Annual Conference.

For the past few years, a POMC subcommittee has coordinated a track at the Spring Conference. This year’s track presented in Wilmington was well attended and featured innovative technical topics, such as design and use of carbon FRP structures in water and wastewater plants and ultrasonic testing as a key component of predictive maintenance.

The focus on technology should come as no surprise. “It seems that everywhere we turn, technology offers new opportunities,” notes Harney. “Plant Operations and Maintenance has made a commitment to

Committee Spotlights

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The Communication Subcommittee is working on a web-based forum where plant operators and maintenance professionals can meet to collaborate on items of shared interest, including evaluation of plant process techniques and professional advice from seasoned maintenance personnel. “We are also planning to use WebEx at our committee meetings so that remote participants can be more involved,” adds Harney. “I have challenged our current maintenance technician’s school and class coordinators to find ways that social media can be used to enhance the classroom experience.” He points to the importance of transforming tablets and smart phones – standard fare in today’s classrooms – from distractors to educational tools.

Harney invites anyone interested in helping with these initiatives to contact him at 336-430-6240 or dell.harney@greensboro-nc.gov.

Wastewater Operators School Committee

The Wastewater Operators School Committee is tasked with educating up-and-coming wastewater treatment plant operators in the state of North Carolina by hosting three operators schools per year: one for the Physical/Chemical Wastewater Operators (Raleigh) and two schools for the Biological Wastewater Treatment Plant (WWTP) Operators (Raleigh and Morganton). The schools are designed to meet the minimum criteria that the students must meet in order to sit for the North Carolina Certification exams.

“Because of other initiatives the Association is launching in 2015, our main focus for next year will be moving the school dates,” says chair Billy Allen. The schools in Raleigh will be moved up from the end of April/early May to February. In Morganton, the schools will be moving up a month, from July to June.

Previously, the committee experienced a gap in meeting frequency and workload from September to January. The revised schedule will mean a big change for the committee’s workload and planning. “It will also be a big change for our instructors,” notes Allen, “because all our instructors are volunteers and they have been used to the schools being held at the same time for the past 20 years.” On the other hand, spreading out the schools will mean that the workload of the committee will be more balanced throughout the year.

The new schedule may help the committee address one of its main challenges: keeping its volunteers active and engaged. The other challenge involves the scheduling of more than 50 instructors for each of the schools. “We always look to have backup plans and last minute instructors,” says Allen. “It never fails that some issue pops up.” A school coordinator and three-to-four-person subcommittee are assigned to each school. However, even if the instructors teach at several different schools, they have only one point of contact with the committee.

In addition to the certification schools, the committee is also tasked with organizing a one-day wastewater seminar on advanced topics in wastewater treatment. The seminar is aimed at operators who have been certified for quite some time and are looking for training that goes above and beyond the minimum certification requirements. This year, the committee had several exciting advanced topics at the seminar on September 9, including a group of college students from the University of North Carolina at Charlotte who presented on anaerobic reactor research they are currently conducting – a process radically different from current industry practices.

During his nine years volunteering with the Wastewater Operators School Committee, Allen has enjoyed helping to provide training and professional development for his colleagues. “There is a lot of camaraderie on the committee,” he adds. The committee includes operators in responsible charge, like Allen, as well as engineers, plant operators, and other like-minded individuals from across the industry.

“I really enjoy seeing the look on students’ faces when we are able to explain to them something they may not have fully understood about wastewater treatment,” says Allen, who continues to teach math classes at the school. Like him, quite a few committee members are also instructors.

Allen became involved with the committee thanks to his former supervisor, Roy Purgason. “After tagging along with him for a couple of meetings and getting to know some of the others on the committee, I knew there were some good people involved on the committee and the Association,” he recalls. “I felt I could really learn a lot from them and that it would be a very good move for advancing my career and accomplishing some goals I had set for myself.”

He has been able to use the experience he has gained with the committee in job interviews and has been able to include his accomplishments on his resume. Over the years, Allen has also gained experience with leading and organizing.

The committee consists of about 50 members with eight to 12 typically in attendance at any one meeting. “People cycle on and off, depending on their commitments,” explains Allen. An in-person meeting is typically held once a month in Durham or Raleigh. The committee always provides a conference call number for those who cannot make the trip.

Professional Wastewater Operators Committee

Participants in the monthly tour organized at one of North Carolina’s wastewater treatment plants by the Professional Wastewater Operators Committee (PWOC) receive two hours of continuing education units. “Ideally, we try to get this out there for those utilities who don’t have the staff or budgets to send their folks to weeklong schools to get their contact hours,” says chair Tony Mencome, who is completing his second year of a two-year term as chair.

Each plant tour is preceded by a presentation by the host on everything from biosolids handling to an overview of how the plant works. In some cases, engineers come in and outline the process.
behind a plant’s upgrade, including the reasons behind the project and how the plant was brought into compliance.

“Sometimes engineers present on something more specific, such as alternative carbon sources for biological nutrient systems,” says Mencome. “We have also had equipment manufacturers come in and discuss new techniques and products such as industrial coatings and odour control equipment.”

At the end of each tour, the PWOC distributes evaluation sheets and asks for input on future topics. The committee organizes a plant tour in the western, central, and eastern parts of the state on a rotating basis. Each year, at the Annual Conference, the PWOC also recognizes a plant in each region for its high level of professionalism and community service. Criteria evaluated for the award include plant appearance, safety, compliance, and innovative operations and maintenance (O&M) practices.

Water Board of Education & Examiners
Serving three-year terms, the 10 to 15 members of the Water Board of Education and Examiners (WBOEE) are charged with assisting the state-appointed North Carolina Water Treatment Facility Operators Certification Board (NCWTFOCB). The WBOEE meets four times a year to help develop certification curricula and ensure reference materials for both instructors and the Distribution & Collection Schools Committee. Members also review each exam application, and help to administer and monitor the entire certification process.

This year, Daniel Williams, director of public utilities for the Town of Morehead City, winds up his two-year term as chair. As of January 2015, the position will be filled by Ivan Thomas, currently the vice-chair. “He was a great addition to our committee,” notes Williams. With five years of experience on WBOEE, Thomas has also served as chair of the Buncombe County Utility Coordinating Committee and is currently a part of NCWaterWARN and the AWWA National Water Loss Control Committee. The operations manager at the City of Asheville, he has been with the city for 18 years.

“Right now, we have the minimum number of people we need on the WBOEE,” adds Williams. “But we are always looking for new people.” The committee must have at least two members from systems serving less than 10,000 people and two holding valid A-Distribution certification.

Committee Spotlights

Wastewater Laboratory Analyst Committee

“Being a member of the Wastewater Laboratory Analyst Committee has given me the opportunity to learn from others, and, together, to troubleshoot solutions to problems,” says Debra Collins, chemist for the City of Wilson’s Water Reclamation Facility and chair of the committee since May.

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She brings a wealth of experience to the position, including 23 years with Southern Testing & Research Laboratories (currently known as Microbac Labs STR Division) and several years as the LabNet East chair, where her responsibilities included ensuring that information covered in LabNet meetings was made available to the lab analyst in the eastern section of the state. “I understand the struggles from the point of view of the contract lab as well as the municipal lab,” she notes, “from the need to meet the NPDES permit requirements to the importance of maintaining NC lab certification for both lab classes.”

Collins joined the Southeastern Section of the NC Professional Wastewater Operators Association (PWOA) in 1986 and continued her involvement while moving between the commercial and municipal sectors. “I knew the commercial labs were missing an important link with their clients when it came to understanding permit requirements,” she says. She also sat on the NC AWWA-WEA’s now-retired Pretreatment Committee. “Being involved helped me understand both industrial permit and pretreatment program requirements of the NC Department of Water Quality (DWQ) Pretreatment Section,” explains Collins, adding that, though responsibilities have shifted, when hired she was responsible for overseeing the City of Wilson’s lab and staff as well as assisting the plant manager in overseeing the pretreatment program. “So once again, my involvement with these professional organizations proved most helpful.”

In addition, Collins serves on the NC Pretreatment Consortium (PC) Certification Board, teaches at the Annual NC-PC Certification School, and has taught lab classes at the annual Wastewater Operators School in Morganton. She has been a member of the Young Professionals and the Awards Committees and was a recipient of the WEF Laboratory Analyst Excellence Award in 2009. This past year, she served on the Lab Technology Day Agenda Committee for the first time.

Held on May 6, the event was followed on June 26 with the lab analyst exams, which will be administered again in October. Collins notes that the Association would like the committee to develop an Exam Review Subcommittee to vet prospective exam-takers and provide training for those interested in pursuing their lab analyst certifications. Other goals for the committee include reviewing and updating the “Need to Know” criteria, as well as the policies and procedures governing the administration of the exam.

Currently, the committee is in the early stages of reorganization. Ideally, the regional LabNet participants would form the basis for membership, but with the support of a more formal committee charter. Says Collins, “We are looking for people to serve on the committee and bring a variety of expertise to the table in order to continue offering the highest quality programming and certification.”

Committee Spotlights

Wastewater Board of Education & Examiners

The WBOEE is pleased to announce that the Collection System “Needs to Know” document is nearing the peer review step. “Quite a bit of work has gone into updating the document,” points out Chair David Wagoner. “Once the draft is completed, the proposed updated document must be reviewed and approved by the state-appointed North Carolina Water Pollution Control Systems Operators Certification Commission (WPCSOCC).”

As for the review and updates of biological and physical/chemical “Needs to Know” documents, currently these are still works in progress. “For the biological update, we are in the process of reviewing all the treatment technology in North Carolina and the existing “Needs to Know” manual to ensure we are looking both at the technologies currently being used as well as those on the rise so that educational requirements can follow suit,” explains Wagoner. “The biological manuals are in pretty good shape compared to many other states.”

WBOEE also assists and supports the WPCSOCC in its mission of assuring that NC’s wastewater operators meet the highest standards of proficiency through the development of certification course curricula, content and references; test question development assistance; certification course validation, audits, and instructor guidance; exam proctoring; and other training-related assistance as may be requested by the WPCSOCC.

Appointed to three-year terms by the NC AWWA-WEA, the 10 to 15 members of the WWBOEE include at least two members representing each of the following system sizes and types: i) less than 10,000 population; ii) biological Grade IV; iii) physical/chemical Grade IV; and iv) collections Grade IV.

Currently, the committee is looking to fill three seats for terms beginning January 2015. See page 95 for more details.
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As a youngster, Jon Lapsley spent his summers holding surveying rods and assisting with a variety of civil engineering projects. “I had a lot of exposure to civil engineering growing up,” he confirms, adding that, as a professional engineer in North Carolina, his father was involved in a variety of areas, from private and commercial development to municipal water and wastewater projects.

Years later, as a consulting engineer for CDM Smith, Lapsley cut his teeth on a number of very large projects for Charlotte Mecklenburg Utility Department (CMUD), including one of the largest finished water mains and wastewater pump stations in the state. Today, he is still working on projects for CMUD as well as for clients across the Carolinas, in Greensboro, Raleigh, and a number of other municipalities. His work involves a wide array of projects, from conveyance and pump stations to wastewater treatment and more.

Although he never doubted he would become a civil engineer, Lapsley did not foresee his close ties with the water and wastewater industry. In the end, what brought him to this career path is a strong connection with his home state of North Carolina.

A native of Hendersonville in the western part of the state, he attended Clemson University before heading off to “the cold” of the Northeast for graduate school at Cornell University. “I had to come back south where it was warmer,” he laughs, adding that he also wanted to be closer to his family.

In 2003, Lapsley accepted an offer from CDM Smith. “It turned out to be a great time to come back to North Carolina,” he adds. “There were a number of very large infrastructure projects for CMUD that I was able to work on, exposing me to a lot of interesting and challenging work that captured my attention right away.” It was perfect for a graduate who was fresh out of school and trying to figure out what to do with his career.

At the same time, encouraged by his coworkers, he joined the NC AWWA-WEA. “They pointed out the benefits of professional development, networking and giving back to the community,” recalls Lapsley. His first role with the Association was as a member of the Seminars and Workshops Committee, and he remains a member to this day.

He was responsible for maintaining the committee website long before the creation of www.ncsafeewater.org. “Material was shared on the web through individual consultant websites,” he explains. After a few years, an opportunity arose for Lapsley to become more involved in the planning of seminars, workshops, and the overall education program for the membership. He served for two years as vice chair of the Seminars and Workshops Committee and then two more years as chair.

Lapsley was also part of a team that developed the Association’s new e-learning program, which has only recently been launched to the membership. “That was certainly a highlight of my involvement with the committee and a challenging endeavor for the Association,” he notes.

In 2011, he took on a leading role in the deployment of the council chair program, assuming responsibility for the Technical Program Council. Two years later, he was elected to serve on the board of trustees until 2015. This latest position is more of an oversight role, which involves helping to guide the overall direction of the Association, including budgeting and strategic planning.

The trustees also serve as liaisons with the individual committees and council chairs to convey questions and concerns from the committee level to the board of trustees, particularly if there are issues to be addressed and decisions that need to be made. “It is certainly a different role,” says Lapsley. “It is not so much about boots on the ground as it is about providing guidance and assistance to those volunteers who are doing the day-to-day implementation of Association programs and initiatives.”

As a first-year trustee, his focus has been on gaining a firm understanding of how the business of the Association is carried out. “It can be challenging to get a handle on what various committees do while being there to support them,” he explains. “On the other hand, our Association is made up of so many great volunteers that are passionate about the programs they are putting on, that they do not need a whole lot of guidance for their day-to-day work. We have a robust group of volunteers at all levels.”

He points to the many events, seminars, conferences, and local schools that are attended by members and organized by members as well. “At the end of the year, you can see that
your membership with the Association provided value not only to you professionally, but also to the community, by training the professionals that protect our water quality,” says Lapsley.

Other rewards that Lapsley appreciates include developing relationships with other members, whether they are clients, other consultants, or vendors. As he works on projects, he benefits from having this network of contacts to which he can reach out for guidance in order to provide a high level of service to his clients.

“I am also grateful for the opportunity to learn from those who came before me,” says Lapsley. “With only 10 years under my belt, I still have a lot to learn from those who have been doing this for 40 or 50 years and have seen things grow and change so much in their careers.”

Giving back to the community is also very important to him, as is working through the Association to protect water as a resource. “That is another trait I picked up from my father,” he notes, adding that his father was a past chair of the NC AWWA-WEA and served the Association in various capacities throughout the 40-plus years of his career. “As a youngster, I was definitely exposed to the importance of getting actively involved and not just standing on the sidelines.”

Lapsley calls his father from time to time to ask him questions. Although semi-retired, Lapsley Sr. is still working on water-related issues in the western part of the state and volunteering in one capacity or another in the local community.

Four months ago, Lapsley and his wife welcomed their first son, Charlie. Although his life has become much busier now, the new father is hoping to continue staying involved in the Association. After all, he knows just how important it is to set an example for the next generation.
As a guide at the Annual Conference and now a presenter at one of the seminars, Maggie Pierce has come full circle. “That’s where I started,” she says, recalling the moment when she first connected with the Association and realized that her career was starting to take shape.

When Pierce was in high school, she loved science but hated the idea of being stuck in a lab. Then she discovered environmental science. “It combined biology and chemistry and made them into something practical,” explains the young engineer who now works in Hazen and Sawyer’s Raleigh office. “I really loved the applied aspect of that. It was about using science and math to serve people and the environment.”

Then the teacher took the class to visit the local wastewater treatment plant. While her classmates found the plant disgusting, Pierce secretly admired the work being done there. At that point, however, she had yet to consider the treatment of water and wastewater as a potential career.

After high school, she enrolled in North Carolina State University’s environmental engineering program. As she progressed through the curriculum, she began to realize that she really enjoyed studying water and wastewater. “Lucky for me, I chose the right major,” she laughs, “even though I didn’t know where I would end up.”

Then, in 2007, while attending a career fair during her sophomore year of college, she was hired for a summer internship at Hazen and Sawyer. “I clicked with the people I met from Hazen and Sawyer,” she recalls. “I didn’t know what my internship would look like but I knew that if I liked the people, I could work with them.”

During the summers, after her sophomore year and then again after her junior year, she performed some sampling at a wastewater treatment plant. Along with working in the office, she spent a lot of time out in the field at various plant sites.

“It was not glamorous,” she notes, “but it was the best learning experience anyone could ever ask for.”

It was after her first summer internship that Pierce started her process classes. “It was so interesting to take the classes after actually having seen those processes in action,” she explains. “Now, any time I interact with college students, I stress the importance of an internship.” She adds that an internship allows both the employee and the employer the chance to get to know one another and determine whether they are a good ‘fit.’

In fact, after she graduated from university, Pierce interviewed for a full-time job at Hazen and Sawyer and started two weeks later as an engineer-in-training (EIT). Having taken the Fundamentals of Engineering exam during her final year, the young graduate was able to hit the ground running.

Since then, she has found her calling in the water side of the industry, an area on which she now focuses all of her time. “One of the best attributes of Hazen and Sawyer is that, when you start, you are not pigeonholed,” she explains. “You have the opportunity to see a lot of different work that we do and find your niche.”

For the past three years, Pierce has been working on a project prompted by a new Environmental Protection Agency (EPA) regulation governing the disinfectant and disinfection by-product rules. All water plants must comply with the new rules. In 2010, Pierce helped launch an initial study of all the different options available to meet this new rule.

She then worked with the client to select a suitable option for the client’s water treatment plants. Granular activated carbon contactors will be applied at five water treatment plants, ranging from 250,000 gallons per day to 12 mgd, in settings that include both rural and urban systems.

Before implementing the new system, it was necessary to conduct a hydraulic analysis of the existing plants to determine how the new process would affect the hydraulic processes and to confirm the hydraulic design of the new facilities. “I really enjoy modeling hydraulics,” notes Pierce. “It’s something that I did when I was working in wastewater and that translated very easily to water.”

Another aspect of the project was the chemical systems design. This involved looking at historical plant data to determine necessary chemical doses, as well as storage, containment, and types of feed pumps.

“Something else I really enjoy about working at Hazen and Sawyer is the ability to be involved with the client from the very beginning,” says Pierce, adding that she has attended all the presentations to the client since 2010. “In the beginning I mainly watched and then gradually became more actively involved. It has been a wonderful learning experience.”
Unfortunately, due to certain socio-political factors, the project had to refocus from chloramines to another option: a granulated granular activated carbon process. On the other hand, the technology will now be applied at five water treatment plants, ranging from 250,000 gallons per day to 12 mgd, in settings that include both rural and urban systems. Pierce will also be involved in pump selection and hydraulics design for the intermediate pump stations associated with these plants.

She is also working with the electrical engineer who will be designing the system to power the pumps as well as with the instrumentation, structural, and civil engineers at Hazen and Sawyer. “I really like working with engineers from other disciplines,” says Pierce, “and it’s great that they are all under one roof.”

After all, every part of the design is interrelated. While working in a team with other engineers can be challenging, Pierce appreciates learning the implications of all the other facets of engineering throughout the design. “It’s not something you learn in school,” she explains.

She is looking forward to seeing the implementation of the design after four years of work. As a fairly recent graduate, she has yet to see many of her projects come to fruition but certainly appreciates the sense of satisfaction that comes with completion. Shortly after she started with Hazen and Sawyer, she worked on a project at a reverse osmosis water treatment plant, which has subsequently been constructed.

“What was once just on paper is now a physical building,” she exclaims, her enthusiasm clearly evident. “I got to be there when they turned on the pumps for the first time!”

She reflects that, ultimately, this is the goal of any engineer, to see all the calculations, drawings, and technical writing come together into a physical structure that serves the community. Pierce is happy with her career choice. Just as planned, she is not ‘stuck in a lab,’ far from the practical application of her work. She is right in the middle of the action, working toward that final moment when the switch is turned on.

At NC AWWA-WEA, she is just as active. Although there was no student chapter at NC State when she was in college, she was involved in setting one up after graduation. She wanted other students to benefit from an early interaction with the Association, just as she had. The student guide at her first Annual Conference in Raleigh opened the door to a lifetime of opportunity. “We went to a couple of paper presentations and then my guide had a committee meeting,” she recalls. “So I accompanied him. It was fascinating to see how the Association works behind the scenes.”

When she started at Hazen and Sawyer, her colleague Chris Belk invited her to join the Water For People Committee. “The people on that committee are so welcoming and involved,” says Pierce. During her first year, she helped out with the golf tournament. Then Belk recruited her to work on the Model Water Tower Competition, which she ran with his assistance in her third year.

She has continued to run the event now that it falls under the responsibility of the Public Education Committee (PEC). Although she is still involved with Water For People, her passion lies with the PEC, for which she is now chair.

“I really enjoy having the opportunity to interact with people involved in utilities, regulatory agencies, and other engineering firms – people who have 30 years of experience and students who have no experience at all.”
Plant Spotlight:
Roanoke River Wastewater Treatment Plant
Roanoke Rapids Sanitary District, NC

By A. Gregg Camp (ORC) and Justin Blackmon, EI (Utilities Engineer)
Edited by David Hamilton, PE / ARCADIS (NC AWWA-WEA Plant Operations & Maintenance Committee)

General
The Roanoke Rapids Sanitary District (RRSD) formed as a publicly-owned utility to provide water treatment, water distribution, sanitary wastewater collection, and wastewater treatment services to the City of Roanoke Rapids, the Town of Gaston, and the unincorporated areas of Greenbriar, Lincoln Heights, West Rosemary, Lakeview, and the Becker Industrial Park. Bulk sales of water and sewer collection are provided to the adjacent counties of Halifax and Northampton as well. RRSD wastewater is treated at the Roanoke River Wastewater Treatment Plant (RR WWTP), which started operation in fall 1965 and is located in Weldon NC near I-95 and US 158 just downstream of Lake Gaston near the Virginia border. The facility currently serves a population of approximately 20,000. Average daily wastewater flow sources are 67% domestic (residential/commercial/institutional) and 33% industrial. The RR WWTP design flow is 8.34 mgd and experiences an ADF of 3.5 mgd. The annual facility operating cost with depreciation for the WWTP is approximately $2.37 million.

Treatment Processes
The key treatment processes at the Roanoke River facility are as follows:

Preliminary Treatment
- Influent 350,000 gallon storage tanks (2 units)
- Acid adjustment (sulfuric acid – 78%)
- Automatic bar screen with automatic classifier rag removal (1 unit – Rotomat)
- Manual back up bar screen (1 unit)
- Grit cyclone grit remover with continuous classifier (1 unit – Jetta)
- Backup gravity grit remover with continuous classifier (1 unit – Detritor)

Primary Treatment
- Primary Clarifiers (two units – 12-foot sidewall depth)
- Secondary clarifiers with a traveling bridge syphon system (two units)

Secondary Treatment
- Trickling (roughing) filters with recirculation capability (two units – 130-foot diameter)
- Activated sludge aeration basins (three units)
- Secondary clarifiers with a traveling bridge syphon system (two units)

Biosolids Treatment
- Lime pH adjustment
- Anaerobic heated and mixed primary digesters (two units – 45-foot diameter)
- Anaerobic quiescent secondary digester (one unit – 45-foot diameter)
- Gravity settling tanks (two units)
- Gravity belt thickener (one unit)
- Lime stabilization, mixing and holding tanks (five units; two mixing, three holding)
- 1 MG biosolids storage tank (one unit; glass-lined steel)

Disinfection
- Sodium hypochlorite chlorination system
- Sodium bisulfite dechlorination system

Further description of these processes is as follows:

Influent wastewater flows to the preliminary treatment processes where rags and other debris as well as grit are removed. Wastewater then flows by gravity into the influent pump station where a 2 mgd, 4
mgd, and two 7 mgd pumps are located. Pump operation is staged for pumps to come on, beginning with the small pumps and adding larger pumps as flow increases. The three largest pumps are variable frequency controlled.

Flow continues through the 70-foot diameter primary clarifiers where suspended solids are removed. Flow from the primary clarifiers continues on to the first biological treatment process, trickling roughing filters with rotary distributors. The filters contain 5.5 feet (depth) of granite rock media. As flow exits orifices down the face of the distributor arms, the distributor is hydraulically propelled allowing flow to trickle evenly over the media. Flow leaving the trickling process enters a pump station where one 2 mgd, two 4.5 mgd, and one 9 mgd pumps are located. These pumps come on in stages beginning with the smaller pumps and adding larger pumps as flow increases. The three largest pumps are variable speed controlled.

Flow is pumped to a conventional activated sludge secondary treatment process consisting of three half million gallon aeration basins and two million gallon rectangular secondary clarifiers. Solids that settle to the clarifier floor are returned to the aeration basins or wasted with the use of a cable driven traveling syphon bridge. Air for the aeration basins is supplied with four multi-stage blowers. Two are 75 horsepower and two are 100 horsepower.

As flow leaves the secondary treatment system, it enters the last stage of treatment, chlorination followed by dechlorination, before discharge to the Roanoke River. There are two 13,680-gallon sodium hypochlorite tanks. Each is equipped with a diaphragm feed pump. Although intended to be used one tank at a time, with the alternate tank available to receive a shipment, the pumps are piped and have valves to allow either tank to be pumped in the event of pump or tank failure. Hypochlorite is received around 12% concentration and is diluted to 6%. Approximately 6,000 gallons are received per load. There is one 4,470-gallon sodium bisulfite tank. It is equipped with two diaphragm pumps, which are rotated on regular intervals. Bisulfite is received and used at around 38% concentration. The two chemicals are fed manually with the use of a feed pump control panel equipped with a speed pump rectifier. The pumps are also stroke controlled.

As wastewater leaves the secondary clarifiers, it is dosed with hypochlorite just prior to entering the contact chamber. Bisulfite is added to the effluent flume of the contact chamber. There is a 50-microgram limit for hypochlorite leaving in the wastewater before it enters the Roanoke River. There is also a 400 weekly, and 200 monthly, fecal coliform colony count per 100 ml limit.

**Biosolids Treatment**

**Stabilization and Thickening**

Solids from the plant processes are sent to the floating cover anaerobic digesters for stabilization. There are two primary digesters that are operated on an alternating basis each day. They are fed at regular intervals over a 24-hour period. These two digesters are heated in the mesophilic range and mixing is provided. The single secondary digester is for solids concentration and liquid separation without mixing.

Volatile solids reduction and fecal coliform measurements are used to verify process to significantly reduce pathogens (PSRP) and vector attraction reduction (VAR). The liquid is decanted back to the primary clarifiers. Stabilized solids are dosed with lime to help control odor, then stored in a 1 MG aboveground holding tank.

Waste activated solids are pumped into two above ground steel 20,000-gallon gravity-settling tanks. Wasting is on a continuous basis. Prior to entering the tank the solids are inoculated with a nonionic polymer. The solids are gently mixed with rotating vertical stirring blades to aid coagulation and thickening. Additionally, the solids can be fed to a gravity belt thickener for more thickening. Another dose of polymer is used before entry in the belt thickener. Solids are thickened from around the 0.75% range to around 4.0%. After thickening, lime is mixed in with 12,000-gallon batches of the concentrated solids. Time and pH levels are used to verify PSRP and VAR. Once stabilized, these solids are also transferred to the solids holding tank prior to land application. Mixing and a pH of 12.0 are maintained in the tank for odor control.

**Land Application**

The WWTP has more than 3,000 acres of permitted land application area. Most of this land grows row crops. The land is located in Halifax, Northampton and Warren counties and is privately owned. In addition the Sanitary District owns an 86-acre buffered site. This land is pasture with approximately half planted in tressure grass and the other half Bermuda grass. This acreage was added as emergency back up in the event the row crop rotation
or weather would not allow application on the privately owned land.

Hauling and application is done through a private contractor using tanker trucks to haul and a pull spreader tank for application. The WWTP provides a pump and a spill-protected loading station for the tanker trucks. Hauling and spreading is done randomly and depends on crop rotation and weather. When it is time to land apply the contractor flags off the field for its buffered area of the selected site. Hauling and spreading can last for several days to weeks.

**SCADA**

RR WWTP operates a comprehensive SCADA system that monitors the performance and alarm status of the plant. The only automation is for the rotary distributors: As plant flow decreases and the distributors slow and stop, a timing mechanism will turn recirculation pumps on to keep the distributors turning.

**Expansions and Upgrades**

The RR WWTP has not expanded, but has upgraded in recent years: New primary clarifiers were added in FY2010-2011, the disinfection system was converted from gaseous chlorine and sulfur dioxide to liquid sodium hypochlorite and sodium bisulfite in FY2011, and rotary distributors were rebuilt and a new gravity belt thickener was installed in FY2014.

**Challenges Overcome**

Bypasses of the WWTP are a significant concern and minimizing them is of the highest priority. When the activated sludge process was added the original two secondary clarifiers were abandoned and scheduled to be demolished. However, it was decided to keep them. The original weir wall was extended up approximately four feet, increasing the capacity of the tanks to 350,000 gallons each. Originally, they were used for biosolids storage that was being held for land application. Later, a million gallon tank was erected for biosolids storage. This freed up the 700,000 gallons of space for other uses. In the year 2000 a twelve inch self-priming pump was set up at the headworks of the plant. During high flow events, as a result of inflow and infiltration (I&I) created from heavy rains, incoming wastewater can be diverted and held in these two flow equalization tanks. When flow recedes, the diverted flow can be returned to the plant, thereby eliminating a bypass situation. These tanks are utilized in another way as well. There are times when a maintenance project needs to be performed on a piece of equipment or area that cannot accept flow. At these times the incoming flow can be diverted to these two storage tanks allowing the work to be accomplished. Since the year 2000, many millions of gallons have been stored as a result of these two activities.

**Unique Attributes**

**Rectangular Clarifiers**

The original secondary clarifiers at the facility were round. However, when the activated sludge process was added, the original basins were replaced with rectangular basins. It was a task to adjust to the operational challenges and idiosyncrasies of these clarifiers. There are no plows that collect settled solids in a hopper for return. Instead, there is a cable-driven traveling syphon bridge. A set of four stainless steel tubes supported by fiberglass floats extends to the bottom. The four tubes are arranged to cover the width of the floor. There are a series of holes on the underside of each tube which syphon up settled solids. Nipples on the topside of each tube are used with a vacuum cleaner to pull prime on each tube. Priming is performed routinely; usually every one to three days, depending on a number of factors, such as time of year or the sludge return rate. The traveling bridge is equipped with skimmer arms for controlling scum. They prop up as the bridge travels to the weir end of the clarifier and they lower and skim the surface as the bridge returns to the opposite end where a collection trough is located. Because the clarifier is relatively narrow, weirs located on the end wall are not sufficient for a proper overflow rate. To accomplish the correct overflow rate, a set of three troughs equipped with weirs extend out away from the weir end wall for about 30 feet to increase overall weir length.

**Dedicated to Public Education and Awareness**

One of the objectives of the WWTP is public education and awareness. The staff takes advantage of every opportunity to accomplish this goal. Tours of the facility are given often to elementary, middle, and high school students, as well as local community college classes, students from universities working on science projects, civic groups, businesses, and local leaders. The WWTP also participates in a mentoring program where local students come in for a day to learn about wastewater treatment. These events provide an opportunity to showcase the facility, demonstrate the complexities of the treatment process as a whole, and emphasize the importance of the ultimate objective of protecting the environment. The tours also help wastewater customers understand what their monthly payment funds. ORC Gregg Camp says: “(The plant staff) find it very refreshing to see the ‘eyes wide open’ expression on visitors’ faces as they go through a tour.”
Most come away with a new found amazement of a business they really never realized existed. It never ceases to show just how much the public needs to know about the wastewater business. But, a little education goes a long way towards the demonstration of the effort made to accomplish the charge of wastewater treatment. It is very rewarding when cards or notes are received thanking (us) for the time and effort given to explain this business.”

**Personnel**

**Staff**

Personnel at the Roanoke River treatment facility include 11 Operations and Maintenance staff (male). All operators are NC certified and one staff member is a Class 1 Certified Maintenance Technologist through the NC AWWA-WEA certification program. There are three laboratory staff (female), and one administrative staff member (male). Together these employees represent nearly 200 years of combined experience.

**Staff Development**

All plant employees are encouraged to pursue professional development. The district will pay for classes/seminars that are pertinent to the job. The district hosts two safety meetings per month that all employees attend. The district arranges technical training for employees that need CEUs (provided by NCIC in 2013 and to be provided by NCRWA in 2014).

Certifications offered include Grades 1-4 Biological, Land Application, Maintenance Technologist, Laboratory Technologist, Pretreatment, and others on an individual basis as needed.

**Health & Safety / Awards and Recognition**

The district has a comprehensive safety program. The district has two safety meetings per month district wide, there is a safety committee that inspects each facility quarterly, and there is an accident review committee and safety appeals committee that meet as necessary. The district has one manager of Environmental Safety and Health (MESH) certified employee and RRSD has received Carolina Star status in 2014 from the NC Department of Labor. The Roanoke River WWTP has received the George W. Burke Award on two occasions recognizing the facility for establishing and maintaining an active and effective safety program. The district has also been recognized by NCDOL for efforts in safety with no lost-time-accidents; the WWTP is on the eighth consecutive year with no lost time due to accidents.

Contact for More Information on the Roanoke Rapids Sanitary District Roanoke River WWTP: A. Gregg Camp, WRF ORC (gcamp@rrsd.org, Ph: (252) 536-4884).
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Excitement is building for North Carolina’s largest and most important gathering of water and wastewater professionals – the NC AWWA-WEA Annual Conference! The Association’s 94th Annual Conference will be held November 16-19, 2014 at the MC Benton Convention Center in Winston-Salem, NC. This conference is North Carolina’s primary forum where industry decision-makers, and others involved in the water and wastewater industry gather to exchange fresh ideas and share proven successes. Attendees will learn from informative technical sessions, network at social events, and enjoy visiting with leading-edge companies in the exhibit hall.

The Twin City Quarter, composed of the Benton Convention Center, Embassy Suites Winston-Salem, and Winston-Salem Marriott, is the site of this year’s Annual Conference. All three properties are connected via a climate-controlled walkway; combined hotels feature 461 luxurious guest rooms and suites and together with the Benton Convention Center offer over 170,000 square feet of meeting and banquet space. The location also includes a Starbucks Coffee Shop, GRAZE Restaurant & Lounge and a full service day spa.

Winston-Salem, the city of the arts, abounds with opportunities to enrich your life with art. While at the Annual Conference in the Twin City Quarter, you will be within walking distance of the Downtown Arts District with streets laden with shops, galleries, museums, and restaurants – all within one block of Business 40. Winston-Salem is also home to Winston-Salem State University, Wake Forest University, the Bowman Gray School of Medicine, historic Old Salem, and is the host for the annual furniture mart, which attracts visitors from across the US and the world. The 2005 international rankings for quality of life by Mercer Human Resource Consulting ranked Winston-Salem in the top 50. The company placed Winston-Salem in a tie for 46th place with Lexington, KY; Osaka, Japan; Pittsburgh, PA; and Seattle, WA.

Join us on Sunday, November 16 to kick-off your conference experience with one of two great recreational events. Set your sites on a day of sporting clays or choose to tee-off in our annual golf tournament. Whenever you arrive, we look forward to seeing you!

Hunting Creek (www.huntingcreekpurchases1.com) in Harmony will host the sporting clays event with registration and lunch beginning at 12:00pm and a shotgun start at 1:00pm. Hunting Creek has a 13-station sporting clays course that offers more than a mile of trails. The course meanders through various elevations before ending on a lowland next to a stream. Each of the stations on the course are located well out of sight of the previous station and are equipped with two Promatic traps that operate with push button ease. A 45-foot tower adds greater variety to the sportsman’s clay experience. Registration for this event includes 100 targets and lunch for a fee of $70 per person. All participants will be required to sign a waiver on-site.

The golf tournament will take place at Reynolds Park Golf Club in Winston-Salem. Registration will begin at 9:00am. Again this year, the golf package price is $65 per golfer, and includes a round of golf, box lunch and prizes. Team and individual sign-ups are accepted. The rolling terrain of this classic 1930 Ellis Maples/Perry Maxwell layout is conveniently situated near the center of downtown Winston-Salem. This family-friendly course still has enough bite to challenge all calibers of golfers, despite a limited number of traps and terrain hospitable to wayward shots. Reynolds Park is especially attractive to college students and beginning golfers, yet hosts numerous countywide tournaments. A well-established course, it has mature trees lining the fairways and a few creeks that come into play on almost all holes. Although the course measures only 6,534 yards, it plays deceivingly longer and requires the use of all the clubs in your bag. The signature hole is #18, a 425-yard, par 4, requiring an approach shot to an elevated green. The abundance of flowering trees and bushes makes the course glow in the spring and fall.

The exhibit hall will feature 156 booths filling the North & South Main Halls of the Benton Convention Center. Vendors are eager to share their knowledge with attendees, and the flexible conference schedule allows ample time to talk. The exhibit hall will open Sunday evening at 5:00pm for a Welcome Reception with complimentary hors d’oeuvres and sodas, and a cash bar. At 7:00pm we will announce the golf and clay shoot winners, induct new members into the Select Society of Sanitary Sludge Shovelers (5S), and present the Golden Manhole Awards and Collection and Distribution Systems of the Year Awards.

On Monday and Tuesday buffet-style lunches will be served in the exhibit hall with tables available so you can conveniently stop and talk as you eat. Another social will take place in the exhibit hall on Monday from 5:15pm – 6:45pm with complimentary hors d’oeuvres and sodas, and a cash bar. As you plan your conference attendance you will want to make sure you are present in the exhibit hall for the six door prize drawings that will take place Sunday through Tuesday giving every attendee multiple chances to win great prizes donated by our exhibitors. Door prize tickets are included in attendee registration. Exhibitors will also be able to get in on the competitive atmosphere with a ‘Best in Show’ award. On Monday, secret shoppers will roam the exhibit hall seeking out exhibitors that really set themselves apart from the others. The winner will receive $100 off the purchase of an exhibit booth at the 2015 conference.

With so much to do inside and outside of the exhibit hall, don’t forget that the exhibit hall will close on Tuesday at 1:20pm before the end of the conference.

At the core of everyone’s conference experience is the technical program, and this year’s line-up will not disappoint. Continuing education units will be offered for the pre-conference workshop, Opening Session, technical sessions,
Monday morning’s Opening Session & Operator Awards from 7:45am to 9:05am will closely follow the theme of ‘Expect the Unexpected’ introduced at the pre-conference workshop. The Opening Session keynote speaker is Mark McIntire, Environment and Energy Policy and Affairs Director from Duke Energy in Raleigh, NC. McIntire will present his perspective on the interconnectedness of the water and energy professions, and the similar challenges each industry faces related to the public, regulations, finances, and climate. Time will be set aside during the Opening Session & Operator Awards to hear remarks from visiting AWWA vice-president Michael Simpson, and visiting WEF executive director Eileen O’Neill on the state of the industry. In celebration of our operations personnel, operator awards will also be presented during this time. The remainder of Monday and all of Tuesday will be filled with 30-minute technical sessions being offered all day! Technical session tracks include water, wastewater, collection and distribution, policy and management, and special topics.

With such a great response last year, once again this year you can pre-register to earn continuing education units (CEUs) in the exhibit hall! Attendees that select this option will visit four exhibitors within 70 minutes to attend four 15-minute presentations and receive 1.0 contact hour. These exhibitor CEU sessions will take place at three times during the conference: Monday 9:10am and 1:20pm and Tuesday 8:30am. During each time period, two tracks of sessions will run. Space is limited for this popular learning experience.

The facility tours will highlight two local facilities. Space for both tours will be limited, and scheduling will only allow you to attend one tour. To reserve a space, be sure to register and pay for a tour with your conference registration. The cost to attend a tour is $5. A tour of the Salem Lake Dam & Thomas Water Treatment Plant will outline the unique challenges experienced during the 2008 renovation of both sites. The Deer-Hitachi Construction Machinery Corporation is regulated by the City of Winston-Salem’s Industrial Waste Control Program (WS IWC) as a metal finisher and is one of only three industrial users regulated by the WS IWC to achieve a five consecutive year 100% compliance status in the last 12 years. This facility treats its wastewater to well below federal discharge standards and is currently able to recycle most of the treated wastewater back into its manufacturing process.

The popular Pipe Tapping Contest will take place on Monday, November 17 at 1:45pm. In this competition of skill, teams compete for the best time for opening a cement-lined, ductile iron pipe and installing a tap.

In the Operations Challenge events, four-person teams, along with their coaches, compete in events that challenge their skills in various wastewater-related activities. The winner is determined by a weighted point system. At the National WEFTEC level, there are five events in the Operations Challenge: Collection System, Laboratory, Process Control, Pump Maintenance, and Safety. The 2014 NC AWWA-WEA Operations Challenge Competition will be the first NC AWWA-WEA competition to include all five events. To accommodate this number, the Operations Challenge events will take place throughout the day on Monday and Tuesday.

There is a great deal of planning, coordination, and equipment required for both the Pipe Tapping and Operations Challenge competitions. Organizations wanting to support these popular events are invited to participate in monetary sponsorship or review the list on page 40 of needed supplies and make an equipment donation.

On Monday evening, after dinner on your own, join your fellow conference attendees at the Marriott Hotel’s Graze Restaurant for the Chair’s Dessert Reception. This casual event is a great way to wrap-up the first full conference day and catch up with friends and colleagues. During the reception, we will recognize individuals involved with our NC Safewater Endowment Fund. Central to our mission and vision, this program raises money to provide scholarships for water/wastewater related education. To support the continued growth of the NC Safewater Endowment Fund, a fundraising event is being planned for the Annual Conference, with the event tentatively planned to conclude during the Chair’s Dessert Reception. We hope all members will participate in the fundraiser and take this opportunity to contribute to the future of our industry.

Again this year the Best Tasting Water Contest will be held on Tuesday at 11:30am. All utilities are invited to submit a sample and see how the taste of their drinking water measures up to the taste of others in the state. A panel of volunteer judges will rank individual samples and results will be combined to establish the overall rankings. Awards will be given for first, second and third place. In order to participate, samples must be turned in at the conference registration desk by 5:00pm on Sunday, November 16.

The Annual Conference shines the spotlight not only on the water/wastewater industry as a whole, but more specifically on NC AWWA-WEA, and Tuesday afternoon and evening highlight the inner workings of the Association and the committees and the people that make things happen. Starting with the Gavel Gala & Awards at 5:30pm you can sit in on the annual business meeting, witness the installation of the 2015 board of trustees and the formal passing of the gavel, as well as congratulate those earning membership awards and winning contests that took place during the conference. The official Awards Banquet will get started at 7:00pm and will honor several outstanding people in our industry.

Students are encouraged to attend and get a jump-start on their career by participating in our student activities. To make conference attendance a little easier, students are eligible for FREE MONDAY ONLY REGISTRATION. To take advantage of this offer,
Flygt MultiSmart brings a state-of-the-art Pump Station Manager to Xylem’s innovative offering within Monitoring & Control. With up to 35% reduction in energy consumption, it can pay for itself in less than 15 months. It also eliminates nuisance call-outs and provides a wealth of operational information.

For more information contact your Flygt product sales professional.

14125 South Bridge Circle
Charlotte, NC 28273
704-409-9700
Donations Needed for the Pipe Tapping and Operations Challenge Contests

The organizers of the Pipe Tapping and Operations Challenge competitions are in need of the following equipment for the 2014 events. If you can supply any of these items contact the event coordinator listed below. Organizations making equipment donations will be recognized as sponsors of the Pipe Tapping or Operations Challenge Competition.

**PIPE TAPPING**

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 – CC by Flare Corp stops ¾” one piece</td>
<td></td>
</tr>
<tr>
<td>14 – Flare by Flare Curb stops ¾”</td>
<td></td>
</tr>
<tr>
<td>2 – 100ft rolls of type K copper ¾”</td>
<td></td>
</tr>
<tr>
<td>4 – 14” pipe wrenches</td>
<td></td>
</tr>
<tr>
<td>4 – 6” wedge action, restraining glands (Megalugs kits)</td>
<td></td>
</tr>
<tr>
<td>2 – 6” cast iron solid caps</td>
<td></td>
</tr>
<tr>
<td>2 – 6” cast iron cap with a 2” tap</td>
<td></td>
</tr>
<tr>
<td>4 – reed copper tubing cutters 5/8” to 2 1/8”</td>
<td></td>
</tr>
<tr>
<td>4 – bags of cutter wheels</td>
<td></td>
</tr>
<tr>
<td>4 – Allen wrench sets standard and metric</td>
<td></td>
</tr>
<tr>
<td>4 – flaring tools ¾”</td>
<td></td>
</tr>
<tr>
<td>2 – Mueller B-101 drilling and tapping machine</td>
<td></td>
</tr>
</tbody>
</table>

Pipe Tapping Coordinator: Brandon Miller, City of Raleigh, (919) 795-0437 Cell, (919) 996-4528 Office, or brandon.w.miller@raleighnc.gov.

**OPERATIONS CHALLENGE: Collections Event**

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 – LENOX 4.5-inch circular cutting blade (model 72L), or equivalent.</td>
<td></td>
</tr>
<tr>
<td>10 – 4-inch service saddle with attached gasket.</td>
<td></td>
</tr>
<tr>
<td>12 – flexible repair couplings. FERNCO</td>
<td></td>
</tr>
<tr>
<td>20 – LENOX saw handles with 18” PVC saw blades (model HS F180)</td>
<td></td>
</tr>
<tr>
<td>10 – new full length-8 inch SDR 35 pipe</td>
<td></td>
</tr>
</tbody>
</table>

Event Coordinator: Greg Morgan, gregmorgan@co.union.nc.us, (704) 507-0372

**OPERATIONS CHALLENGE: Scoring and Process Control Events**

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP 932 and 933 Ink Cartridges (For printing Process Control tests and official score sheets)</td>
<td></td>
</tr>
<tr>
<td>8 ½” x 11” printer paper basic calculators (solar powered) digital stop watches</td>
<td></td>
</tr>
<tr>
<td>10” x 13” manila clasp envelopes</td>
<td></td>
</tr>
<tr>
<td>sharpie markers (black) #2 pencils</td>
<td></td>
</tr>
</tbody>
</table>

Event Coordinator: Billy Allen, ballen@charlottenc.gov, (704) 553-2124

**OPERATIONS CHALLENGE: Maintenance Event**

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parts for Godwin CD100M Dri-Prime Pump</td>
<td></td>
</tr>
<tr>
<td>Engine components-</td>
<td></td>
</tr>
<tr>
<td>2 ea. primary oil filter</td>
<td></td>
</tr>
<tr>
<td>2 ea. secondary fuel filter</td>
<td></td>
</tr>
<tr>
<td>1 bx. fuel dye test strip</td>
<td></td>
</tr>
<tr>
<td>Pump components-</td>
<td></td>
</tr>
<tr>
<td>ejector housing screen</td>
<td></td>
</tr>
<tr>
<td>air compressor air filter</td>
<td></td>
</tr>
</tbody>
</table>

Event Coordinator: Hank Lewis, hmlewis@charlottenc.gov, (704) 556-9397 ext. 244

**OPERATIONS CHALLENGE: Laboratory Event**

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 – magnetic stir plates</td>
<td></td>
</tr>
<tr>
<td>1 – 5-gallon carboy with spigot</td>
<td></td>
</tr>
<tr>
<td>6 ml volumetric pipets</td>
<td></td>
</tr>
<tr>
<td>2 – pipet bulbs (safety type)</td>
<td></td>
</tr>
</tbody>
</table>

Event Coordinator: Donna Slachciak, dslachciak@charlottenc.gov, (704) 553-2124

**OPERATIONS CHALLENGE: Safety Event**

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>digital stop watches disposable latex gloves</td>
<td></td>
</tr>
<tr>
<td>1 – Scott Protégé gas monitor with pump clipboard</td>
<td></td>
</tr>
<tr>
<td>clipboard</td>
<td></td>
</tr>
</tbody>
</table>

Event Coordinator: Michael W. Starney, mikes@msobc.org, (828) 225-8262

For additional information, please visit carotek.com or call us at 704-844-1100.
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- Full Port Eccentric Plug Valves
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- Mud & Foot
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- Weir Gates & Stop Logs

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- End Suction
- Self Priming
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- Progressive Cavity
- Vertical Turbine
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- Flowmeters
- Pressure/Temp Transmitters
- Level Transmitters
- Analyzers
- Recorders
- Pressure/Temp Gauges
- Pressure/Temp Switches
- Diaphragm Seals
- Heat Tracing
- Actuators
- Instrument Enclosures
- Signal Isolators

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- Grit Removal
- Packaged Treatment Systems
- Odor Control
- Classifiers
- Screens
- Membrane Systems
- Heat Tracing

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For additional information, please visit: carotek.com
or call us at 704-844-1100
North Carolina • South Carolina • Virginia • Georgia • Tennessee

CAROTEK®
The Power of Solutions
### Conference Overview

#### Sunday, November 16

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00am – 3:30pm</td>
<td>Exhibit Set-up</td>
</tr>
<tr>
<td>9:00am</td>
<td>Golf Tournament at Reynolds Park Golf Club*</td>
</tr>
<tr>
<td>12:00pm</td>
<td>Clay Shoot at Hunting Creek Preserves*</td>
</tr>
<tr>
<td>12:00pm – 6:00pm</td>
<td>Committee Display Tables</td>
</tr>
<tr>
<td>2:00pm – 6:00pm</td>
<td>Conference Registration Desk Open</td>
</tr>
<tr>
<td>3:00pm – 4:30pm</td>
<td>Pre-Conference Workshop: Expect the Unexpected, Part 1: Implications of the Dan River Coal Ash Spill*</td>
</tr>
<tr>
<td>3:00pm – 5:00pm</td>
<td>Board of Trustees Meeting</td>
</tr>
<tr>
<td>5:00pm</td>
<td>Best Tasting Water Contest Entries Due</td>
</tr>
<tr>
<td>5:00pm – 7:30pm</td>
<td>Welcome Reception in the Exhibit Hall</td>
</tr>
<tr>
<td>5:30pm – 6:00pm</td>
<td>Moderator’s Meeting</td>
</tr>
<tr>
<td>7:00pm</td>
<td>Award Presentations</td>
</tr>
</tbody>
</table>

#### Monday, November 17

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:45am – 5:30pm</td>
<td>Conference Registration Desk Open</td>
</tr>
<tr>
<td>7:00am – 7:00am</td>
<td>Moderator’s Meeting</td>
</tr>
<tr>
<td>7:00am – 7:00am</td>
<td>Committee Display Tables</td>
</tr>
<tr>
<td>7:45am – 9:05am</td>
<td>Opening Session &amp; Operator Awards</td>
</tr>
<tr>
<td>Keynote Speaker: Mark McIntire, Environmental and Energy Policy and Affairs Director, Duke Energy, Raleigh, NC*</td>
<td></td>
</tr>
<tr>
<td>8:00am – 5:00pm</td>
<td>Student Poster Contest</td>
</tr>
<tr>
<td>9:00am – 6:45pm</td>
<td>Exhibit Hall Open</td>
</tr>
<tr>
<td>9:10am – 10:20am</td>
<td>Exhibit Hall CEU Program, Session 1*</td>
</tr>
<tr>
<td>9:15am – 5:10am</td>
<td>Technical Sessions</td>
</tr>
<tr>
<td>9:30am – 4:30pm</td>
<td>Operations Challenge: Collection System, Pump Maintenance, and Safety Events*</td>
</tr>
<tr>
<td>9:30am – 12:00pm</td>
<td>Operations Challenge Laboratory Event*</td>
</tr>
<tr>
<td>11:30am – 1:20pm</td>
<td>Association Buffet Lunch</td>
</tr>
<tr>
<td>12:05pm – 1:15pm</td>
<td>Student Lunch*</td>
</tr>
<tr>
<td>1:20pm – 2:30pm</td>
<td>Exhibit Hall CEU Program, Session 2*</td>
</tr>
<tr>
<td>1:30pm</td>
<td>Facility Tours: (Participants may only attend one tour.)</td>
</tr>
<tr>
<td>1:45pm</td>
<td>Thomas WTP/Salem Lake Dam*</td>
</tr>
<tr>
<td>3:00pm – 3:30pm</td>
<td>Afternoon Break</td>
</tr>
<tr>
<td>5:15pm – 6:00pm</td>
<td>Industrial Reception</td>
</tr>
<tr>
<td>5:15pm – 6:00pm</td>
<td>Industry Newcomer’s Reception</td>
</tr>
<tr>
<td>5:15pm – 6:00pm</td>
<td>Water Resources Committee Reception</td>
</tr>
<tr>
<td>5:15pm – 6:45pm</td>
<td>Social Hour in Exhibit Hall</td>
</tr>
<tr>
<td>8:30pm – 10:30pm</td>
<td>Chair’s Endowment Dessert Reception &amp; NC Safewater Endowment Silent Auction</td>
</tr>
</tbody>
</table>

#### Tuesday, November 18

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00am – 8:00am</td>
<td>5S Breakfast (5S Members Only)</td>
</tr>
<tr>
<td>7:30am – 1:20pm</td>
<td>Committee Display Tables</td>
</tr>
<tr>
<td>7:30am – 5:30pm</td>
<td>Conference Registration Desk Open</td>
</tr>
<tr>
<td>7:30am – 1:20pm</td>
<td>Exhibit Hall Open</td>
</tr>
<tr>
<td>8:00am – 5:00pm</td>
<td>Technical Sessions</td>
</tr>
<tr>
<td>8:30am – 9:40am</td>
<td>Exhibit Hall CEU Program, Session 3*</td>
</tr>
<tr>
<td>9:00am – 10:00am</td>
<td>Operations Challenge: Process Control Event*</td>
</tr>
<tr>
<td>9:40am – 10:15am</td>
<td>Morning Break</td>
</tr>
<tr>
<td>10:30am – 3:30pm</td>
<td>Operations Challenge: Laboratory Event*</td>
</tr>
<tr>
<td>11:30am</td>
<td>Best Tasting Water Contest</td>
</tr>
<tr>
<td>11:30am – 1:20pm</td>
<td>Association Buffet Lunch</td>
</tr>
<tr>
<td>2:15pm – 2:45pm</td>
<td>Afternoon Break</td>
</tr>
<tr>
<td>5:30pm – 7:00pm</td>
<td>Gavel Gala*</td>
</tr>
<tr>
<td>7:00pm – 10:00pm</td>
<td>Awards Banquet*</td>
</tr>
</tbody>
</table>

#### Wednesday, November 19

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00am – 9:00am</td>
<td>Coffee</td>
</tr>
<tr>
<td>8:00am – 11:30am</td>
<td>Conference Registration Desk Open</td>
</tr>
<tr>
<td>9:00am – 11:00am</td>
<td>Forum: Expect the Unexpected, Part 2: Emergency Response to Illicit Discharges*</td>
</tr>
<tr>
<td>11:30am – 2:30pm</td>
<td>Board of Trustees Meeting</td>
</tr>
</tbody>
</table>

* These events are available for sponsorship.
* These events offer contact hours.

### Connect with the Annual Conference Online to Learn More and Register

Visit [www.ncsafewater.org/events_education/conferences/annual](http://www.ncsafewater.org/events_education/conferences/annual) to get more information and the latest updates. You may choose to register online or download and print the registration form. Use your smartphone or tablet to scan these barcodes and get connected quickly.

- **Annual Conference Home**
  [http://www.ncsafewater.org/events_education/conferences/annual/](http://www.ncsafewater.org/events_education/conferences/annual/)
- **Online Registration**
- **Technical Program**
- **Exhibit List**
Global Technologies, Local Solutions.

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This tentative schedule is current as of 7/29/14 and subject to change.

**SUNDAY, NOVEMBER 16, 2014**

9:00 am - 4:30 pm  [Expect the Unexpected Part 1: Implications of the Dan River Coal Ash Spill – Speakers TBA]

**MONDAY, NOVEMBER 17, 2014**

7:45 am - 9:00 am  [OPENING SESSION - Mark McIntire, Duke Energy]

<table>
<thead>
<tr>
<th>TIME</th>
<th>WATER</th>
<th>WASTEWATER</th>
<th>COLLECTION &amp; DISTRIBUTION</th>
<th>SPECIAL TOPICS</th>
<th>POLICY &amp; MANAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>David Briley, Hazen and Sawyer</td>
<td>K. Richard Tsang, CDM Smith</td>
<td>Bryan Odom, WK Dickson &amp; Co., Inc.</td>
<td>Michael Wicker, Withers &amp; Ravenel</td>
<td>Tory Wagener, Cavanaugh</td>
</tr>
<tr>
<td>9:50 am - 10:20 am</td>
<td>The Wait Is Over - Tier 3 and 4 Operational Evaluation Level (OEL) Reporting and Stage 2 DBP Rule Compliance</td>
<td>Co-Digestion Opportunities and Challenges</td>
<td>Preparing for Waterline Construction in a Downtown Urban Environment</td>
<td>Polychlorinated Biphenyls (PCBs) in Collection Systems and WWTPs - The Charlotte-Mecklenburg Utility Department Mitigation Experience</td>
<td>Application of Career Ladders for Employee and Leadership Development</td>
</tr>
<tr>
<td></td>
<td>Reed Barton, CDM Smith</td>
<td>James O'Shaughnessy, ARCADIS US Inc</td>
<td>Nolan Ramey, Kimley Horn</td>
<td>Darrell DeWitt, Charlotte Mecklenburg Utility Dept (CMUD)</td>
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<td>Maggie Pierce, Hazen and Sawyer</td>
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<td>Aaron Collins, Schnabel Engineering South, PC</td>
<td>Sarah Braman, CH2M HILL</td>
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<td>11:00 am - 11:30 am</td>
<td>Chlorine Dioxide for Pre-oxidation and DBP Control</td>
<td>Digestion Pretreatment: Critical Issues in Thermal Hydrolysis Design and Commissioning</td>
<td>Strategies to Address Site-Specific Instream Metals Criteria Development</td>
<td>A River Runs Through It: Force Main Relocation Across the Neuse</td>
<td>Reducing Nutrient Loading From Onsite and Decentralized Wastewater Systems in the Chesapeake Bay Watershed and North Carolina Piedmont</td>
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<td>Peter O’Adams, HDR, Barry Parsons, City of Greensboro</td>
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<td>Paul Wilson, Brown and Caldwell</td>
<td>Ben Latino, McKinn &amp; Creed</td>
<td>How Utilities Can Gain Efficiency in the SEPA Process</td>
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<td>Ralph B. ‘Rusty’ Schroeder, Jr., Brown and Caldwell</td>
<td>Jeff Cruzhank, Hazen and Sawyer</td>
<td>Paul Wilson, Brown and Caldwell</td>
<td>Mary Sadler, Hazen and Sawyer</td>
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<td>Developing a Water Supply Agreement to Ensure a Sustainable Intersbasin Transfer for Union County’s Yadkin River Basin Service Area</td>
<td>Experience, Insights and Opportunities: Advanced Instrumentation Changes Everything</td>
<td>20 Tips for a Successful Pump Station Renovation</td>
<td>Work Smarter, Not Harder! Manage Your Infrastructure With GIS!</td>
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<td>A Constructive Critique of USEPA Methods for Nutrient Permitting: Going Beyond the Toxics Paradigm</td>
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<td>European Technology in the USA - Emerging Technology and Drivers</td>
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<td>Jeremy Allen, Highfill Infrastructure</td>
<td>Steve Tarallo, Black &amp; Veatch</td>
<td>Ricardo Campos, Brown and Caldwell</td>
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<td>HSGAC: A Site Specific Granular Activated Carbon Model Design Tool</td>
<td>The Treatment Plant Multi-Tool - a 65-Foot Deep, 50MMD Pump Station</td>
<td>Pilot First! Inspecting PCCP Water Mains in Greensboro</td>
<td>Navigating Energy Performance Contracting: One Utility’s Answer to Completing Good Projects without Adding Debt</td>
<td>Jennifer Bell, CH2M HILL</td>
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<td>Trooper Smith, Freese and Nichols, Inc.</td>
<td>James Perott, Brown and Caldwell</td>
<td>Jennifer Bell, CH2M HILL</td>
<td>Olivia Flynn, PE, CDM Smith</td>
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<td>Challenges for Blended Water Sources in Pilot Studies</td>
<td>Competing Odor Sources</td>
<td>Portable Parallel Analysis - A New Paradigm for Distribution System Monitoring</td>
<td>Is the Envision ™ Rating System Right for Your Utility? Tangible Strategies for Implementing Sustainability in Infrastructure Projects</td>
<td>Back to the Future - Revisiting NC Water Quality Regulations During Rules Reviews</td>
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<td>William Kreutzberger, CH2M HILL</td>
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8:00 am - 8:30 am Design Decisions for New Ozone-Biofiltration Water Treatment Plant  
Bill Dowbiggin, CDM Smith
- Process Control for Improved Nitrogen Removal
- Managing & Assisting With State & Federal Enforcement Directives Related to Sanitary Sewer Overflows (SSOs)
- Construction of the Progressive Design-Build McPike Creek WWRF Effluent Filter Expansion Project
- Next Generation Water Loss Tools - AWAs  New and Improving Tools and Publications for Water Loss Control
- Will Jernigan, Cavanagh

8:35 am - 9:05 am Ahoy Matey! Navigating the Seas of Setting Process Advancements  
Cory Hopkins, Hazen and Sawyer
- Smart Whole Plant Optimization: Operators and Consultants Team Up to Feed Savings
- Pressure Pipe Condition Assessment Across North Carolina
- Overview of Construction Manager at Risk (CMAR) Project Delivery
- Collaborative Alternatives to Project Delivery
- Jeff Coggins, Black & Veatch

9:10 am - 9:40 am Water Treatment Residuals Handling Upgrades for Regulatory Compliance and Operational Efficiency  
Jonathan Treadway, CDM Smith
- Managing Multiple Variables – WW Treatment Optimization and Real-Time Energy Management
- Rehabilitation or Replacement? That is the Question.
- Looking to Minimize Construction Changes and Project Cost Escalation? Lesson-Learned from the City of Greensboro: Start With Good Specs!
- Leveraging GIS-Based Mobile and Cloud Technologies to Support Asset Management and System Operations
- Jayson Bremen, CDM Smith

9:40 pm - 10:15 pm BREAK IN EXHIBIT HALL

10:15 am - 10:45 am An Interim Solution for Regional Raw Water: The Lower Cape Fear Water and Sewer Authority’s 29-mdg Raw Water Booster Pump Station  
Tony Boazin, McKim & Creed
- Maximizing Clarifier Capacity and Performance Through CFD Modeling
- Planning for the Future: A Regional Master Plan Approach With the Opportunity to Minimize Future Operation and Maintenance Concerns
- Utility Uses Design-Build (Integrated Delivery) to Fast Track New WWTP Outfall and Diffuser
- Next Generation Asset Management: Knowledge Management in an Aging Workforce

10:50 am - 11:20 am Filter Media Asset Management: A New Sustainable Approach to Maintaining Filter Performance  
William Gresham, Utility Service Group
- Utilization of Dynamic Modeling to Evaluate and Design Secondary Clarifiers for the Winston-Salem Muddy Creek WWTP
- Brunswick County’s Advanced Meter Infrastructure (AMI) Conversion Program
- City of Tampa’s Utility Capital Improvement Projects (ICAP)
- Keeping Out the Riffraff: City of Raleigh Biennial Pipeline Construction Prequalification

11:25 am - 11:55 am Filter Condition Assessment and Optimization  
Kelly Comstock, Brown and Caldwell
- Industrial WWTP Staff Augmentation: Operational Support During Routine and Upset Conditions
- Craven County Water: Change In Operating Strategy Utilizing Hydraulic Modeling
- Brian White, McKim & Creed

12:00 pm - 12:30 pm Reverse Osmosis for Ground Water - A Solution for ONWASA’s Dixon Water Treatment Plant  
Eric Carter, Kimley Horn
- To the Grid: Startup and Operation of the WSACC Heat to Energy Project
- Forecasting Future Funding Demand for Asset Renewal and Replacement
- Shifting From a Reactive Approach to Proactive Planning: Asset Management for an Aging Treatment Facility

12:35 pm - 1:05 pm Smoothing the Upgrade Path - A Qualification-Based Approach to a Control System Upgrade at the Cary/Apex Water Treatment Facility  
Terry M. Draper, HDR
- Industrial Waste to Energy in NC: Is it Worth It?
- The Town of Wingate’s Dual Approach to Sewer Rehab: Maximizing Grant and Loan Funding
- Adam Sharpe, CDM Smith

1:10 pm - 1:40 pm Lean Water Operations - Transforming Data Into Information Is Critical to the Success of Your WTP  
Pam Moss, Hach Company
- Arsenic Inhibition of Anaerobic Process: A Review
- Conceptual Design to Construction (C to C) for Streamlined Implementation of Trenchless Rehabilitation of Buried Infrastructure
- Mandy LeBlanc, ARCADIS US Inc

1:45 pm - 2:15 pm Lessons Learned From Security and Preparedness Projects at Various Water and Wastewater Systems  
Jack Moyer, UPS
- Newtons - More Than Just a Great Snack - The Key to Comparing Mixing Technologies
- Adromor Basin SSES Master Plan and Sewer Rehabilitation
- Remote Facility Maintenance Logistics Study
- Erin Culbertson, Brown and Caldwell

2:15 pm - 2:45 pm BREAK

2:45 pm - 3:15 pm What About Reliability?: Tampa Bay Water's Unique Reliability-based Asset Management Program  
JD Solomon, CH2M HILL
- Grit Happens: Know How to Deal With It - A Case Study on Selection of Grit Removal Systems for WWTPs
- The Value of Both Assessment and Inspection Technologies in a Basin-wide Evaluation for the City of Lancaster, SC
- Jeffery A. Eger, HDR

3:20 pm - 3:50 pm Weatherford Water Crisis: High Service Pump Station Discharge Piping Failure  
Bryan Jann, Freese and Nichols, Inc
- Western Wake Regional Wastewater Management Facilities - Partnership, Permitting, Desing/Construction, and Outreach
- Shooting the Gap - Alternatives for Squeezing 10 Miles of 60” WIP Into the Urban Columbia Landscape
- Erin Culbertson, Brown and Caldwell

3:55 pm - 4:25 pm Lake Mixing to Improve Raw Water Quality  
Robert Hilt,Town of Cary Water Resources Dept.
- An Alternative Mathematical Model for Oxygen Transfer Evaluation in Clean Water
- Utility Stream Crossings: Whose Problem Is It and Who’s Paying?
- The Latest in MS4 Permitting for Stormwater Programs and its Impact on Wastewater
- John Baldwin, McKim & Creed

4:30 pm - 5:00 pm TBD: OLD TANK: A Structural Engineer’s Perspective on Repairing, Retrofitting, and Re-purposing Your Facilities  
Daniel Haberek, Brown and Caldwell
- Taming Tigers and Wrestling Anaerobics: Pender County Commerce Park WWTP
- The Use of Super Oxygenation to Prevent Odor and Corrosion in Force Mains
- Turning Liabilities Into Assets: Local Government Stream and Wetland Restoration
- Ward Marotti, WK Dickson & Co., Inc

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9:00 am - 11:00 am Expect the Unexpected Part 2: Emergency Response to Illicit Discharges – Speakers TBA
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### SSES Data Collection Methodologies
**PRESENTER:**
Michael Koonce, Hydrostructures

### Real-Time THM Monitoring for System Optimization
**PRESENTER:**
Kelley Wilber, Heyward

### Proper Design of Suction Line Conditions
**PRESENTER:**
Preston Campbell, Pen Valley Pump Co, Inc

### Sanitary Sewer Asset Management for Fact-Based O & M and CIP Practices
**PRESENTER:**
Glen Hill, RedZone Robotics, Inc

### Lime Slaker and Slurry Delivery Systems
**PRESENTER:**
Jeff Tennant, Chemco

### Common Pipe Materials for Water and Sewer Construction and Rehabilitation
**PRESENTER:**
Bryan Jann, Freese and Nichols

### Improve Process Control Using Inline Suspended Solids Sensors to Measure Return Activated Sludge Concentration
**PRESENTER:**
Harvey Klaer, Cerlic Environmental Controls / Mike Ping, Heyward Inc.

### Potable Water Tank Mixing System
**PRESENTER:**
Michelle McAdden, Solar Bee

### Fixes for Inflow and Infiltration
**PRESENTER:**
William Goff, Sealing Systems, Inc

### Anua Monoshell Odor Control System for Wastewater Applications
**PRESENTER:**
Casey Davis, Anua

### New Technology to Control Water Quality
**PRESENTER:**
Gary Visser, Hach Co

### Centrifugal Pump Station Evaluation
**PRESENTER:**
Zak Purvis, Kimley-Horn & Associates

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- We use lighter publication stock that consists of recycled paper. This paper has been certified to meet the environmental and social standards of the Forest Stewardship Council® (FSC®) and comes from responsibly managed forests, and verified recycled sources making this a RENEWABLE and SUSTAINABLE resource.
- Our computer-to-plate technology reduces the amount of chemistry required to create plates for the printing process. The resulting chemistry is neutralized to the extent that it can be safely discharged to the drain.
- We use vegetable oil-based inks to print the magazine. This means that we are not using resource-depleting petroleum-based ink products and that the subsequent recycling of the paper in this magazine is much more environment friendly.
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- Within the pages of each issue, we actively encourage our readers to REUSE and RECYCLE.
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So enjoy this magazine...and KEEP THINKING GREEN.

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The Value of Water: The value of water is immeasurable. It is a vital resource in every form of nourishment we need for our bodies to survive, and in every commodity we use. We in the USA have clean, safe water delivered to our homes every day. But over 3.5 million people die each year from water-related diseases all over the world.

The Cost of Water: Compared to the cost of other utility bills, water is a bargain. However, this cost of water is not sustainable. The 2009 Report Card on Americas Infrastructure indicates total investment needs over the next 20 years for water and wastewater infrastructure to be over $200 billion dollars; over $16 billion dollars in North Carolina alone.

Your Obligation and Opportunity: We have clean water because of the work of thousands of dedicated water and wastewater professionals in North Carolina, but it is everyone’s obligation to keep our water safe, clean and available for generations to come. Consider pursuing one of the many career opportunities in the water industry for a fun, exciting, and rewarding future.

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Business Development Contacts
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SPECIAL SECTION: SAFETY

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Developing an Effective Safety Program

By Michael Garver, City of Raleigh, Public Utilities Department

Today, businesses and organizations are more focused on safety within the workplace than they were in the past. This increased attention to safety is driven in part by an organization’s need to reduce costs associated with Workers Compensation claims and lost productivity as a result of workplace injuries. Employers are also recognizing the importance of reducing accidents that can result in decreased employee morale and, most importantly, the need to have a workforce that returns home healthy each day.

An effective safety program is paramount in achieving these goals, and requires the direct involvement of all employees within the organization. Management must lead the charge to ‘safety excellence’ by demonstrating commitment and leadership in developing and upholding safe business processes. This includes communicating the organizations goals, allocating the necessary resources, defining accountability, and taking necessary measures to mitigate identified hazards.

Employees at all levels of the organization play an important role in driving the safety effort. By directly involving all levels of employees within the organization in the development and administration of safe work practices a utility can be better positioned to achieve an effective safety management program. This includes identifying and correcting workplace hazards, and adhering to the policies and procedures developed by the organization that are intended to create safe work practices and prevent injuries or other unintended accidents.

The following paragraphs outline the structure and content of the City of Raleigh – Public Utilities Department’s (CORPUD) Safety Program. The Department’s program focuses on four broad areas or elements that work together to achieve and maintain a safe work environment. These safety program elements include:

- Written Policies, Procedures, and Programs
- Employee Training
- Workplace Safety Inspections
- Incident Investigation and Corrective Actions

Written Policies, Procedures, and Programs:
The City of Raleigh – Public Utilities Department (CORPUD) Safety Program is based on a set of policies and procedures that describe how staff members perform their jobs in a safe and healthful manner. These procedures focus on reducing an employee’s exposure to workplace hazards while working to increase an employee’s awareness of potential hazards. Procedures are developed that describe how work is to be performed while protecting both employees and the environment.

Workplace Hazard Assessments are performed to identify hazards associated with the tasks, and communicate instructions to staff which outline the steps necessary to protect employees from those hazards. The assessments are used to identify and control hazards that are present in the workplace. The preferred approach to controlling hazards is to eliminate the identified hazards whenever possible. An example of this is removing a hazardous chemical from use in the treatment process and replacing it with one that is less hazardous. The next step would be to implement an engineering control, such as relocating or enclosing the chemical storage and handling area in order to minimize an employee’s potential exposure to the substance. The final two steps that may be taken to protect staff include implementing administrative controls and assigning personal protective equipment (PPE) requirements when working in close proximity to a chemical storage area.

A recent example of a procedure that was developed by CORPUD and includes instructions that address worker safety is the Resource Recovery Division’s - Air Relief Valve (ARV) Inspection and Repair Procedure. In creating the procedure, the Maintenance Section staff looked closely at how to perform inspection and maintenance work on ARVs while ensuring the safety of staff during the performance of
“Training employees at all levels within the organization on the policies and procedures that have been developed is an important key to ensuring that all employees understand the expectations of their job.”

the work. Some of the safety-related aspects of the procedure include addressing issues associated with confined space entry hazards, flammable and toxic environments, roadway workzone safety, and proper lifting and opening of manholes. Each task associated with ARV inspection and servicing implements either an engineering, administrative, or PPE control to protect employees from existing or potential hazards.

Employee Training:
Training employees at all levels within the organization on the policies and procedures that have been developed is an important key to ensuring that all employees understand the expectations of their job. Safety training must be developed that informs staff of the importance of safe work practices and explains how to accomplish a specific task safely. Educating the workforce will positively affect the employee’s attitudes toward safety, and improve skills that are necessary to perform each job safely.

CORPUD has developed a safety training program and curriculum which is scheduled and delivered to staff in the following categories:

- Division-wide safety training is conducted on a wide range of topics that are required by North Carolina Department of Labor – Occupational Safety and Health (NCDOL-OSH), or have a significant impact on reducing potential incidents. Division-wide training classes are held on a reoccurring schedule, typically monthly. Classes are 30-45 minutes in duration and include topics such as emergency preparedness, bloodborne pathogen awareness, personal protective equipment, hazard communication, and driver safety. Employees are encouraged to participate as instructors for these classes which help to broaden their knowledge as experts in the subject matter being presented.

- Weekly Toolbox Safety Topics are small group discussions lasting 10-15 minutes on a wide variety of safety-related topics. The safety coordinators develop and distribute outlines on a regular basis that address safety issues and cover topics that impact the work performed by staff. Safety Committee members often request specific topics to be reviewed based on their experiences and observations of potential unsafe conditions, behaviors or near misses.

- Specialized Training is conducted for safety programs required by the NCDOL – OSH regulations, and are intended for specific groups within the organization that have unique training requirements. Some of the programs and high-hazard tasks that require specialized training include confined space entry, trenching and shoring, aerial lift operations, arc flash protection, crane operation and rigging, and work zone traffic control. CORPUD has the benefit of having a large number of staff members who have completed instructor training and/or certification to assist in teaching other employees in the department. This pool of experienced instructors makes it possible for CORPUD to provide the necessary specialized safety training to a large percentage of our staff.
Organizations may find that they do not have the necessary expertise in a particular area, and may find it beneficial to obtain training from an outside source. There are a large number of training resources available from both private and public organizations, including the NCDOL-OSH, NC Industrial Commission, North Carolina State University Industrial Extension Service, and the Safety & Health Council of NC. Obtaining formal training for staff can help to build on the knowledge and experience needed to develop and grow the organization’s safety program.

**Workplace Safety Inspections:**
In order to achieve and maintain a safe workplace, an organization must implement inspections to verify compliance with regulatory requirements and to identify potential hazardous conditions that could lead to an injury. CORPUD has implemented regularly scheduled preventive maintenance inspections of its safety systems, such as safety showers, fire extinguishers, emergency lighting, and exit signs. Employees are trained to recognize when a safety system does not function or perform correctly and record the observed condition or deficiency in a work order system. The work order system functions to track and assign the necessary repair or replacement of equipment to an individual or team that is trained and equipped to make the repair.

Periodic walk-through inspections occur that look at all areas and systems within the facility with the goal of finding potential hazards or deficiencies before an incident occurs. Formal compliance inspections are completed by the CORPUD Public Utilities Safety & Health (PUSH) Team that look at specific locations and communicate findings back to the staff responsible for that area. Corrective action recommendations are made to assist the location in achieving and maintaining compliance with environmental and safety regulations. Corrective action recommendations may be as simple as moving paint and solvent products into a flammable cabinet, or installing signage to notify employees of equipment that may start automatically. Having a facility inspection program that does not communicate and follow up on corrective actions will not achieve the desired goal of creating a hazard-free workplace. Employees should be required to inspect their individual work space each day and report problems immediately so they may be corrected.

**Incident Investigation and Corrective Actions:**
Investigating personal injury, vehicle incidents, and property damage accidents should be a component of an organization’s safety program. Investigations should be conducted in a way that helps to identify failures in the safety management system and investigate possible corrective actions. The primary goal of all investigations should be to prevent a recurrence of a similar incident in the future. CORPUD has implemented a two-step investigation process that involves the employee’s immediate supervisor and the department safety coordinator.

An investigation is completed at the scene of the incident whenever possible, and evidence related to the incident should not be altered until the investigation is completed. The safety coordinator assists the supervisor in evaluating the circumstances associated with the event, and works collaboratively to determine the root cause of the incident. Root cause analysis will include reviewing all contributing factors including persons, processes, equipment, and environmental conditions associated with the event. Often when conducting a root cause analysis, it is determined that there is more than one cause, and more often than not, employee training will play an important role in preventing a recurrence. Once a corrective action has been implemented, it is necessary for the affected workgroup to evaluate the effectiveness of the change and report its determinations to management.

As the organization grows and changes over time, the safety program must be re-evaluated to ensure the continued success in protecting the workers’ health. CORPUD has seen a consistent decrease in the number, frequency, and costs associated with both vehicle accidents and personnel injuries during the past five years. The reduction in incidents is due to the combined efforts of staff managing their work environment and being mindful of safe work practices, and CORPUD management providing the necessary resources to implement the safety program and train employees.

**About the Author**
Michael Garver has been employed with the City of Raleigh Public Utilities Department for the past 10 years, including six years as a Utilities Safety Coordinator.
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Making Safety Really Work in Your Organization

By Brian McKendree, MS, CSP

Changing Culture, Changes Behavior
If you cannot explain what safety means in your organization, maybe it’s time for a change. We live in a world of shrinking budgets, ever-evolving laws and regulations and constraints of time on our work efforts. With the right commitment and effort toward safety, many of these concerns can be eased or possibly eliminated. It makes no difference if your organization is either public or private, the principles of an effective safety culture will have a positive impact on budgets, incident rates and most importantly people.

Core Safety Principles
An organization’s ‘Safety Culture’ can be determined by how well that organization weaves safety into everything it does through a set of three core safety principles: commitment, accountability, and involvement. Within the framework of these core principles an organization’s safety culture can either thrive or ‘Die on the Vine.’ Each core principle can be broken down into smaller elements, which can be measured to track progress. Let’s examine the first core principle of ‘commitment’ and what that means.

Commitment
Commitment, in a broad sense, means to be responsible for something through one’s time and/or energy. It can also mean an obligation, devotion or dedication. An organization that strives for a culture of safety must start with the unwavering support by top management. If individuals at the top of an organization do not feel responsible for the health and safety of everyone in their organization, everything beyond this point will not make the impact needed for true culture change. Management can show commitment to safety by stating clear expectations for safety at all levels of the organization.

Align safety expectations with organizational business goal. In other words, develop safety criteria that can be measured and evaluated. For instance, stating a goal that all supervisors must take Occupational Safety and Health Administration (OSHA) 10-hour training within the first six months of employment and a refresher OSHA 10-hour every three years, can be measured and evaluated. Additionally, top-level commitment can be demonstrated through leading by example to model the safe behavior that is expected of others. There is nothing more damaging to the success of building a safety culture than having mixed messages demonstrated by top-level management. Management should never establish a safety policy, rule or requirement that they themselves are not willing to follow. Furthermore, management can show commitment to safety by providing budgetary resources for safety supplies and meaningful training, incorporating safety goals into performance reviews, encouraging all level participation in safety initiatives, including safety goal setting, incentives, committees, etc.

With that being said, the principle of commitment is not just for management, employees are obligated to follow management’s lead and participate in what they are asked to do. When safety performance goals are set, employees should seek out ways to meet each goal not only for their supervisor, but also for themselves, those they work around, and, ultimately, their family. Accountability is the key to measuring safety commitment success.

Accountability
Accountability is defined as being responsible to someone or for some action. The idea of this principle is to hold ourselves and others to account for safe choices and behaviors when the opportunity arises. The accountability process starts with the expectations around which people have control. That is why clearly communicating these expectations is so important. If the expectations are not understandable, reasonable, and measurable, the accountability process will be challenged. For example, if an organization determines that every work task, must be preceded by a job hazard analysis plan and that this plan must be reviewed and confirmed by affected employees, those affected employees can be held accountable for the success of the work task. Additional ways where accountability feeds a culture of safety are through regular safety inspections, attendance of safety meetings/training sessions, adherence to safety protocols, near miss investigations, finding root causes while not affixing blame, etc., all of which focus on opportunities for improvement. These opportunities only constitute a part of the overall accountability principle.

Once employees know the expectations and have been provided the knowledge and tools to meet those expectations, further accountability should include positive reinforcement for safe choices and behaviors. This involves positive recognition when employees are doing things right, while looking for opportunities to ‘coach’ employees in

“An organization’s ‘Safety Culture’ can be determined by how well that organization weaves safety into everything it does through a set of three core safety principles: commitment, accountability, and involvement.”
what is expected when they are not doing things right. The idea is that, when safe choices and behaviors are measured and recognized more often than poor choices and behaviors, a positive atmosphere will provide a boost to any organization. Involvement, at all levels of an organization, is the true test of how effective a culture of safety is evolving.

**Involvement**

When employees are engaged and are actively participating in their own safety and that of their fellow workers, the change to the culture can be dynamic. By encouraging employees to help change the environment around them and giving them a voice in decision-making, they will be encouraged to be champions for change.

Getting employee involvement will take many forms, from simple to more complex methods. Simple ideas could include a safety suggestion contest or selecting the periodic safety meeting topics. More complex ideas could include being a participant in a safety committee or safety steering committee which would determine change initiatives, having employees involved in hazard recognition / opportunities for change initiatives, having employees provide one another with regular feedback on safety performance, having employees involved in mentoring programs, or getting employees involved in periodic safety analysis of the organization’s work areas. These and many other ideas will help employees realize that they can have a positive impact on safety by being involved in solutions. So, now that we know the basic core principles for a thriving ‘safety culture,’ what are the benefits for an organization that achieves this culture of safety?

**Final Points**

Making safety work in any organization can be challenging and will take some time to implement. The reward, however, is worth the effort. Organizations with a thriving culture of safety will see employees that are motivated to succeed. It is in our nature to want to help make things better. As organizations
move forward with these changes, employees begin to self-correct themselves. They will learn through observing others and speak positively of one another. Positive motivation begets correct behavior, which in turn inspires safer choices. Results include less employee turnover, lower incident rates, improved insurance modifier rates, and a more productive workforce. Simply put, an organization built with a culture of safety will be a desirable place to work.

About the Author: Brian McKendree has a master’s degree in Safety from Marshall University, a Certified Safety Professional designation from the Board of Certified Safety Professionals, and nearly 20 years of experience in the field of safety. He is the divisional safety director for Crowder Construction Company, responsible for the Civil and Environmental and Heavy Civil Divisions, as well as the (North Carolina and Federal) STAR Voluntary Protection Program coordinator for the company.

“Organizations with a thriving culture of safety will see employees that are motivated to succeed. It is in our nature to want to help make things better. As organizations move forward with these changes, employees begin to self-correct themselves.”

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When I was growing up, cars did not have seatbelts. As a child, the only safety restraint in a moving vehicle was my mother’s arm that instinctively swung up and over me whenever she sensed danger.

Over the ensuing decades, manufacturers began installing seatbelts in all cars, and people considered wearing them. Then in the mid-1980s, states started mandating seatbelt usage. Even if some of us still did not wear them, we did make our kids buckle up.

Today, according to the National Safety Council, seatbelt use averages 88% nationally; in 1984, that usage was only 14%. Every state (and the District of Columbia) except New Hampshire has mandatory seatbelt laws. Anyone under the age of 30 probably does not even think of the seatbelt as an optional device. Getting people to buckle up is not the challenge it was 30 years ago. Today, wearing a seatbelt is second nature. It is a part of our day-to-day operations.

According to the OSHA Small Business Handbook, “the key to the success of a safety and health plan is to see it as a part of your business operation and to see it reflected in your day-to-day operations.” As you implement the plan and incorporate it into your business culture, safety and health awareness will become second nature to you and your employees.”

Safety within an organization is not a plan or a policy; it is the shared attitudes, values, goals, and practices that are communicated and incentivized. In other words, safety is a culture.

The Merriam-Webster dictionary defines culture as:

- the beliefs, customs, arts, etc., of a particular society, group, place, or time
- a way of thinking, behaving, or working that exists in a place or organization (such as a business)

In his 1945 book titled The Cultural Background of Personality, anthropologist Ralph Linton defined culture as “a configuration of learned behaviors and results of behavior whose component elements are shared and transmitted by the members of a particular society.”

Valérie Barnes, PhD, senior technical adviser in human factors with the Office of Nuclear Regulatory Research, describes safety culture as “the values, attitudes, motivations, and knowledge that affect the extent to which safety is emphasized over competing goals in decisions and behavior.”

What does a safety culture look like? Do our organizations’ business practices incentive or discourage an appropriate safety culture? Is safety cultivated in your organization?

Merriam-Webster defines cultivation, as it relates to our topic, as:

- the integrated pattern of human knowledge, belief, and behavior that depends upon the capacity for learning and transmitting knowledge to succeeding generations
- the characteristic features of everyday existence (as diversions or a way of life) shared by people in a place or time
- the set of shared attitudes, values, goals, and practices that characterize an institution or organization

By combining all these different definitions, we can conclude that a safety culture is learned behavior that consists of integrated patterns of shared values, goals, and practices that are emphasized over competing goals in an organization and transmitted to succeeding generations.

A strong safety culture has also been characterized simply as “doing the right thing when no one is watching.” The “right thing” can be a learned safety practice as suggested by Linton. But what makes us decide whether to apply that practice on a routine basis? It is certainly incumbent upon our organizations to provide the appropriate training, policies, and processes that support being able to make that decision. However, the right thing is also the “shared attitudes, values, goals, and practices” that are communicated and incentivized by our particular organization. It is our explicit as well as implicit “social norm.” The “right thing” is what is acceptable. It is impacted by 1) what is understood as most important, 2) how management judges performance, 3) the boss’s expectations, and 4) what coworkers expect of each other.

The real trial of cultural fortitude comes when doing the right thing safety-wise seemingly conflicts with the organization’s financial or operational objectives. Manag-
ers establish the goals of the organization, provide resources and authority. Business tools such as compensation programs, bonus plans, promotion systems, recognition programs, and project performance measures exist to drive behavior. What is paid attention to, measured, publicized, reported on, and promoted is what gets done in an organization. “You inspect what you expect.” Therefore, for a safety culture to truly flourish, it is critical that these tools also drive the right safety behavior.

For example, if you measure and report only on “days without a workplace injury,” the result may be for people to avoid reporting injuries, rather than actual injury prevention. If getting people to do the right thing when no one is watching is not an overt priority for your organization, even exceptional safety efforts may fall victim to unintentional consequences. As Barnes says, a true safety culture promotes safety “over competing goals,” which may include things like billability or schedule.

A safety culture can exist only when the organization’s leaders create an environment that drives out fear and encourages personal responsibility for worksite safety. Managers have the ability and the responsibility to create a climate in which safety attitudes are promoted and expected. Even more importantly, managers lead by personal example. Deliberate or not, their actions set the priorities for everyone. If your organization’s safety policy prohibits the use of cell phones while driving, do your managers violate this personally and/or in front of other employees? What message does this send?

My mom’s arm may have kept me safe when I was a kid, but now there are much more effective and accepted ways to keep me from flying through the windshield. A safety culture has been created that makes wearing seatbelts second nature. Each generation embraced seatbelts a little more, to the point that we do not really have to even think about it anymore; it is the social norm or culture.

Recall that culture “transmits knowledge to succeeding generations.” This particular aspect of culture can be invaluable to the success of a strong, embedded, long-term safety culture. A strong culture can reduce the energy required to create employee commitment as the staff population changes and people retire or join us. Like the use of seatbelts, the established culture transmits knowledge to new employees just as it does for succeeding generations. An overall safety attitude should also be a critical behavior to incorporate into an organization’s hiring practices.

A safety culture in businesses and organizations can be created and nurtured by promoting attitudes, values, goals, and practices that encourage safety; by encouraging employees to do the right thing even when no one is looking; by ensuring that the business practices you measure and reward promote safety; by leading by example; and by making safety a part of your hiring practices.

Now buckle up!

About the Author
Phyllis Elikai, CPA, CIA, CMA is vice president, corporate safety director, and chief people officer at McKim & Creed, Inc., and has undergraduate and graduate degrees in finance and business administration from Texas Christian University.
“Reaching for a True Star” – The Carolina Star Program

By Thomas A. Bach, PE, Water and Sewer Authority of Cabarrus County (WSACC)

Introduction
Reaching for a star beyond our solar system, we stretch our knowledge and engage many resources to discover the unknown. Exploration is a difficult but exhilarating task. Reaching for stars in the Carolina Star Program requires dedication similar to space exploration. Achieving Star certification can be very fulfilling to any public or private sector organization because it focuses on keeping employees safe from illness and injury. In addition, the Carolina Star Program empowers employees to proactively improve their organization’s safety and health program. Employee engagement gives them true ownership of the program. An employee taking complete responsibility and accountability of the program is essential for success.

This article summarizes the Carolina Star Program and provides an overview of how a local water authority has benefited from participation in the program.

Star Program Purpose
The main purpose of the Carolina Star Program is to bring together an organization’s management and employees with North Carolina Department of Labor’s Occupational Safety and Health (NCDOL-OSH) Division personnel. This partnership helps develop a cooperative relationship at the worksite that focuses on recognizing and promoting safety and health management systems. This particular program can be successfully implemented by following the five main elements below:

1. Management Commitment and Leadership: Management agrees to meet established NCDOL-OSH safety standards by leading and supporting an effective program within an organization that, in the end, the employees understand and accept.

2. Employee Involvement and Participation: Employees agree to actively participate in the formation and operation of an organization’s safety and health program by working with management in a cooperative way in order to ensure a healthy and safe worksite.

3. Hazard Identification and Evaluation: Management and employees together strive to thoroughly understand all worksite processes and operations that are considered hazardous to employee exposure. Also, they develop the knowledge and skills to identify and correct safety and health hazards with which they come into contact at the worksite.

4. Hazard Prevention and Control: A hazard evaluation allows management and employees to properly identify safety and health hazards at the organization’s worksite, and then follow up with this identification to eliminate or control the particular hazards. Eliminating or controlling these hazards can be accomplished through engineering controls, administrative controls, personal protective equipment, and the establishment of safety and health rules.

5. Safety and Health Training: This type of training is essential to strengthen and support management’s commitment to stop an employee’s exposure to possible safety and health hazards at the organization’s worksite. Standard practices emphasizing the prevention of hazard exposure in order to stop harmful effects to each employee and others within an organization must be included in all safety and health training classes. In addition, safety and health training is effective if employees agree with and follow the established policies and procedures within their organization’s programs.

Available Star Programs
The NCDOL-OSH Division currently offers four different types of Star Programs to organizations across the state that want to develop, follow, and emphasize proper safety and health guidelines, policies and procedures in order to protect their employees against the many safety and health hazards at various worksites. These four different programs can be summarized as follows:

1. Carolina Star: The Carolina Star program includes general industry and private sector organizations that are more experienced within the occupational safety and health industry, and which provide effective and understandable safety and health programs to all employees.

2. Rising Star: The Rising Star program includes general industry and private sector organizations that have adequate occupational safety and health programs, but that do not quite meet the overall qualifications and requirements of the Carolina Star Program. Having adequate safety
and health programs according to NCDOL-OSH personnel particularly means that the organization within the Rising Star Program has fulfilled the majority of phases of a safety and health management system, and is striving to attain Carolina Star Program status. In addition, the Rising Star Program organizations have the opportunity to coordinate with NCDOL-OSH personnel in making their safety and health management programs even better and more in line with Carolina Star Program requirements. Along this same path of opportunity, an organization’s main focus within the Rising Star Program should be to decrease its injury and illness rates enough to be considered for the Carolina Star Program. Organizations within the Rising Star Program are encouraged to commit resources towards achieving the Carolina Star Program status by setting Star-related goals that directly follow the Carolina Star Program.

3. Building Star: The Building Star program includes organizations exclusively focused on the construction industry (general contractors and subcontractors) that have effective occupational safety and health programs. Organizations are required to prove completion of several preliminary requirements in order to attain Building Star Program status. One of the major objectives of this particular program is to arrange construction worksites that are clear of safety incidents, accidents and illnesses. Safe sites promote more effective and complete safety and health programs and management systems.

4. Public Sector Star: The Public Sector Star program includes organizations considered part of state agencies and local governments that have effective occupational safety and health programs. Public Sector Star organizations have safety and health program requirements that are essentially the same as Carolina Star Program organizations. In addition, these organizations also adhere to additional requirements such as the North Carolina General Statutes (specifically NCGS 95-148) and the Code of Federal Regulations (specifically 29 CFR 1910 and 29 CFR 1926). Participants within the Public Sector Star Program primarily focus on sharing knowledge, experience and abilities they have attained within the safety and health industry, and usually encourage other public sector entities to be more active in promoting good safety and health practices.

The overall details covered within the qualifications for each of the four Star Programs differ slightly with respect to one another, but basically follow the same requirement areas such as injury and illness rates, term of participation, program elements, and safety and health management system qualifications. In addition, applicant eligibility for all four Star Programs shall include an already existing and working safety and health management system that has received positive and supportive feedback from worksite employees. Currently, there are a total of 153 Star Program sites in North Carolina with the following overall breakdown of sites by program category:
- Carolina Star: 101
- Rising Star: 8
- Building Star: 23
- Public Sector Star: 21

Star Program Benefits
Organizations attaining worksite certification in the Star Program receive the following benefits:
1. continually motivating employees to approach work tasks in a safe and systematic manner, which should ultimately lead to positive and quality driven outcomes;
2. decreasing the amount of workers’ compensation claims and costs; and
3. increasing the amount of local community awareness and involvement when it comes to safety and health programs, which usually leads to positive acknowledgement from the community.
4. An organization’s safety and health program usually shows signs of improvement when working together with NCDOL-OSH personnel.
5. Organizations participating in the Star Program report approximately 60 to 80 percent fewer lost workdays when compared to another organization with the same size and similar industry that is not involved with the program.

6. It is possible to obtain important and relevant perspectives on safety and health related issues/facts from NCDOL-OSH personnel while working together on facility audits and/or inspections.

7. Staff members attend and actively participate in area team meetings and annual conferences in order to meet and network with highly qualified safety and health professionals.

WSACC – Public Sector Star Program Highlights
The Water and Sewer Authority of Cabarrus County (WSACC) attained Public Sector Star Program certification in November 2009. Several WSACC staff members have been actively involved with the program since starting the initial phase of the NCDOL application in summer 2006. Since receiving the certification, WSACC staff fully developed numerous safety and health policies, programs and procedures that follow Carolina Star Program guidelines; formed four internal subcommittees (Employee Involvement, Workplace Assessment, Hazard Recognition & Correction, Safety & Health Training) to research ways to decrease incidents/accidents and increase morale at the various WSACC facilities; actively assisted the Carolina Star Central Team in planning the Carolina Star Annual Conference; encouraged other governmental entities to be involved with the Carolina Star Program, and mentored other organizations by making field investigations of their facilities prior to initial audit visits by NCDOL-OSH personnel.

1. Some benefits to WSACC becoming a Public Sector Star Program site are as follows:
2. continuous open communication with NCDOL-OSH personnel on audit findings, corrective actions and resolutions;
3. coordinating and networking with other Carolina Star Program site representatives statewide;
4. improvement of various safety and health policies, programs, and procedures within WSACC (e.g., respiratory protection, hearing conservation, contractor safety);
5. direct employee involvement with the WSACC Star Program Advisory Committee and supporting subcommittees;
6. determining better ways to decrease the amount of accidents/incidents at WSACC facilities, thus decreasing the corresponding injury and illness rates;
7. complete ownership of enhancements to safety and health policies, programs, and procedures within WSACC, thus, increasing an employee’s problem solving ability and improving the overall morale of an organization;
8. direct management and employee involvement with the local community when it comes to safety and health awareness (e.g., creating poster campaigns related to safety and health, offering safety and health training classes);
9. increased mentoring opportunities with organizations in each of the different Star Programs, but especially the Public Sector Star Program (WSACC staff have mentored a few Public Sector Star Program sites in the past, including the Roanoke Rapids Sanitary District);
10. awareness of new programs/systems (e.g., Globally Harmonized System – GHS) and technologies within the safety and health industry; and
11. continuously improving/strengthening the relationship between NCDOL-OSH personnel, WSACC management, and WSACC employees, which is key to the overall success of every Carolina Star Program.

For more information on the Carolina Star Program, you can contact one of the NCDOL-OSH Star Program representatives at (919) 807-2912 or visit the NCDOL-OSH website at www.nclabor.com/oshastar.

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North Carolina Department of Labor – Carolina Star Program Brochure (December 2011).

About the Author
Thomas Bach is employed with the Water and Sewer Authority of Cabarrus County (WSACC) as the Utility Systems Engineer and has worked at WSACC for the last eight years in his 31-year career. Bach is the past Chair of the NC AWWA-WEA Communication Committee and has been involved with the committee since 2008. In addition, he is the current State Secretary for the Professional Engineers of North Carolina (PENC) and serves on the PENC Executive Committee. Bach received his BS in Civil Engineering from the University of Tennessee/Knoxville in 1983.
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Consider this statistic: 80 out of every 100 accidents are someone’s fault; usually it is the person involved in the incident. Unsafe acts cause four times as many accidents and injuries as unsafe conditions. Accidents occur for many reasons. Unfortunately, too many employees and supervisors tend to look for ‘things,’ or excuses on which to blame the accident, instead of looking for the root cause of the accident – which typically points directly at people’s unsafe acts.

Items worth considering by institutions that provide communities water and wastewater systems include the following:

1. **Taking Shortcuts**
   Everyday we take actions in hopes of making our work faster and more efficient. However, make sure these time savers do not risk your own safety, or that of others. Shortcuts that reduce your safety on the job are not timesavers, but a recipe for injury.

2. **Being Confident Is a Good Thing**
   Overconfidence is too much of a good thing. Being overconfident can lead to the ‘It will never happen to me’ attitude, which can quickly put you in harm’s way.

3. **Starting a Task with Incomplete Instructions**
   To do the job safely and accurately the first time you need complete information. Ask questions if you need to. You will be more likely to do the job right, on time and without injury. It is never dumb to ask questions; it is dumb not to.

4. **Poor Housekeeping**
   A quick look at your site’s housekeeping usually provides a good indicator of quality, production and safety. Poor housekeeping not only creates all types of hazards, but sends a bad message about your work and your company. Practicing good housekeeping will make your job safer and more productive.

5. **Ignoring Safety Procedures**
   Thankfully, the individuals that ignore or purposely break safety rules are few and far between. Not only are you breaking company rules, and may be disciplined, but it is just a matter of time before an ‘accident’ occurs. If you are one of these individuals – now is a good time to change your ways.

6. **Mental Distractions from Work**
   Having a bad day at home and worrying about it at work is a hazardous combination. Dropping your mental guard can pull your focus away from safe work procedures. Do not become a statistic because you took your eyes off the machine ‘just for a minute.’

7. **Failure to Pre-Plan the Work**
   Everyone has heard the saying ‘Plan Your Work and then Work Your Plan.’ The saying works. Well-planned work does not usually result in accidents. Always plan your work and include safety in that plan.

“Unsafe acts cause four times as many accidents and injuries as unsafe conditions.”

By Frank Castillo, MESH, CHSP, Senior Safety Consultant, East Coast Risk Management
**Demasiadas Excusas – Demasiadas Accidentes**

Considera esta estadística: 80 de cada 100 accidentes son culpa de alguien, por lo general, la persona involucrada en el incidente. Los actos inseguros causan cuatro veces más accidentes y lesiones que las condiciones inseguras. Los accidentes ocurren por muchas razones. Desafortunadamente, demasiados empleados y supervisores tienden a buscar “cosas”, o excusas para culpar del accidente, en lugar de buscar la causa raíz del accidente – que, por lo general, apunta directamente a los actos inseguros de las personas.

Los pautas que vale la pena considerar por las instituciones que ofrecen los sistemas de agua potable y alcantarillado de las comunidades son las siguientes:

1. **Tomar atajos**
   Todos los días tomamos acciones para con la esperanza que nuestros esfuerzos sea más rápido y eficiente. Sin embargo, asegúrese de que estos ahorradores de tiempo no arriesgan su propia seguridad o la de otros. Accesos directos que reducen su seguridad en el trabajo no son atajos, sino una receta para la lesión.

2. **Teniendo Confianza en Exceso es algo bueno**
   El exceso de confianza es demasiado de una buena cosa. Ser demasiado confiado puede producir a la actitud “Nunca va a suceder a mí”, lo que le puede poner rápidamente en peligro.

3. **Inicio de una tarea con instrucciones incompletas**
   Para hacer el trabajo de una manera segura y correcta la primera vez le hace falta la información completa. Haga preguntas si es necesario. Usted será más probable que lo haga bien el trabajo, a tiempo y sin lesiones. No es tonto para hacer preguntas, es tonto no hacerlo.

4. **Pobre Limpieza y Mantenimiento**
   Un rápido vistazo a la limpieza de su sitio por lo general es un buen indicador de la calidad, la producción y la seguridad. Mal servicio de limpieza no sólo crea todo tipo de peligros, pero envía un mal mensaje sobre su trabajo y su empresa. Practique una buena limpieza. Su trabajo será más seguro y más productivo también.

5. **Procedimientos de seguridad Ignorando**
   Afortunadamente, las personas que ignoran o deliberadamente violan ciertas reglas de seguridad son pocas y distantes entre sí. No sólo usted está violando normas de la empresa, y puede ser disciplinado, pero es sólo una cuestión de tiempo antes de que ocurra ese “accidente”. Si eres una de estas personas - ahora es un buen momento para cambiar sus maneras.

6. **Las distracciones mentales de Trabajo**
   Tener un mal día en casa y preocuparse por ella en el trabajo es una combinación peligrosa. Dejando caer su guardia mental puede tirar su enfoque lejos de los procedimientos de trabajo seguros. No te conviertas en una estadística, ya que tomó los ojos de la máquina “sólo por un minuto.”

7. **Si no se pre-planificar el trabajo**
   Usted ha escuchado el dicho “planificar su trabajo y luego trabaja tu plan.” El dicho indica que trabajo bien planificado típicamente no resulta en accidentes. Siempre planeee su trabajo - e incluir la seguridad en ese plan.

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**About the Author**

Frank Castillo, MESH, CHSP is a Senior Safety Consultant for East Coast Risk Management’s offices in Raleigh and Chapel Hill, North Carolina. Frank has an Environmental Safety and Health (MESH) degree from NC State University, and a C-MESH (Construction Manager of Environmental Safety and Health) as well as Masters of Science in Secondary Education from the UMiami. He can deliver training for the OSHA 10 and 30-hour Construction Safety (with Federal OSHA cards issued), in both English and Spanish, Workzone Flagger Safety and Renovation (with National Safety Council certificates issued), Repair and Painting (RRP) to Certify Firms and Renovators under the new EPA 40 CFR 745.90 course.

Prior to joining ECRM, Castillo worked as a Safety Professional for WakeMed Health & Hospital system in Raleigh, NC, where he earned the Certified Healthplace Safety Professional (CHSP) credential. Frank also was an OSHA Safety Compliance Officer for the state-run NC Department of Labor.

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INTRODUCTION
When we talk about asset management we often explain it in a way that suggests it is a new approach to managing our water system assets. What we ought to be saying is that we have been managing our assets ever since we installed them, and that what we are doing now is introducing alternative, additional, or new techniques to assist the way we go about sustaining our infrastructure at all levels to enable the reliable and effective delivery of services to our customers.

If we accept this premise, then it becomes easier to take the next step; considering the management of our assets as a governance issue. What does this mean? It means that when our town council, or other municipal government, makes a decision to raise or not raise rates or user fees, there needs to be a direct and transparent connection between the decision and the predicted impact it will have on our ability to provide safe and reliable services across town operations (positive if rates and user fees are raised, potentially negative if they are not).

In order to do this we are required to know how much we need to invest in our assets, where, when, and why. We need to be able to provide the justification for every dollar we spend on operating, maintaining, and renewing our assets. We need to be able to show that any rate increase we request is a direct result of the fact that, if we do not increase the amounts we spend on, and invest in our infrastructure, we are increasing the risk that those assets will fail.

What we are learning through assisting small towns with their asset management planning is that, while there are certainly towns that may never develop the capacity, and capability, to manage data and information about their systems without ongoing support from external agencies, they are still capable of employing asset management principles and making more defensible and appropriate funding decisions.

To better explain the concepts, this article will discuss approaches taken with the Town of Lake Lure in North Carolina to complete a Whole of Government Asset Management Program and Plan.

In 2011, GHD partnered with the Town of Lake Lure to develop a Whole of Government Asset Management Program. As a part of this project, the Town of Lake Lure was able to receive funding for this project through the North Carolina Rural Economic Development Center Planning Grant Program. As an active participant in the North Carolina Rural Economic Development Center STEP Program (Small Town Economic Prosperity Program), both Lake Lure and the Rural Center take pride in understanding the future investment strategies of Lake Lure's infrastructure. The STEP Program was created to assist towns such as Lake Lure with reenergizing the town and economy. The STEP Program focuses on three primary goals:

- supporting economic development adversely affected by structural changes in the economy or recent natural disasters;
- implementing a comprehensive model of technical assistance and grant-making to aid in revitalization efforts; and
- providing information vital to the development of public policies that support long-term investment in the economic vitality of North Carolina’s small towns.

Continued discussion with small towns across North Carolina regarding public policy for infrastructure management has identified an opportunity to address a perceived gap in small town administration and management programs with respect to the ongoing management needs of a town’s physical infrastructure. It was acknowledged that in the water sector in general, asset management was a current area of focus that still had a way to go before it might be considered that the sector had an adequate understanding of how to manage infrastructure assets in a sustainable, effective manner. It was considered that this was particularly so for small towns; however, the scale of the issue was relatively unknown.

A key aspect of the development of an asset management plan would allow for benefit from facilitating identification of common factors, issues, challenges, and opportunities for improvement, for water and wastewater system asset management, as well other critical department assets located within the Town of Lake Lure.

METHODOLOGY
The project consisted of three distinct parts:
- Training
- Asset Management Plans
- Program Analysis to Identify Policy Initiatives

Training
The training component consisted of two parts. First, training was provided directly to the town manager of Lake Lure. This training session was seen as an opportunity to develop a common understanding of asset management by the town manager and to begin developing a high-level asset register. While GHD would be working directly with department staff to provide them with an understanding of asset management planning techniques, hearing reinforcing messages about asset management was a way to strengthen the participation in and support of the program by the town.

The second component of the training introduced basic concepts of asset management, and the 10 steps to developing an asset management plan. As part of the introductory session, Lake Lure department
leaders were led through the identification of their major assets – this formed the backbone to their asset registers (refer to Step 1 in the 10-step approach to developing an asset management plan – Figure 1) in their asset management plans. There was also an opportunity for each department to talk about the opportunities and challenges they were facing.

Throughout the training, a common framework was presented in regard to the seven key components of an asset management program (refer to Figure 2), and to the 10-step approach to developing an asset management plan. The framework and the approach are central to the United States Environmental Protection Agency’s two-day ‘boot camp’ on asset management, with training developed and delivered by GHD. The other key concept introduced during the training was the matter of governance in regard to the management of assets; that is, the ability to answer the following five core questions:

- Do you know what assets you have, what condition they are in and whether they are performing efficiently and effectively?
- Do you know what levels of service you are aiming to deliver, and how each asset is performing within that context?
- Are you actively managing risk in order to prioritize and optimize investments in your infrastructure; and, to identify the relative criticality of your assets?
- Do you have documented operations, maintenance and capital investment plans that reflect what you know about your assets?
- Do you have long term funding and asset management improvement strategies to enable and sustain service delivery?

### Asset Management Plans

One of the keys to the successful development of an asset management plan is the data that is used to create an understanding of the state of the assets, and the need to expend money on maintaining or replacing those assets. In order to encourage a sense of ownership by each department, a standard data capture template was prepared and provided, to be completed by staff. Staff members were encouraged to consider a range of data sources in identifying their assets, asset hierarchy, and asset attribute data; including:

- as-built drawings,
- design drawings,
- manufacturers manuals,
- bid documents,
- schedules of quantities,
- current and former staff,
- photos, and
- GIS system and layers.

An early finding of the project related to the challenges experienced in developing their asset registers. The following observations were made:

- Staff does not always have the time to tackle ad hoc projects, particularly those that require learning and applying new business techniques. We found that it was necessary to make a follow-up visit to work through the development of each asset register.
- One-time training in new business functions – e.g., asset management – is insufficient to get those ideas fully integrated. We found it beneficial to deliver a second, more informal presentation on asset management while we were in town to work on the asset register. Going through the material for a second time appeared to allow town staff the opportunity to further develop and reinforce ideas they had about asset management and to be able to ask better questions (i.e., is this true?).

Once the asset registers were developed, further data for each asset was more easily obtained. Engineering reports about the assets, masterplans, staff knowledge about assets, GIS, etc., proved to be the main sources of asset data. The process of gathering this data show staff do not always have the time to keep records up to date or determine where they could be found.

It was also noted that some of the data received from Lake Lure had some incomplete information of physical assets. Necessary and appropriate assumptions were used to facilitate the development of the town’s whole of government asset management plan. While, initially, it is not expected that the Town of Lake Lure will have perfect information about their assets, the town plants to take the recommendations provided and build upon these techniques for future plan updates.

### DISCUSSION

**Program Analysis to Identify Policy Initiatives**

The main result of this project was the production of asset management plans. The work is in the latter stages of completion with the Town; however, enough of the work has been completed to allow the identification of other findings and policy recommendations.

Grant funding to water and wastewater projects ought to include a requirement for the development and handover of operations and maintenance information prior to the provision of the final 10% of grant funding. An incentive is needed to encourage better practice in regard to capturing data and information that will be used over the life of the asset after it has been constructed. Lake Lure, as well as other small towns, will need assistance in identifying how to store and manage that data, a function with which the Regional Councils may be able to assist.

The Regional Councils can play a key role in supporting small towns in the management of their data and information, particularly by the use of hosted solutions – a ‘Regional Council Cloud’, if you like. This could be in the form of a centralized GIS that each town would use on a fee-for-service basis; that means a small town does not use.
have to internally replicate a part-time, specialized skill set. Larger towns, or regional councils in more prosperous regions, may also like to consider simple work order management systems that may also be centralized and shared. An added benefit of this approach will be the development of the unit cost rates required for better asset management planning, a key deficiency in most small towns.

Agencies working with small towns and their infrastructure systems need to reiterate the message of good asset management practice; towns should know what assets they own and what the financial liabilities of that ownership are, such that rate-setting by the town reflects the full cost of providing services. Recent initiatives to allow bonus points for an asset management plan in the provision of grant funding should be continued, and maybe even made mandatory. Training support to explain the requirements of the new grant-funding mandate will be required. Additionally, this type of program will be necessary in order for many to be able to meet this new standard. Efforts to assist small towns should also build off the work already undertaken by the United States Environmental Protection Agency in promoting asset management and the Check Up Program for Small Systems (CUPSS) software.

CONCLUSIONS

The departments that participated in this project have been provided with an introduction to the concepts of asset management, with simple tools, scaled to the Town’s size and resources, that facilitate the management of data and information about those assets. The production of an asset management plan for them has positioned them to take advantage of being able to tell the story of their department and seek the appropriate funding that is needed to address the full cost of services that need to be provided.

However, as staff and the physical infrastructure in Lake Lure change, there will need to be continued attention to supporting town staff in managing data and information about their assets by staff from agencies like the Regional Councils. Small towns are rarely in a position where they can neatly manage succession planning and the complete handover of undocumented, institutional knowledge.

ACKNOWLEDGEMENTS

The authors would like to thank the Rural Economic Development Center assistance in helping to fund this project for Lake Lure. The authors would also like to thank the Town of Lake Lure staff that participated in this project and to encourage them to further the knowledge they have about their assets, as they forecast for the future of their systems.
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NC Safe Water
ENDOWMENT UPDATE

By Ray Cox, Chair, Endowment Committee

The NC Safe Water Endowment Program (NCSWEP) continues to help produce a sustained, educated and trained workforce through the following primary activities:
- providing annual scholarships to university and community college students;
- providing educational awards for teachers or programs that increase safe water awareness;
- encouraging more students to consider a career in a water profession through promoting greater involvement in schools by water professionals; and
- promoting public safe water education.

In the four years since NCSWEP’s inception, the endowment has grown to more than $375,000 pledged and nearly $330,000 in investment value. In 2014, five students received awards totaling $7,000 to help further their education, and a community educator received another $1,000 to help promote stormwater awareness. Four of the student scholarships are eligible for annual renewal as long as the recipient continues to satisfy the qualifying criteria. Learn more about these award winners below.

For 2015, the NC AWWA-WEA Board of Trustees has approved the award of $11,000 through the NCSWEP. Applications for the 2015 awards are now available through the following website: http://www.ncsafewater.org/committees/external-affairs-council/endowment_committee/

As we approach year end, please consider making a monetary gift to NCSWEP that is meaningful to you. If every member of NC AWWA-WEA gave $10 annually, we could endow a new $1,000 award or add $1,000 in value to an existing award each year. For the price of two mocha lattes or two burgers per year, our members can help to build a sustained water industry workforce. Can you think of a better professional legacy? For more information, or to obtain an award application, visit our website or contact the Endowment Committee chairman, Ray Cox at rcox@hiepc.com or 910-313-1516.

2014 NC Safe Water Endowment Scholarship & Grant Recipients

Please note, in 2014 some scholarships were awarded by combining money from multiple funds.

The Carol Bond Fund/NC Safewater Fund Community College Scholarship

Timothy Straw, Wake Technical Community College – Raleigh, NC

Timothy Straw is currently attending Wake Technical Community College and studying Environmental Science Technology, while also working on his North Carolina Environmental Educators Certification through the North Carolina Department of Environment and Natural Resources. Prior to attending Wake Tech, Straw worked as an outdoor field instructor for the North Carolina Outward Bound School in Pisgah National Forest, Cape Lookout National Seashore, the Everglades National Park, and the 10,000 Islands National Wildlife Refuge. After finishing his Environmental Technology degree, Straw intends to finish his bachelor’s degree in Anthropology at NC State University before entering the workforce.

“Being the recipient of the Carol Bond Fund/Safewater Fund Community College Scholarship means more than financial assistance toward my degree,” says Straw. “Being a recipient of a scholarship pertaining to water and education means that there is an existing network of individuals who are committed to the same values and ethics of environmental water quality that I am. This makes me feel both grateful and encouraged.”

The Environmental Manufacturer’s Representative Scholarship Fund

Sara Troutman, NC State University – Raleigh, NC

Sara Troutman grew up in Aberdeen, NC and is currently an undergraduate student at North Carolina State University, majoring in Environmental Engineering and Mathematics with a minor in Spanish. Her interests include drinking water and wastewater treatment processes and their optimization through mathematical modeling. Troutman is enrolled in the Math Honors Program. She is also a member of Phi Beta Kappa and has been an officer in the Tau Beta Pi chapter at NC State for two years. Outside of academics, Troutman is involved with InterVarsity Christian Fellowship.

“Receiving this scholarship is an extraordinary honor and will further encourage me, in my education within the field of water resources, to develop solutions to current and future water quality challenges,” says Troutman. “I would like to express my appreciation to the scholarship committee as well as to my professors and advisors who have invested their time in my education. I owe them so much gratitude.”


Jacquelines Batts, NC A&T University – Greensboro, NC

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- Timothy Straw
Meredith Bullard is majoring in Civil Engineering at North Carolina State University in Raleigh, NC. She was raised in Garner, NC and became interested in water resources during a project she completed while in her sophomore year of high school. Her project focused on water purification, and she built and demonstrated a functional water filter made of low cost, easily available materials. Her interest in water resources and global water scarcity issues increased as she progressed through high school and continued into her college career. During the summer before her freshman year in college, Bullard worked as a research assistant for Dr. Detlef Knappe in the Environmental Engineering Department at NC State. During this experience she learned basic water sampling and lab analysis techniques and saw firsthand how NC State collaborates with the communities in North Carolina to improve standards of water quality.

In her free time, Bullard is involved with Campus Crusade at NC State and leads a bible study for freshman girls. She is also an Engineering Ambassador and represents the College of Engineering in major events on campus, as well as serving as a teaching assistant in the introductory Engineering class, E 101, where she has the privilege of helping younger engineering students discover the exciting opportunities NC State has to offer. Bullard is a member of AWWA and ASCE on campus. Additionally, she loves to travel, and spent eight weeks (May 2014-July 2014) studying abroad in the Czech Republic studying Surveying as well as World Population and Food Prospects – a course that focuses on global sustainable human development.

“I am humbled by and grateful for this award,” says Bullard. “It allows me to continue to pursue my degree in Civil Engineering at NC State; I am confident that the engineering skills I will gain will equip me to benefit society, protect and improve the quality of the environment, and meet a basic human need. I plan to graduate with a degree in Civil Engineering with a concentration in Water Resources and want to use my degree to make a difference both locally and globally. I am thankful for the opportunities that I have had so far to learn more about this critical area, and I look forward to continuing my education.”

The NC Safewater Fund/GHD Clean Water Fund
Joshua Peeler, UNC Charlotte – Charlotte, NC
Josh Peeler is a North Carolina native and recent graduate of UNC-Charlotte with a bachelor’s degree in Civil and Environmental Engineering. Peeler will be continuing his education in the fall to pursue a master’s degree in Environmental Engineering. His graduate research will focus on emerging contaminants in the environment, particular pharmaceuticals and personal care products within municipal wastewater treatment plant effluents, and the interaction with chlorine as a wastewater disinfection method.

“I am blessed to have been a recipient of the Safe Water Fund/GHD Clean Water Fund Scholarship, which I will use for graduate tuition and expenses,” says Peeler. “I want to thank the NC AWWA-WEA for the valuable assistance in my graduate studies and the time and devotion from the organization to the UNC-Charlotte student chapter.”

The Raftelis Foundation Elementary Education Scholarship
City of Salisbury Stormwater Division – Salisbury, NC
The City of Salisbury’s Stormwater Department was awarded the Raftelis Foundation Elementary Education Scholarship for 2014. The Department plans to purchase an EnviroScape Watershed, Stormwater Pollution and Prevention Model (see photo) for their educational efforts.

Salisbury is actively engaged in sustainability and environmental education for recycling, industrial pretreatment, drinking water and wastewater treatment, water conservation, as well as FOG (Fats, Oils, Grease and Wax) management and disposal. Considering that the department began in August 2013, it is not surprising that its latest effort is in the area of stormwater awareness. The department has participated in numerous educational efforts, including park and street events, Earth Day,
“I plan to graduate with a degree in Civil Engineering with a concentration in Water Resources and want to use my degree to make a difference both locally and globally.” ~ Meredith Bullard

camp and club meetings, and outdoor festivals, in addition to many visits to school classrooms. The goal is to not only educate citizens and children on how stormwater is managed, but to encourage the preservation of our water resources with a key message that stormwater is not treated before entering waterways. Whatever is dumped or washes into a storm drain will ultimately flow to the area’s streams and rivers, affecting the wildlife in and around these habitats.

The EnviroScape model will be of great importance to this effort, as it visually depicts the watershed, erosion, as well as point and non-point sources for pollution, using interactive, hands-on demonstrations. It will allow students to easily learn the dos and don’ts that will protect stormwater quality and maintain environmental stability. Stormwater runoff from Salisbury flows into the Yadkin River and ultimately into nearby High Rock Lake, which is not only the home to area wildlife but is also used heavily for recreation such as boating, swimming and fishing, by several counties. Because of this, sustainability is an important component of the city’s efforts, and many people don’t realize the results of their actions. Something as simple as washing a car in the street, or leaving fertilizers, grass clippings and leaves where they can wash into storm drains can adversely affect the ecosystem. Other important lessons include remembering to pick up after pets and making sure trash, cleaners, paint, or other items do not get dumped into the storm drain. The ultimate message to elementary students is “only rain down the storm drain,” and the City of Salisbury’s educators are grateful to receive the funds needed to purchase an effective tool to help deliver this message.

Watch for 2015 Endowment Application details coming soon!

http://www.ncsafewater.org/committees/endowment_committee/

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MAINTENANCE TECHNOLOGIST QUESTIONS

Questions provided by the NC AWWA-WEA Plant Operations & Maintenance Committee.

1. Alternating current will produce a ________ wave.
   a) heat       b) cycle
   c) sine       d) neutral

2. Sludge is pumped onto a drying bed that is 50 feet long and 20 feet wide. If the sludge is 6 inches deep, how many gallons of sludge are on the drying bed?
   a) 7480 gallons  b) 3740 gallons
   c) 9680 gallons  d) 5620 gallons

3. Which of the following are considered a safety sensitive function under the Federal Motor Carrier Safety Administration (FMCSA) where drug testing is required?
   a) Driving a commercial motor vehicle
   b) Pulling a trailer
   c) Operating a recreational vehicle
   d) Operating a forklift

4. This type of maintenance is considered reactive?
   a) Predictive Maintenance  b) Corrective Maintenance
   c) Preventive Maintenance  d) Scheduled Maintenance

Answers:
1. c) Source: Electrical Fundamentals for Water and Wastewater, Lesson 1.
2. b) Source: Math review handout.
3. a)
4. b)

WASTEWATER CERTIFICATION QUESTIONS

Questions provided by the NC AWWA-WEA Wastewater Board of Education & Examiners.

1. According to 15A NCAC 08G, what is the maximum number of consecutive calendar days a Back-Up ORC can act as a surrogate for the ORC due to the ORC vacancy or personal/familial illness?
   a) 30 consecutive days  b) 60 consecutive days
   c) 90 consecutive days  d) 120 consecutive days

2. What is the theoretical amount of alkalinity consumed in the nitrification stage to convert 1 mg/l of ammonia to nitrate?
   a) 7.14 to 7.2 mg of alkalinity is consumed per mg of ammonia.
   b) 3.6 mg of alkalinity is consumed per mg of ammonia.
   c) 7.2 pounds of alkalinity is consumed per mg of ammonia.
   d) 14.3 to 14.5 mg of alkalinity is consumed per mg of ammonia.

3. When ORCs or back-up ORCs vacate their position as an ORC/BORC, according to 15A NCAC 08G, how long do they have to notify their regional office and the WPCSOCC?
   a) Seven calendar days  b) 14 calendar days
   c) 21 calendar days  d) 30 calendar days

4. What are the two typical means of removing phosphorous from wastewater?
   a) Chemical  b) Biological
   c) Chemical and biological  d) Physical and chemical

5. What is the sludge age of a plant that has a circular aeration basin and the following attributes:
   AB diameter = 60 feet; AB depth = 13 feet; the MLSS = 3200 mg/l; Plant flow = 4 mgd; the primary tank effluent TSS is 65 mg/l?
   a) 3.4 days  b) 3.8 days
   c) 4.4 days  d) 7.6 days

Answers:
1. d) 2. a) 3. b) 4. c) 5. a)

WATER CERTIFICATION QUESTIONS

Questions provided by the
NC AWWA-WEA Water Board of Education & Examiners.

1. A confined space is defined by OSHA as any space that:
   a) has limited entry.
   b) is not designated for continuous work occupancy.
   c) is large enough for an employee to perform work.
   d) All of the above.

2. A cross-connection exists if a connection leads from a ______ line to anything other than a ______ connection.
   a) potable, non-potable
   b) non-potable, potable
   c) potable, potable
   d) non-potable, non-potable

3. Before any repair is started to a hydrant, the ______ must be notified.
   a) fire department
   b) neighborhood association
   c) NC DENR
   d) NC AWWA

4. A test cock on an approved backflow prevention assembly must be:
   a) closed
   b) a gate valve
   c) blow-out proof
   d) a ball valve

Answers
1. d)  2. c)  3. a)  4. c)

CERTIFICATION INFORMATION

If you have any questions regarding operator/engineering certification and exams, please contact the appropriate agency.

NC Board of Examiners for Engineers & Surveyors
919-791-2000
www.ncbels.org
Exam Date: 10/24/14
Responsible for Professional Engineers and Professional Surveyors

NC Water Treatment Facility Operators Certification Board
919-707-9040
http://www.ncwater.org/pws/
Exam Date: 10/30/14
Responsible for Drinking Water Certifications (Surface, Well, Distribution, & Backflow/Cross-Connection)

Water Pollution Control System Operators Certification Commission
919-807-6353
http://portal.ncdenr.org/web/wq/admin/tacu
Exam Date: 12/11/14
Responsible for Wastewater Certifications (Animal Waste, Biological WW, Physical/Chemical, Land Application, Spray Irrigation, Collections, Subsurface, and OIT)
The Operator’s Tailgate

This section serves as a forum for operations and maintenance workers to seek answers and solutions to problems and challenges through the insights and experiences of fellow operations-maintenance experts and professionals. Operations-maintenance workers and professionals are welcome to submit their questions anonymously to the forum at nbanks@ncsafe.org.

**Question: What exactly is TKN? I have a pretty good idea what all the other parameters we test for at the plant, but I’m a little confused on TKN. How do the numbers affect our plant?**

**Answer:** Simply put, TKN (Total Kjeldahl Nitrogen) is organically bound nitrogen plus ammonia. Organic nitrogen consists of compounds with nitrogen attached, such as cyanide, nitric acid, and a host of others. The organic bound nitrogen in TKN is typically more difficult to remove than ammonia in municipal wastewater systems, but a reduction can normally be seen. Plant characteristics, along with influent characteristics, play a role in how much organic nitrogen is removed. To find the true organic bound influent nitrogen you need to subtract the influent ammonia from the influent TKN nitrogen. If you do not test specifically for influent ammonia (which is more readily removed), a good comparison cannot be made.

**Question: There is a test for BOD and a test for COD. What is the difference between the two? Is running a COD, which is a two-hour test, as reliable as a BOD test that takes five days to get results? How do you correlate the two?**

**Answer:** BOD is an analysis of Biochemical Oxygen Demand, where COD is measuring the Chemical Oxygen Demand. The main difference for wastewater operators is that BOD measures the dissolved oxygen used by aerobic bacteria in the breakdown of biodegradable substances, while COD includes chemical oxidation of organic substances. As far as reliability, the COD is a well-documented test and, if performed accurately, gives reliable results. There is no set correlation between the two, except that COD numbers will generally be higher than BOD numbers. The ratio between the two, is plant and influent dependent, so there really cannot be a set matrix such as 2:1. Repeated sampling and testing gives the best ‘average’ for a particular plant.

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Questions answered by:
John Gibson
NRWWTP Facility Manager
COR/PUD/
Resource Recovery Div.
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Welcome New Members!

The following people became members of NC AWWA-WEA in April, May, and June of 2014 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 a NC SLAM membership. We welcome these professionals to the Association and look forward to seeing them at future events and working with them on various projects and committees.

We want to learn more about our members! If you are an NC AWWA-WEA member and would like to introduce yourself to our membership, email your photo and the answers to the following three questions to Nicole Banks at nbanks@ncsafewater.org, and you may be featured in an eNews email or on www.ncsafewater.org.

1. Where did you go to school and what did you study?
2. Where do you work, what is your title, and what is your main job?
3. Why did you join NC AWWA-WEA?

For information on how to join, and the membership options available, please visit www.ncsafewater.org/about/membership.

Most of the Association’s work is carried out through committees. To learn more about each committee review the list of active committees at www.ncsafewater.org/committees, and click on a committee’s name to learn more about them. To express your interest in learning more about a committee, contact the committee chair directly, or complete the Online Volunteer Form available at www.ncsafewater.org/committees.

Next to some new members names, you may see the name of the endorser or sponsor who recruited them to become a member. The endorser/sponsor who recruits the greatest number of members may be recognized at the NC AWWA-WEA Annual Conference with one of the following awards:

The Maffitt Membership Cup honors Mr. McKean Maffitt and is given annually to the member of the NC Section AWWA who secures the greatest number of new members.

The William M. Piatt Membership Award honors Mr. William M. Piatt and is given annually to the member of the NC WEF Member Association who secures the greatest number of new members.

American Water Works Association (AWWA)
Vince Alarid – Siemens Water Technologies
West Bishop – Sepro Corporation
Bruce Bland, Jr. – Stokes Regional Water Corporation
Lee Comer – Davidson Water Inc.
Ray Cox – Highfill Infrastructure Engineering
Nicholas Defelice – UNC Chapel Hill
William Delosh – Town of Mooresville
Paxton Fishburne
Christopher Fuller – Moore County Public Utilities
Keith Hambright – Meridian Laboratory
William Hart – City of Asheville
Hamed Honari
David Lee – Schneider Electric
Mark Letterman – City of Asheville
Mark Miller – Schneider Electric
Catherine Noyes – Raffel’s Financial Consultants Inc.
Chris Oliver – URS Corporation
Shubhashini Oza – UNC-C
Christopher Peta – Schneider Electric
Zia Qureshi – Schneider Electric
Mike Sanchez – John R Adams Co Inc.
Lora Toy – RTI International
Joseph Wilson – Charlotte Mecklenburg Utilities
Stokes Regional Water Corp (organizational member)
Wilson County Southwest Water Dept. (organizational member)

Water Environment Federation (WEF)
David Bollinger – Duke
Brad Boris – City of Morganton
Josh Carpenter
Jeffrey Coggins – Black & Veatch
Jonathan Greer – Catawba County
Joshua Griffin – Union County Public Works
Matthew Hargett – Union County Public Works
Jody Harvey, Jr – Union County Public Works
Darrell Hill – Greenville Utilities Commission
Keith Hodge
Rob Huguley – Pulsafeeder Inc.
William Huncuy – Union County Public Works
Matthew Morris – Union County Public Works
Thomas Nangle – CDM Smith
Ryan Neal – ARCADIS
Andy Nix, Solex – Thermal Science Inc.
Larry Oxford – Trinity Manufacturing Inc.
Charles Shue – McKim & Creed
Christopher Thomson – Kruger Inc.
Jonathan Williams – City of Statesville

NC SLAM
Steven Abercrombie – Town of Denton
Lonnie Bassinger – City of High Point
Daniel Bula – Kimley-Horn and Associates Inc.
Michael Burch – Broad River Water Authority
New Members

Benjamin Burt – City of Winston Salem
William Chavis – Town of Pembroke
Robert Clayton – City of Greensboro
Harold Collins – Town of Waynesville
Dustin Combs – Town of Columbia
Jonathon Cranford – City of Thomasville
Jason Deese – Town of Pembroke
Trupti Desai – NC State University
Thomas Drum – Lincoln County
Rocky Durham – NCDENR/DWR/Public Water Supply Section
Cory Fredell – City of Gastonia
George Galambos – URS
Steven Gandy – Municipal Engineering Services Company
Elmer Garland – Unimin
Kenneth Gentry – City of King
Robert Hinson – Lincoln County
Dominic Howard – City of Winston Salem
Robert Howell – City of Gastonia
Robert Winton Jenkins – City of Gastonia
Lee Johnson – City of Statesville
Bahareh Karami Moghadam –
   Black and Veatch International Company
Wallie Lamm – City of Durham
John Lankford – City of Shelby
Samuel Laytham – Utilities Inc.

Ursula Locklear – Town of Pembroke
Bobby McLamb – City of Raleigh
Jason McLeod – ECS Carolinas LLP
Kyle Meeks – Greenville Utilities
Eric Messer – Town of Waynesville
Yao Missebukpo – City of New Bern
James Moore – City of Greensboro
Joshua Moore – Statesville Analytical Inc.
Darrell Morrison – City of Shelby
Melvin Murray, III – OWASA
Brandon Patrick – Town of West Jefferson
Christopher Powell – City of Eden
David Powell – Town of Wallace
Matthew Queen – Utilities Inc.
Dane Reid – Fayetteville Public Works Commission
Jarario Robinson – Utilities Inc.
Matthew Schaupp – Two Rivers Utilities
Steven Smith – City of Shelby
Ernest Smyre – City of Greensboro
Travis Tucker – City of Elizabeth City
Dakota Turner – Utilities Inc.
Richard Wagoner – City of Eden
Kenneth Wellmon – City of Shelby
Jeffrey Westmoreland – NC DENR
Tyler White – City of Asheville
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NC AWWA-WEA has long recognized that proficient wastewater operators are critically linked to the preservation and enhancement of North Carolina’s natural environment. The wastewater operator certification process is one means of assuring wastewater operator proficiency, a process that is currently administered by the North Carolina Water Pollution Control System Operators Certification Commission (WPCSOCC). Making the connection between these two related concepts, the NC AWWA – WEA created the Wastewater Board of Education and Examiners (WWBOEE) to promote and engage in programs to assist in assuring that North Carolina’s wastewater operators meet the highest standards of proficiency within the profession by offering to assist, support, and serve as a resource to the WPCSOCC in various tasks involving wastewater operator certification.

Areas of potential involvement where NC AWWA–WEA has chartered/authorized its WWBOEE to support and assist the WPCSOCC include certification course curricula, content, and references; development and maintenance of the Needs To Know Manuals; test question assistance; certification course instructor guidance; certification course validation and audits; assisting with examination application processing; examination review and evaluation for training or curricula deficiencies; examination proctoring; and appeals.

The WWBOEE is composed of 10 – 15 members appointed to three-year terms by the NC AWWA-WEA chair. At least two members each shall represent each of the following system sizes and types: (a) less than 10,000 population; (b) physical/chemical Grade II; (c) biological Grade IV; and (d) collections Grade IV. Other certifications can be requested for addition within the WWBOEE composition where they may be of assistance, and future interaction with the laboratory analyst, maintenance technologist, and residuals management/land application certification areas is anticipated.

The board meets every one to three months as workload demands to conduct the board’s normal business. Meetings are held at sites centrally located to the board members; in-person attendance is preferred and encouraged although conference call-in provisions are available. Additional business is conducted informally among the board members between regularly scheduled meetings on various new and ongoing assignments.

The WWBOEE currently has or will have three vacancies to fill; one seat serving population <10,000; one seat for physical/chemical Grade II; and one seat for other applicable certification.

May 23, 2014 – Jonathan Ham joined the Town of Garner earlier this month as assistant town engineer. Ham holds a bachelor’s degree in biological engineering from North Carolina State University and earned a master’s...
degree in business administration from the University of North Carolina at Wilmington. He has been licensed as a professional engineer (PE) since 2009. As the assistant town engineer, Ham will be assuming numerous duties, including doing plan reviews, supplying technical assistance on stormwater issues, administering the Town's flood plain management program, assisting with project management of Town-funded construction and providing development services.

"Jonathan’s experience, coming from his other work on utilities, will only add to the Engineering Department’s expertise and will aid him in doing plan reviews for the town," said town engineer Tony Chalk.

Prior to joining the Town of Garner Engineering Department, Ham was the project engineer/project manager for the Cape Fear Public Utility Authority in Wilmington for five and a half years. He has also worked for ESP Associates as an engineering project manager and for Tripp Engineering as a staff engineer.

Stockholm Junior Water Prize (SJWP) Results

New Hampshire Student to Represent US in International Stockholm Junior Water Prize Competition

Deepika Kurup from Nashua, N.H., was named the US winner of the 2014 Stockholm Junior Water Prize (SJWP), the most prestigious international competition for water-related research, during a ceremony in June at the Hilton Dulles Airport Hotel in Herndon, VA.

Kurup’s project, A Novel Photocatalytic Pervious Composite for Degrading Organics and Inactivating Bacteria in Wastewater was selected from 48 state SJWP winners at the national competition that was held June 13–14. Her research offers options for safe, cost-effective, and eco-friendly wastewater treatment by integrating an enhanced photocatalytic advanced oxidation process with filtration using novel pervious composites.

"The water sector is an ever-evolving profession that continually seeks new and innovative approaches to sustainable water management," said Mohamed F. Dahab, Chair of the SJWP Review Committee. "We were very impressed with the high caliber of research and creativity presented by Miss Kurup and all of the young men and women who participated in this year’s competition.”

Kurup received $10,000 (USD) and an all-expense paid trip to Stockholm, Sweden where she will represent the United States at the international competition during World Water Week, August 31 to September 5, 2014. The international winner will receive $15,000 (USD) presented during a royal ceremony by the prize’s Patron HRH Crown Princess Victoria of Sweden.

Other competition winners included the two US runners up, Blyé DeMessie (Mason, OH) and Zachary Loeb (Melbourne, FL) who each received $1,000, as well as Jack Andraka (Crownsville, MD) and Chloe Diggs (Glen Burnie, MD), who were joint recipients of the Bjorn von Euler Innovation in Water Scholarship Award.

In the United States, WEF and its Member Associations organize the national, state, and regional SJWP competitions with support from Xylem Inc., who also sponsors the international competition and the $1,000 Bjorn von Euler Innovation in Water Scholarship Award.

North Carolina SJWP Representative

Margaret Pan, a student at The North Carolina School of Science and Mathematics in Durham, NC, was selected for her project, Optimizing the Synthesis of Flat-Sheet Phase Inversion Polyvinylidene Fluoride (PVDF) Membranes for Membrane Distillation. NC AWWA-WEA selected Pan as the North Carolina winner and sponsored her to attend the 2014 national competition in Herndon, VA. David Wagoner, NC SJWP coordinator, remarked, “Maggie represented NC AWWA-WEA beautifully in this high level competition.” Pan will attend MIT in the fall.

For more information about SJWP, visit www.wef.org.

Congratulations to Christopher McGinness

Christopher McGinness has been promoted to the position of AWWA Manager of Section Services. For the last several years, Christopher has been an invaluable AWWA Section Services team member and has demonstrated exceptional skill at developing and maintaining effective and positive relationships. In his new role, he will lead initiatives and design programs to support AWWA Section operations and local member value. He will be responsible for managing the day-to-day operations of the AWWA Section Services team including staff supervision.

We have come to know, respect and count on Christopher as he has served NC AWWA-WEA in AWWA Region II as the AWWA Senior Section Relationship Manager and the staff adviser for the Diversity Committee. He will continue to fill these roles, while assuming the additional duties of manager.

WEF Promotes Pamela Henry to Deputy Executive Director

The Water Environment Federation (WEF) has promoted Pamela Henry to the position of Deputy Executive Director. Having been with WEF for more
than 25 years, Henry is a seasoned leader who will oversee a number of key organizational programs including WEFTEC operations and exhibitions, advertising and sponsorships, marketing, communications and creative services, human resources, and facilities management.

“Pam is a proven leader who makes shouldering a heavy load appear deceptively easy,” said WEF Executive Director Eileen O’Neill. “She deftly combines running a tight ship and managing multiple responsibilities with a genuine interest in people and a talent for growing teams. We are absolutely delighted that she has agreed to serve WEF in this new role.”

Beginning her career with WEF in the exhibitions group in 1986, Henry has held a variety of positions within the Federation, including Membership Director, Director of Conferences & Exhibitions, and Sr. Director of Conference Operations, Exhibitions, and Sales Development. Among her most notable achievements have been her contributions to the phenomenal growth and success of WEFTEC, WEF’s annual technical exhibition and conference.

Under her leadership, WEFTEC has regularly set new attendance and exhibition records, while solidifying its reputation as the must-attend event for water quality professionals around the world. Most recently, WEFTEC was recognized by Trade Show Executive as one of the fastest growing trade shows in the United States.

“Although much of Pam’s work over the years has been behind the scenes, the results of her commitment to WEF staff, WEF members and to WEFTEC are undeniable,” continued O’Neill. “She’s an enormous asset to the organization as demonstrated by success in many areas.”

NC AWWA-WEA Members at ACE 2015

The American Water Works Association, one of the national parent organizations of NC AWWA-WEA, held its Annual Conference & Exposition (ACE) June 8–12, 2013 in Boston, MA. NC AWWA was represented by the attendance of over 70 of our members. These professionals benefitted from an available 120 professional sessions and 6 workshops, 485 exhibiting companies, and the opportunity to network with over 11,000 other water professionals from around the world. Here are some photos of our attendees while in Boston.

Exciting Leadership Changes in Schnabel’s Greensboro, NC Office

Schnabel Engineering South, P.C. (Schnabel) is pleased to announce some leadership changes in our Greensboro, NC office. As of January 2014, Thomas Fitzgerald, PE assumed the role of Branch Leader, serving an instrumental role in
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guiding the office through continued growth, while maintaining high quality standards and a true client focus. Tom has been with Schnabel for more than 15 years, serving as the Lead Design Engineer and Project Manager for the evaluation, design, and construction of numerous new and existing RCC, concrete, and earthen dams and spillways.

Tom notes, “I’m excited about the challenge. From a client service perspective, we don’t expect to change much. Robert Cannon has done an excellent job of guiding our efforts and energies towards exceptional client service. Our clients will remain central to all we do. I see my primary role as helping our Greensboro staff stay ahead of changing technologies and changing market dynamics.”

After serving as Greensboro’s Branch Leader for 14 years, Robert Cannon, PG, has been promoted to serve as our Dam Engineering Services’ Director of Strategic Development and Growth, focusing on enhancing exposure of all of Schnabel’s dam engineering services throughout the country. In order to support Schnabel’s strategic direction, Robert will identify partnerships and growth initiatives throughout the United States, as well as promote Schnabel’s multi-disciplinary services related to dam projects, including our tunneling and geostuctural engineering services.

Robert has an eye for opportunity. “Schnabel Engineering is a medium-sized engineering firm that, because of its focus, has the bench strength and services capacity of a much larger firm. We have 90 talented staff working solely on dam engineering projects of all types on a day-to-day basis. As a result of our experience, reputation for quality work, and depth of resources, we are poised for continued growth of our dam engineering practice and are in a position to branch out into broader geographic territories.”

**About Schnabel**
Schnabel, an employee-owned company, is an ENR Top 250 engineering firm, employing over 300 professionals in 19 nationwide offices. Schnabel specializes in geotechnical, geostuctural, dam, and tunnel engineering, as well as environmental, geosciences, construction monitoring, and resident engineering services. For more information, please visit us at schnabel-eng.com.

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**HUBER Technology, Inc. Selects Henk-Jan van Ettekoven as the New President of the North American Subsidiary**

HUBER Technology, Inc., a wholly owned subsidiary of HUBER SE, announced today that Henk-Jan van Ettekoven has been appointed as the new President at HUBER Technology, Inc., headquartered in Huntersville NC.

Henk-Jan van Ettekoven, 47, served as the company’s Director of Manufacturing and Service since 2007, in which he was responsible for strategic growth opportunities, the development of new programs and products, along with directing aftermarket sales activities in North America.

Prior to joining HUBER Technology, Inc., van Ettekoven served in a senior executive position at American Monforts Corporation, a subsidiary of Germany-based Monforts which produces machines and ranges for dyeing and finishing woven and knitted fabrics, including responsibility for North America aftermarket sales business.

HUBER SE Board of Director Rainer Köhler said, “I want to welcome Henk-Jan to his new role as HUBER Technology’s President and CEO. Henk-Jan has the depth and knowledge of strategic, marketing, sales, financial, technical, and operational leadership experience. I am highly confident that Henk-Jan will bring exemplary visionary leadership, tremendous passion, and focus on ensuring the success of the HUBER Technology business.”

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**About HUBER Technology, Inc.**
HUBER Technology provides state-of-the-art equipment for municipal and industrial water and wastewater treatment. Our main focus is liquid/solid separation in general and headworks equipment in particular. We offer a comprehensive line of stainless steel equipment.

The HUBER Group is successfully operating in the environmental engineering sector. With more than 175 years of commitment to drinking water and wastewater treatment, HUBER has always been an innovator in this field with a continuous focus on the development of new solutions to conserve one of our most valuable resources: water.

A member of the German owned HUBER Group, HUBER Technology, Inc. maintains its 35,000 square feet of executive offices and operations in Huntersville, North Carolina.

**News and Notes**

**Professionals Join McKim & Creed North Carolina Offices**

McKim & Creed, Inc., an engineering, geomatics (surveying) and planning firm with offices throughout the South, announces that the following professionals have joined the company’s North Carolina offices.

- **Jeff Aker, PLS**, has rejoined the company’s Raleigh headquarters as a geomatics project manager. In this role, he is responsible for overseeing a variety of surveying projects for private and public sector clients. He is a Professional Land Surveyor in North Carolina and Virginia, and is a graduate of Wake Technical Community College with a degree in surveying technology. Most recently, he worked with Mattern & Craig as a survey manager.

- **Joe Colin** comes to McKim & Creed’s Wilmington office as a hydrographic technician, performing surveys for beach renourishment programs, before- and after-dredging operations, and coastal monitoring. Colin is a graduate of UNC...
Wilmington and Cape Fear Community College with degrees in psychology and marine technology, respectively. Previously he worked with Weeks Marine, Inc.

Jonathan Crowe has joined the firm’s Charlotte office as a CAD technician focusing on CAD drawings associated with water and wastewater treatment facilities. He is studying civil engineering and sociology at UNC Charlotte. Previously, Crowe worked with Bohler Engineering as a design engineer intern.

Jay Manning has rejoined the Charlotte staff as a civil designer with extensive knowledge of ACAD Civil 3D. As a civil designer, he provides design services in support of civil/site engineering and land development projects, as well as stormwater permitting and erosion/sediment control. He has 15 years’ experience in the field and is a graduate of Craven County Community College.

A new engineer intern in the Wilmington office is Craig Nursey, EI, who is responsible for providing technical and design services in support of civil engineering and land development projects. Nursey has a degree in biological engineering from North Carolina State University.

Kevin Plemmons, PE, has returned to McKim & Creed’s Wilmington office as a project engineer specializing in municipal water and wastewater infrastructure projects. He is a graduate of The Citadel with a degree in civil engineering.

Prior to re-joining McKim & Creed, Plemmons worked as the water resources engineering and programs manager for the City of Concord.

David Ridout, PE, has joined McKim & Creed’s Raleigh location as a project engineer who specializes in land development, site design and water infrastructure. He has a degree in civil engineering from North Carolina State University and is a member of the American Society of Civil Engineers. Prior to joining McKim & Creed, Ridout worked as an engineering aide with Aqua North Carolina.

About McKim & Creed
McKim & Creed is an employee-owned firm with more than 350 staff members in offices throughout the South, including North Carolina, Florida, Virginia, Georgia and Texas. The company, which is headquartered in Raleigh, offers civil, environmental, structural, mechanical, electrical and plumbing engineering services, as well as airborne and mobile LiDAR, subsurface utility engineering, and hydrographic and conventional surveying services for the municipal, energy, development and institutional markets. For more information about McKim & Creed, visit www.mckimcreed.com.

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- Fabrication
- Metallizing
- Nickel Plating
- Sandblasting (Different Media)
- Shafts to 20 feet in Length
- Welding-Acetylene & Electric
- Gearbox Rebuilding
- Fans & Blowers
- Mechanical Repairs & Refurbishing

**MOTOR REPAIRS & REWINDS**

- A.C. Motors
- D.C. Motors
- Foreign Metric Motors
- Hermetic Motors (Complete)
- Poly Phase Motors
- Servo Motor Repair
- U.L. / Explosion Proof Certification
- Variable Speed A.C. Motors
- Wound Rotor Motors
- Authorized Warranty Service Center
- DynamoMeter Load Testing of Motors
  (Up to 600 HP)
- Eddy Current Clutches
- Magnetic Clutch Repair

**PUMP REBUILDING**

- Mechanical Repairs
- Housing & Impeller Abrasion / Coating

**FIELD SERVICES**

- Removal & Installation of Equipment
- Start Up
- Shaft Alignment (Laser)
- Electrical Testing & Repair
- Surge Testing
- Precision Dynamic Balancing
- On-site Electric Mechanical Repairs
- Laser Alignment
- Preventative Maintenance
- Infrared Thermography
- Vibration Analysis

**TROUBLE SHOOTING**

- All Motors
- Control Circuits
- D.C. Controls
- Mechanical Equipment
- Programmable Logic Controls
- Variable Frequency Drives

**MACHINE SHOP SERVICES**

- Bearing Removal (150 Ton Press)
- Fabrication
- Metallizing
- Nickel Plating
- Sandblasting (Different Media)
- Shafts to 20 feet in Length
- Welding-Acetylene & Electric
- Gearbox Rebuilding
- Fans & Blowers
- Mechanical Repairs & Refurbishing

**MOTOR WARRANTY**

- Standard NEMA T Frame & Metric IEC, 3 phase AC motors
- Remanufactured: 2 year warranty
- (All other motors warranted for 1 year)
- Reconditioned: 1 year warranty - excluding windings
  (All other motors warranted for 90 days.)

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**Session tracks will include**

- Water Utility Infrastructure Management
- Asset Management Programs
- Practical Applications for Pipeline Management
- Technology and Modeling in the Water Sector
- Emergency Preparedness & Security Issues

**Topics are subject to change.**

**WATER INFRASTRUCTURE Conference**

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• The latest information in your field from state and/or national professional publications
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Join NC AWWA-WEA in one of three ways:
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  919-784-9030 or www.ncsafewater.org
  Annual dues for 2013 are $45.
• National AWWA
  800-926-7337 or www.awwa.org
  Contact AWWA for dues information.
• National WEF
  800-666-0206 or www.wef.org
  Contact WEF for dues information.
**NC Currents Future Themes & Submission Deadlines**

*NC Currents* is the official publication of the NC AWWA-WEA. Members, individuals, and committees are encouraged to submit content for the magazine. If you would like to submit an article to be considered for publication in *NC Currents* please complete the Submission Form & Publication Agreement (available at [www.ncsafewater.org](http://www.ncsafewater.org)) and email both the completed form and your article to Nicole Banks at nbanks@ncsafewater.org. Articles must be received by 5:00pm EST on the listed submission deadline.

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.

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<th>WINTER 2015</th>
<th><strong>Alternative Delivery Methods</strong> (Submission Deadline September 29, 2014)</th>
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<td>In August 2013, <em>House Bill 857</em> was signed into law by Governor McCrory. This new law (<em>Session Law 2013-401</em>) allows all state agencies and local governments to utilize various forms of project delivery, including design-build, construction management at risk, and public-private partnerships (P3) without involving legislative approval for each project. This law also puts North Carolina in a group with only four other states (VA, FL, CO, AZ) that specify design-build contracts are to be selected based on qualifications (QBS). While this new law could greatly benefit public water and wastewater utilities in North Carolina, there are still many unknowns about the different alternative delivery methods; why one contracting method should be selected over another, the potential benefits of alternative delivery versus traditional design-bid-build, the benefits of QBS in reference to design-build, and the lessons learned from other alternative delivery projects. In the <em>NC Currents</em> Winter 2015 issue, we invite the submission of articles that provide case studies describing the alternative delivery contract selection process, the pros and cons of alternative delivery, comparison of QBS design-build versus price-based design-build, and lessons learned throughout the entire alternative project delivery process.</td>
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<td><strong>Theme Leaders:</strong> Marco Menendez (McAdams) <a href="mailto:menendez@mcadamsco.com">menendez@mcadamsco.com</a>, Brigette Welton (Dewberry) <a href="mailto:bwelton@dewberry.com">bwelton@dewberry.com</a>, Kelly Boone (CDM Smith) <a href="mailto:boonekr@cdmsmith.com">boonekr@cdmsmith.com</a>, Steve Hilderhoff (GHD) <a href="mailto:steven.hilderhoff@ghd.com">steven.hilderhoff@ghd.com</a></td>
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<td>Our industry benefits greatly from automation. Technologies such as: process instrumentation, control and automation, Supervisory Control and Data Acquisition (SCADA), telecommunications, information technologies, and the management of information all improve our level of service in the water and wastewater business. <em>NC Currents</em> wants to highlight your case studies for efficient automation. The issue on automation will focus on the efforts of NC AWWA-WEA members in the design, manufacture, and operation of in-plant control and remote SCADA systems. Potential topics include:</td>
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<td>· Instrumentation and control devices and networks</td>
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<td>· PLC, DCS, and PC-based control systems</td>
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<td>· Plant control and SCADA-related software</td>
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<td>· Control panels, motor controllers, variable frequency drives (AC), variable speed drives (DC), and final control elements</td>
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<td>· The IT interface to plant control and SCADA systems</td>
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<td>· Networks and wireless communication relating to automation systems</td>
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<td>· Security systems for treatment, storage, and pumping facilities</td>
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<td></td>
<td><strong>Theme Leaders:</strong> Marianna Boucher, McKim &amp; Creed, <a href="mailto:mboucher@mckimcreed.com">mboucher@mckimcreed.com</a>, (910) 343-1048 x206 Shameka Collins, City of Greensboro, <a href="mailto:shameka.collins@greensboro-nc.gov">shameka.collins@greensboro-nc.gov</a>, (336) 433-7370 Wade Shaw, City of Raleigh, <a href="mailto:wade.shaw@raleighnc.gov">wade.shaw@raleighnc.gov</a>, (919) 795-2100 Mike Shelton, Kimley-Horn, <a href="mailto:mike.shelton@kimley-horn.com">mike.shelton@kimley-horn.com</a>, (704) 409-1815</td>
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<th><strong>Trenchless Technology: Not a Boring Subject</strong> (Submission Deadline July 6, 2015)</th>
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| WINTER 2015 | **How We Protect Your Water** (Submission Deadline October 5, 2015) |
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2014/15 Schedule of Events

The following schedule is current as of September 10, 2014. 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 a NC AWWA-WEA event. For further details concerning all NC AWWA-WEA events, visit the NC AWWA-WEA website at www.ncsafewater.org or contact the NC AWWA-WEA office directly at (919) 784-9030.

September 2014
27-Oct 1 WEFTEC
New Orleans, LA

October 2014
10 Where Do I Find Practical Cybersecurity Guidance for My Water Utility?
In-person in Greensboro, NC or online webinar

13-17 NC AWWA-WEA Coastal Collection & Distribution School
Morehead City, NC

Greensboro, NC

23 NC AWWA-WEA Growing Relationships and Opportunities Through Water Resources (GROW)
Raleigh, NC

23 NC AWWA-WEA Wastewater Laboratory Analyst Exam
Wilson, NC

30 NCWTFOCB Exams (application deadline 30 days prior)
Kinston, Morganton, and Raleigh, NC
NCWTFOCB (919) 707-9040

November 2014
16-19 NC AWWA-WEA Annual Conference
Winston-Salem, NC

December 2014
3 NC AWWA-WEA Seminar: WWTP Optimization & Troubleshooting
Tar Heel, NC

9 NC AWWA-WEA Seminar: Contemporary Topics in Water/Wastewater Construction
Greenville, NC

11 NC AWWA-WEA Growing Relationships and Opportunities Through Water Resources (GROW)
Wilmington, NC

11 NCWPCSOCC Exams
Kensansville, Morganton, Raleigh, Salisbury, & Williamston, NC
NCWPCSOCC (919) 807-6353

February 2015
16-19 Eastern Maintenance Technologist School and Exam
Raleigh, NC

16-20 Eastern Biological Wastewater Operators School and Physical/Chemical Wastewater Operators School
Raleigh, NC

16-20 Coastal Collection & Distribution School
Morehead City, NC

March 2015
26 NC AWWA-WEA Growing Relationships and Opportunities Through Water Resources (GROW)
Raleigh, NC

April 2015
12-14 NC AWWA-WEA Spring Conference
Wilmington, NC

May 2015
28 NC AWWA-WEA Growing Relationships and Opportunities Through Water Resources (GROW)
Greensboro, NC

June 2015
7-10 AWWA ACE
Anaheim, CA
AWWA, (800) 926-7337, www.awwa.org

15-18 Western Maintenance Technologist School and Exam
Morganton, NC

15-19 Western Biological Wastewater Operators School
Morganton, NC

July 2015
13-17 Western Collection & Distribution School
Morganton, NC

30 NC AWWA-WEA Growing Relationships and Opportunities Through Water Resources (GROW)
Charlotte, NC

September 2015
14-18 Western Collection & Distribution School
Durham, NC

24 NC AWWA-WEA Growing Relationships and Opportunities Through Water Resources (GROW)
Asheville, NC

26-30 WEFTEC
Chicago, IL

October 2015
29 NC AWWA-WEA Growing Relationships and Opportunities Through Water Resources (GROW)
Wilmington, NC

November 2015
15-18 NC AWWA-WEA Annual Conference
Raleigh, NC

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