6th Annual
VWEA Operations Conference & Operations Challenge

INSIDE
• Algae: From Resource Depletion to Resource Recovery
• Environmental Excellence Award Winners
• Collection Systems Committee Workshop

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### FEATURES

**Virginia General Assembly Update**
The 2017 short, odd-year General Assembly session was relatively quiet for VWEA members compared to recent years past. Nevertheless, there were several notable bills introduced, including significant legislation for the purpose of managing nutrient discharges within the Chesapeake Bay watershed. Other bills addressed water and sewer connection fees, stormwater utilities, and a possible stormwater management credit system. On the budget side, there was little action.

**Collection Systems Committee Workshop**
This September the VWEA Collection Systems committee will host a WaterJAM 2017 workshop to provide utility managers, engineers, and practitioners with key tools for the characterization of available wet weather capacity in sanitary sewer systems, need evaluations, and performance assessments within Infiltration and Inflow (I/I) reduction and remediation programs.

**NFPA 820 Standard**
NFPA 820 Standard for Fire Protection in Wastewater Treatment and Collection Facilities is seeking public input until June 28, 2017.

### WEF FEATURES

**Algae: From Resource Depletion to Resource Recovery**
Generally, when we think of algae in water quality context, we think of how nutrients in agricultural runoff, municipal wastewater effluent, and urban stormwater provide the conditions for algae blooms in water bodies. These algal blooms lead to eutrophication and dead zones, causing water quality and negative economic effects.

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Matt Winschel, PE
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mwinschel@winenv.com

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Glen Allen, VA 23060

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**Bary** - Photoflo and corrosion control
Spring is on the horizon, although we cannot complain too much about the mild winter we had here in Southeast Virginia. It seems that we went through all four seasons in the winter this year. Whatever the case may be, we are all looking forward to spring and summer. Our committees are as busy as ever, and well into their planning and execution phases for their yearly seminars, conferences, and events.

Our Industrial Waste and Pretreatment (IW&P) Conference was held on March 7, 2017. It was an amazing event highlighted by a 17% increase in attendance over last year and representation from 32 Virginia utilities and one New York utility. The IW&P Committee recognized 10 industries for the Environmental Excellence Award. There were five platinum winners (with five or more years of 100% compliance with pretreatment permit requirements), and five gold winners (with two to four years of 100% compliance). What an extraordinary effort by the IW&P Committee – kudos to Chris Carlough and committee leadership on a job well done. Do not forget, the Stormwater Conference is just around the corner, scheduled for April 27, 2017 in Richmond. In addition, the Annual Education Conference will follow on May 11, 2017 in Richmond as well.

One of our focus areas this year is our membership, and mainly how we can grow it through the state-only membership initiative. As it stands today, we have 1,545 total members, a 5% increase from 2015. Our state-only memberships make up 4% of our membership profile and we expect that percentage to keep rising.

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a 5% increase from 2015. Our state-only memberships make up 4% of our membership profile and we expect that percentage to keep rising. It is worth mentioning that 42% of our members are from the private sector, 47% are from the public sector, and 7% are students (upcoming water and wastewater professionals). I take pride in saying that our membership profile demonstrates the shared vision in the quality of our waters across all our membership groups. Please spread the word about VWEA and make it your duty to bring industry professionals to an event and to help join our association.

"Water is the most critical resource issue of our lifetime and our children’s lifetime. The health of our waters is the principal measure of how we live on the land." – Luna Leopold

This quotation signifies the ultimate goal of our profession and the passion behind our drive and motivation. We are wastewater professionals working together to protect our waters so future generations can prosper. Seeing a generation of motivated individuals working together to support this cause is an inspiration to all of us. The present-day generation of students help us succeed and carry that torch into the future. With that said, I am pleased to announce the establishment of a new WWA Student Chapter at George Mason University. The Board of Directors approved the Chapter Bylaws at our February 28, 2017 meeting, and sent a letter of consideration to the Water Environment Federation (WEF). It is tremendously encouraging to see these motivated individuals and their passion for our industry. We are very excited about the new Chapter, and enthusiastic about the ways we can contribute to their successes.

As always, I want to take this opportunity to thank our members and committee volunteers for their dedication and commitment to our association. I am ever-proud to be serving with you this year and forever thankful for this opportunity. Please tell us how we are doing; we would love to hear from you. You can contact us via email on admin@vwea.org. Please visit us on www.vwea.org to learn more on how you can become a member or if you are interested in volunteering on one of our committees.

“As always, I want to take this opportunity to thank our members and committee volunteers for their dedication and commitment to our association.”
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The 2017 short, odd-year General Assembly session was relatively quiet for VWEA members compared to recent years past. Nevertheless, there were several notable bills introduced, including significant legislation for the purpose of managing nutrient discharges within the Chesapeake Bay watershed. Other bills addressed water and sewer connection fees, stormwater utilities, and a possible stormwater management credit system. On the budget side, there was little action. A summary of select legislation follows. At the time of writing, some items discussed below remained subject to review by the governor.

In January 2016, Governor McAuliffe directed the Secretaries of Commerce and Trade, Natural Resources, and Agriculture and Forestry to convene a work group to recommend strategies for offsetting nutrient discharges from new or expanding point sources in the Chesapeake Bay watershed. The work group made several recommendations that were eventually crafted into legislation approved by the General Assembly.

House Bill 1619 directs the State Water Control Board to conduct decennial reviews.
“Although the General Assembly has not previously appropriated monies to the Fund, HB 2311 endorses a mechanism by which the Commonwealth could become a participant in the market for nutrient credits and assume more responsibility for funding the generation of nutrient offsets for new or expanded facilities.”

of the Chesapeake Bay watershed nutrient allocations in the Water Quality Management Planning Regulation. The initial review, scheduled for 2020, is of limited scope and will consider only the most dramatically changed circumstances. The regular review process begins in 2030 at which time the board will consider whether significant changes affecting an existing facility have made nutrient discharges unnecessary or impossible and unlikely to resume. If there are excess allocations, the board may propose to either reallocate them among facilities registered under the Watershed General Permit or to reserve them for future use. Importantly, the board may not reduce allocations based solely on voluntary improvements in nutrient removal technology. Governor McAuliffe signed the bill on February 13, and it becomes effective July 1, 2017.

House Bill 2311 amends the Virginia Code provisions governing the Nutrient Offset Fund. The bill allows DEQ to use the fund to purchase nutrient credits generated by point and nonpoint sources. DEQ would make purchase decisions based on criteria designed to maximize cost-effectiveness. Although the General Assembly has not previously appropriated monies to the Fund, HB 2311 endorses a mechanism by which the Commonwealth could become a participant in the market for nutrient credits and assume more responsibility for funding the generation of nutrient offsets for new or expanded facilities. Accordingly, the bill reaffirms nutrient credit trading as a mechanism for offsetting nutrient loads associated with continued economic development.

Connection fees
In the House, legislation (Senate Bill 1569) to amend the ratemaking standard for locali ty water and sewer connection fees was defeated in a fairly close vote. Currently, the code provides in at least two sections that water and sewer connection fees set by localities must be “fair and reasonable.” In other sections, the code applies the “fair and reasonable” standard to connection fees set by localities. Governor McAuliffe signed the bill on February 13, and it becomes effective July 1, 2017.

Spill reporting – media notification
Existing law requires individuals to provide written notice of an unlawful discharge to DEQ following the initial 24-hour report. In turn, DEQ must provide this information to a local newspaper if the discharge may impact public health or the beneficial uses of state waters. House Bill 1870 would have expanded media notification of spills to multiple local newspapers, television stations, and radio stations. The same bill was
defeated last year, and this year the bill died in a House subcommittee.

**Aboveground chemical storage tanks**

There continued to be interest in issues related to chemical storage, but legislation on these issues gained less traction than in past sessions. In the wake of a DEQ report to the General Assembly on chemical storage in Virginia, House Bill 1860 would have required the State Water Control Board to develop a new regulatory program for aboveground chemical storage tanks. The bill died in a House committee.

**Stormwater**

Three stormwater-related bills are awaiting the Governor’s signature. As introduced, the first (House Bill 1597) would have required localities to provide a full waiver of stormwater charges to a person who reduces stormwater flow or pollutant loadings from their property. However, the bill was amended to simply clarify that full or partial waivers must be provided to "a person who reduces stormwater flow or pollutant loadings from their property by retaining stormwater and treating it on-site." This is consistent with existing law and is not expected to significantly change fee waiver programs.

House Bill 1774 is intended to create alternatives to the technical design standards recently adopted for new development and redevelopment in rural tidewater communities. As introduced, HB 1774 proposed a credit system to improve stormwater management in these rural tidewater communities. Ultimately, HB 1774 was amended to require a study on this topic by a workgroup under the Commonwealth Center for Recurrent Flooding Resiliency. The study will likely inform targeted legislation in the future.

Finally, House Bill 2009 confirms that localities may contract out administrative aspects of their stormwater programs other than enforcement.

**Lead testing in schools**

In the wake of Flint, multiple bills concerning lead in drinking water were introduced. The General Assembly passed Senate Bill 1359. It requires each local school board "to develop and implement a plan to test for lead" and remediate as necessary.

**Funding**

In this tight budget year, no money was earmarked for SLAF in FY18. The budget bill did authorize the transfer of $7.7 million from the Water Quality Improvement Reserve Fund (Items 363-B and 364-B) to the Natural Resource Commitment Fund for technical assistance to the Soil and Water Conservation Districts and grants to support agricultural best management practices. An additional $500,000 was appropriated from the Reserve for the state’s match to the Conservation Reserve Enhancement Program (Item 364-2C).
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Algae: From Resource Depletion to Resource Recovery

Generally, when we think of algae in water quality context, we think of how nutrients in agricultural runoff, municipal wastewater effluent, and urban stormwater provide the conditions for algae blooms in water bodies. These algal blooms lead to eutrophication and dead zones, causing water quality and negative economic effects.

The same biological processes that lead to water quality problems from nutrient pollution can be harnessed to treat, and recover, nitrogen and phosphorus through production of algae biomass for wastewater bioremediation. Algae can be cultivated and harvested to create biomass that can be transformed into biofuels and bioproducts.

As the wastewater sector seeks to manage high energy costs while recovering resources to meet tighter nutrient limits, the algae bioproducts and biofuels industry is searching for productive feedstock. The potential is being recognized, as demonstrated by awarding of the 2016 Paul L. Busch Award to Jeremy S. Guest, assistant professor in the Department of Civil & Environmental Engineering at the University of Illinois at Urbana – Champaign. This $100,000 award recognizes Guest’s work with algae treatment and resource recovery.

In October 2016, the Water Environment Federation (WEF; Alexandria, Va.) and the Algae Biomass Organization (ABO; Preston, Minn.) hosted the forum Algae in Wastewater Treatment at the Algae Biomass Summit. The forum brought together algae technology developers, leading design and engineering firms, municipalities, regulators, and other stakeholders to review the state of algae-based tertiary wastewater treatment systems. Forum participants also discussed opportunities and challenges in deploying such systems in the context of an evolving economic, environmental and regulatory landscape.

Types of algae
Algae tolerate a wide range in environments with respect to temperature, salinity, and water quality. The communities of algae found in treatment and harvesting operations typically are mixed culture, combining both photosynthetic and heterotrophic types, as occurs in nature. Photosynthetic algae use nutrients from nitrogen and phosphorus in wastewater, capture carbon as carbon dioxide, use energy from sunlight, and produce oxygen as a waste product. Heterotrophic algae use organic chemicals for carbon and energy.

Blue-green algae are photosynthetic, but actually are bacteria (cyanobacteria) that contain phycocyanin, which give the blue-green color. Blue-green algae also produce microcystins, which are toxins that cause many of the negative effects of algae blooms in lakes. Other algae are eukaryotes, as opposed to bacteria, and are generally green, brown, and red. Common green algae strains are shown in Figure 1.

Algae treatment
The use of algae as wastewater treatment is common, as the biological processes take place in ponds and lagoons naturally. About half of the 16,000 regulated water resource recovery facilities (WRRFs) have ponds/lagoons. These features are prevalent especially at smaller WRRFs (Bastian 2016). The efforts now are focusing on how to use...
microalgae for wastewater treatment within conventional WRRFs.

Similar to other biological wastewater treatment techniques, algae treatment can utilize suspended- or attached-grown methods. Suspended-growth ponds use paddles keep microalgae suspended for sunlight, coupled with a shallow depth for light penetration. The layout of these ponds gives rise to the name raceways, as shown in Figure 2.

Attached growth techniques utilize a substratum that rotates alternatively through wastewater (to provide nutrients) and atmosphere (to provide sunlight and carbon dioxide). Two common types of attached growth algae treatment technologies are biofilm rotating algae biofilm reactor (RABR) and revolving algal biofilm (RAB).

In pilot tests in Chicago, an RAB system has demonstrated the potential for recovering nutrients from wastewater. The RAB system is capable of producing concentrated algae biomass (10% to 25% solids), which has value and can be used to produce a variety of products (Kumar 2016).

Several types of wastewater are applicable for algae treatment including municipal wastewater, produced water from oil and gas extraction, dairy farms and swine wastewater.

Several types of wastewater are applicable for algae treatment including municipal wastewater, produced water from oil and gas extraction, dairy farms and swine wastewater. During treatment, nitrates and phosphates are combined with water and carbon dioxide to grow the algae. Microalgae is often represented by the chemical formula \( \text{C}_{106} \text{H}_{263} \text{O}_{110} \text{N}_{16} \text{P}_{1} \). It is important to note the phosphorus to nitrogen ratio of 1 to 16 when evaluating the design, as well as looking to add carbon dioxide to balance the carbon:nitrogen:phosphorus ratio and achieve completed nutrient assimilation, according to Ron Sims, who gave the presentation Microalgae-based approaches to Algae-based tertiary wastewater treatment at the forum.

Most of our existing laws and regulations that deal with wastewater were designed with conventional treatment systems in mind. How does algae fit in the regulatory environment? 40 CFR Part 503 includes definitions for Class A and Class B biosolids. Algae from municipal wastewater (as part of the treatment system) are subject to Part 503. Algae solids from municipal treatment could meet class A or Class A/EQ in a number of ways. Metals are unlikely to be problematic and consistent low metals and pathogens may provide basis for reduced monitoring, said Robert Bastian in his presentation, Algae Biotechnology for Wastewater Treatment: Regulatory Issues, at the forum.

Bioproducts and bioenergy
A number of bioproducts can be produced from algae biomass. Fertilizers from algae solids generally have about 8% to 10% nitrogen content and 1% to 2% phosphorus content, Bastian said. The biomass also can be used as feed for aquaculture and agriculture. Products from phycocyanin include pigments and antioxidants, Sims also reported.

The first techno-economic analysis (TEA) for algae biofuels integrated with wastewater treatment was performed in 1960, according to Algae Biotechnology for Wastewater Treatment: An Introduction presented by John Benneman. Using anaerobic digestion, the biomass can
produce biogas, especially when mixed with food wastes and municipal wastewater biosolids to generate more methane for combined heat and power (CHP). Additional processing, such as hydrothermal liquefaction (“pressure cooking”) can convert algae to biocrude oil. Other processes can produce biodiesel, bioplastics, acetone, butanol, and ethanol, Sims said.

When evaluating any energy resource recovery opportunity, it is important to calculate the energy return on investment (EROI): Does the system provide more usable energy than it consumes?

According to recent work in Europe, algae biofuels have an EROI of 1.9, substantially higher than corn ethanol’s and biodiesel’s value of 1.3. In addition, biomethane from algae enables greenhouse gas savings of more than 50% compared to diesel. Furthermore, algae biofuel production per hectare is 10,000 kg CH₄/ha/yr, enough to fuel 10 vehicles, double sugar bioethanol and palm oil diesel, reported Frank Rogalla in his presentation, Wastewater Treatment and Energy Recovery with Cultivation of Microalgae.

Conclusions
State regulators, municipalities, and other industrialized jurisdictions increasingly are moving toward tertiary wastewater treatment as a means to mitigate the environmental effects of nitrogen, phosphorus, heavy metals, and other components of traditional wastewater treatment systems. But traditional systems can be an expensive and energy intensive proposition.

Algae-based systems, which make up just a small fraction of tertiary systems in use today, offer a potential solution, providing a low input-energy platform for nutrient recovery with a variety of opportunities for production of value-added coproducts.

Barry Liner is director of the Water Science & Engineering Center at WEF. Noah Mundt, senior program manager at Siemens, was a moderator of the forum and is a member of both WEF and ABO (www.algaebiomass.org).

References

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- The author of the article must be clearly identified by name, title, and organization, and both a telephone number and email address must be supplied for contact purposes.
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- The article should be submitted electronically via email as a Word document.
- Length of material should be limited to a maximum of 2,000 words.
- Any photographic images to be included with the material must be free and clear of any copyright and be submitted as JPGs or TIFs that are high resolution (300 dpi). Image files should be sent separately with captions, not embedded in the Word document.

Please submit your article or article proposal to: conduit@vwea.org

Additional Questions? Please Contact: Felicia Glapion, Editor, at fglapion@hazenandsawyer.com.
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• Confined Space in Construction Safety Workshop
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**Gold Award:** Two to four consecutive years of 100% compliance with the requirements of pretreatment permit for a specified period of time.

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Thinking of water in new ways
In the current financial climate and with the recent densification trend in the highly urban areas of Virginia, a need exists for sanitary sewer utilities to shift their focus towards extending not only the overall life, but the usefulness of their aging infrastructure systems. On the leading edge of this shift is the development of more data-driven tools that allow stakeholders to more accurately understand the available capacity in, and predict the long-term capacity of their sewer system. In particular, one of the earliest (and still commonly used) analysis approaches is the forecast of current and future flows in a sewer conveyance system commonly referred to as hydrologic modeling.

Hydrologic modeling is the use of simplified mathematical models to represent complex and dynamic processes typically found in sewer conveyance systems (Cormeau, et al., 2017). This type of modeling estimates both the dry-weather and wet-weather flows that enter into the sanitary sewer system. These estimations can be used by cities and utilities to understand the current and future flow conditions of their system. Used in the right manner, this information allows decision makers to plan and prioritize limited financial resources most effectively and with a higher degree of certainty.

**Data-Driven Hydrologic Modeling Success Story 1**
The Hampton Roads Sanitation District (HRSD) started an extensive Flow, Pressure and Rainfall (FPR) program in 2007. The program provided the basis for the hydrologic and hydraulic calibration of a Regional Hydraulic Model (RHM) in 2011 (a compliance milestone under an EPA consent decree). FPR continues to provide the information needed to refine the RHM while the RHM is used to assess the capacity of the regional sanitary sewer system and to develop a Regional Wet Weather Management Plan.

“Rainfall is the most challenging type of data to QA/QC compared to flow and pressure data. HRSD Analysts use multiple tools on a daily basis just for the QA/QC of our vast rain gauge network,” said Kim Peterson, HRSD Data Analysis Manager. This lead HRSD to develop a Quality Control/Quality Assurance (QA/QC) program to ensure the validity of the flow, pressure, and rainfall data in addition to maintaining a high rate of reliability for each meter type. Metering data was QA/QC’d daily either by an automated SQL-driven alert method or a manual review of the data by an analyst. This level of data review, data flagging, and issue documentation provided quality data for use in HRSD’s RHM.

**Data-Driven Hydrologic Modeling Success Story 2**
Using 10 years of sanitary sewer flow data taken from their gravity flow monitoring program, the City of Virginia Beach has developed...
high confidence demand flows for each of their 400+ service areas (Motley, Toro, & Logue, 2017). “We saw it as a way of being more efficient and more cost-effective,” said Steve Motley, City of Virginia Beach Utility Engineering Manager. Using these flow projections, the City was able to successfully identify many high priority inflow and infiltration (I/I) areas prone to increased flows after significant rainfall events.

This is most evident when looking at their defect capture rate (average defects per pipe) after implementation of their enhanced sanitary sewer evaluation study (SSES) CCTV program.

Since implementation of their enhanced program, the city has seen many benefits, including reduced program cost and higher levels of service for rate payers. “It is an extremely efficient use of resources for the city,” said Steve Motley.

Regardless of your readiness to implement similar programs, it is best to educate yourself on the different techniques and available tools that can bring tangible benefits to a utility sewer system.

Upcoming Learning Opportunities
For this year’s Virginia AWWA/VWEA Water-JAM conference, the Collection Systems Committee is planning a workshop with the title Rainfall-derived Infiltration and Inflow (RDII) Modeling: From Sanitary Sewer System Monitoring and Modeling to Capacity Management, Operation and Maintenance (CMOM).

The workshop will cover meter placement, data collection, data quality review and development of model parameters for wet weather hydrology and its practical applications for a wastewater utility. Emphasis will be placed on hands-on activities for using rain gauge and flow meter data to develop the necessary dry weather and wet weather flow parameters for use in standard hydraulic models and their practical application. Breakout sessions will provide attendees with an opportunity to try different computer tools and hydrologic methods for determining Rainfall-derived Infiltration and Inflow (RDII).

For more information contact the workshop co-chairs Carlos Toro (ctoro@brwncald.com) or Dr. Matthias Wittenberg (wittenbergm@cdmsmith.com) or check the WaterJAM 2017 website at http://www.vwea.org/?page=WaterJAM2017. Registration will open in early May.
THE OFFICIAL PUBLICATION OF THE VIRGINIA WATER ENVIRONMENT ASSOCIATION, INC.

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On February 27, 2017, NVRAC organized a lunch and learn at Fairfax Water’s Griffith Water Treatment Plant. About 50 participants from northern Virginia enjoyed an excellent lunch while listening to a presentation about Hampton Roads Sanitation District’s (HRSD) project: The Sustainable Water Initiative for Tomorrow (SWIFT).

Dr. Charles Bott (HRSD Director of Water Technology and Research) talked about this innovative water purification initiative to ensure a sustainable source of groundwater to meet current and future needs in eastern Virginia. The plan is to, by 2030, inject 120 million gallons per day (mgd) of wastewater effluent into the Potomac Aquifer, the primary source of groundwater throughout eastern Virginia. HRSD will purify their dry weather effluents (otherwise to be discharged into the Elizabeth, James or York rivers) through additional rounds of advanced treatment to match the existing groundwater chemistry. HRSD has completed extensive testing and computer simulations, and a one mgd demonstration facility is scheduled to open in January 2018. This multi-year initiative will ensure a sustainable source of groundwater, while in a fiscally responsible way, address environmental challenges such as the Chesapeake Bay restoration, sea level rise, and saltwater intrusion.
The National Fire Protection Association (NFPA) develops, publishes more than 300 consensus codes and standards intended to minimize the effects of fire and other risks. NFPA 820 Standard for Fire Protection in Wastewater Treatment and Collection Facilities originated in 1983. The standard establishes minimum requirements for protection against fire and explosion hazards in wastewater treatment plants and associated collection systems, including the hazard classifications, construction requirements, and ventilation of specific areas and processes. NFPA standards are revised every three to five years. Revisions take place over a two-year period with a balance of committee members from various interest groups such as document users, enforcers, manufacturers, insurers, and special experts. All NFPA documents are available for viewing free of charge when you set up a free on line account by providing your email address and setting up a password. The NFPA 820 document can be viewed at www.nfpa.org/820.

The NFPA is currently seeing public input on the next edition of NFPA 820 and is also seeking new committee members, in particular document users and enforcers. Any interested party, not just committee members or NFPA members, can make recommended additions and changes to the document. These are called public inputs. To submit public input go to www.nfpa.org/820 and click on “The next edition of this standard is now open for public input” next to the paper and pencil icon at the top of the page. Once you sign in, you can click on a particular section of the standard, make suggested changes, provide substantiation for the changes and submit it to the committee for review at their first draft meeting. All public inputs must be reviewed by the committee, and a response will be sent to the submitter indicating the action taken on the public input.

If you are interested in applying to be on the technical committee you can open the “Technical Committee” tab to apply online. You can also sign up for ALERTs above the tabs to be notified of meeting dates and locations and when document drafts are posted.

If you have questions, please contact Nancy Pearce at npearce@nfpa.org.

“The NFPA is currently seeing public input on the next edition of NFPA 820 and is also seeking new committee members, in particular document users and enforcers.”
The Joint VWEA/VA AWWA Student Activities Committee has the following announcements:

**Student Video Competition**
Doing or studying something interesting in the water industry that you would like to share? We are considering providing this event at WaterJAM this fall…

Our idea is to ask you to submit a short video that captures the interesting thing you are doing/studying, and we will share them with the attendees of WaterJAM.

On top of that, we are considering making this a CONTEST with FINANCIAL AWARDS. Like the idea? Interested? Go to the following link and let us know: [http://doodle.com/poll/u2badvzvkd9dp2k87](http://doodle.com/poll/u2badvzvkd9dp2k87)

Look in the next edition of The Conduit or keep checking the SAC webpage to see if we will be adding this competition to WaterJAM.

**Student Water Challenge**
Every year at WaterJAM, the SAC holds a Student Water Challenge for engineering, environmental, and science majors from Virginia colleges and universities.
- On the competition day teams of students from competing schools will be given a water quality/water treatment problem to solve.
- Teams will be allowed approximately five hours to develop a solution to the assigned problem.
- The problem will focus on using a combination of engineering and science to address a real world water quality issue.
- The winning team will receive a traveling trophy, a plaque, and a monetary award of $1,200.
- The second place team will receive a plaque and a monetary award of $500.
- The winners will be announced on Wednesday evening at the Awards Banquet.

**Scholarships**
The Student Activities Committee is pleased to announce that there are three VA AWWA scholarships available for the year 2017. We solicit your applications for the following:

- **VA AWWA Ray A. Jackson (Undergraduate) Scholarship:** One award in the amount of $2,000 will be given out to an undergraduate student from universities and colleges in Virginia. Application submittal deadline is June 16, 2017.

- **VA AWWA Graduate Student Scholarship:** One award in the amount of $2,500 will be given out to a graduate student from universities and colleges in Virginia. Application submittal deadline is June 16, 2017.

- **VA AWWA Operator’s Scholarship:** One award in the amount of $1,500 will be given out to a water system (plant or distribution) operator in Virginia. Application submittal deadline is April 2, 2017.

Go to [http://www.vaawwa.org/get-involved/scholarships/](http://www.vaawwa.org/get-involved/scholarships/) and apply today!
VWEA Scholarships

VWEA Scholarship applications are now available on our website at: http://www.vwea.org/?page=Scholarships. $2500 awards will be given in the following categories:

Undergraduate Student Scholarship: Students enrolled at Virginia universities in a civil or environmental engineering or physical/environmental science undergraduate program.

Rising Freshman Scholarship: Students graduating from high school in 2017 and planning on enrolling at a Virginia college or university in a civil or environmental engineering or physical/environmental science undergraduate program.

Sonny Roden Memorial Graduate Student Scholarship: Students enrolled at Virginia universities in civil or environmental engineering or science graduate program.

Operators Scholarship: Operators employed in the wastewater treatment field at a utility in Virginia. The award will be up to a total of $2,500 applied to sending a total of three (3) operators to the Wastewater Treatment Plant Operators Short Course scheduled for August 2017 at Virginia Tech.

Member Dependent Scholarship: Students enrolled at Virginia universities in a civil or environmental engineering or physical/environmental science undergraduate program who are children of current VWEA members. $2500 award.

2017 Application Deadlines:
- Roden, Undergraduate, Rising Freshman and Member Dependent: May 26, 2017
- Operator Scholarship: June 15, 2017

Send in your completed applications with supporting documentation to: Grace Lerose, grace.lerose@richmondgov.com and Kathy Rabalais at kathy.rabalais@vwea.org.
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Winter’s over, spring is here, and it’s time to start planning your late summer! Experience Fluid Thinking with friends, both old and new, and other industry professionals in Hampton at WaterJAM 2017!

Come join us in September for WaterJAM – the Joint Annual Meeting of the Virginia Section American Water Works Association (VA AWWA) and the Virginia Water Environment Association (VWEA). Since 2002, WaterJAM has been a record-setting conference registering growing numbers of participants each year. More than 1,500 professionals join their friends and colleagues to make WaterJAM one of the most successful state conferences in the United States.

This year’s theme, Fluid Thinking, is appropriate as the water, wastewater, and stormwater industries continue to move toward a convergence in treatment and water quality. More importantly, Fluid Thinking is a recognition of the exciting time our industry is going through as we are all doing more with less. This year’s WaterJAM promises the latest in technology to help you advance your knowledge in this highly technical world while you have a little fun along the way.

Your WaterJAM Planning Committee has been working tirelessly over the past few months and will continue doing so to fulfill our mission:

Plan and implement a sustainable comprehensive conference that brings together technical excellence and innovation while supporting networking opportunities at an exceptional value to all attendees.

A tremendous team is working on your behalf to plan this year’s WaterJAM, and our goal is to exceed your already high expectations for this annual event. Many new committee members have brought new life and excitement into this process which will be reflected when you join us in Hampton later this year!

We have partnered with the Hampton Roads Convention Center (HRCC) and Embassy Suites Hotel to host our activities from September 11-14, 2017. The Hampton location not only offers picturesque scenery, but access to local shops and restaurants.
We anticipate almost 1,500 professionals coming together to present new ideas, update you on current regulatory initiatives, and discuss industry hot topics that we face in our water, wastewater, and stormwater world.

As a testament to WaterJAM’s successful history, we had another huge response to our Call for Abstracts in 2017. With nearly 300 abstracts submitted, our Technical Program Co-Chairs, Adrianna Dimperio, Vice Co-Chairs, Ryan Radspinner and Sarah Lothman, worked exceptionally hard to put together another comprehensive technical program with something for every attendee. Due to this overwhelming response and the quality of the abstracts, this year’s Technical Program will once again offer ten concurrent sessions for a total of 205 presentations to be given over three days. Some of the sessions offered this year are as follows: System Operation and Maintenance, Technology Forum, Emerging Technology, Water and Wastewater Treatment, Biosolids Management and Solids Handling, and two sessions each on Stormwater Management and Asset Management.

Returning this year will be sessions for One Water, and Public Outreach and Education. New this year will be two sessions dedicated for Condition Assessment and the return of Alternative Project Delivery. We’re certain there’ll be something for everyone in this diverse program! All of the sessions provide the opportunity for professional engineer educational credits; the large number of presentations will also allow numerous opportunities for both water and wastewater operator educational credits.

Local Arrangements Co-Chairs, Stacey Higgins and Beverley Noffsinger, and their well-oiled machine of volunteers from both VA AWWA and VWEA have been hard at work ensuring that your conference experience provides much more than just technical growth. The committee is focused on providing activities that give participants opportunities to network, socialize, and have fun – all hallmarks of WaterJAM. While it’s a little early to provide details, there is no doubt this year’s conference will be as memorable as ever.

We’ve selected the Riverfront Golf Course in Suffolk, VA to host our Golf Outing. In addition, the ever-popular Clay Shoot will continue to be held at Old Forge Sporting Clays in Providence Forge. These events are sure to provide loads of competition, sponsorship opportunities, and chances to win excellent prizes provided by generous local businesses as well as our own Fluid Thinking community.

WaterJAM isn’t just for adults anymore. The Work for Water Committee is planning its second annual Junior WaterJAM. This event is designed to introduce elementary and middle school students to the drinking and wastewater industries. Attendees will learn the basics of what we do and the careers involved, as well as receive a guided tour of the exhibit floor with stops at a variety of vendors chosen to pique their interest. The program is capped off with viewing either the Rapid Tapping competition or a team practice run for that event. So if you see kids at JAM, know that you are looking at the future of our industry.

The YP sponsored service event is staying on Monday. The Young Professionals Committee, in coordination with the Chesapeake Bay Foundation, is excited to bring WaterJAM attendees a fantastic volunteering opportunity! All attendees, families, and friends are invited to join CBF to clean oyster shells which are recycled from local area restaurants.
Volunteers will use CBF’s shell washer to remove organic matter and sort the shells. CBF will use the cleaned shells as a surface for baby oysters to attach to. Please sign up for the event on the WaterJAM registration page. For information, contact John Groeger (John.Groeger@ghd.com), Beau Mackie (bmackie@Dewberry.com) or Nicole McDer- mott (nmcdermott@hazenandsawyer.com).

For those who would rather stimulate their intellects, we’ve planned some Monday workshops that will provide attendees the opportunity for additional education and collaboration. These workshops will cover timely topics.

After your day of golfing, clay shooting, the YP service event or enjoying the workshops, join your friends at the Hampton Roads Convention Center Terrace, for the Meet and Greet as we kick off the conference in style with great food and music. Don’t miss this event, or you’ll likely have your friends telling you the next morning how much fun you missed!

Tuesday’s activities start with the annual 5K Fun Run/Walk to benefit Water For People. This is always a well-attended event and a great way to kick off your conference day. The 5K is followed by the General Opening Session. Keynote speaker, George Hawkins as General Manager of DC Water, will present his insights on the future regulatory environment for utilities. Also, the featured speaker will be the former director of the NASA Langley Research Center.

Technical sessions will follow on Tuesday afternoon, all day Wednesday, and Thursday morning. Tuesday afternoon there will be a Networking Reception featuring the Water Reach Silent Auction in the exhibit hall from 5:00 to 6:30 p.m. Be sure to get your bids in for the auction between 2:00 and 6:00 p.m. After 6:30 p.m., Tuesday night will remain a free night to attend consultant and vendor outings or simply to enjoy one of the local eating or nightlife establishments.

As always, the pinnacle of the conference is Wednesday night’s Awards Banquet and Fun Night. The pre-dinner reception is a great time to mingle with friends and colleagues and a perfect opportunity to meet our WEF and AWWA national representatives. During the banquet, some of the top performers in our profession will be recognized with prestigious awards.

Once the banquet is finished, it will be time to let loose and have some fun! Once again this year the fun night will feature themed games and prizes along with dancing and refreshments.

The Young Professional (YP) Committee is as active as ever for this year’s WaterJAM. The YP Planning Committee is striving to
Fluid Thinking

make WaterJAM 2017 one of the best ever for new and current young professionals and students (see the YP article on page 51). If you have questions or ideas, please contact our YP Liaison Michelle Siminari at msiminari@fairfaxwater.org.

The Exhibits Committee Co-Chairs, Matt Harrison and Chris Wilson are working to make sure this year’s Exhibit Hall is even better than last year. At each break in the Technical Program Tuesday and Wednesday, be sure to visit the Exhibit Hall to see the latest technology while enjoying some light refreshments. New this year will be mobile sessions in the exhibit hall for vendors to present their latest innovations and products. We will continue to feature exhibitor trailers, so look for the latest valves, pumps and other emerging technologies. As always, the exhibit area will be hosting the Top Ops Competition Finals, Operations Challenge, and Utility Rodeo demonstrations. And don’t forget the Scavenger Hunt, Networking Reception featuring the Water Reach Silent Auction, the WaterJAM Exhibitors’ sponsored Water For People Raffle, and free Wi-Fi access as you visit with vendors and network over delicious food and beverages. SWAG (Sewer & Water Art Gallery) will be returning this year in the Exhibit Hall.

In case you have extra time, we’ve planned additional events before and after the conference. The Water Taste Test is returning. Come out and support the team in educating the public about the value of water and the benefits our industry provides to our communities.

Before you leave for home after your week in Hampton, we suggest you consider one of our facility tours. This year, Pete Baskette is arranging tours that are sure to be informational as well as entertaining.

To keep up with technology and improve sustainability, we encourage the use of the WaterJAM app at this year’s conference (iOS and Android). By using the app, you can bypass the printed program and reduce the amount of paper used at the conference. This year, WaterJAM is working with the VA AWWA/VWEA Sustainability Committee to put on a conference with as small an environmental footprint as possible. Finally, to stay current on the latest WaterJAM news, be sure to follow us on Twitter (#WaterJAM) and find us on Facebook at www.facebook.com/VirginiaWaterJAM.

Because WaterJAM is the premier event for Virginia water professionals, hotel rooms will move quickly, so make sure to register and book early (and save money in the process!). Registration opens online in early May, so be sure to check the VA AWWA and VWEA websites for registration information. We are tremendously excited about this year’s WaterJAM and on behalf of your hard-working WaterJAM Planning Committee, we look forward to seeing you in Hampton in September!

Respectfully,
Ryan Clark (ryan.clark@kimley-horn.com)
Steve Cook (CookSJ@bv.com)
WaterJAM 2017 Co-Chairs
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TO SUBMIT SWAG ITEMS!

WaterJAM 2017 will include the second annual Sewer and Water Art Gallery (SWAG) on Sept. 11-14. Do you have an antique, eclectic, and/or interesting sanitary sewer, stormwater, or potable water item that you've found during fieldwork or accumulated over the years? These items will provide entertainment to the hundreds of people visiting the WaterJAM Conference. Prizes will be awarded to the top three items voted on by attendees.

If you think you may have items to donate, please contact Danny Maas at dmaas@brwncald.com and he'll coordinate further instruction with you.

2016 SWAG Winners
- Congratulations to Newport News Waterworks for their First place entry of a Service Connection Book dating to before 1900.
- Second place went to Virginia Beach Public Utilities with an interesting sewer cross bored with a gas line.
- Third place went to the mystery item from Chesapeake Public Utilities which was filter media collected from a residential faucet that was inadvertently not removed when the house switched from well-water to city water.

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SUBMIT YOUR ABSTRACT TODAY!
Submission Deadline: August 1 2017  Word Limit: 125 Words

The top poster related to drinking water topics will go on to represent the Virginia AWWA Section at the 2018 AWWA Annual Conference and Exposition and win $1,000.

The top poster related to a wastewater, stormwater, or environmental topic will receive a prize in the amount of $1,000.

For question and abstract submission, please contact:
Ali Nemati  Phone: 703-849-0437  anemati@Dewberry.com
Allison Lee  Phone: 703-537-7908  alee@hazenandsawyer.com

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So you have heard about the great benefits of WaterJAM and you are interested in attending this year! Your next step may be to justify the value of your attendance to your manager/boss/supervisor. Sound overwhelming? Well, we hope that the advice below will help you develop your plan and will result in your attendance at WaterJAM 2017 in Hampton.

The advice below was compiled as a general guide to help Young Professionals through the process of conference attendance justification and value added attendance. However, developing a clear justification for the value of conference attendance is a key skill and is important for career development at any level of experience.

General Tips
- Develop a clear plan and research the program, benefits, and costs prior to requesting attendance.
- Consider what the potential return on investment is for the organization sponsoring your attendance at WaterJAM.
- Focus on knowledge transfer: What information will you bring back to your organization?
- Plan on formalizing this information in a brief memo, presentation, or discussion with your team after attending.
- Register early to take advantage of lower registration rates!
- Remember to highlight that it is generally cost effective to attend a large event (like WaterJAM!) with multiple attributes – technical sessions, networking events, continuing education credits, professional development opportunities, large exhibition hall and multiple vendor contacts – instead of trying to attend a number of small events to achieve the same benefits.

As part of your justification, clearly articulate the connection between your organization’s needs and opportunities offered by the conference program. These connections may focus on networking opportunities, team building if more than one person from your team attends, developing an understanding of current tools and technologies, exploring new and innovative tools and technologies, and volunteer opportunities to further your professional development through involvement in WWA, VA-AWWA, and the broader industry.

The following details are important to identify prior to requesting attendance and should be highlighted in your plan to attend WaterJAM:
- Technical Session Content: Which sessions will you plan to attend and why?
- Vendor Contacts: What vendor booths will you visit and why?
- Current Technologies: Which technologies is your organization currently using? Consider the benefits from attending relevant technical sessions and refreshing contact with vendors.
- Innovative Technologies: Which new technologies will be discussed or displayed that you plan to learn more about and bring this new information back to your organization?
- Training/Workshops: Are there any workshops or training sessions that are relevant to you and your organization? How will this training benefit your professional or technical development?
- Registration and Travel Costs: You will need to have a defendable estimate of your total attendance costs prior to finalizing your attendance plan. When developing your total estimated expenses, consider the following costs:
  - Registration fees.
  - Any additional workshop fees.

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• Any separate ticketed events.
• Regional travel costs (calculate mileage if you drive or train/bus/airplane ticket costs).
• Lodging costs (consider booking early to take advantage of any hotel blocks).
• Local transportation costs (taxis, shuttles, rental car, parking, gas).
• Food per diem.
• Registration fees.

Once you have impressed your manager/boss/supervisor and you are on your way to WaterJAM, consider how you will implement your attendance plan and how you will organize the information and contacts you collect at WaterJAM. Take notes or develop your own way of remembering the details! Consider noting the following:

• **Session Information:** Title, speakers’ names, summary, major takeaways, action items (for each session).
• **Networking Events:** Summary, major takeaways, action items, attendees you spoke with and their contact information.
• **Vendors and Products/Technologies:** Description, contact information, benefits, action items.

When you return from WaterJAM, make sure to formalize your acquired knowledge with a brief memo, presentation and/or discussion with your team. This will document the benefits of your attendance and provide a good record of what you learned at WaterJAM. Make sure you provide the return on investment that you promised in your attendance plan!
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Announces The Third Annual River Course Golf Tournament

WHERE: The River Course of Virginia Tech
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- Two drink tickets.
- Lunch after the round from Preston’s at the River!
- Prizes will be given to each participant!
- 20 team maximum

IMPORTANT NOTES:
- Hole sponsorships available at $75 each. Call for information.
- Mulligans available for purchase!
- Registration forms available on VWEA website on “Events” page.
- Please call 540-639-3947 for any questions or to request entry forms.
- Money is due for all teams and sponsors by June 1!

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