

Code	Session Title	Details
OS1_01	Opening General Session (OS1_01)	
OS1_01_01	How Can Utilities Strengthen Climate Resilience?	The widespread effects of climate change have presented serious operating challenges for the water sector. Join Wesley Wiggins, an Oak Ridge Institute for Science and Education Fellow at the U.S. Environmental Protection Agency, for a look at how the EPA's Creating Resilient Water Utilities initiative has helped utilities across the United States build resilience to climate-induced changes in water quality and quantity.
OS1_02	Algae Control (OS1_02)	
OS1_02_01	A Proactive Monitoring Plan for Algal Blooms, Taste and Odor, and Cyanotoxins	Proactive drinking water agencies are seeking a streamlined approach to monitor cyanobacteria and nuisance algae. Unfortunately, there is no single method that answers all the fundamental questions needed to make treatment decisions and ensure a safe water supply. This presentation will describe a successful monitoring and mitigation program developed by the Cypress Environmental Laboratory - City of Wichita Falls, including a presentation of data from a June/July 2021 bloom event.
OS1_02_02	Rising to the Challenge of Harmful Algal Blooms: Two Case Studies from Ohio	Harmful algal blooms (HABs) are growing in frequency and severity across the United States, and many water utilities are contending with HAB outbreaks in their source water and algal toxins in their system. In this presentation, Dr. Peter S. Fiske will summarize the latest research on HABs: their occurrence, mitigation strategies, and implications for water quality. Fiske will also summarize recent results for optimizing algal toxin treatment at two water plants in Ohio.
OS1_03	Pressure Management (OS1_03)	

OS1_03_01	Is Your Pressure Data Any Good?	You get a pressure reading of 62 psi. What does that mean? Is it 62.0000 psi? 62 +/- 5 psi? Somewhere around 62 psi? Who really cares?
OS1_04	Energy Management (OS1_04)	
OS1_04_01	Dynamic Pump Sequencing - Optimizing Energy Efficiency	We've heard of self-driving cars, but what about self-driving water systems? XiO's Dynamic Pump Sequencing automation tool is designed to operate pumps based on real-time data and analysis. A new type of Industrial Internet of Things solution combines remote sensors and cellular communications with the robust power of cloud computing services. In this presentation, we will examine how a large utility in Southern California was able to reduce annual energy usage by 15–20% using a dynamic pump sequencing tool to optimize its system of 11 pumps. Energy usage data were presented to the state as part of a rebate program. Initial feedback shows the system paid for itself in a matter of months.
OS1_05	Coagulation and Flocculation (OS1_05)	
OS1_05_01	Introduction to Creating a Robust Coagulant Control Strategy	Coagulation is a fundamental drinking water treatment process in conventional treatment and is often a driving factor in the successful performance of downstream treatment processes. This presentation will provide operators and other water professionals with the information and tools necessary to create a coagulant control strategy, which can prove an invaluable tool for treatment troubleshooting and optimization. By systematically working through each of the site-specific parameters that affect coagulation performance, operators can develop a thorough understanding of how and why coagulation performance can deviate from optimal conditions, and how to anticipate and respond to those performance deviations.

OS1_05_02	Selection of Ferric Coagulants	Ferric chloride and ferric sulfate will be compared and contrasted for their performance in terms of organics and turbidity removal.
OS1_05_03	Jar Testing - Simple and Effective	The presentation will discuss new jar testing procedures for gathering supporting data on what coagulant, coagulant aid, and dose will provide the best filterability, indirect DOC reduction, and good settleability. The new jar testing procedures have been applied in the last 4 years working with over 50 surface water utilities in California. The presentation will discuss the jar testing procedures focusing on the new filterability technique and UVA results that provide the supporting data on best coagulant and dose applied to full-scale plant operations along with case studies of systems with poor filterability and disinfection by-products.
OS1_06	Nitrification (OS1_06)	
OS1_06_01	Operators Guidance to Prevention and Responding to Distribution System Nitrification Events	AWWA's Inorganic Contaminants Research Committee has developed this one-hour session to provide guidance to water system operators regarding prevention and response to nitrification events in the distribution system. Three water quality experts will be presenting on the following topics: 1. Nitrification Background and Water Quality 2. Monitoring for Nitrification Prevention 3. Operational Responses and System Improvements for Nitrification Control
OS1_06_02	Nitrification and Case Study for Multifaceted Management	This presentation will provide an overview of nitrification basics and a case study of a Texas utility's multifaceted nitrification management approach. The presentation will discuss improved water quality as demonstrated by increased chlorine residual after implementation of these strategies and practical lessons learned.

OS1_07	Lunch and Learn - Workforce Strategies (OS1_07)	
OS1_07_01	Enhancing Communication and Training: Including the "Why" Behind the "What"	This presentation will use microbiology and chemistry concepts to explain how we can communicate better with operators so they come to a deeper understanding of water processes by ensuring they know the "why" behind the "what."
OS1_08	Certification Corner Challenge (OS1_08)	Test your water knowledge by taking the Certification Corner Challenge! This interactive version of Opflow's popular quiz will give OpShow attendees practice answering questions that are similar in format and content to those that appear on certification exams.
OS1_09	Risk Management (OS1_09)	
OS1_09_01	Communicating Drinking Water Risks to the Public	It can be hard for those at drinking water utilities to talk to their customers and the public about health risks from constituents in their drinking water. The risk numbers estimated and used by regulators usually don't match those used by the medical community, which confuses everybody. People at water utilities are trained to treat and distribute water, not toxicology or public health. What's a utility to do? This presentation will explain what's going on and offer some ideas on how you can be more effective when you have to talk risks. Mostly: say what you know, say what you don't know, and reference those who know more than you do.
OS1_10	Main Breaks (OS1_10)	

OS1_10_01	Water System Operators Can Stop Water Main Breaks	<p>Dr. Leishear has written more than 34 publications on the failure analysis of piping and water main breaks. His publications are based on a theory that he invented as part of his doctoral research in 2005 while employed as a researcher for a U.S. Department of Energy laboratory. That theory conclusively proved that standard methods to evaluate water main breaks had been incorrect for more than a century. These methods are now available to properly understand water main breaks.</p>
OS1_11	Groundwater (OS1_11)	
OS1_11_01	Groundwater Remediation with a Sustainable Solution for Small Systems	<p>A significant share of small water systems doesn't meet regulatory standards because they are impacted by contaminants for which traditional treatment approaches are technically and economically unsuitable. A new technology to generate a stannous or ferrous ion reagent in-situ via an electrolytic process has been developed to address these limitations and bring to small systems a reliable, effective and economically viable solution for the treatment of inorganic and trace metal contaminants.</p>
OS1_11_02	Arsenic Removal with a Sustainable Solution for Small Systems	<p>While the EPA is reviewing its MCL recommendations for arsenic, utilities are preparing for the possibility of a more stringent federal standard by evaluating the efficacy of their existing arsenic removal treatment systems. Concerned with having to increase their reliance on bulk chemicals to meet a lower arsenic MCL and the associated inherent concerns, the City of Alamosa, Colo., evaluated a novel technology that generates a ferric reagent in-situ to replace the use of bulk ferric. Through bench-scale testing of the in-situ generated ferric reagent, the city proved it can achieve arsenic removal below 1 ppb while reducing chemical use by more than 30% compared to bulk ferric. Results will be presented.</p>

OS1_12	System Maintenance (OS1_12)	
OS1_12_01	Prevention of Bacterial Contamination of Stored Hydrants: Utility Recommendations for Hydrant Inlet Orientation and Capping	Protecting drinking water quality is highly reliant on good practices in the construction, operation and maintenance of all parts of the drinking water distribution system network. Hydrants connected to potable water systems are of particular importance because they are accessible to the public and can provide access for chemical and microbiological contaminants that can spread through distribution systems. In the summer of 2015, Edmonton (Alberta, Canada) utility field crews encountered several instances where water samples collected from newly installed hydrants were total coliform positive and thus did not meet the regulatory requirements to be put into service. In this presentation we outline identified causes and lessons learned.
OS1_13	Water Reuse (OS1_13)	
OS1_13_01	Smaller Utilities: Got Some Wastewater You Could Use?	For many smaller communities, wastewater is just a nuisance to get rid of. And where does this wastewater go? Much inland wastewater is treated, then evaporated, infiltrated, or dumped in a river. In coastal areas, most treated water is just disposed to the ocean. And it costs money to do so. What a waste! This talk will address the considerations and issues facing a smaller system that has a source of wastewater at hand. Why recycle? What can you do with it? Why you might want to. Why you might not. What are the technical considerations? What are the regulatory hurdles? Where would the money come from? How to get started. How to get help.
OS1_14	Cross-Connection Control/Backflow Prevention (OS1_14)	

OS1_14_01	Southern California Water Utility Proactively Addresses Issues with Backflow Assemblies	Elsinore Valley Municipal Water District owns and operates a diverse water system with a service area that covers 97 square miles. In May 2008, district staff completed an exercise to identify and inventory all testable and non-testable double check detector assembly (DCDA) or single check backflow devices for fire service protection. As part of that exercise, district staff proactively inventoried and noted the condition of 278 testable DCDA backflows and 123 single check assemblies throughout the district to continue the district's mission of providing a safe and reliable water supply to its customers.
OS1_15	Operations and Maintenance (OS1_15)	
OS1_15_01	O&M Manual Updates: How to Better Optimize Operations & Maintenance Efficiency and Consistency	Operations & Maintenance (O&M) manual updates are a necessary part of every utility's operations and maintenance program. O&M staff are focused on performing the daily tasks required to keep systems running smoothly and in compliance with regulations. These important O&M tasks sometimes require updates and refinement to keep them relevant to the utility's needs. Staff is busy keeping up with O&M tasks where evaluation of the relevance of an existing O&M manual can fall low in the priority list. This presentation will highlight the benefits of making necessary updates and evaluations, which are invaluable to ensure continued O&M efficiency and consistency. In addition, the presentation will review recommended O&M content updates and evaluations and the benefits that may be realized by completing them.
OS1_16	Manganese Removal (OS1_16)	
OS1_16_01	Operators Guide to Manganese Issues and Concerns	This one-hour session will present an overview of manganese (Mn) issues/concerns, including Mn treatment options, Mn contractors, and Mn in distribution systems.

OS2_01	Opening General Session (OS2_01)	
OS2_01_02	AWWA's Window on Washington: What's Happening With Infrastructure and Regulations?	<p>AWWA Legislative Director Tommy Holmes will provide an update on the implementation of the Bipartisan Infrastructure Law; the Build America, Buy America rule; cybersecurity; and drinking water contaminant regulations. It's been a busy year in the water arena, and the association and its members will be actively involved as these issues continue to develop.</p> <p>Plus, this year's event will provide nearly 40 sessions with practical ideas for effective water and wastewater system operations in four different tracks: Distribution and Collection Systems, Water/Wastewater Quality and Treatment, Small System Challenges, and Utility Resilience.</p>
OS2_02	Wastewater Treatment (OS2_02)	
OS2_02_01	Oh, the Places Suspended Solids Will Go! (Hint: Where They're Not Supposed To)	<p>The purpose of this presentation is to discuss the impact malfunctioning decanters had on a Virginia wastewater treatment plant's operation (poor settleability of mixed liquor suspended solids and high levels of ammonia) and how the owner addressed the issues. The presentation also discusses the measures that had to be taken to minimize risks associated with health and safety. The plant was built in the 1960s and uses four sequencing batch reactors for biological treatment of the sewage followed by tertiary chemical clarification, cloth-disk media filtration, and UV disinfection.</p>
OS2_02_02	Managing Heavy Metal Exceedances in Areas with Limited Water Sources	<p>Golden State Water Company has regular exceedances of heavy metals in some of its source water. Learn about treatment and treatment optimization for the removal of these heavy metals.</p>
OS2_03	Water Loss Control Best Practices (OS2_03)	



OS2_03_01	Master Meters Testing for ALL Systems	<p>The ability to test your production / master meters can be done on any sized system. Pitot testing is a methodology that can accurately test meters ranging from 6" and above. You can have a system that supplies 100,000 residents or a small system that supplies 500 residents and confidently know that the first step in controlling water loss can be accurately done for your water system.</p>
OS2_03_02	Arresting Water Loss - Reducing Both Water Loss and Water Usage at a State Penitentiary	<p>Comprehensive water loss control programs are not only for utilities. There is a penitentiary in the Midwest that was built in 1908, but little had been done to maintain the water distribution system over the course of a century. Leaks and breaks were common in the system, parts of the system used plastic electrical conduit that had been glued together for water pipe, and the average system pressure was unnecessarily high. Learn how a combination of pressure management, pipe repair and replacement, acoustic leak detection, an automated leak detection system, water metering, engagement portals, and water-conserving fixtures drastically reduced real water loss and water usage at this penitentiary.</p>
OS2_04	Source Water (OS2_04)	

OS2_04_01	Creating an Effective Monitoring and Treatment Plan for Taste and Odor	<p>This presentation will discuss monitoring and treatment protocols for taste and odor caused by cyanobacteria. The presentation will review a study performed by Conway Corporation, Garver, and University of Central Arkansas as well as provide insights to connections made between monitoring parameters and actual taste and odor events. This study began in 2018 and is scheduled to continue through 2025. The presentation will also cover the improvements made to the watershed from a best management practices standpoint in prevention of nutrient loading as well as treatment improvements, planned future improvements, and updated protocols with the use of powdered activated carbon and other means of MIB and geosmin removal from raw water.</p>
OS2_05	Water Loss Control Innovations (OS2_05)	
OS2_05_01	AI Edge Technology Reveals a New, Ground-Breaking Approach to Water Loss Control	<p>In this session, operators will learn about a new way to rapidly diagnose and bring water loss under control, made possible by artificial intelligence-enabled edge technology and championed by the City of Atlanta. The discussion will use actual data from real case studies.</p>
OS2_05_02	Do Not Listen for the Leak, Measure the Size of the Hole	<p>The current climate challenges are making the need to protect global water sources and supplies paramount. For the past 100+ years in pressurized water systems the primary tools are acoustics and data loggers. Listening sticks and the like are fraught with issues, from ambient noises, high water tables, and non-metallic pipes to name a few. The other issue we have is even with all the sensors deployed we still cannot put the "X" on the exact location and know the severity of those leaks. A need to do it different is critical, and this presentation will discuss a revolutionary method to address water loss and allow the owner to see in real time what the status of its network is.</p>

OS2_05_03	Maximizing Data Requires Inspection Accuracy, Data Layering and Timely Deliverability	When entering a potable water main, every opportunity should be taken to gather as much data as possible in an efficient manner. This presentation will discuss how Electro Scan Inc. gathers multiple data sets, achieves time-sensitive deliverability, and graphical display of leak detection data in real time in Innovyze InfoAsset Planner
OS2_06	Emerging Contaminants (OS2_06)	
OS2_06_01	Proactive Planning for PFAS in Water Treatment Plant Residuals Management	While compliance with state and pending federal primary standards for PFAS under the Safe Drinking Water Act, along with the associated treatment costs, have commanded significant attention in the drinking water industry, the numerous other federal PFAS regulatory actions currently under consideration that will affect residuals management practices have garnered far less discussion than the potentially significant impact merits. The purpose of this presentation is to foster utility preparedness for the inevitable regulation of PFAS residuals, discussing the implications for plant operations and proactive steps that utilities can take to mitigate the impact.
OS2_07	Lead Removal (OS2_07)	
OS2_07_01	Lowering Distribution System Lead Levels with Treatment Plant Optimization	In this presentation, Dr. Peter Fiske will present the results of a 3-year collaboration with the City of Akron (Ohio) to successfully lower distribution system lead levels by optimizing treatment plant operations. Operators will learn about new methods for optimizing corrosion control variables (orthophosphate addition, pH control) while simultaneously balancing treatment plant operations to minimize disinfection by-products. Surprisingly, treatment plant optimization can deliver better and more stable water quality as well as result in lowered treatment plant chemical use and lower operating expenses.

OS2_08	Lunch and Learn: Water Quality Sampling and Response (OS02_08)	
OS2_08_01	The Achilles' Heel of Water Quality Data: Sample Collection QA/QC	Sample collection quality assurance/quality control (QA/QC) is often viewed as being of little importance in the grand scheme of what we do in the water industry. However, poor sample collection QA/QC procedures can cause a chain reaction of issues in the life cycle of data. Water quality data integrity begins with sample collection, and it is important that operators and lab staff are trained properly to ensure that human error is minimized, and data are reliable, defensible, and high quality.
OS2_09	Certification Corner Challenge (OS2_09)	Test your water knowledge by taking the Certification Corner Challenge! This interactive version of Opflow's popular quiz will give OpShow attendees practice answering questions that are similar in format and content to those that appear on certification exams.
OS2_10	SCADA Management and Cybersecurity (OS2_10)	
OS2_10_01	Manual Operations with Day Without SCADA	With the growing threats of malware and cyber-attack, water and wastewater agencies must ensure that they can manually operate their systems and facilities if their SCADA systems or networks are compromised. West Yost is partnered with the Idaho National Laboratory to develop a roadmap on how to document complex manual procedures.
OS2_10_02	How Cloud-Based SCADA Provides True System Redundancy	As water and wastewater facilities seek protection from malicious cyberattacks, a new generation of cloud-based SCADA systems provides full system redundancy – not just data backups – for true resiliency.

OS2_11	Storage Facility Operations (OS2_11)	
OS2_11_01	Using Adenosine Triphosphate Concentrations to Guide Reservoir Management Decision Making	Here we explore the use of adenosine triphosphate (ATP), along with traditional water quality and operational variables (e.g., chlorine, turbidity, residence time), to review impacts on water quality and to inform reservoir inspection and capital rehabilitation decision-making frameworks. The study highlights that ATP is a sensitive surrogate of microbial activity that is superior to heterotrophic plate counts and can serve as a complimentary tool to chlorine in reservoir water quality management decision-making.
OS2_11_02	California Dam Project: Aerial Surveillance of Dams, Reservoirs, and Transmission Systems Pre and Post Disaster	The California Dam Project is a multi-stakeholder effort to advance emergency response technology readiness through the development of an integrated monitoring and response system. The system enhances our current capability to document existing conditions and status of water resource infrastructure (e.g., dams) and extends our ability to deploy a coordinated and informed response following an incident, accident, or disaster. Rapid assessment and situational awareness coupled with real-time diagnostics are keys to emergency response and recovery. Technology systems, with demonstrated success in defense and military settings, allow for concurrent and scalable monitoring and assessment with a high degree of efficiency and accuracy.
OS2_12	Regulatory Challenges (OS2_12)	

OS2_12_01	Eliminating the Danger Zone: A Texas Utility's Story of Switching from Gas Chlorine to On-Site Hypochlorite Generation	The City of Deer Park, Texas, currently uses gas chlorine and aqua ammonia to form chloramine disinfection at its surface water treatment plant. Due to the location of the plant, the city has been proactive in exploring alternatives for improving the existing system and seeking a reliable and safe solution to address chemical safety and handling risks. This presentation will present a technical evaluation of three alternatives (secondary containment for gas chlorine, bulk-delivered hypochlorite, and an on-site hypochlorite generation (OSHG) system), and the city's decision-making process in selecting the OSHG option. Design features, regulatory permitting requirements, project implementation, and maintenance of plant operation will also be presented.
OS2_12_02	Final Regulatory Presentation TBD	
OS2_13	Tank Maintenance (OS2_13)	
OS2_13_01	Disinfecting and Cleaning Your Tank Regularly Helps Promote Better Water Quality	Water storage tanks are prone to sedimentation and contamination if they are not cleaned and disinfected regularly. There are several ways to help prevent contamination, including securing the tank, installing a mixing system, and installing screens to keep out animals. Potable tanks should be cleaned out every three years at a minimum. Tanks can be cleaned out by divers, robotic underwater operating vehicles, as well as be drained and cleaned out during dry cleanouts. These and additional guidelines will be discussed in detail.
OS2_14	Emergency Preparedness (OS2_14)	

OS2_14_01	Operators Without Borders - Opportunities for Operators to Volunteer in Developing Countries	Operators Without Borders (OWB) is a registered charity for and by operators. Its first mandate is to assist water and wastewater utilities in developing countries rebuild after disasters, and its second mandate is to provide free training and capacity-building initiatives. This presentation will feature OWB operator volunteers describe their experiences in disaster situations and non-disaster work to which they have contributed, how it benefits the affected communities, and what it meant to them personally. The session will outline the work OWB is doing in Ukraine and Haiti. The session will conclude by outlining the volunteer opportunities available.
OS2_14_02	AWWA Closing Remarks	