



# WaterTOC

Technical Online Conference  
Thursday, February 20, 2020  
10:00 A.M. - 4:00 P.M.

Virginia Tech Executive Briefing Center | Arlington, VA  
Blue Ridge Community College | Weyers Cave, VA  
Southwest Higher Education Center | Abingdon, VA

Up to 4 CPU credits available.

## PROGRAM SCHEDULE



Water Operator  
CPE credit



Wastewater Operator  
CPE credit

10:00 am

### Conference Registration and Coffee Welcome and Opening Remarks



#### Clear as Mud: How to Optimize Residuals Handling During a Record Rainfall Year

This presentation will provide an overview of the residuals handling and treatment facility design and operation at the Loudoun Water Trap Rock Water Treatment Facility, compare the projected residuals production with actual production during the first year of operation, and discuss how the solids collection and thickening processes were successfully optimized to mitigate disposal challenges.

**Presented by:** *Rodney Mutter, CDM Smith*



#### When You Need a Bigger Bucket; Containing the Storm, a Wet Weather Success

This presentation will discuss the wet weather management program and how it effectively dealt with a storm event where 5.35" of rain fell, with majority of rainfall occurring during a two-hour period resulting in the facility treating a peak flow of over 92 mgd while showing consistent treatment while experiencing extreme changes in influent flow to the facility all without experiencing a sanitary sewer overflow.

**Presented by:** *Tim Castillo, Augusta County Service Authority*



#### Coagulant Changeover for Treatment Process Optimization – Balancing Water Quality and Operational Objectives

The purpose of this presentation is to describe the results of a holistic evaluation of coagulant impacts on water quality and operational objectives at a conventional surface water treatment plant. Based on the results, an optimized coagulation treatment strategy was developed to achieve important operational benefits and cost savings while maintaining optimal water quality. Key aspects of the study included an analysis of disinfection byproduct formation and a corrosion control evaluation. The presentation will describe bench-scale and full scale testing methodologies for the coagulation evaluation as well as regulatory coordination necessary to implement a long-term treatment change.

**Presented by:** *Farrell Owens, City of Winchester*



#### Implementation of Hydrocyclone technology to Assess the Potential for Sludge Settleability Improvements

UOSA, in conjunction with Jacobs and VA TECH, is conducting a comprehensive, full-scale, multi-year pilot study to determine the efficacy of waste sludge hydrocyclones as a viable and reliable technology to improve sludge settleability and process stability resulting in secondary process intensification (i.e., operating at increased mixed liquor suspended solids (MLSS) concentrations and secondary clarifier solids loading rates (SLR)). The pilot study will be conducted on half of the UOSA 54 MGD RWRP with the other half operated as a "control" to allow for a full-scale, side-by-side comparison of sludge settleability and plant performance for each train under similar flow and loading conditions.

**Presented by:** *Matt Brooks, UOSA*



**Using Zeta Potential to Achieve Optimum Water Treatment Performance** The purpose of this presentation is to explain zeta potential and how it can be used to optimize coagulation and filtration at water treatment plants. Several case studies will be presented from water treatment plants that were able to significantly improve the consistency and quality of their treatment using zeta potential.  
**Presented by:** *Nicolle Boulay, Stantec*



**Evaluation of Peracetic Acid for Disinfection of Filtered Secondary Effluent at Washington Suburban Sanitary District** A pilot study of peracetic acid was performed to determine efficacy of treatment at the Washington Suburban Sanitary Commission's (WSSC) Parkway Water Resource Recovery Facility (WRRF). Based on the pilot, it was concluded that PAA was capable of providing effective disinfection at the Parkway WRRF to meet the facility's disinfection standards with minimal impact on effluent quality.  
**Presented by:** *Beth Maloney, Stantec*



**Preserving Institutional Knowledge through Developing Standard Operating Procedures** Standard Operating Procedures (SOPs) reflect the collective wisdom, institutional knowledge and experience of hundreds of professionals throughout an industry. However, the important task of developing operational standards, guidelines and procedures rarely gets the attention it deserves. The intent of the presentation is to examine the challenges and benefits of developing SOPs for Water/Wastewater professionals and utilities.  
**Presented by:** *Wayne Sirna, Dewberry*



**PFAS ... Planning For Additional Statutes? Treatability In Review** Perfluoroalkyl Substances (PFAS) are an emerging contaminant concern in drinking water, and soon to be in wastewater. Most states in the region have adopted or begun to adopt very stringent PFAS limits, for various compounds. This presentation will present a recently completed Water Treatment Plant upgrade driven by PFAS source detection, quantified by testing and piloting, designed, bid, constructed, and started up. Wastewater utilities are beginning to test its influent wastewater, treated effluent, and biosolids. The various WW sources may include concentrated leachate wastestreams, and conventional WWTP technologies do not remove PFAS, and may even increase concentrations. This presentation will review WTP and WWTP issues and potential treatment and pretreatment techniques and technologies.  
**Presented by:** *Bill Meinert, O'Brien and Gere, part of Ramboll*



**Portsmouth's Lake Kilby Water Treatment Facility Treatability Study** The purpose of the presentation is to detail the Treatability Study completed for the City of Portsmouth at their Lake Kilby Water Treatment Facility which looked at potential changes to various aspects of their water treatment process. These included a potential change from aluminum sulfate as the coagulant to a pre-hydrolyzed coagulant; a potential change to the plant's manganese control strategy which uses sodium permanganate; and a potential change to the plant's corrosion control strategy which involves the application of sodium hexametaphosphate to the finished water.  
**Presented by:** *Rachel DuBois, Jacobs*



**Balancing the Impact of Septage Acceptance on Biological Nutrient Removal Performance** Many municipal water reclamation facilities (WRFs) accept hauled in high strength waste such as septage and fats, oils and grease (FOG) from residential and business customers outside of their sewer service area. At larger WRFs, the loading from hauled in wastes often only makes up a small fraction of the influent plant load and has limited impacts on the facility operation. However, at smaller WRFs the contribution of the trucked in wastes can be significant and could have a substantial impact on the facility operation, especially at those facilities which perform BNR. This presentation discusses co-treatment of the septage with WAS as a potential alternative to reduce the overall tankage volume, enhance process stability and reduce supplements.  
**Presented by:** *Thor Young, GHD*



**Cyanotoxin Assessment and Management Plan for a Mid-Atlantic Water Supply** This presentation summarizes a 5-step trigger-based management plan based on the assessment of cyanotoxin levels observed in the water supply between 2017 and 2018. Analyses confirmed the risks associated with the potential for cyanotoxin occurrence (as total microcystins) were minimal, in part because of the low probability of harmful algal blooms (HAB) developing in the water supply reservoirs. The plan incorporates source water mitigation, treatment alternatives at the plants, and potential communication actions abased on the concentration of algal toxins detected in finished water.

**Presented by:** *Yann Le Gouellec, Newport News Waterworks*



**Don't Forget Secondary Clarifier Design Features to Improve BNR Performance** Activated sludge treatment is a "paired system" consisting of bioreactors (aeration tanks) and secondary clarifiers to convert and remove biodegradable and particulate matter. As effluent limits become more stringent, improving secondary clarifier design becomes more critical, in addition to refining the biological processes. This presentation will discuss the operational differences between a primary and secondary clarifier and will focus on the design features that help optimize the performance of secondary clarifiers.

**Presented by:** *Anjana Kadava, Black & Veatch*



**Addressing Emerging Contaminants with Competing Goals** This presentation will discuss the challenges of competing treatment objectives with respect to emerging contaminants (PFAS, 1,4-dioxane, and others) and potential treatment strategies for effective removal.

**Presented by:** *David Briley, Hazen and Sawyer*



**Surviving Ammonia - Both Aquatic Life and Your Utility** To inform attendees of the status of Virginia's amended freshwater aquatic life water quality criteria for ammonia-N, and their options for addressing potential, new or modified, stringent VPDES permit requirements. As a result of actions by the 2018 General Assembly and others, there are critical options for both the calculation and determination of permit limits, and for the timing of compliance.

**Presented by:** *Dick Sedgley, Aqualaw*



**When Algaecides can't cut it: Algae Treatment by Air and Sonication** This presentation provides an overview of algae speciation, the adverse impacts from harmful algal blooms, particularly in relation to drinking water, and treatment methods beyond commonly used chemical algaecides. It focuses on the Lake Manassas Reservoir which has seasonal algae and provides raw water to the Lake Manassas Drinking Water Treatment Plant in Manassas, VA. The Reservoir is currently treated with a copper sulfate pentahydrate algaecide, however anticipated removal results have not been observed. This presentation will provide utilities with different algae treatment methods that focus on physical and acoustic technologies and describe how they work and are used in different systems.

**Presented by:** *Kelsey Kenel, HDR*



**Balancing Act: Optimizing Primary Effluent Equalization to Reduce Nutrient Load Variability to Secondary Treatment** This presentation describes the nutrient management system at AlexRenew including the various operating modes. It will compare the performance of the system and effectiveness in variability reduction, along with presenting the operational results obtained to date and share lessons learned.

**Presented by:** *Paula Sanjines, Jacobs*

4:00 pm

Adjourn