

# American Water Works Association Annual Conference & Exposition (AWWA ACE24)

June 10-13, 2024 in Anaheim, California

## Session Descriptions & Objectives with Speaker Names

[www.awwa.org/ace](http://www.awwa.org/ace)

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Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/10/2024	9:00 AM	4:30 PM	PCW01	PCW01: Asset Management: From Fundamental Concepts to Advanced Practices	The AWWA 2020 survey evaluating the Progress Levels in Asset Management revealed that many utilities still lack maturity in fundamental asset management documentation. This workshop will delve into critical documents, including the strategic asset management plan and asset management plans, exploring their content, sharing valuable lessons learned, and illustrating the advantages they offer utilities. Moreover, advanced topics like resilience, social equity, and environmental justice will be examined in relation to these plans.	Celine	Hyer	Senior Vice President   Water Conveyance Leader	Arcadis	1
6/10/2024	9:00 AM	4:00 PM	PCW02	PCW02: Successful Implementation of a Condition Assessment Program After Funding	Many utilities face challenges when it comes to establishing condition assessment programs. Some struggle to initiate such programs due to a lack of guidance, while others have programs but are unsure how to kick-start them. This workshop aims to guide the audience through the effective implementation of a condition assessment program, offering insights into tailored approaches that suit their utility's unique requirements. Industry-leading utilities will also share case studies to illustrate their successful approaches and explain why these strategies were effective.	Scott	Jauch	Assistant Project Manager	HDR	2
6/10/2024	9:00 AM	4:00 PM	PCW03	PCW03: Optimal Delivery for my Public Water Utility Capital Project: What's the Best Approach?	How do you determine the best approach for delivering a capital improvement project? This workshop offers an opportunity for professionals, both new and experienced, to collaborate with water utility experts on how to make informed decisions about project delivery methods. In the morning, participants will gain insights into different project delivery methods, such as design-bid build, construction-manager-at-risk, and design-build, and engage in group discussions to select the most suitable method for example projects. In the afternoon, panels featuring experienced owners and practitioners will provide real-life perspectives on collaborative water project delivery methods.	Spencer	Adams	Engineer	Jacobs	3
6/10/2024	9:00 AM	4:00 PM	PCW03	PCW03: Optimal Delivery for my Public Water Utility Capital Project: What's the Best Approach?	How do you determine the best approach for delivering a capital improvement project? This workshop offers an opportunity for professionals, both new and experienced, to collaborate with water utility experts on how to make informed decisions about project delivery methods. In the morning, participants will gain insights into different project delivery methods, such as design-bid build, construction-manager-at-risk, and design-build, and engage in group discussions to select the most suitable method for example projects. In the afternoon, panels featuring experienced owners and practitioners will provide real-life perspectives on collaborative water project delivery methods.	Paul	Delphos	Regional Global Practice Manager - Water	Burns & McDonnell	4
6/10/2024	9:00 AM	5:00 PM	PCW04	PCW04: Operationalizing Automation, Data Analytics, and Machine Learning	Water 2050 proposes the advancement of digital technologies to enhance resource management and optimization. This workshop will delve into the factors driving this initiative, the obstacles encountered, and the opportunities it presents in harnessing digital technologies and putting data analytics into practical operation. It will explore the integration of AI/ML for improved decision-making intelligence. Participants will gain insights into evaluating and strategizing their decision support systems and AI/ML projects, underpinned by robust data engineering and analytics capabilities.	Prabhushankar	Chandrasekeran	Intelligent Water National Practice Leader, Arcadi	Arcadis	5

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6/10/2024	9:00 AM	4:30 PM	PCW05	PCW05: How to Extend the Lives of Old Water Mains Using Proven, Cost-Effective Methods	This workshop will emphasize the hands-on implementation of water main rehabilitation techniques, catering to utility managers and engineers at every proficiency level, from beginners to seasoned experts. Attendees will acquire the essential skills required to initiate or enhance programs that achieve greater infrastructure renewal while optimizing costs and minimizing public disruptions. The workshop will spotlight case studies from both large and small utilities, and participants are encouraged to actively engage in discussions and share their own experiences.	Dan	Ellison	Sr. Professional Associate	HDR	6
6/10/2024	9:00 AM	5:00 PM	PCW06	PCW06: Operationalizing Digital Twins: Connecting to SCADA	Digital twins offer excellent benefits in operations, emergency management, and planning; however, the development of the digital twins requires knowledge in Operational Technology (OT) and data management/integration. The workshop will provide hands-on experience on how to build digital twins, including OT, cyber security, real-time modeling tools and utility case studies.	James	Cooper	Global Director	Arcadis	7
6/10/2024	1:00 PM	5:00 PM	PCW07	PCW07: Beyond the Spec Book: Learn to Design and Operate Water System Equipment through AWWA Standards & Manuals	This comprehensive workshop offers participants hands-on experience with water system equipment such as pumps, valves, and pipe. Through this workshop, attendees learn practical knowledge of water treatment equipment and equipment specifications in user terms. They will also learn the value of AWWA Standards and Manuals as a resource in designing and operating various water system equipment.	Jihyon	Im		CDM Smith	8
6/11/2024	1:00 PM	1:45 PM	CHAT	Fireside Chat with EPA	With an interactive audience discussion moderated by AWWA's CEO, David LaFrance, the Fireside Chat with EPA will cover EPA's perspective a variety of relevant topics in the water sector, as well as recognize the 50th Anniversary of the Safe Drinking Water Act. You will not want to miss this opportunity for discourse with key EPA regulators and the chance to have your questions addressed.	David	LaFrance	Chief Executive Officer	American Water Works Association	9
6/11/2024	2:00 PM	5:00 PM	TUE01	TUE01 - Improving Water Treatment Resilience and Sustainability with Biological Treatment	Many utilities are looking to biological treatment to achieve more economical and sustainable treatment in surface water, ground water, and reuse applications. Biological treatment processes have the potential to boost treatment resiliency, as well as improve the overall sustainability of water treatment processes by leveraging microorganisms to biologically transform or degrade components.	Ashley	Kent	Discipline Leader, Biological Drinking Water Treat	Arcadis	10
6/11/2024	2:00 PM	2:30 PM	TUE01-01	Biological Treatment State of the Industry	Provides brief history of biological drinking water treatment, overview of design considerations, operations, & monitoring for biological treatment systems. Covers definition, benefits, removal mechanisms, sets the stage for remaining presentations.	Nissim	Gore-Datar		Arcadis U.S., Inc.	11
6/11/2024	2:30 PM	3:00 PM	TUE01-02	Aerobic Surface Water Biological Filtration	Addresses the biofiltration process located in surface water treatment trains downstream of pre-treatment and upstream of disinfection. Discuss target contaminants, regulatory considerations, biological removal mechanisms, planning and best practices	Lynn	Stephens		Brown and Caldwell	12
6/11/2024	3:00 PM	3:30 PM	TUE01-03	Aerobic Groundwater Biological Treatment	Aerobic biotreatment of groundwater relies on natural microorganisms to remove dissolved inorganic contaminants in the presence of oxygen. Discuss target contaminants & regulatory concerns, biological removal mechanisms, treatment system config.	Darren	Lytle		US EPA	13
6/11/2024	3:30 PM	4:00 PM	TUE01-04	Anoxic Biological Treatment	Anoxic biological treatment is used primarily in groundwater applications & relies on natural microorganisms to remove inorganic & organic contaminants. Discuss target contaminants, regulatory concerns, biological removal mechanisms, operations.	Giridhar	Upadhyaya	Water and Reuse National Specialty Leader	Brown and Caldwell	14

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6/11/2024	4:00 PM	4:30 PM	TUE01-05	Aerobic Biological Filtration for Reuse	Focus on implementing biofiltration in potable reuse applications and provides detail on different contaminant removal and mechanisms, regulatory considerations, testing and operational guidance.	Christina	Alito			15
6/11/2024	2:00 PM	5:00 PM	TUE02	TUE02 - Complexities of PFAS - New Research about Removal, Transport, and Destruction	Research on PFAS has made significant strides in understanding the removal, transport, and destruction of these persistent contaminants. Studies explore advanced filtration technologies, such as adsorption and membrane processes, to enhance PFAS removal from water sources. Additionally, research delves into the environmental fate and transport of PFAS, unraveling pathways and mechanisms that govern their movement through different media. Innovations in destructive technologies, including chemical and biological degradation methods, offer promising avenues for breaking down PFAS compounds, addressing the urgent need for effective remediation strategies in the face of growing environmental and health concerns.	Kim	Ervin			16
6/11/2024	2:00 PM	2:30 PM	TUE02-01	Spearheading PFAS Destruction with Technological Breakthroughs	Top American universities are pioneering three promising technologies—supercritical water oxidation, plasma-based treatment, and photocatalysis—to degrade harmful PFAS pollutants in water. Commercialization efforts are underway, offering hope to the water and wastewater industry for cost-effective and environmentally safe solutions to combat PFAS contamination.	Justas	Rutkauskas			17
6/11/2024	2:30 PM	3:00 PM	TUE02-02	PFAS and AFFF Remediation and Forever Stabilization Using Advanced Polymers	This presentation will focus on the history, background, uses of PFAS, current regulations, traditional & emerging remediation technologies (separation, concentration, stabilization, and destruction) and will discuss recent case studies of using granular activated carbon (GAC), anion exchange (IX) resins, and powdered media to remove PFAS from water sources including potable and non-potable water across the country. For stabilization of PFAS contaminated waste; AVANTech has completed a variety of solidification technologies to allow for the safe and efficient disposal of highly concentrated PFAS waste.	Frank	Cerio	Senior Business Development Manager	Avantech LLC	18
6/11/2024	3:00 PM	3:30 PM	TUE02-03	Updates in PFAS Adsorption and Application of HALT for PFAS Destruction in Exhausted GAC and Adsorbent Regeneration	Utilities are increasingly detecting PFAS in water supplies and as PFAS MCLs are established in the coming years, significantly more systems will be required to implement PFAS treatment. The first part of this presentation will provide an overview of lessons learned from implementation of full-scale and pilot-scale adsorbent PFAS treatment systems in diverse water matrices. Disposal of spent media is another challenge that utilities are increasingly faced with. The second portion of this presentation will report on results from a lab-scale study using hydrothermal alkaline treatment (HALT), which uses strong alkali and near-critical temperatures and pressures to degrade and mineralize PFASs, for the regeneration of spent GAC.	Charlie	Liu	National PFAS Lead	Kennedy Jenks	19
6/11/2024	3:30 PM	4:00 PM	TUE02-04	The Impact of Tension-Driven Flow on the Transport of AFFF and Water Dynamics in Vadose Zone	This presentation delves into the intricate interplay of Per- and poly-fluoroalkyl substances (PFASs), a rapidly emerging class of contaminants prevalent in environments affected by historic aqueous film-forming foam (AFFF) usage. PFAS compounds accumulate at the air-water interface during transport in the vadose zone, leading to tension-driven flow (TDF) due to reduced interfacial tension (IFT). This phenomenon significantly complicates our ability to comprehensively understand, characterize, and simulate PFAS migration in unsaturated conditions. The results reveal notable TDF effects, including substantial lateral water movement and consequential shifts in moisture content which has significant implications for effective remediation.	Faran	Vahedian	PhD Candidate	Colorado School of Mines	20

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6/11/2024	4:00 PM	4:30 PM	TUE02-05	Impact of Organic Matter on PFAS Removal from Complex Water Matrices by Selective and Nonselective Adsorbents	This presentation focuses on the impact of organic matter presence on PFAS removal performance of selective and nonselective adsorbents during the treatment of complex water matrices such as groundwater, surfacewater and wastewater effluent. Employing different levels of pretreatment, such as ozonation (O3) and biologically active filtration (BAF), can alter the concentration/characteristics of the interfering organic matter, which ultimately impacts the PFAS removal performance and longevity of adsorption-based processes. Further, Size exclusion chromatography analysis was conducted to uncover the mechanisms behind organic matter interference with PFAS removal for selective versus nonselective adsorbents.	Bahareh	Tajdini		Colorado School of Mines	21
6/11/2024	4:30 PM	5:00 PM	TUE02-06	The Data Availability and Accessibility of PFAS in U.S.	Despite increasing attention to the occurrence of per- and polyfluoroalkyl substances (PFAS) due to environmental and health risks, PFAS data remains inconsistent. This study evaluates the state of PFAS data accessibility and availability across U.S. states. We explored the PFAS data in groundwater, surface water, and soil. We evaluated each state's data source, data quality, and quantity (list of PFAS species, data format, observations, and sampling timelines). We assessed the dataset access and associated costs for the public and researchers. This ongoing research aims to assess PFAS data status and accelerate the development of data-driven models to address the comprehensive environmental challenges.	Jialin	Dong		UCI	22
6/11/2024	2:00 PM	5:00 PM	TUE03	TUE03 - What Does Water 2050 Mean for Water Infrastructure Asset Management Practices	This session will show the relationship between the visionary concepts from Water 2050 and asset management. Case study presentations will provide examples of the linkage and show how their utilities have adapted their business practices to anticipate future challenges. There will be opportunities for audience engagement through question and answer after each presentation and the panel discussion.	Jennifer	Suttles	Division Director, Water and Sewer Technical Servi	Gwinnett County Government Department of Water Resources	23
6/11/2024	2:00 PM	2:15 PM	TUE03-01	Advancements in a Changing Asset Management Landscape	In this presentation, we will examine the changing asset management landscape and demonstrate how an advanced asset management framework that incorporates a focus on people, data, and advanced digital technology can help water and wastewater utilities to maximize their performance against an array of financial, environmental, and social targets and metrics. We will begin by surveying the state of the industry, with a focus on the impact of emerging issues such as material price inflation, equity and environmental justice, and climate change resiliency.	Kevin	Slaven	Associate Vice President	Arcadis	24
6/11/2024	2:15 PM	2:35 PM	TUE03-02	How Can Asset Management Support Water 2050 Objectives?	Review of the Water 2050 reports and outcomes and how asset management programs and principles align with the AWWA initiative	Randy	Moore			25
6/11/2024	2:35 PM	2:55 PM	TUE03-03	Navigating the Future: The Crucial Role of Asset Management in Water 2050	How the integration of a comprehensive asset management framework and the value of leadership play a pivotal role in shaping the future of the utility and how water assets are managed.	Krystin	Berntsen	Deputy Director	Palm Beach County Water Utilities Department	26
6/11/2024	2:55 PM	3:15 PM	TUE03-04	Ensuring Service Equity and Affordable Access to Water in Portland, Oregon	Equity and affordability are key considerations for the Portland Water Bureau which has integrated service equity into their capital planning decision-making process. Infrastructure investments include intentional, and robust stakeholder engagement	Jodie	Inman		Portland Water Bureau	27
6/11/2024	3:15 PM	3:35 PM	TUE03-05	NTMWD's East Fork Water Reuse Project – Benefits of a Large Constructed Wetlands in North America	This 2,000-acre constructed wetland represents a sustainable, cost-effective approach to meeting the water supply needs of one of the fastest growing regions in the U.S. as well as providing additional benefits such as wildlife habitat and education	Cody	Graham		North Texas Municipal Water District	28

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6/11/2024	3:35 PM	3:50 PM	TUE03-06	Ahead of the Curve: Raleigh's Proactive Approach to Influent Flow Forecasting	The City of Raleigh introduced a tool at the Neuse River Resource Recovery Facility for 72-hour advance influent flow predictions. This tool enhances the plant's wet weather strategy, allowing precise flow diversion and clarifier deployment.	Javad	Roostaei		Hazen and Sawyer	29
6/11/2024	3:50 PM	4:05 PM	TUE03-07	Fostering Transparency with Stakeholders: Applying the AAA Method to Business Case Evaluations	Gwinnett County used the AAA method to promote community involvement and integrate the method in its business case evaluation process. An example will show how to identify community priorities, define consistent goals, and promote transparency	Jennifer	Suttles	Division Director, Water and Sewer Technical Servi	Gwinnett County Government Department of Water Resources	30
6/11/2024	4:05 PM	4:25 PM	TUE03-08	Risk to Resilience: Houston Water's Holistic Approach to Future Adaptation	Houston will share how City is preparing to cope with Climate threat, silver tsunami and degrading infrastructure with the adaption of disruptive technology.	Satish	Tripathi	Managing Engineer		31
6/11/2024	4:25 PM	4:40 PM	TUE03-09	Adaptive Asset Management Planning for Resilience Enhancement Under Climate Change Impacts	Participants in this session will learn the fundamental decision-making attributes of adaptive asset management planning when it comes to the coastal water supply infrastructure assets that are exposed to impacts of sea-level rise and saltwater intrusion. This presentation will demonstrate a case study to illustrate the effectiveness of adaptive planning versus reactive planning in resilience enhancement of infrastructure assets.	Kambiz	Rasoulkhani	Senior Asset Management Consultant		32
6/11/2024	2:00 PM	3:30 PM	TUE04	TUE04 - Tackling Plant Operation & Maintenance Issues	This session will review how utilities tackle tough operation and maintenance issues at their plants. Issues range from chemical tank maintenance, chlorine equipment maintenance, and overall O&M performance standards					33
6/11/2024	2:00 PM	2:30 PM	TUE04-01	Guidance for Treatment Chemical Tank Cleaning and Inspection	Proper storage of most treatment chemicals includes proactive maintenance and periodic attention, but how often and how should this be done? Water and wastewater industry guidance on these topics is limited but there is room for improvement based on the experience among utilities.	James	Springer	Engineer	Greater Cincinnati Water Works	34
6/11/2024	2:30 PM	3:00 PM	TUE04-02	Achieving Consistent Chlorine Competence through Comprehensive Training	Phoenix Water Services Division has created "The Chlorine Academy," a seven-module, hands-on learning program that teaches new operators how to maintain Wallace and Tiernan chlorine system in a risk-free environment. The presentation will provide information on the genesis of the training program, a curriculum outline, sample activities, and share the benefits this program has brought to the organization. If you're interested in bringing new and practical ways to enhance knowledge and ensure safe maintenance practices, don't miss this engaging session.	Roberta	Santos	Water Training Program Coordinator	Phoenix Water Services Dept.	35
6/11/2024	3:00 PM	3:30 PM	TUE04-03	Fostering a Performance Culture in Operations and Maintenance	Successfully navigating a competitive labor market, inflated construction costs, and increasing regulatory requirements while maintaining affordable rates has utilities questioning if their existing organizational structure and business processes are still appropriate. Over the last two years, City Utilities (CU) has redesigned their Operations and Maintenance Division to unlock latent workload capacity and improve productivity. Following launch of the redesign, CU launched four initiatives to establish new practices for planning and scheduling work, cross training, setting expectations, and measure performance. This presentation will include lessons learned from the redesign and development of performance standards across the division.	Benjamin	Groeneweg	Program Manager: Asset Management	Fort Wayne City Utilities	36

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6/11/2024	2:00 PM	3:30 PM	TUE05	TUE05 - PFAS Media Maintenance and Management Strategies	This session explores the nuanced aspects of maintaining and optimizing the performance of PFAS removal media throughout its operational lifespan. Topics covered include best practices for routine maintenance, techniques for media regeneration, and considerations for efficient management to ensure sustained efficacy in PFAS removal systems. Attendees will gain insights into the challenges and innovations associated with preserving the functionality of PFAS media, contributing to the development of effective, long-term solutions for mitigating PFAS contamination.					37
6/11/2024	2:00 PM	2:30 PM	TUE05-01	From Production to Destruction: Storyboarding the Life Cycle of PFAS Removal Media	The forthcoming federal PFAS regulation is further exacerbating an already immense demand for treatment media. In many instances, adsorptive media remain the most viable PFAS removal technology. Knowledge varies among practitioners on mining and manufacture of media, transport, landfills in faraway places, and of incineration as a means to destroy PFAS. Like many consumer products, the full life cycle is misunderstood by the end user or the communities served by these products. This paper will detail the manufacturing, transport, use, disposal, and potential reuse of two widely used PFAS removal media, anion exchange resin and granular activated carbon to inform water utilities, their customers, and designers of the cradle to grave journey	Michaela	Bogosh		CDM Smith	38
6/11/2024	2:30 PM	3:00 PM	TUE05-02	Regenerable PFAS Adsorbents: Laboratory and Field Scale Comparisons with Activated Carbon and Single Use PFAS-specific Resins	Anion exchange resins (IX) and activated carbons exhibit promising potentials for the removal of per- and poly-fluoroalkyl substances (PFAS) from natural waters. However, the present-day resins and adsorbents are typically operated in a single load-and-dispose mode until exhaustion. This strategy increases the substrate demand and the consequent operational cost of treatment. In this study, we compared the performance of multiple single-use PFAS-specific resins with regenerable PFAS adsorbents. The removal of multiple long- and short-chained carboxylic, sulfonic, precursor and emerging PFAS from natural waters was examined with a particular focus on the applicability of resin reuse and regeneration.	Fuhar	Dixit		University of British Columbia	39
6/11/2024	3:00 PM	3:30 PM	TUE05-03	New Avenues for Renewing GAC: HRSD's Evaluation for a Regional GAC Reactivation Facility	This presentation will include the benefits of evaluating a regional GAC reactivation facility. This study will be useful for utilities trying to implement GAC for TOC and PFAS removal in drinking water and reuse applications. It will also include information on the processes involved in the GAC reactivation facility and considerations for planning a new installation.	Christina	Alito			40
6/11/2024	2:00 PM	5:00 PM	TUE07	TUE07 - Emergency Preparedness Modeling for Distribution Systems	Water utilities are faced with tough decisions about how to operate, maintain, and improve their water distribution systems. Capacity, aging infrastructure, and water quality concerns drive the decision-making process, as do other risks to infrastructure. This session will focus on helping utilities make informed decisions using hydraulic modeling to quantify risks common to distribution systems.	Meg	Roberts	Distribution Systems Services Leader, Associate Vi	Hazen and Sawyer, P.C.	41
6/11/2024	2:10 PM	2:35 PM	TUE07-02	The Challenge of Planned and Unplanned Supply Outages	Planned supply outages require operational adjustments and emergency outages require rapid response. This presentation will focus on modeling best practices for addressing both planned and emergency supply outages, including case studies.	Melissa	Brunger	Associate	Freese and Nichols, Inc.	42
6/11/2024	2:35 PM	3:00 PM	TUE07-03	How Water Distribution System Storage Impacts Resilience – Anchorage Water Case Study	Water distribution system storage is a balancing act between system hydraulics, resiliency, redundancy, and water quality. This presentation shows a case study of various uses of storage and its interaction with system resilience and water quality.	Jacques	Annandale	Capital Assets Manager	Anchorage Water and Wastewater Authority	43

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6/11/2024	3:00 PM	3:25 PM	TUE07-04	Evaluating Valve Criticality for Risk and Resilience	Inadequate distribution system isolation valves, due to disrepair or poor placement, exacerbate negative impacts of pipe breaks. This presentation will illustrate models used to evaluate the criticality of valves for emergency preparedness.	Thomas	Walski		Bentley Systems, Inc.	44
6/11/2024	3:25 PM	3:50 PM	TUE07-05	Transmission Main Vulnerability Analysis in Louisville, KY	Using Louisville Water's hydraulic model, 11 transmission main vulnerabilities were identified where an outage could cause significant disruption. Mitigation measures for each outage were identified & prioritized based on capital & operational needs.	Chris	Keil	Senior Technical Engineer	Louisville Water Company	45
6/11/2024	3:50 PM	4:15 PM	TUE07-06	Pipe Breaks: Prevention, Analysis, Response	This presentation reviews hydraulic modeling techniques for analyzing real-world pipe breaks and how results can help utilities prepare and respond. Case studies will be used to illustrate the process including a 30-inch main break in Orlando FL.	Chadwick	Meisel	Project Engineer	CHA Consulting	46
6/11/2024	4:15 PM	4:40 PM	TUE07-07	Best Practices for Analyzing Distribution System Contamination	Contamination is a risk to every distribution system. Models can be used to prepare for and analyze the impacts of contamination events. Case studies will be used to illustrate modeling best practices for risk and resilience.	John	Collett	Principal Engineer	Hazen and Sawyer	47
6/11/2024	2:00 PM	3:30 PM	TUE08	TUE08 - The Project Before the Project: For Owners, Capital Project Delivery Is More Than Just Design and Construction	Delivering capital projects is a tremendous undertaking for utility owners, and when you put aside the design and construction phases of the project, the burden remains on owners to plan, budget, fund, procure, bid, administer, and hand-off their capital projects, often with little outside help. This session focuses on capital project delivery from the owner's perspective and the standards, best practices, and evolving needs for owners to remain both steadfast in their values and flexible in their approach.	Spencer	Adams		Jacobs	48
6/11/2024	2:00 PM	2:30 PM	TUE08-01	Capital Delivery Optimization and Best Practices	The audience will learn how Northern Kentucky SD1 and other utilities are implementing best practices to adjust their organizations, maximize the utilization of existing staff, and support automation and other efficiency improvements to reduce waste and increase their capital delivery efficiency and cost-effectiveness.	Brandon	Vatter	Senior Manager	Raftelis Financial Consultants	49
6/11/2024	2:30 PM	3:00 PM	TUE08-02	Attracting Contractors to Your Project: Strategies for when construction demand exceeds contractor resources.	The post pandemic construction market has changed significantly. With an increase in the number of projects, and limits and risks imposed on contractor's resources, the market has shifted from "bid it and they will come" to owner's competing to attract contractors to their projects. Vital projects have been downsized or delayed as costs for construction have escalated due to supply chain issues, labor shortages and competing projects. This session will explore strategies owners can use to attract more offers for its projects and work to build the most project they can for the budget available by increasing competition and reducing risks.	Coy	Veach	Vice President	Freese and Nichols, Inc.	50
6/11/2024	3:00 PM	3:30 PM	TUE08-03	Updating a Design Manual in a Changing World: A DC Water Case Study	To achieve its vision of being a world-class water utility, DC Water continuously strives to improve its services and practices. One of the key documents that guides this improvement is the Project Design Manual (PDM). The PDM presents design criteria, standards, procedures, and management methods for all linear infrastructure design for DC Water. The update process considered several factors such as: Climate changes and their implications on design storm, safety factor, and water main redundancy, regulatory agency updates from OSHA, DDOT, etc., storage and pipe material changes due to supply chain shortages, lane width changes to accommodate traffic flow variations, innovation and technology, pipe material changes to extend lifespan etc.	Bethel	Abate	Civil Engineer/ Project Manager	DC Water	51

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6/11/2024	2:00 PM	5:00 PM	TUE09	TUE09 - Utility Perspectives on LSLR Challenges Under the LCRI	This session will provide an opportunity for water systems to share experiences and learn from each other with some of the major challenges related specifically to identifying and replacing LSLs on private property, and how to prepare for potential upcoming requirements under the LCRI. The challenges to be addressed in this session are funding, private property access and communication/public outreach. All utilities with LSLs will be faced with these challenges when development and implementing their lead service line replacement programs.	Rebecca	Slabaugh	Drinking Water Practice Lead	Arcadis	52
6/11/2024	2:00 PM	2:30 PM	TUE09-01	LCRI Requirements for Lead Service Line Replacements	This session will provide an overview of the proposed Lead and Copper Rule Improvements (LCRI) compared with the Lead and Copper Rule Revisions (LCRR) with a focus on the inventory and replacement requirements and how utilities of different sizes will be impacted by the proposed changes and the timeline for the changes.	Adam	Hendricks		Philadelphia Water Department	53
6/11/2024	2:30 PM	3:30 PM	TUE09-02	Customer Side Access	This session will include a short introduction of each panelist (10 minutes) followed by questions from the moderator and the audience regarding the options available for accessing private property for the purpose of identification and removal of customer-side LSLs. This includes state laws, local ordinances and individual property-owner signed agreements. The panelists will discuss the risks to utilities and what to avoid regarding work on private property. The panelists will also review their challenges and successes with obtaining pipe materials on the customer side and, ultimately, signed approval of a right-of-entry to replace the customer side of an LSL.	Jeff	Swertfeger	Superintendent	Cincinnati Water Works	54
6/11/2024	2:30 PM	3:30 PM	TUE09-02	Customer Side Access	This session will include a short introduction of each panelist (10 minutes) followed by questions from the moderator and the audience regarding the options available for accessing private property for the purpose of identification and removal of customer-side LSLs. This includes state laws, local ordinances and individual property-owner signed agreements. The panelists will discuss the risks to utilities and what to avoid regarding work on private property. The panelists will also review their challenges and successes with obtaining pipe materials on the customer side and, ultimately, signed approval of a right-of-entry to replace the customer side of an LSL.	Alexis	Woodrow	Lead Reduction Program Manager	Denver Water	55
6/11/2024	3:30 PM	4:15 PM	TUE09-03	Funding	This session will include a short introduction of the panelists regarding their experience around obtaining funding and/or the status of their LSLR program (10 minutes) followed by questions from the moderator and the audience regarding funding of LSLR, specifically, what restrictions exist on funding for customer-side replacements and how to work within or eliminate, if possible, the constraints. For example, the Bipartisan Infrastructure Law (BIL) funding typically includes a combination of loan and grant money. This federal funding is intended to be used to assist the property owners with the cost of replacement. However, in most states, the loan portion cannot be used for the customer-side since the loan would be paid back with public ratepayer funds and there are limitations on using public funds for private improvements. The panelists will discuss strategies for dealing with these limitations and other sources of funding for the private and public LSLRs.	David	Rowley	Manager of Water Production and Transmission	City of Rochester	56



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6/11/2024	4:15 PM	5:00 PM	TUE09-04	Communication and Outreach	This session will include a short introduction of each panelist (10 minutes) followed by questions from the moderator and the audience regarding communication and public outreach related to LSLR programs. Panelists will discuss best practices for reaching customers regarding identification and replacement of LSLs and how they monitor engagement. This will include who their trusted messengers are, what forms of communication are used, their successes with different messaging and frequency of messaging to ultimately achieve the private side access and replacement of customer side LSLs. The difficult balance of outreach and participation while not alarming customers will be discussed.	Bryan	Frierson		Passaic Valley Water Commission	57
6/11/2024	2:00 PM	5:00 PM	TUE10	TUE10 - Water Policy Look Ahead	With Water 2050 AWWA is looking 30 years into the future and asking what future the sector believes we need to aspire to. The session focuses on the water policy challenges and opportunities facing the sector today. Overcoming today's obstacles will be necessary to set the stage for achieving future goals	Suzanne	Delorenzo	Director of Water Quality	San Jose Water Company	58
6/11/2024	2:00 PM	2:30 PM	TUE10-01	State's View on Water Sector Opportunities and Challenges	Over the last five years the administrators of the state drinking water programs crafted a series of reports describing regulatory and infrastructure funding challenges and opportunities. This year is the SDWA's 50th anniversary and a time to look forward at the opportunities for effective risk reduction that warrant the sector's attention.	Ron	Falco	CO Drinking Water Program Mgr.	Colorado Dept. of Public Hlth & Env	59
6/11/2024	3:00 PM	3:30 PM	TUE10-03	Bridging the Gap Between Drinking Water and Direct Potable Reuse: Using Drinking Water Treatment Experience to Inform DPR	Direct Potable Reuse (DPR) is being widely considered with unpredictable climate and water supplies. States are developing their own direct potable reuse regulations and are varied. This presentation will summarize the treatment innovations and ultimate regulatory requirements set forth in the Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESTR) and how those data can be applied to DPR applications and regulatory compliance. For example, the California Water Resources Control Board has draft DPR regulations published for public comment that require 1-log chemical, filtration, and physical removal of Cryptosporidium, and this presentation discuss the lessons learned on LT2ESTR implementation to support DPR implementation.	Christine	Cotton			60
6/11/2024	3:30 PM	4:00 PM	TUE10-04	Risk Reduction Opportunities in Drinking Water	New drinking water standards can be controversial, complicated, and costly. Recent and anticipated drinking water regulations for lead, per- and polyfluoroalkyl substances, and disinfection byproducts are cases in point. If we step back and look at significant risk reduction opportunities in the sector, what are they?	Chad	Seidel			61
6/11/2024	4:00 PM	4:30 PM	TUE10-05	America's Water Initiative: US Water Issues and How to Solve Them	Water utilities are under great pressure. Public confidence in the water industry is at an all-time low. Rates are skyrocketing in many areas. Numerous utilities are at risk of failure. Nearly all utilities are facing aging infrastructure and climate change/extreme weather event challenges. Results from a 10-year initiative by the Columbia Water Center to address these issues are presented. The solutions were developed considering a confusing and unrealistic regulatory picture, the differences between urban and rural utilities, and the need for an overhaul of utility governance/ownership.	William	Becker	Vice President	Hazen and Sawyer, PC	62
6/11/2024	4:30 PM	5:00 PM	TUE10-06	Research to Guide Water's Future	The drinking water community has prided itself on advancing system operations and risk reduction measures based on the best available science. Active research agendas set the stage for important rulemakings, facilitated more efficient water resource management, and advanced technological innovation. As we look forward, today's national and international research agendas will be essential to future successes.	Peter	Grevatt	Executive Director	Water Research Foundation	63

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/11/2024	2:00 PM	5:00 PM	TUE11	TUE11 - Small System Management in the 21st Century	Operating a water utility under mindset “as long as the pipes are wet, all is good” is no longer sufficient in the 21st Century. Water utilities, especially small-sized water utilities, need to consider affordability, source adaptation, asset repair and replacement, and financial planning as they strategically build resilience and sustainability today and into the future. These six speakers will provide water utility managers and staff with the tools and roadmap to their strategic goals.	Michael	Grimm		West Slope Water District	64
6/11/2024	2:00 PM	2:30 PM	TUE11-01	Strategic Planning for Small to Midsized Systems	Operators, managers and board members of small to medium-sized water or wastewater systems can benefit from attending this session by having a better understanding of how a strategic planning session / meeting can help the system plan and develop policies that help them improve their systems. Examples of strategic Planning sessions and meetings will be shared and discussed. Todd Gardner, CEO, BBP Water Corporation, Spence IN. has been in the industry for over 25 years, starting a small public-school corporation that had its own water system and wastewater treatment plant. Served 11 years on the Alliance of Indiana Rural Water Board, presenting many management classes for water and wastewater operators.	Todd	Gardner	CEO	BBP Water Corp	65
6/11/2024	2:30 PM	3:00 PM	TUE11-02	Rural Ripples: Surfacing Water System Challenges Coast-to-Coast	Small water systems, predominantly serving rural communities, grapple with distinct challenges that set them apart from larger urban systems. This presentation, based on insights from rural water association directors and their teams, unveils the multifaceted issues these systems confront. From infrastructure to regulation, and finance to technology, we'll delve deep into the heart of these challenges. This presentation will offer a unique lens into the water industry's pressing concerns and chart a path forward for these smaller systems.	Jeff	Biberdorf	Director of Sales & Marketing	Fontus Blue	66
6/11/2024	3:00 PM	3:30 PM	TUE11-03	Building Climate Resilience and Equity in Small, Rural Communities With Tools and Resources	RCAP, Pacific Institute, and LiKEN will present on their multi-year collaboration researching the intersection of water, climate, and equity for frontline rural communities. They will present on lessons learned by bringing together such different perspectives and skill sets and on an array of educational materials and tools developed to meet the needs and climate realities of small, rural communities/water utilities.	Laura	Landes		RCAP	67
6/11/2024	3:30 PM	4:00 PM	TUE11-04	Providing Safe and Accessible Drinking Water to Small Disadvantaged Communities Through the SAFER Program	Access to safe drinking water remains challenging for small communities in California. Under the State Board’s SAFER and associated Technical Assistance Programs, the California Urban Water Agencies (CUWA) is leveraging the experience of major urban water agencies to support these communities. This presentation will discuss how small, disadvantaged communities can access and benefit from these programs. Communities will learn about the technical, managerial, and financial assistance they can receive to address their needs in providing safe, clean, affordable, and accessible water. Finally, this presentation explores opportunities for CUWA’s collaboration with other entities interested in supporting statewide access to safe drinking water.	Amparo	Flores	Senior Manager	Brown and Caldwell	68

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/11/2024	4:00 PM	4:30 PM	TUE11-05	Online Support and Resources for Water & Wastewater Operators	WaterOperator.org provides free resources from nearly 800 organizations that serve the water and wastewater industry. The website features a document library with links to over 15,000 resources that cover every aspect of operations, compliance, capacity development, regulations, and best practices for both water and wastewater operators. The calendar tool provides links to every operator event from all 50 states that provides continuing education credit all in one place. All information is free and publicly available for download. This presentation will feature resources currently available for small system operators as well as a demonstration of how to use the website to find similar resources.	Hideyuki	Terashima		Illinois State Water Survey	69
6/11/2024	4:30 PM	5:00 PM	TUE11-06	Community Engineering Corps – Striving Towards Equitable Access to Infrastructure	Community Engineering Corps (CECorps) - an alliance partnership between the American Water Works Association, the American Society of Civil Engineers, and Engineers Without Borders USA - works to build a future where everyone has access to the engineering resources required to live a life of opportunity. This session features an informational presentation about the CECorps Program, followed by a case study highlighting the services provided by AWWA-members via the CECorps program in an effort to bridge the water and sanitation infrastructure gap.	Molly	Sullivan	Community Engineering Programs Mgr.	American Water Works Association	70
6/11/2024	2:00 PM	5:00 PM	TUE13	TUE13 - Implementing & Communicating Water Conservation Programs	Hands-on programming is the bread and butter of any effective water conservation and efficiency program. These speakers will share lessons learned from their programs, including the importance of communicating with the public and show how water use is changing.					71
6/11/2024	2:00 PM	2:30 PM	TUE13-01	Saving Water in Affordable Housing, One Leaky Toilet at a Time	This session focuses on a project deploying real-time toilet leak detection in 1,200 units across eight affordable housing communities. Spearheaded by the Pacific Institute in collaboration with the Housing Authority of the City of LA, Sensor Industries, Bonneville Environmental Foundation, and the LA Better Buildings Challenge, this project has curtailed water consumption at each property by approximately 15%, translating to millions of gallons of annual water savings. This session offers insights about water savings, water bill savings, and embedded energy savings for water treatment and distribution. This session also offers insights from each collaborator in this partnership. This research has informed the pathways for scalability.	Cora	Snyder		Pacific Institute	72
6/11/2024	2:30 PM	3:00 PM	TUE13-02	When You Have the Funds, the Data, and the Contractor, and the Customer Still Says No	This presentation is about the implementation of an invitation-only residential irrigation retrofit program (ERIP) that Walnut Valley Water District (District) developed and launched in collaboration with EcoTech Services, Inc. and Eagle Aerial. This program was free to the District's residential high water users, and was funded by USBR grant funds, MWD MAAP funds, and District funds. We will highlight the various phases of this program, including seeking program funding, development of the scope-of-work, identification of the potential participants, installation of the irrigation retrofits, and the resulting water savings. We will also share the challenges of offering such a program; including, customers just flat out saying "NO".	Donna	Dilaura		Walnut Valley Water District	73
6/11/2024	3:00 PM	3:30 PM	TUE13-03	Conservation Through Education: How an Education Program in Dallas Became a Major Contributor to Water Conservation	Since 2006, the City of Dallas EEI program has pushed the elementary, middle, and high school students of Dallas to learn many different aspects of water conservation through a hand-on, analysis-focused approach. Homes with children that have participated in the EEI program have shown savings of 501 gallons per home per month per a study done in 2014 by the University of North Texas.	Alicia	Lee			74

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/11/2024	3:30 PM	4:00 PM	TUE13-04	Water Conservation: It Takes a Village	Los Angeles Department of Water and Power's Community Partnership Outreach Grants Program provides \$90,000 grants to non-profit organizations (NPO) who propose projects that promote water use efficiency and/or water conservation. Utilities partner with trusted community organizations and effect water use behavior change through customized programming to specific customers. Many of the awarded grants have been used as opportunities to pilot a program before launching it at a larger scale. Through this unique collaboration, LADWP has worked closely with a variety of NPOs and strategically focused nearly \$1 million in grant funds to targeted communities.	Cherry	Villanueva		Los Angeles Water & Power	75
6/11/2024	4:00 PM	4:30 PM	TUE13-05	A Guidebook: Effective and Ongoing Drought Communication for Any Budget and Any Water Agency Size	In recent years, the United States has witnessed a significant increase in both the severity and frequency of droughts. While many agencies and utilities have traditionally relied on conventional communication methods to distribute drought information, such as bill inserts, print media, advertisements, and various marketing strategies there's a growing recognition of the importance of incorporating digital media to effectively convey critical messages. This shift towards digital communication holds valuable lessons that can benefit any campaign budget and any agency or utility size.	Barbara	Beran		Katz & Associates	76
6/11/2024	4:30 PM	5:00 PM	TUE13-06	From the Rockies to the Kitchen Sinks: Where Is Colorado River Water Used?	The Colorado River is a vital water source for more than 40 million people. Climate change and over-use has left the Colorado River storage system on the brink of dead-pool. During this 30-minute presentation, Flume will present information and data on how Colorado River water is used, examining indoor and outdoor water demand for single-family homes in the West. Using a nationwide network of sensors, Flume will share top water use in various communities and by appliances and fixtures and identify opportunities for water resource planning and future management in these key states.	Sarah	Musiker	Sr. Director	Flume Water	77
6/11/2024	2:00 PM	3:30 PM	TUE14	TUE14 - California's Hexavalent Chromium Regulation	In 2022 California proposed a Maximum Contaminant Level for hexavalent chromium of 10 ppb, which is expected to take effect in 2024. This session will discuss California's regulation of hexavalent chromium, potential cost of compliance, and how regulators are preparing for enforcement of the new regulation.	Tim	Worley			78
6/11/2024	2:00 PM	2:30 PM	TUE14-01	California and National Costs of Compliance With a CR6 MCL	With a proposed California MCL for Cr6 at 10 ppb, and a potential national Cr6 MCL, AWWA funded a desktop study aimed at updating the California and national costs of compliance with a Cr6 MCL originally developed in 2012. This study updated the occurrence data and the treatment unit cost data to develop a range of potential cost for complying with Cr6 MCL that may range from 1 to 20 ppb.	Issam	Najm	President	Water Quality & Treatment Solutions	79
6/11/2024	2:30 PM	3:00 PM	TUE14-02	A New Approach for Characterizing Affordability Challenges - California's Proposed MCL for Hexavalent Chromium	In June 2023, the State Water Resources Control Board issued an updated draft maximum contaminant level (MCL) for Hexavalent Chromium (Cr VI). The updated MCL incorporates new approaches for evaluating the economic feasibility and affordability of the proposed regulation. This presentation demonstrates a new framework and alternative metrics that enhance the State's assessment for characterizing affordability challenges. The goal is to ensure that fiscal support needs of Community Water Systems (CWSs) and economically challenged households are met in a targeted and holistic manner. The presentation will also highlight key considerations for providing funding and support to water systems that will struggle to meet the costs of compliance.	Janet	Clements	CEO/Director of Economics	One Water Econ LLC	80

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/11/2024	2:00 PM	3:30 PM	TUE15	TUE15 - Innovative Source Water Protection Approaches for Addressing Emerging Contaminants	This session explores diverse challenges in water quality management and the innovative approaches employed to mitigate contamination risks. From addressing 1,4-Dioxane in the Ohio River through interstate collaboration to tackling PFAS in Tucson's wellfields with a unique golf course treatment facility, and finally, the evolution of continuous online algae monitoring for proactive water treatment in the Region of Peel. Attendees will gain insights into effective strategies, collaborative initiatives, and advanced technologies shaping the future of source water protection.					81
6/11/2024	2:00 PM	2:30 PM	TUE15-01	Using Source Water Protection to Reduce 1,4-Dioxane in the Ohio River	This presentation describes how the Greater Cincinnati Water Works (GCWW) and partners reduced a major 1,4-dioxane discharge in their upstream watershed. A single facility located 180 miles upstream of the GCWW intake is responsible for 56 percent of the reported 1,4-dioxane discharged directly to surface water in the U.S. GCWW, and other Ohio River utilities, used a novel technical and legal approach to intervene in the NPDES permitting and subsequent appeal process to block the facility's attempts to vacate 1,4-dioxane effluent limits in their discharge permit. This presentation offers a blueprint for utilities to use the Clean Water Act and other federal statutes to affect changes in their watershed and protect source water quality.	Richard	Stuck	Source Water Protection Manager	Greater Cincinnati Water Works	82
6/11/2024	2:30 PM	3:00 PM	TUE15-02	Protecting Tucson Water's Central Wellfield: Randolph Park Golf Complex PFAS Treatment Facility	on Water's Central Wellfield is the historic source of water for Tucson and serves as the sole alternate drinking water supply to Tucson's current use of recovered Colorado River water. Tucson Water is leading the design and construction of a remediation well and PFAS treatment facility located on Randolph Park Golf Complex to protect the central wellfield from a migrating PFAS plume emanating from Davis Monthan Air Force Base (DMAFB). This presentation will discuss identifying monthly flow rates by balancing plume containment and golf course irrigation demand, treatment process design, and the visual impact.	Kristen	Amante		Carollo	83
6/11/2024	3:00 PM	3:30 PM	TUE15-03	Don't Let Your Guard Down, Evolution of Continuous Online Algae Monitoring in Full Scale Systems	Freshwater algae are a diverse group of photosynthetic microorganisms which can lead to many water quality and operational challenges in water systems. Historically, algal blooms have negatively impacted the 132 MGD Lorne Park WTP and the 317 MGD Arthur P. Kennedy WTP. In response, both WTPs adopted operational response plans for algae and continuous online algae monitoring systems, to detect and speciate algae in raw water, as an early warning system. Next phase will include new source water monitoring systems that will be deployed in Lake Ontario at both intakes to further monitor lake water quality including algae presence, enabling advanced real-time alarms and data to assist operators in their day-to-day decisions.	Chengyang	Jiang			84
6/11/2024	2:00 PM	3:30 PM	TUE16	TUE16 - Ensuring Water Supply Resiliency for 19 Million People: Lessons Learned From Water Agency Leaders in Southern California	Ensuring a reliable, resilient and sustainable water supply for Southern California is becoming more challenging due to climate change, seismic risks and increasing regulations. This facilitated panel of water agency leaders will discuss lessons learned from past and planned implementation of resiliency programs and expected benefits to the region, state and nationally.	Keli	Balo	Deputy Director, Engineering and Program Management	San Diego Public Utilities Department	85
6/11/2024	2:00 PM	3:30 PM	TUE16	TUE16 - Ensuring Water Supply Resiliency for 19 Million People: Lessons Learned From Water Agency Leaders in Southern California	Ensuring a reliable, resilient and sustainable water supply for Southern California is becoming more challenging due to climate change, seismic risks and increasing regulations. This facilitated panel of water agency leaders will discuss lessons learned from past and planned implementation of resiliency programs and expected benefits to the region, state and nationally.	Anselmo	Collins	Senior Assistant General Manager, Water System	Los Angeles Department of Water and Power	86
6/11/2024	2:00 PM	2:15 PM	TUE16-01	Water Supply Resiliency Challenges	Summary of climate change and seismic risks that Southern California water utilities face in ensuring reliable water supply	Dan	Rodrigo	Sr. Vice President	CDM Smith	87

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/11/2024	2:15 PM	3:00 PM	TUE16-02	Panel Presentations on Water Supply Resiliency in Eastern Riverside County, San Diego, City of Los Angeles, and South Orange County	Presentation of innovative projects being implemented to increase resiliency, such as potable reuse and seawater desalination using sub-surface intakes.	Lanya	Voelz Alexander	Assistant General Manager of Planning, Engineering	Eastern Municipal Water District	88
6/11/2024	2:00 PM	5:00 PM	TUE17	TUE17 - Strategic Policies for Tackling Water Challenges Across the Globe by Charting a Course to a Sustainable Water Future	Communities across the world are facing many common water challenges ranging from scarcity, flood, and poor management. This session will provide a venue for North America attendees and our overseas visitors to share lessons learned, success stories, and insights across a number of projects and geographic settings.	Pooja	Chari	Water & Wastewater Engineer	Woodard & Curran	89
6/11/2024	2:00 PM	2:30 PM	TUE17-01	Sustainable Development and Water Security: Increasing Global Water Scarcity in Developing Countries and Their Potential Solutions	Using Falkenmark's 'water barrier' methodology, this presentation aims to identify regions that pose a high water security threat and explore policy and engineering solutions to tackle this global threat.	Tyler	Maxwell	Water Resources Engineer	AECOM	90
6/11/2024	2:30 PM	3:00 PM	TUE17-02	Developing Policies to Promote Water Utilities Consolidation for the Integrated Water Management In Korea	The Korean government has recently been promoting smart water management infrastructure to 'establish a clean and safe water management system,' improving water purification plants and old pipes for drinking water management, and developing innovative water management technologies. However, while Korea's local water supply still has structural problems such as operational inefficiency, reduced manpower, lack of expertise, and aging facilities, a series of recent tap water accidents is increasing public distrust in tap water. This study examines the major current issues and sectoral issues of the local water supply project and, in order to improve the efficiency and equity of the water supply project, realizes integrated water management.	Jong Ho	Ahn		Korea Environment Institute	91
6/11/2024	3:00 PM	3:30 PM	TUE17-03	Achieving Destination 2030 to Provide Water and Sanitation to All	We have less than 10 years to ensure that everyone in the world has access to lasting and safe water, sanitation, and hygiene services, and meet United Nations Sustainable Development Goal 6. The solution lies in government-led systems with strong private sector support. Governments have the scale, financial muscle, and legitimacy to deliver water and sanitation services to everyone, forever. Destination 2030 is our guiding strategy to achieve these government-led systems and local, national and global impact. We will provide information about how to do collaborative monitoring across an alliance, the key impact target, the critical linkages between local and national impact pathways, and ways attendees can get involved.	Mark	Duey		Water For People	92
6/11/2024	2:00 PM	3:30 PM	TUE18	TUE18 - Centering People: Exploring the Intersection Between DEI, Water 2050 and the UN's Sustainable Development Goals	Leaders across the globe and the AWWA community are working today to create a better tomorrow. A sustainable water future means a sustainable workforce. Hear from this esteemed panel of national leaders about the intersection between the Water 2050 project, the UN's Sustainable Development Goals, and everyday DEI strategies.	Donnell	Duncan	Associate Vice President		93

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/11/2024	2:00 PM	4:00 PM	TUE19	TUE19 - Setting the Stage for the Next Generation of Water Professionals	Setting the stage for the next generation of water professionals involves a strategic focus on education, technology, and sustainability. Establishing partnerships between educational institutions and the water sector providing internships that can introduce and prepare young individuals for working for water. Encouraging the adoption of cutting-edge technologies and data-driven solutions within the water sector will attract tech-savvy professionals and enhance efficiency. Moreover, emphasizing the industry's commitment to sustainable practices and environmental stewardship will resonate with the socially conscious values of the next generation, inspiring them to contribute to the vital work of water professionals in addressing global water challenges.					94
6/11/2024	2:00 PM	2:30 PM	TUE19-01	Setting the Stage for the Next Generation of Young Professionals	Covering the importance of providing young professionals the opportunity to participate in internships. These internships give them the opportunity to see how a working laboratory functions, while also giving them the opportunity to develop and execute a research project which will be presented to the team. It will also cover how critical it is when hiring potential candidates to not only look at experience that appears to be directly applicable, but also look at potential transferable skills. These skills can be integrated and improved upon as the learn the new profession. This leads to more well-rounded and competent young professionals.	Kaitlyn	Rullo		EPS	95
6/11/2024	2:30 PM	3:00 PM	TUE19-02	Identifying Strategies for Increasing the Presence of Young Professionals in the Water Industry	According to the 2023 AWWA State of the Water Industry, an ageing workforce ranks in the top 10 list of concerns for the future of the water industry. Throughout my pathway to becoming a young professional in the water industry, I have been exposed to a variety of experiences and interacted with individuals that have intrigued my interests to identifying the reasons for a struggle to increase the presence of young professionals. The goal of this presentation is to provide viewers with conclusions based on a survey conducted on college students and young professionals within the Midwest. Ultimately, the content of the presentation will support the development of effective strategies for overcoming an ageing water industry workforce.	Nicole	Martindale		HDR	96
6/11/2024	3:00 PM	3:30 PM	TUE19-03	Fostering the Next Generation of Water Professionals	How do you attract and retain the next generation talent when the workplace gap spans five generations? Fostering the up-and-coming water professionals through internships, mentorships, and strong values has proved successful in creating a sense of belonging at work while also setting expectations for work ethic. This presentation shares examples of how this has been successfully done and how other employers in the water industry can replicate the process.	Stephanie	Hubli			97
6/11/2024	3:00 PM	3:30 PM	TUE19-03	Fostering the Next Generation of Water Professionals	How do you attract and retain the next generation talent when the workplace gap spans five generations? Fostering the up-and-coming water professionals through internships, mentorships, and strong values has proved successful in creating a sense of belonging at work while also setting expectations for work ethic. This presentation shares examples of how this has been successfully done and how other employers in the water industry can replicate the process.	Raj	Vaidya	Engineer	Woodard & Curran	98

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/11/2024	3:30 PM	4:00 PM	TUE19-04	How to Create an Effective Workplace for Millennials and Gen-Z's	Talent management for Millennials and Gen Z individuals requires a tailored approach, as these generations have distinct preferences, values, and expectations in the workplace. FRWRD has started some unique initiatives which encourage employee engagement, employee recognition and reward. With talent becoming a critical issue in the next 2 years, it is important that we use every effective recruitment and retention strategy to sustain human capital. The presentation will discuss some of the key factors identified by employees to affect retention. The presentation will discuss key strategies with data on emerging initiatives and group studies to effectively manage and engage Millennials and Gen Z employees.	Promod	Vohra		FRWRD	99
6/11/2024	3:30 PM	5:00 PM	TUE21	TUE21 - Strategies to Improve Resiliency in Water Infrastructure	Join us for a session on exploring strategies to improve resiliency for utility owners. Moulton Niguel Water District led an effort to broadly engage their organization to develop a people-centered approach to sustained organizational resilience. A panel discussion will follow, featuring Ted Henifin, Interim Third Party Manager for Jackson Water, and representatives from engineering partners. The discussion will explore the critical intersection of resiliency and sustainability in water infrastructure development through the lens of the Jackson water system and its complex challenges.	Mel	Harclerode			100
6/11/2024	3:30 PM	4:00 PM	TUE21-01	Empowering People for Sustainable Utility Resilience	The Moulton Niguel Water District (MNWD) launched an ecosystem and people-centered effort to evaluate and strengthen their resilience planning. Through utility-wide engagement and collaboration with partners across California, they used four industry megatrends to challenge current operations and identify 22 investment areas to improve utility resiliency. MNWD scanned global practices beyond the water sector for an approach that improves practices but also engages their staff, external partners, and community to sustain ecosystem readiness necessary for true organizational resiliency.	Jason	Carter	Vice President	Arcadis	101
6/11/2024	4:00 PM	5:00 PM	TUE21-02	Building Resilient and Sustainable Water Infrastructure in Jackson, MS – Insights From the Project Team	You've seen the headlines, now hear from the project team of JXN Water, Ted Henifin, interim third-party manager will speak on lessons learned and introduce key parts of his project team from Jacobs, Stantec, and HDR to speak on the progress of the system in its recovery. This panel will explore the critical intersection of resiliency and sustainability in water infrastructure development and management. Through a multi-disciplinary lens, the panelists will provide valuable insights and practical approaches for the AEC industry to understand the challenges in Jackson, MS.	Ameerah	Palacios	Strategic Communications Business Class Lead - KY/	HDR	102
6/11/2024	3:30 PM	5:00 PM	TUE22	TUE22 - Smart Water Metering: Advancements, Trends, and Business Models in the Global Water Market	The evolving landscape, driven by technological advancements, allows metering systems to gather more data through cellular networks and convert it into actionable intelligence, marking a departure from traditional billing-focused designs. This session explores how to maximize the value of this intelligence, emphasizing the need for utilities to leverage new AMI data sets for improvements and innovations in operations. Here from experts as they explore the transformation of water metering and shifting metering business models.	Christopher	Tapia	Meter Service Worker	Carlsbad Municipal Water District	103
6/11/2024	3:30 PM	4:00 PM	TUE22-01	The State of the Global Water Metering Market: Key Tech Trends and Business Model Shifts	In this presentation, Bluefield will highlight vendor-agnostic technology and business model shifts transforming the water metering sector, and discuss growth outlooks, use cases, and outstanding questions. Attendees will get a better understanding of the key developments and trends to watch in a fast-changing market, to help guide their own smart metering investment strategies.	Eric	Bindler		Bluefield Research	104



Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/11/2024	4:00 PM	4:30 PM	TUE22-02	Advanced Metering Infrastructure (AMI): Better Use of Systems and Data	The Water Research Foundation (WRF) is undertaking this project to bring different perspectives together to understand the breadth of applications of advanced metering infrastructure (AMI) systems and to help realize maximum value from these systems. To realize benefits beyond meter readings for customer billing, utilities need to understand improvement opportunities enabled by the new AMI data sets and associated data processing, analysis tools, and potential control tools. This project will capture innovative applications of AMI technology through valuable and practical discussions, plus identify any research or innovation needs that might be particularly useful in continuing to advance this area of practice.	D. Michael	Rotunno		Arcadis	105
6/11/2024	4:30 PM	5:00 PM	TUE22-03	Dark Territory: Extending Your Metering System Beyond Billing Into Operations	Traditionally, water metering systems were designed for billing, not operations. With the convergence of technological advancements in metering, meter reading technologies and cloud computing, metering systems can acquire more data points with ease through a robust cellular network and convert this data into actionable intelligence.	Patrick	Williamson			106
6/11/2024	3:30 PM	5:00 PM	TUE23	TUE23 - PFAS Operations Experience	The extent of PFAS occurrence in environmental waters is unknown, and there is economic and public pressure to install treatment systems that can remove additional PFAS that may be regulated in the future. To this end, robust analytical methods and knowledge of treatment efficacy across a wide breadth of PFAS are needed. This session adds to the sector's growing PFAS treatment knowledge through analysis of three utility approaches to PFAS treatment.					107
6/11/2024	3:30 PM	4:00 PM	TUE23-01	Did All of My PFAS Piloting Pay Off During Full-Scale Operation?	In 2019, the Middlesex Water Company began planning for PFAS treatment at their Park Avenue wellfield and implemented an extensive multi-phase piloting program. This presentation will compare the results of bench-scale testing (performed over two months), field-scale testing (performed over 12 months), accelerated partial permanent treatment (performed over 11 months), and full-scale operation (over 12 months) for a new 13-mgd WTP. Results captured during full-scale operation implemented in two phases will be featured in comparison to the expectations of the bench-scale and field-scale testing. The goal is to help utilities answer the question of "how much is too much?" when it comes to piloting systems for PFAS treatment.	David	Tanzi	Senior Vice President	CDM Smith	108
6/11/2024	4:00 PM	4:30 PM	TUE23-02	Implementing and Operating the Largest PFAS Treatment Facility in North Carolina	The Cape Fear Public Utility Authority (CFPUA) designed and constructed a 44-mgd GAC treatment facility to address short- and long-chain PFAS compounds, including GenX, in its source water. The GAC facility started operating in October 2022 and has been effective in reducing PFAS in the finished water. This presentation will share the PFAS treatment strategy that CFPUA implemented and the results of the first year of operation, including the GAC reactivation.	Carel	Vandermeiden	Deputy Executive Director	Cape Fear Public Utility Authority	109
6/11/2024	4:30 PM	5:00 PM	TUE23-03	From Hundreds of PPT to Non-Detects: Summary of Four Years of Full-Scale PFAS Treatment and Breakthrough Data	The Owen District Road WTP in Westfield, MA has been treating highly contaminated water sources with total PFAS detected in 200-300 ng/L or ppt with granular activated carbon (GAC). While GAC, operating in a lead-lag configuration, has delivered finished water with non-detects of all the monitored PFAS, monthly data analyses of the PFAS levels throughout the lead and lag vessel bed depth (influent, 25%, 50%, 75%, and effluent) provide insights into PFAS adsorption and breakthrough behaviors by GAC. This presentation will share full-scale data from four years of operation including 1) how six PFAS (PFOA, PFHxS, PFOA, PFHxA, PFHpA, and PFBS) migrate throughout media depth, 2) raw water PFAS trends, 2) and 3) start-up water quality data.	Jihyon	Im		CDM Smith	110

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/11/2024	3:30 PM	5:00 PM	TUE24	TUE24 - Exploring the Digital Transformation of Water and Wastewater Industry	This session will present four examples of digital transformation in the Water Industry from various perspectives on a wide variety of topics. Learn about the journey and benefits of digital transformation and applying Artificial Intelligence.	Kedric	Szana		Jacobs	111
6/11/2024	3:40 PM	4:00 PM	TUE24-02	Pioneering a Digital Transformation, The Dekalb County Journey Towards a Centralized SCADA Management Utility Integration Center	The journey to establish a Centralized SCADA Systems Management and Water Utility Integration Center is a transformative endeavor in water utility management. Key elements and strategic steps include understanding the utility's mission, aligning it with a visionary perspective, assessing asset conditions, gaining executive support, defining clear goals, estimating costs, and effective procurement, team management, and design. This journey aims to enhance water utility management by optimizing infrastructure, boosting data analysis capabilities, and strengthening system resilience, fostering efficiency and sustainability in modern water utility management.	Kevin	Montague	SCADA Systems Manager	Dekalb County, Watershed Management	112
6/11/2024	4:00 PM	4:20 PM	TUE24-03	Applications and Shortcomings of Machine Learning for Drinking Water Systems	Machine learning models can be used to understand several aspects of drinking water systems; however, they rely on large datasets representing a full domain of conditions and may not be the best tool for all situations. This presentation will describe beneficial uses of ML models, data requirements for model development, and other modeling approaches that can fill gaps when ML is insufficient.	Sierra	Johnson			113
6/11/2024	4:20 PM	4:40 PM	TUE24-04	Revolutionizing Water Resource Management: Artificial Intelligence and Image Processing Solutions	This research harnesses AI and image processing to revolutionize water resource management, encompassing flood detection, drought monitoring, and water quality assessment. It utilizes diverse data sources, such as satellite imagery, ground-based photos, and gauge-generated data. Innovative tools like ATLANTIS and AQUANet enhance waterbody segmentation, complemented by a suite of models that merge physics-based and Deep Learning-based approaches. The presentation also offers a glimpse into future directions, emphasizing our dedication to innovating techniques and tools that bolster the sustainability of our planet's precious water resources.	Erfan	Goharian	Assistant Professor	University of South Carolina	114
6/11/2024	4:40 PM	5:00 PM	TUE24-05	Application of Building Information Modeling (BIM) and Augmented Reality (AR) in the Water and Wastewater Industry	This article explores the applications and benefits of BIM and AR in the water and wastewater industry. BIM facilitates collaborative design, clash detection, and informed decision-making in pipeline design. During construction, BIM optimizes sequences, improves coordination, and reduces errors. AR overlays virtual information on-site, guiding construction and enhancing documentation. In asset management, BIM integrates data for monitoring, maintenance planning, and decision-making. AR aids technicians with real-time guidance during inspections and repairs. Integrating BIM and AR improves efficiency, accuracy, and decision-making across the industry.	Immanuel	John Samuel	Project Engineer	Garney Construction	115
6/11/2024	3:30 PM	5:00 PM	TUE25	TUE25 - Unique Project Drivers Guiding 3 Owners to Collaborate Delivery	What do a circa-1800's WTP in Maine, a 1/2-billion dollar conveyance project in California, and Microchips in Texas have in common? They have enough unique challenges and project drivers to encourage these Owners to look beyond traditional design-bid-build for delivery methods that provide the flexibility they need. Attendees in this session will learn about three vastly different projects, and why their Owners determined that CMAR and Progressive Design Build afforded them the best path to a successful project outcome.	Scott	Phillips	Business Development Manager	Garney Construction	116

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/11/2024	3:30 PM	4:00 PM	TUE25-01	Using the CMAR Delivery Model to Replace the 135-Year Old Saco River Water Treatment Plant in Biddeford, Maine	<p>This presentation provides a brief history of the 135-year-old Saco River Water Treatment Plant, and how the Maine Water Company employed the CMAR project delivery model to achieve multiple project goals and lay the groundwork for ensuring the new treatment plant will serve its customers into the next century.</p> <p>The information included in this presentation will provide the audience with an interesting real-world case study of how a collaborative design approach and CMAR delivery model brings practical value to the design and construction of critical water infrastructure, and how it can be readily applied throughout the process.</p>	Marc	Morin	Senior Associate	Hazen and Sawyer	117
6/11/2024	4:00 PM	4:30 PM	TUE25-02	Assembling the Best Minds: Using Progressive Design Build to Deliver a \$580M Conveyance System Repair & Upgrade in the SF Bay Area	<p>Utility owners will get practical information from this case study on the planning and execution of a major utility upgrade using collaborative delivery. This information provides a real-world example for owners to use in educating their staff and Board members on the benefits of using collaborative delivery.</p> <p>Silicon Valley Clean Water (SVCW) is a regional wastewater Joint Powers Authority located in the San Francisco Bay Area, mid-way between San Francisco and San Jose, California, serving approximately 250,000 customers. As one of the earliest adopters of Progressive Design Build for public infrastructure in California, SVCW's experience can provide a practical road map for starting, executing, and finishing large concurrent projects.</p>	Mark	Minkowski	VP, Pipelines Community of Practice Leader	Kennedy/Jenks Consultants	118
6/11/2024	4:30 PM	5:00 PM	TUE25-03	Making My Way Downtown, Flowing Fast, Drilling Past and I'm Chip Bound: Designing a 16-mile pipeline on an Expedited Schedule	<p>Due to the growing international demand for microchip products, and the booming industry of the manufacturers that make them – major chip manufacturers have begun to relocate operations to new areas that can meet their space and water requirements. North Texas, and more specifically Sherman, Texas has become one of these regions for several of these manufacturers. While this opportunity will improve the wellness and growth of Sherman, this Abstract will detail the necessary water infrastructure improvements needed to meet the immense water use and describe the strategy used to implement it on a condensed schedule.</p>	Jacob	Pannell			119
6/11/2024	3:30 PM	5:00 PM	TUE27	TUE27 - Water is a National Security Priority	<p>Water and wastewater play a critical role in our nation's infrastructure. Ensuring the protection of these systems is crucial for the survival and well-being of all Americans. The sector faces a variety of threats, including contamination, physical attacks, and cyber-attacks. In this session the Cybersecurity and Infrastructure Security Agency (CISA) will discuss collaboration with the Environmental Protection Agency and water system stakeholders to mitigate risks, including new resources to support water systems with managing various risks. The recently updated strategic plan of the Water Sector Coordinating Council will be profiled which include key priority for improving the sectors security posture. The session will also include a profile from a utility on actions it has taken to mitigate various risks. This will conclude with a facilitated panel discussion with audience Q&amp;A.</p>	Andrew	Ohrt	Resilience Practice Area Lead	West Yost Associates	120

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/11/2024	3:30 PM	3:50 PM	TUE27-01	Securing Vital Infrastructure: Safeguarding Water and Wastewater Systems from Diverse Threats	Water and wastewater play a critical role in our nation's infrastructure. Ensuring the protection of these systems is crucial for the survival and well-being of all Americans. The sector faces a variety of threats, including contamination, physical attacks, and cyber-attacks. In this session, Dr. David Mussington, Executive Assistant Director for Infrastructure Security at the Cybersecurity and Infrastructure Security Agency (CISA), will discuss CISA's collaboration with the Environmental Protection Agency and water system stakeholders to mitigate risks. By addressing physical impacts like climate change, setting cybersecurity standards, and providing resources, we aim to enhance the resilience of this essential resource of the future.	Corliss	McCain-Rouse		CISA	121
6/11/2024	3:30 PM	5:00 PM	TUE29	TUE29 - The Water Research Foundation Research Highlight: Holistic Flood Management Under Climate Impacts	Municipalities and utilities are facing unprecedented challenges in planning for extreme precipitation and flooding events, which are occurring more frequently and unpredictably. A holistic approach to flood management and modeling, including partnerships among stakeholders, is needed to better balance competing management objectives while minimizing overall system vulnerabilities in a changing climate. This half-session will provide the latest advances and best practices with case studies from WRF-funded research studies and share the utility perspectives as well. The research findings and related guidance can be applied by municipalities of all sizes to incorporate climate variability and uncertainty into their holistic flood management and modeling practices.	Harry	Zhang		The Water Research Foundation	122
6/11/2024	3:30 PM	5:00 PM	TUE30	TUE30 - Challenges and Solutions for Implementing Metropolitan Water District's Pure Water Southern California	Our session will feature five speakers that will present on the work that they are currently doing to help implement the PWSC. There will be a variety of topics including technical and policy presentations made by the Metropolitan and LACSD staff responsible for the work. After the presentations, the panel members will answer both questions from the facilitator as well as the audience.	Gloria	Lai Bluml	Advanced Water Treatment Facilities Program Manage	Metropolitan Water District of Southern California	123
6/11/2024	3:30 PM	3:48 PM	TUE30-01	Program Overview and Planning	Metropolitan is responsible for implementation of the program. Highlights of the PWSC will be provided, including information on program objectives, partners, environmental planning, costs and funding, program risks/challenges, and schedule.	R.	Chalmers			124
6/11/2024	3:48 PM	4:06 PM	TUE30-02	LACSD Source Water and Facility Coordination	LACSD is an integral partner with Metropolitan and will provide space for the AWT, additional nitrogen removal via sidestream centrate treatment, HPOAS train modifications, incorporation of a flex MBR, and additional source control.	Derek	Zondervan	Assistant Department Head - Facilities Planning	Los Angeles County Sanitation Districts	125
6/11/2024	4:06 PM	4:24 PM	TUE30-03	PWSC Facilities	The focus of the facilities discussion will be treatment plant site selection, power supply, pipeline alignment and right-of-way through developed areas and disadvantaged communities, diverse recharge facilities that are available year-round.	Gloria	Lai Bluml	Advanced Water Treatment Facilities Program Manage	Metropolitan Water District of Southern California	126
6/11/2024	4:24 PM	4:42 PM	TUE30-04	Water Quality, Permitting and DPR	Meeting water quality objectives is a challenge because of the varied demands that must be met; while permitting is even more difficult due to balancing the IPR water quality with the DPR water quality, while protecting the public at all times.	Heather	Collins	Water System Operations - Section Manager	Metropolitan Water District of Southern California	127
6/11/2024	4:42 PM	5:00 PM	TUE30-05	Public Outreach Efforts	Metropolitan's public outreach has implemented a comprehensive outreach program to the community with an emphasis on community benefits and impacts on underserved communities, both during construction and afterwards.	Rupam	Soni	PWSC Community Relations Team Manager	Metropolitan Water District of Southern California	128

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/11/2024	3:30 PM	5:00 PM	TUE31	TUE31 - Navigating Challenges of Water Affordability	Rising costs and recent high-profile crises have made the affordability of water and sewer service a prominent policy issue for utility managers, as well as local, state, and federal officials across the United States. A clear picture of affordability is critical as utility leaders seek to serve low-income customers while simultaneously raising the revenue necessary to maintain and advance public health. Developing and implementing sustainable models, such as income-based affordability programs and community-driven solutions, get us closer to safe water access for all.					129
6/11/2024	3:30 PM	4:00 PM	TUE31-01	Troubling Trends: A National Water & Sewer Affordability Update	This presentation reports findings from a study of household-level low-income water and sewer rate affordability with original data from a nationally representative sample of >400 American utilities. Replicating 2017, 2019, and 2021 studies with new data from 2023, this study measures affordability with: 1) the Affordability Ratio (basic water and sewer costs as a percentage of disposable income) at the 20th income percentile (AR20); and 2) basic water and sewer costs as Hours of Minimum Wage labor (HM). Results show that prices rose significantly from 2017-2023, and affordability worsened dramatically. Data indicate that that income distributions and costs of living are the main drivers of America's affordability challenges.	Manuel	Teodoro	Professor	University of Wisconsin	130
6/11/2024	4:00 PM	4:30 PM	TUE31-02	Effective Strategies for Building Consensus with a Rate Advisory Committee	Understanding the community's values related to water affordability and customer assistance is critical when a utility undertakes a significant investment in infrastructure. Utilities must understand the community's perspectives on the investment and affordability challenges. Tualatin Valley Water District proactively convened a Rate Advisory Committee (RAC) to consider the need to form a Customer Assistance Program and make a recommendation to the Board. In March 2023, the RAC unanimously recommended a Percent Discount Customer Assistance Program for low-income customers to address the District's affordability issues. Presentation attendees will learn proven techniques to build consensus for critical public policy decisions.	Elizabeth	Bakke	Principal	Conсор	131
6/11/2024	4:30 PM	5:00 PM	TUE31-03	Building an Income-Based Tier Affordability Program	Detroit and many urban cities have long struggled with water affordability. Funding and legal constraints have hampered the ability to implement income-based water affordability programs. In 2022, the Detroit Water and Sewerage Department (DWSD) launched an income-based water affordability program that has three tiers, three primary benefits and three funding sources. The department first had to conduct a rate study, shift costs and create an inclining block rate for water usage. While doing so, the team set the fixed monthly bill tiered amounts at 1.3% of the average household income of each tier with the lowest being \$18. The architect of the DWSD Lifeline Plan, Gary Brown, will present on the program and the enrollment.	Bryan	Peckinpugh	Public Affairs Officer	Detroit Water & Sewerage	132
6/11/2024	3:30 PM	5:00 PM	TUE33	TUE33 - Xylem Sponsored Session - Unlocking Optimization: Stories of Success in Pipeline Management and Smart Metering	Utility managers face the challenge of driving efficiency while upholding reliability, safety, and affordability. Join us to hear industry and utility leaders share their success of optimization within drinking water systems through large-diameter pipeline management and integration of smart metering technology. Utility leaders will share their perspectives on holistic strategies, innovative assessments, and transformative applications for data analysis. Attendees will leave equipped with the knowledge to build, strengthen, and optimize their drinking water systems serving large industrial and contract water customers.	Lynne	Putnam	Senior Program Manager		133

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	10:00 AM	11:30 AM	WED27	WED27 - Lessons Learned on Development and Implementation of a Linear Asset Management Program from a Utility Perspective	This session will serve as a venue to discuss lessons learned from development and implementation of linear asset management programs through the lens of representatives from four major utilities. Participants will be representative of varying geographic regions and disciplines within their respective utility, offering unique perspectives on the similar, but different challenges, they each face.	Cheryl	Porter	Chief Operating Officer, Water	Great Lakes Water Authority	134
6/12/2024	10:00 AM	10:15 AM	WED27-01	The City of Baltimore's Water Transmission Main Assessment Program	The presentation will highlight the Water Transmission Main Assessment Program established and managed by the City of Baltimore, including operational and logistical challenges.	Brian	Ball	Chief, Office of Asset Management	City of Baltimore DPW	135
6/12/2024	10:15 AM	10:30 AM	WED27-02	GLWA's Linear System Integrity Program	The presentation will highlight GLWA's Linear System Integrity Program, including operational and logistical challenges.	Cheryl	Porter	Chief Operating Officer, Water	Great Lakes Water Authority	136
6/12/2024	3:00 PM	3:30 PM	WED60-04	Aquifer Storage and Recovery (ASR) Well program: Long-Term Pumping Test Results	This presentation outlines the results of eight aquifer performance tests conducted on two separate ASR well fields. Each test is 5-days in lengths and pumping rates exceeded 5200 gallons per minute. Results of these tests will be discussed and the impacts to future ASR wellfield expansions will be evaluated.	John	Wu	Hydrogeologist	Stantec	137
6/12/2024	3:30 PM	4:00 PM	WED60-05	Increased Resiliency of Provo City's Water System Through Innovative Water Supply Management and Managed Aquifer Recharge	Provo City, Utah, pioneered the planning and development of a municipal water supply for its residents dating back to 1849, long before Utah became a State. The municipal water demands have changed in the intervening years, but growth has been a constant reality. With known water supply limitations in the 21st Century, Provo City has recently made substantial strategic decisions and corresponding investments to increase the resilience of its water supply and ability to meet projected water demands through 2060. The journey has included challenges along the way, but Provo City remains committed to a long-term vision of water supply resiliency for the benefit of the City and its future. Positive impacts are also anticipated for the region	Delmas	Johnson		Hansen, Allen & Luce, Inc.	138
6/12/2024	4:00 PM	4:30 PM	WED60-06	Aquifer Storage and Recovery (ASR) Wells in Central Florida: Construction and Testing	A discussion of ASR well construction and testing details.	Caroline	Smith			139
6/12/2024	1:30 PM	4:30 PM	WED61	WED61 - Enhanced Identification, Early Detection, and Removal of Contaminants in Potable Reuse	Potable water reuse is an increasingly attractive option to diversify water supply portfolios in the face of unpredictable water supplies in California. Research into monitoring and control of chemical and microbiological contaminants in reuse source waters is advancing our ability to implement potable reuse. This session will focus on methods for enhanced identification, early detection, and removal of contaminants in potable reuse.	Maureen	Hodgins	Regional Liaison	Water Research Foundation	140
6/12/2024	8:30 AM	10:00 AM	WED01	WED01 - Monitoring, Prevention and Tools for Managing Nitrification	The standard practice for nitrification monitoring is to collect a grab sample from water storage tanks and reservoirs weekly to monitor residual disinfectant as well as nitrite levels. Implementing the use of on-line analyzers to monitor the nitrite levels is beneficial for maintaining high water quality. Studies were conducted to understand the impact of increased chlorine to ammonia ratio to address nitrification issues on water quality, providing system-specific recommendations for improvement, including the addition of mixers and online analyzers.	Meg	Roberts	Distribution Systems Services Leader, Associate Vi	Hazen and Sawyer, P.C.	141
6/12/2024	8:30 AM	9:00 AM	WED01-01	Use of On-Line Analyzers to Monitor Nitrification in Drinking Water Tanks	This talk is to go over the benefits of using on-line analyzers to monitor nitrite levels in drinking water storage tanks.	Chris	Park		Los Angeles Water & Power	142

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	9:00 AM	9:30 AM	WED01-02	A Utility's Investigations on the Role of a 5:1 Chlorine to Ammonia Ratio in Controlling Nitrification and Total Coliforms.	The Massachusetts Resources Authority (MWRA) made incremental step increases in its chlorine to ammonia (Cl <sub>2</sub> :NH <sub>3</sub> ) ratio in August 2022 from 4.7:1 to 5:1 by September 2022 in an effort to address issues with nitrification and low chlorine residuals in MWRA-serviced communities during summer months. This study was aimed at understanding the impact of a higher 5:1 Cl <sub>2</sub> :NH <sub>3</sub> ratio on distributed water quality in MWRA's Metro-Boston system, and investigate changes in total coliform presence at community TCR compliance taps, following the increase to a 5:1 Cl <sub>2</sub> :NH <sub>3</sub> ratio. This work presents results on experimental work evaluating the biological stability of MWRA's chloraminated drinking water at a 5:1 Cl <sub>2</sub> :NH <sub>3</sub> ratio in the presence of organic matter.	Mandu	Inyang	Program Manager, Chemistry	Massachusetts Water Resources Authority	143
6/12/2024	9:30 AM	10:00 AM	WED01-03	Adopting Multiple Tools to Manage Nitrification Across California: Lessons Learned from Nine Water Districts	A comprehensive review for developing nitrification management plans was performed on 9 water systems spread across the state of California. The project documented evidence of nitrification occurrence, in varying degrees, in all 9 systems. The project developed system-specific improvement recommendations for each district. Locations (primarily tank sites) were identified where capital improvements will be needed in future, including addition of tank mixers, continuous online water quality analyzers, and automated chlorine and ammonia feed systems. This presentation will highlight the nitrification related water quality observations and demonstrate correlations between system operations and water quality.	Amlan	Ghosh		Corona Environmental	144
6/12/2024	8:30 AM	11:30 AM	WED02	WED02 - 101 Series: Conventional Surface Water Treatment	Back by popular demand! AWWA's 101 water treatment series are a great opportunity to learn and refresh. Always engaging, always enlightening. Join us for ACE24's 101 session on Conventional Surface Water Treatment. Coagulation, filtration, disinfection, and aesthetics controls are the backbone to many water treatment systems. A focus on the basics of these technologies and their optimization provides a foundation to improve plant performance and efficiency. This series serves as a reminder of these critical system components, provides basic information for those new to the field, and a valuable refresher for those with years of experience in the industry.	Rebecca	Venot			145
6/12/2024	8:30 AM	10:00 AM	WED03	WED03 - Current Research on Pipe Joints and Pipe Liners	Ongoing research in the field of pipe joints and liners has focused on improving the durability, efficiency, and environmental sustainability of these components. Researchers have been exploring advanced materials and manufacturing techniques to enhance the strength and longevity of pipe joints, and developing pipe liners that can resist corrosion, optimize fluid flow, and address specific challenges in diverse applications in water distribution and wastewater management.					146
6/12/2024	8:30 AM	9:00 AM	WED03-01	Experimental Seismic Testing of Jointed Thermoplastic Pipelines Under Biaxial Loading	Full scale experimental testing for seismic performance of thermoplastic pipes under combined axial loading at the University of Colorado Boulder.	Jessica	Ramos		University of Colorado Boulder Environmental Eng.	147
6/12/2024	9:00 AM	9:30 AM	WED03-02	Water Quality Impacts of Cured in Place Pipe (CIPP) Lining for Potable Water Assets	As water utilities address their leaking infrastructure many are beginning to consider cured in place pipe (CIPP) lining for potable water applications. In the sanitary sewer and storm sewer sectors CIPP technology is quite popular for pipe repairs. But, as CIPP sewer use grew in the U.S. market, a variety of worker, public, and environmental safety hazards were discovered. To date, no studies have examined CIPP drinking water quality impacts. The study goal was to better understand CIPP water quality impacts when products were manufactured under optimum and sub-optimum conditions.	Andrew	Whelton	Asst. Professor	Purdue University, Environmental Engr.	148

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	9:30 AM	10:00 AM	WED03-03	Assessing the Sustainability and Safety of Polyethylene Terephthalate (PET) Liners for Lead Service Lines Upgrades	Managing lead service lines (LSLs) is a major challenge facing North American utilities due to an urgent need to decrease lead exposure and meet new stringent regulations in drinking water. This research project was conducted to assess the sustainability and safety of PET liners that can be considered as an alternative to complete LSLs replacement. Findings regarding its structural integrity, harmful additive release, and potential fragmentation into microplastics during aging under various conditions (pH and temperature of water, freeze-thaw cycles, and shock chlorination) will be featured. Additionally, a life-cycle analysis (LCA) comparing both the use of PET liners and the complete pipe replacement will be presented.	Amelie	Surmont	Scientific Master's student	Polytechnique Montreal	149
6/12/2024	8:30 AM	10:00 AM	WED04	WED04 - Emerging Trends in Sustainable Infrastructure	This session dives into emerging trends and novel approaches for sustainable infrastructure. Orange County, Florida identified their Northwest Water Reclamation Facility as a pilot project for ground-mounted solar installation in pursuit of their goal to achieve 100% of electricity load from clean, renewable sources by 2035. Harrisonburg, Virginia included consideration of specific energy and preferred operating ranges into their procurement process to ensure their equipment best met their needs. A 60+ floor building development in Ottawa has implemented WET technologies using domestic sewage as a heat source.	Christine	Kirby	Senior Associates, Team Leader	Lockwood, Andrews & Newnam, Inc. (LAN)	150
6/12/2024	8:30 AM	9:00 AM	WED04-01	Investing in a Sustainable Future: Solar Energy and the Challenges Encountered	Sustainability and resiliency are no longer just buzzwords; they are vital components in the path forward for utilities in the State of Florida. Orange County, Florida, recognized this necessity and developed a Sustainable Operations & Resilience Action Plan (Action Plan). The County's Northwest Water Reclamation Facility (NWRf) was selected as a pilot project location for ground-mounted solar installation. With construction completed, this presentation describes the unique challenges faced and overcome relative to the County's electrical interconnection and the long-term planning for investment required to make this concept a reality.	Michael	Bomar	Vice President	Tetra Tech	151
6/12/2024	9:00 AM	9:30 AM	WED04-02	Using Specific Energy and Life Cycle Cost Analyses to Evaluate Competitive Pumps	Bidding Pumps against each other is a tricky proposition. The cost of a pump generally only represents 10% of the life cycle cost (LCC) of the equipment, and yet that is generally the only selection criteria in a typical bid. This presentation will cover a novel approach to characterizing the lifetime energy expenditure of various pumps using specific energy an additional criteria for comparison. The City of Harrisonburg, Virginia used this approach to assure that they equipment selected best met the needs of their utility, and set their operators up for success.	Michael	Bernard	VP of Business Development	Specific Energy	152
6/12/2024	9:30 AM	10:00 AM	WED04-03	Emergence & Feasibility of Water Energy Transfer (WET) Systems	Discuss the increasing prevalence of WET system installations as a potential way to meet net zero energy goals, supply building heating and cooling demands, and take advantage of thermal capacities in existing sewer flows. Presentation will provide an overview of the main components of typical WET systems, their applications, highlight a number of existing installations, and provide details of a recent conceptual design and analysis completed by Stantec and challenges that were overcome. This design involved drawing on the thermal resources of an Ottawa trunk sanitary sewer to supply the main heating and cooling requirements for 60+ storeys of residential development. The feasibility of creating a district energy system from this sewer sou	Michael	Thivierge	Water Practice Lead	Stantec	153



Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	8:30 AM	10:00 AM	WED05	WED05 - Prioritizing Pipe Condition Assessment – a Playbook for Savings	This session covers three topics of interest for the water pipe condition assessment community. First, the economic return on investment value proposition for three types of pipe condition assessment categories: desktop condition assessment, survey level condition assessment, and high-resolution condition assessment. Second, outline the business case for each assessment type. Third, prioritize pipe condition assessments economically, and qualitatively based on organizational priorities and triple bottom line impact.	Tim	Ruhl	Product Line Leader - Water Products and Solutions	Mueller	154
6/12/2024	8:30 AM	8:45 AM	WED05-01	Pipe Condition Assessment – Business Case to Budgeting before breakfast	Common return on investment rationale for desktop, survey level condition, and hi-resolution condition assessment will be formulated. The risk, uncertainty, and expected payback from assessment techniques based on past results will be introduced.	Celine	Hyer			155
6/12/2024	8:45 AM	9:00 AM	WED05-02	Virtual Pipe Condition Assessment – The Payback Possible	Replacing a watermain during road repaving can be a path to great savings. But not if you replace perfectly good pipe! Come learn how Tuscon leveraged diverse existing datasets and machine learning to save up to \$300k on a single repaving project.	Elizabeth	Macias		City of Tucson Water	156
6/12/2024	9:00 AM	9:20 AM	WED05-03	High Resolution Transmission Pipe Condition Assessment: Full Cost Accounting A Decade later	Following several failures a high-resolution inspection was undertaken for a highly critical 30-inch ductile iron transmission pipe. Results enabled a phased pipeline management plan that offered millions in savings and zero failure a decade later..	Shaun	Pietig	General Manager	WaterOne	157
6/12/2024	9:20 AM	9:40 AM	WED05-04	Application of Acoustic Survey Level Condition Assessment: Predictive Asset Management Planning	Facing higher service quality and water loss targets, SES Water embraced a data-led asset investment strategy to maximize capital ROI for the renewal of water mains. Resulted in reduction of unplanned service interruptions and lower leakage.	Daniel	Woodworth	Direct	Dayworth Consulting	158
6/12/2024	8:30 AM	10:30 AM	WED06	WED06 - Everything You Ever Wanted to Know About Water Main Rehabilitation - the Brand-New Update to Manual M28	This session will provide an overview of water main rehabilitation methods, what they accomplish, their benefits and limitations. Participants will learn how to determine the method that best matches their objectives, and ways to manage the project or program for maximum benefit. Case studies will demonstrate where utilities have successfully used spray-applied lining, cured-in-place pipe lining, pipe bursting, and other methods, in place of traditional open-trench construction.	Mark	Knight	Professor	Waterloo University	159
6/12/2024	8:30 AM	8:50 AM	WED06-01	Introduction to Water Main Rehab and the New M28 Manual	Provides an overview to the water main rehabilitation methodologies, and their general benefits. Introduces Manual M28	Mark	Knight	Professor	Waterloo University	160
6/12/2024	8:50 AM	9:10 AM	WED06-02	Selecting a Rehabilitation Method; Understanding Both Benefits and Limitations	Decision-support tools from Manual M28 and criteria from the AWWA White Paper, "Structural Classifications of Pressure Pipe Linings" will be introduced	Chris	Macey	Technical Practice Leader for Condition Assessment	AECOM	161
6/12/2024	9:10 AM	9:30 AM	WED06-03	Managing a Rehabilitation Program	LADWP rehabilitated 2,650 miles of cast iron mains. At its peak, this program lined nearly 1 million feet of pipe per year, with 12 large projects underway at any given time. Lessons from this program are applicable to others.	Dan	Ellison	Sr. Professional Associate	HDR	162
6/12/2024	9:30 AM	9:50 AM	WED06-04	Using Pipe Bursting as the Primary Main Replacement Method, in a Small Community	Casselberry Florida adopted pipe bursting as the primary for replacing AC water mains, realizing cost savings and reducing community impacts. Dealing with hazardous waste became a major consideration.	Alan	Amblier	President	AM Trenchless	163
6/12/2024	9:50 AM	10:10 AM	WED06-05	Toronto Case Study - Extending Service Lives Using Various Tools	Toronto has become a model of proactive management of water main infrastructure. This case study will share lessons regarding economical ways of managing and reducing main breaks	Matthew	Coleman	Senior Engineer	AECOM	164

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	10:10 AM	10:30 AM	WED06-06	What's New in Water Main Rehabilitation?	The new Manual M28 covers trenchless service line replacement, among other new topics. New AWWA rehabilitation standards will also be discussed, including CIPP.	Joanne	Carroll	Consultant	Subtegit	165
6/12/2024	8:30 AM	10:00 AM	WED07	WED07 - Managing Water Quality with Distribution Flushing	Distribution system flushing is an important maintenance practice aimed at improving water quality and system performance. Strategic flushing practices release accumulated sediments, debris, and stagnant water, preventing issues such as discoloration, and taste and odor problems. This session discusses valuable insights and utility case studies and tools to support an effective distribution flushing program.					166
6/12/2024	9:00 AM	9:30 AM	WED07-02	A Sleeping Giant - Iron and Manganese Accumulation and Evaluating the Effectiveness of Hydrant Flushing	The Colorado Department of Public Health and Environment is conducting a study at a small drinking water system in rural western Colorado that is helping us learn more about the effects of hydrant flushing on iron and manganese levels. Over the course of a year, multiple points in the distribution system have been tested for iron and manganese, before, during, and after quarterly distribution hydrant flushing operations. Additionally, sampling at the wells and pre-entry point storage tank is helping to understand how oxidized iron and manganese makes its way into the distribution system, and if tank modifications might help trap some of this iron and manganese.	Robert	Clement	Environmental Engineer	EPA Region 8	167
6/12/2024	9:30 AM	10:00 AM	WED07-03	Be Your Own Hero: How Teamwork and Experimentation Improved Our Water Quality	The Town of Cary provides water to over 300,000 customers in the Raleigh-Durham Metro Area. When nitrification hit one of their pressure zones, Town staff from different divisions and departments came together to experiment with and implement solutions. This presentation is intended to encourage utilities to experiment and make decisions using real-world data, informed by hydraulic modeling. The presentation will be given by the Town staff who led the charge to experiment, collect, and process the data and implement data-driven solutions.	Corrie	Bondar		Town of Cary	168
6/12/2024	8:30 AM	10:00 AM	WED08	WED08 - Treatment Plant Solids Residual	This session will review how utilities address issues with solids residuals from treatment plants. Topics discussed will include: screw press dewatering facilities, residual process optimization, and the impact to residuals handling by changing coagulants.					169
6/12/2024	8:30 AM	9:00 AM	WED08-01	Trash to Treasure: Repurposing Solids Residuals at Albuquerque's San Juan-Chama Surface Water Treatment Plant	Managing solids at the Albuquerque Bernalillo County Water Utility Authority's San Juan Chama Water Treatment Plant (SJCWTP) can be complicated, due to Rio Grande River source water conditions, such as: seasonal changes in raw water turbidity and sediment loads, monthly targets for water production, and constraints on raw water diversions. Nonetheless, the Water Authority's staff at SJCWTP has developed and executed an effective and innovative strategy for managing solids that accumulate in the treatment process.	Damian	Luna		Albuquerque Bernalillo County Water Utility Author	170
6/12/2024	9:00 AM	9:30 AM	WED08-02	Lessons Learned from Two Rounds of Primary Coagulants Changes in the Largest Water Treatment Plant in Houston	This paper presents the evolution of the collaborative efforts of the plant operations staff, design engineers and chemical suppliers that is necessary to identify and resolve major issues in dealing with the major challenges at EWPP. The findings of this paper will be useful for water utilities to deal with issues associated with primary coagulants, sludge handling equipment, and chemical costs. Utility managers can use the lessons-learned from this paper and use similar techniques to achieve the goals of better maintaining the equipment and cost savings at their treatment facilities.	Yong	Wang	Managing Engineer	City of Houston	171

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	9:30 AM	10:00 AM	WED08-03	Residual Process Optimization in a Water Production Facility - Lesson Learned and Moving Forward	The LFP residual process handles backwash waste by separating liquid and solid. The supernatant returns to reservoir blending with lake source water. However, the recycle stream had a turbidity of 5 - 20 NTU before optimization, which deteriorates the source water quality and impacts direct filtration performance. Therefore, the research investigated in optimization options to enhance the residual process efficiency. The project started with improving recycle stream quality and then lead to multiyear optimization project for both liquid stream and solid disposal. This residual process optimization not only mitigates the adverse impacts from recycle stream but also improve solid handling efficiency with minimum capital spending.	Shih-Chi	Weng	Scientist	Gwinnett County Dept. of Water Resources	172
6/12/2024	8:30 AM	11:30 AM	WED09	WED09 - Persistent Fixes to Adverse Synthetics: Effective Solutions for PFAS	This session will present lesson-learned from the successful design, construction, and start-up of PFAS treatment systems. This information will provide support to water systems that are in the planning to comply with the anticipated final drinking water MCL for PFAS.	Joe	Stanley	Sr. Vice President	Mott MacDonald	173
6/12/2024	8:30 AM	9:00 AM	WED09-01	GAC Can be Exhausting! Best Practices for the Design and Operation of a Contactor System	As many utilities prepare for PFAS regulations, GAC treatment provides an excellent best available technology. Using two case studies this presentation will cover design, start-up, and long-term operational considerations for a GAC system. Attendees of the presentation will gain an understanding of how to start-up a GAC system and mitigate challenges associated with installation.	Katie	Walker		HDR	174
6/12/2024	9:00 AM	9:30 AM	WED09-02	Under Pressure: Efficiently Executing Your PFAS Pilot Program	Many utilities are facing decisions on how to address PFAS compliance within the anticipated regulatory deadlines. Pilot testing is a critical part of the planning and project development process for reliable and cost-effective PFAS treatment, including consideration of site-specific operational and water quality parameters. This includes understanding what technologies are most applicable based on the specific PFAS compounds present, the key water quality constituents that affect most PFAS treatment technologies, such as iron, manganese, and TOC, and potential locations in the existing treatment train for the PFAS treatment technologies.	Joseph	Nattress	Drinking Water Discipline Leader	CDM Smith	175
6/12/2024	9:30 AM	10:00 AM	WED09-03	Under Pressure – Design Considerations for PFAS Pressure Vessel and Media Specifications	For PFAS treatment, there are dozens of equipment manufacturers and media suppliers. Some providers have "all-in-one" capabilities, while others specialize in one of several aspects of the treatment process. When working through the design and procurement process, specifications that are developed can be broad and open, or very detailed and have strict requirements. With the high cost of PFAS treatment, either approach can result in lifecycle cost impacts of millions of dollars. This presentation will review specific design and specification details that have the most potential for cost impacts and provide options and solutions to develop competitive documents that do not sacrifice treatment effectiveness.	Andrew	Nishihara			176
6/12/2024	10:00 AM	10:30 AM	WED09-04	Band Aid or Major Surgery: A PFAS Story	This presentation summarizes cost effective and long-term treatment strategies for reducing per- and polyfluoroalkyl substance (PFAS) at the City of Riverside's sole water supply, while also considering both current and future regulated groundwater contaminants.	Alice	Wang			177

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	10:30 AM	11:00 AM	WED09-05	Getting Ahead of the Curve: Accelerated PFAS Treatment During Permanent System Construction and Unexpected Lessons Learned	This presentation will discuss how the bench- and field-scale testing performed during design allowed a utility to quickly shift gears during the initial phase of construction, from only focusing on commencing operation of the full facility to implementing an interim treatment plan. A discussion on the expedited permitting, procurement, and delivery of GAC vessels to achieve accelerated treatment and production goals within a five-month period will be included. Installation and commissioning of the accelerated treatment system while the permanent system was under construction will be discussed, and how lessons learned during the commissioning of the accelerated treatment system impacted the commissioning plan for the full facility.	David	Tanzi	Senior Vice President	CDM Smith	178
6/12/2024	11:00 AM	11:30 AM	WED09-06	Beyond Treatment - Holistic PFAS Implementation Considerations	PFAS treatment designs often focus on media selection and pressure vessel design, but what about other components that impact project schedule, acceptance, and ease of operation? The answer - ancillary project and design components. Project stakeholder engagement and the selected equipment procurement model will have major impacts to your project implementation. Decisions related to hydraulics, prefiltration, and backwash/rinse capabilities have impacts on daily operations tasks as well as lifecycle cost. This presentation will discuss these ancillary project components, presenting lessons learned from recent design and startup of local southern California groundwater PFAS treatment systems and other projects throughout the U.S.	Tyler	Hadacek	Envriomental Engineer	Stantec	179
6/12/2024	8:30 AM	11:30 AM	WED10	WED10 - Mastering Technology: People, Processes, and Progress	This special topic session will take attendees on a journey from analyzing current technology trends to realizing the benefits of these solutions in both the short and long term. Presenters will discuss how to make the appropriate selection for a utility, the implications of this decision, and the implementation and change management necessary to adopt these solutions.	Juan	Donoso	Director of Asset Management	Veolia	180
6/12/2024	8:30 AM	8:55 AM	WED10-01	Technology Trends in the Industry	This section discusses industry trends and highlights various impactful improvements that have impacted our industry. This presentation sets the tone of the speed of change and technology's impact on our industry.	William	Teodecki		Aqua America, Inc.	181
6/12/2024	8:30 AM	10:00 AM	WED11	WED11 - Digital Twin Application in California	From improving utility resilience, to enhancing storage and compliance, digital twins and associated technology such as AI are presented with use cases across California. Every topic presented directly applies to the current issues facing local utilities.	Peter	Martin	Client Solutions Manager		182
6/12/2024	8:40 AM	9:00 AM	WED11-02	Simulating WTP Performance After an Earthquake with a Digital Replica	For the Medford Water system seismic resiliency program, the wide variety of conditions and interconnectedness of the various components and treatment processes and trains at the Duff WTP made it extremely challenging to predict the performance of the WTP after a major earthquake. To effectively prioritize seismic improvements at the WTP, a seismic digital twin was prepared to simulate the performance of the WTP in terms of meeting capacity and water quality goals. This presentation covers the evaluation of the system seismic performance using a digital replica to inform prioritization of improvements to the Duff WTP.	Enoch	Nicholson	Senior Drinking Water Engineer	Jacobs	183

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	9:00 AM	9:20 AM	WED11-03	Leveraging Digital Twins to Optimize Recycled Water System Storage Requirements	A Recycled Water Feasibility Planning Study is guiding the City of Petaluma to meet their water neutrality goals. The City's recycled water (RW) system faces the challenge of matching variable supply to system demand fluctuations with equalization storage, as many RW systems do. Peak RW demands must be met from either distribution system storage or a pump station. Digital twins (DT) such as hydraulic models can be leveraged to evaluate the tradeoffs between storage or pump stations to meet peak demands. Creating a digital twin that mirrored the seasonal storage evaluation allowed for the optimization of the system storage needed to meet future demands and identify the most cost-effective customers to serve.	Connor	Rutten			184
6/12/2024	9:20 AM	9:40 AM	WED11-04	Unleashing the Power of AI: Enhancing Drinking Water Compliance with a Large Language Model-Powered Chatbot	Drinking water regulations are complex and ever-changing, often resulting in confusion for the public and operational challenges for utilities and regulators. To alleviate some of these challenges, we developed a Large Language Model (LLM)-Powered Chatbot that can answer questions regarding California drinking water regulations. Our evaluation process involved comparing the effectiveness of two distinct architectures: Retrieval-Augmented Generation architecture chatbots and chatbots powered by LLM fine-tuned on a corpus of regulations. The resulting chatbot can provide accurate information regarding drinking water regulations, aiding in compliance efforts and assisting the provision of pure and wholesome drinking water for all Californians.	Hung	Bui	Associate Sanitary Engineer	SWRCB Division of Drinking Water	185
6/12/2024	9:40 AM	10:00 AM	WED11-05	Harnessing AI in the Water Sector: Transformative Real-World Applications	Explore the transformative role of Artificial Intelligence (AI) in the global water industry through this insightful presentation. Delve into real-world AI applications, from collaborations like the Metropolitan & Las Virgenes alliance to innovations at OCWD & Pani Energy. Understand AI's multifaceted benefits, from resource management to customer centricity. This presentation underscores AI's imperative role in future-ready, sustainable water management.	Jason	Wiltsey		Metropolitan Water District	186
6/12/2024	8:30 AM	10:00 AM	WED12	WED12 - Addressing Unique Construction Challenges of Large- Scale Treatment Facilities	Construction of water treatment systems on a large scale requires addressing several unique challenges. This session provides a discussion of several case studies					187
6/12/2024	8:30 AM	9:00 AM	WED12-01	Delivering a 300 MGD Chlorine Dioxide System for NYC's Croton Water Supply	In preparation for a system wide shutdown of the Delaware Aqueduct system, the NYCDEP has been working on multiple projects throughout its service area to ensure that the rest of their system can provide redundancy and cover the demand. One such project is the installation of a new chlorine dioxide system for the Croton Reservoir System. The new 300 MGD system will be installed within the Old Croton Lake Gatehouse, which was originally constructed in the late 1800s, and is located 25 miles north of NYC at the Croton Reservoir. It will generate on-site ClO2 and deliver it to the water supply aqueduct 100 feet below the Gatehouse with the primary objective of reducing taste and odor issues prevalent in Croton's water supply.	Alicia	Vaccaro		HDR, Inc	188

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	9:00 AM	9:30 AM	WED12-02	Digging Deep:Tapping into Lake Travis for a Dependable Water Supply	The Brushy Creek Regional Utility Authority (BCRUA) is a partnership of three of the fastest growing cities in Central Texas - Cedar Park, Leander, and Round Rock. The authority was formed in 2006 to develop a regional water system that withdraws, treats, and delivers water from Lake Travis to its member cities. The BCRUA recognized the need for a deep-water intake structure to ensure the capacity and reliability of future water supplies in drought conditions. Phase 2 of the project is under construction and includes a deep-water intake in Lake Travis, gravity tunnel with suction chamber, 145 MGD pump station, and a discharge tunnel that connects to the existing Phase 1 raw water transmission pipeline.	Ryan	Opgenorth	Civil Engineer		189
6/12/2024	9:30 AM	10:00 AM	WED12-03	Make Note for the next Guy: Things I wish I would have known and other Lessons Learned for Start-up of Houston's 320MGD Expansion	<p>Make Note for the next Guy: Things I wish I would have known and other Lessons Learned for Start-up of Houston's 320MGD Expansion.</p> <p>This presentation will review the lessons learned from this process and some of the things that would have been helpful to know before starting.</p> <ol style="list-style-type: none"> <li>1. Permitting does not end during the design phase.</li> <li>2. Start the conversation early with vendors and suppliers.</li> <li>3. Be flexible and communicate failures early.</li> <li>4. Do not work in a vacuum.</li> <li>5. It takes their time.</li> </ol> <p>The schedule is urgent; don't panic. That's how mistakes are made.</p>	Jasmin	Zambrano		City of Houston	190
6/12/2024	8:30 AM	10:00 AM	WED13	WED13 - Lead and Copper Communication Guidance	As every utility in North America prepares for compliance with new Lead and Copper rule requirements for lead service line inventory and replacement programs, many water providers are embracing this opportunity to build trust with their customers. Hear case studies, lessons learned, and emerging communication best practices from a geographically diverse set of utility peers.	Matthew	Junker	Public Relations Specialist	The Municipal Authority of Westmoreland County	191
6/12/2024	8:30 AM	8:50 AM	WED13-01	Shovels, software and soft skills: Building a successful lead service line replacement program using Denver Water as a case study	In 2020, Colorado's oldest water utility took on its largest program, the first of its kind in the U.S. – eliminating lead water service lines at no direct cost to customers. Serving a region with 1.5 million people, how would the water utility cut through the noise of everyday life to get people to be aware of the program, engage and change their habits? Come join us to hear how Denver Water has coupled technical expertise with communications, outreach and engagement to achieve strong customer participation in its Lead Reduction Program. The utility will share its top lessons learned from the application of both technical and soft skills during the first five years of the program.	Rachele	Difebbo		Denver Water	192
6/12/2024	8:50 AM	9:10 AM	WED13-02	Communications Tactics Developed When Your Lead Service Line Replacement Program Requires Support from All of your Customers	With over 600,000 service lines of unknown material spread across over 190 municipalities, New Jersey American Water enlisted the support of CDM Smith to support its planning efforts to maintain compliance with New Jersey law requiring removal of all lead service lines by July 2031. The combined project team quickly developed a project website and robust communications plan to begin educating customers on the program and entice them to participate. This presentation will step through the evolution of the communications program, which was guided by performance metrics and real-time results. This helped the team develop best practices for outreach and canvassing of customers while at the same time recognizing that one size does not fit all.	Chelsea	Kulp	Sr. Manager of Government & External Affairs	New Jersey American Water	193

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	9:10 AM	9:30 AM	WED13-03	Safe Water & Proactive Replacement: Maintaining Customer Confidence While Whispering the "L" Word	Cleveland Water is safe. We have >25 years of sampling records that show our water is consistently well below the federal action level for lead. Still, we are the largest PWS in Ohio and have almost 25% of the state's total estimated lead service lines (LSLs). Even before we had a formal Lead Service Line Replacement (LSLR) Program, we started proactively removing full lead services for free. Since BIL funding became available, we have been developing while implementing a LSLR Program using adaptive management principles to create long-term success while working within the requirements of changing federal and state laws. This presentation will highlight lessons learned while implementing YEAR 1 of our >\$33M/year LSLR Program...	Brenda	Culler	Lead Program Manager	Cleveland Division of Water	194
6/12/2024	9:30 AM	9:50 AM	WED13-04	Building a Strong Lead and Copper Communications Plan	Responding to mandated changes can be challenging for utilities partly because of their diverse customer base. The Lead and Copper Rule Revision requires every utility to implement new public education and communication programs in addition to the more traditional infrastructure-focused requirements that our industry is more accustomed to. This presentation discusses three (3) main areas of focus: tips to identify key audiences, a simplified approach to communicating required messages, and strategies to transform a scary situation into an opportunity.	Adriann	Deering	Communications Specialist	Columbus Water Works	195
6/12/2024	8:30 AM	11:30 AM	WED14	WED14 - Getting Prepared for the Lead and Copper Rule Improvements	The US EPA has proposed the Lead and Copper Rule Improvements and the sector is awaiting the final rule. In the interim systems need to begin preparations. Once the rule is finalized the time available for the tasks in the proposed rule will require that systems begin preparing to comply with the LCRI as soon as possible.	Steve	Via			196
6/12/2024	8:30 AM	9:00 AM	WED14-01	LCRI – State Viewpoint on What Lies Ahead	While the Lead and Copper Rule Improvements postpone a number of Lead and Copper Rule Revision requirements for several years, states face a number of hurdles to overcome to support EPA's proposed implementation schedule. This talk will look forward to the next several years of implementation from a state perspective as systems implement the LCRR/LCRI.	Ron	Falco	CO Drinking Water Program Mgr.	Colorado Dept. of Public Hlth & Env	197
6/12/2024	9:00 AM	9:30 AM	WED14-02	Galvanized Iron Pipes – A Source of Lead?	This study of galvanized iron pipes will help to determine to what extent they impart lead into tap water.	Susan	Teefy	Manager of Water Quality	East Bay Municipal Utility District	198
6/12/2024	9:30 AM	10:00 AM	WED14-03	Logistics of Full-Scale Filter Distribution	Denver Water has implemented a full-scale filter distribution program since 2020. Over this period the program has recognized and overcome a number of logistical challenges in order to send filters and ongoing replacement cartridges to thousands of customers. Lessons learned from this experience will be informative for utilities preparing to comply with the LCRI.	Alexis	Woodrow	Lead Reduction Program Manager	Denver Water	199
6/12/2024	10:00 AM	10:30 AM	WED14-04	An Evaluation of State-Specific LCRR Service Line Inventory and Predictive Modeling Requirements from Across the U.S.	The EPA has released guidance to support utilities and states with their service line inventory efforts. The guidance included predictive modeling as a method that water systems have used to analyze data when they have unknown service line materials. Many states have already released state specific guidance, resources, and templates to ensure that water systems understand the service line inventory requirements in their state. This presentation will summarize trends and highlight unique state approaches related to all aspects of the service line inventory including predictive modeling requirements. This information was gathered through interviews with state regulators and interpretation of state issued requirements from all 50 states.	Jonathan	Cuppett			200

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	10:30 AM	11:00 AM	WED14-05	Non-Lead Certification Strategies for Systems with No Known Lead Services Lines	The United States Environmental Protection Agency's Lead and Copper Rule Revisions require all systems to develop lead service line (LSL) inventories. If a water system has unknown, lead, or galvanized requiring replacement service lines, there are many notification and sampling requirements that must be implemented to meet the rule requirements. For systems with no known lead service lines, and no known history of LSLs, notification and sampling requirements might have little public health benefit but could unnecessarily raise public concern. This presentation will help water systems learn from an approach approved by the Virginia Department of Health for Chesterfield County Utilities to obtain a non-lead certification by October 16, 2024.	Vishakha	Kaushik	Project Water Engineer	Arcadis U.S., Inc.	201
6/12/2024	11:00 AM	11:30 AM	WED14-06	LCRI Validation Studies, Integrating Into Current Plans	The logistics, expense, and legal complexities of the LCRI has placed corrosion control on the back burner at water systems and primacy agencies. For many mid- and large-sized systems that would be a serious mistake. The LCRI corrosion control requirements pose a number of challenges that are best considered even as systems accelerate lead service line replacement.	David	Cornwell			202
6/12/2024	8:30 AM	11:30 AM	WED15	WED15 - Building Resiliency in Small Systems	Information on how to work toward water system resilience can be hard to come by for smaller utilities. Many small systems have a hard enough time just keeping up. This session is intended to provide listeners with what to do to gain resilience while still keeping up and with helpful examples of how other systems did it.	Bruce	Macler	Retired		203
6/12/2024	8:30 AM	9:00 AM	WED15-01	Water System Resilience During Natural Disasters	Impacts from natural disasters are disproportionately felt by small water systems. Typically without large budgets and extra staffing, impacts from natural disasters can create severe challenges for small systems to overcome. Understanding past events and what can occur when certain types of disaster situations will arise gives agencies an opportunity to understand unknown challenges and prepare accordingly. This session will explore some of the recent natural disaster occurrences in California and discuss how water systems dealt with recovery.	Yvonne	Heaney		DDW	204
6/12/2024	9:00 AM	9:30 AM	WED15-02	Navigating Water Treatment Challenges in the Desert: Building a Sustainable Treatment Plant for the Community of LeChee	This presentation focuses on the challenges and innovative solutions associated with the development of a water treatment plant for the community of LeChee in the Navajo Nation, a location with unique geological and logistical characteristics. The discussion encompasses a range of critical topics, including the difficulties associated with constructing a water treatment facility in such an environment, the complexities of managing solids residuals and chemical wastewater in a remote location, minimizing liquid discharge, and the implementation of a membrane filtration process to minimize adjustments to process parameters as source water parameters vary with an emphasis in minimizing the chemical treatments needed to maintain optimization.	Jake	Himebaugh	Senior Associate - Process Mechanical Engineer	Brown and Caldwell	205
6/12/2024	9:30 AM	10:00 AM	WED15-03	Construction Challenges at Small Utilities	When part of a larger interconnected service area, small potable water utilities potentially have the ability for extended shutdowns to accommodate construction. However, this downtime is temporary and is typically limited by periods of seasonal low water demands (dry season). A limited downtime period coupled with long lead items can create challenges in meeting a tight constructions schedule. This project (currently in construction) provides an example of how Owner, Engineer, and Contractor continuously work together to overcome challenges to complete a successful project that required a complete chemical system change out and extensive raw water and finished water main modification and tie-ins.	Maria	Arenas		Tetra Tech	206



Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	10:00 AM	10:30 AM	WED15-04	"Unknown to Known" Service Line Inventories for 200+ Small Systems in South Carolina	The South Carolina Department of Health and Environmental Control (DHEC) identified the challenges faced by smaller water systems (funding, staff) in creating a SLM inventory and contracted TruePani, Inc., an engineering and communications firm specialized in lead in drinking water, to develop initial inventories for 218 water systems serving fewer than 10,000 customers at no cost to the systems. This presentation will highlight the key findings from inventorying 100,000+ service lines across the state and discuss how the inventory is impacting future LCRR compliance for these small systems.	Shannon	Evanhec		Truepani Inc.	207
6/12/2024	8:30 AM	11:30 AM	WED17	WED17 - Landscape Transformations for Water Efficiency	Meeting outdoor water demand is a big challenge for utilities. To reduce water use and provide for more sustainable and resilient communities, water utilities are looking to help customers transform their landscapes into ones that are less thirsty and more beautiful.					208
6/12/2024	8:30 AM	9:00 AM	WED17-01	Plants and Pipes: Transforming Landscapes after Lead Service Line Replacements	This presentation and case study will explore the findings from a pilot Denver Water is conducting to replace non-functional turf with native plants and grasses on properties that have a lead service line replacement. Presenters and attendees will explore this dig-once approach to improving public health by removing lead service lines and transforming our landscape to match a warmer climate. Attendees will leave with ideas about how to take advantage of planned infrastructure projects to tackle this joint issue that many utilities share. The presenters will highlight the pros and cons of tackling this endeavor and share lessons learned. The lessons learned will provide attendees with ideas and examples for building their own pilot programs.	Pam	Williams	Community Relations Sr. Specialist	Denver Water	209
6/12/2024	9:00 AM	9:30 AM	WED17-02	Metropolitan's Non-Functional Turf Efforts: finding it, quantifying it, and our removal response	In the midst of a historic drought in California, the focus has been the removal and replacement of non-functional turf (NFT). In response to this issue, the Metropolitan Water District of Southern California partnered with Dr. Andrew Marx to build an interactive Land Cover Dashboard, which allows users to visualize and analyze possible NFT areas across the MWD service area. At the same time, MWD has begun the process of implementing policy and programmatic changes to encourage and enforce the removal of NFT throughout the service area. This presentation will include: 1) a demonstration of the dashboard 2) a review of member agency feedback and use cases and 3) policy and programmatic changes being considered to address NFT.	Krista	Guerrero		Metropolitan Water District of Southern California	210
6/12/2024	9:30 AM	10:00 AM	WED17-03	Native Grass Solutions for Nonfunctional Turfgrass Replacement	In the face of increasing water scarcity concerns and the need for sustainable landscaping practices, the conversion of high-water-using turfgrass to native grass options has emerged as a compelling solution. This presentation explores the significant advantages of transitioning from high-water turfgrass to native grasses in various settings, including small residential lots, large commercial lots, and homeowners' associations.	Lisa	Pace	Senior Water Conservation Specialist	Colorado Springs Utilities	211
6/12/2024	10:30 AM	11:00 AM	WED17-05	Grass Replacement + Program: Taking an Equity Lens Approach to Outdoor Programs	The West Basin Grass Replacement + program offers a free custom landscape design, a free drought-tolerant tree and additional assistance in applying for an increased rebate of \$5 for every square foot of grass replaced with a drought-friendly garden. This program hopes to provide additional resources for the adoption of drought-tolerant gardens and increase tree canopy cover in neighborhoods in the service area disproportionately affected by environmental pollution with consideration of socioeconomic, public health, and environmental hazard criteria as defined by the California Environmental Protection Agency (CalEPA). The pilot phase launched on February 2022 and hoped to evolve the elements to outdoor efficiency programs.	Jenyffer	Vasquez		Calleguas Municipal Water District	212

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	10:30 AM	11:00 AM	WED17-05	Grass Replacement + Program: Taking an Equity Lens Approach to Outdoor Programs	The West Basin Grass Replacement + program offers a free custom landscape design, a free drought-tolerant tree and additional assistance in applying for an increased rebate of \$5 for every square foot of grass replaced with a drought-friendly garden. This program hopes to provide additional resources for the adoption of drought-tolerant gardens and increase tree canopy cover in neighborhoods in the service area disproportionately affected by environmental pollution with consideration of socioeconomic, public health, and environmental hazard criteria as defined by the California Environmental Protection Agency (CalEPA). The pilot phase launched on February 2022 and hoped to evolve the elements to outdoor efficiency programs.	Jenyffer	Vasquez	Water Policy and Resource Analyst	West Basin Municipal Water District	213
6/12/2024	11:00 AM	11:30 AM	WED17-06	Designing Our Way Out of the Drought, One Home at a Time	LADWP are industry leaders in water use efficiency programs and rebates. But what happens when you pluck all the low hanging fruit but still have ever stretching water conservation goals? After analysis of our Water Conservation Potential Study, and completing market we concluded that a). residential turf transformation represented the largest potential savings, and b). after money, the biggest obstacle to transforming the lawn was lack of design know how. We developed a program to provide 1200 single family residential homes with the services of landscape architects to produce bespoke designs for each home. Come learn how the program was developed, challenges and wins, and customer response to the receive curated designs.	Kristin	Tsumura Tsai	Environmental Specialist	Los Angeles Department of Water & Power	214
6/12/2024	8:30 AM	10:00 AM	WED18	WED18 - Tools for Implementing California's Sustainable Groundwater Management Act	Implementing California's Sustainable Groundwater Management Act (SGMA) requires a suite of effective tools to address the complex challenges associated with sustainable groundwater use. Geographic Information Systems (GIS) play a crucial role by providing spatial data analysis to understand groundwater basin dynamics and aid in decision-making. Groundwater modeling tools help simulate aquifer behavior, facilitating the prediction of groundwater level changes and potential impacts of management strategies. Monitoring technologies, such as sensors and satellite imagery, offer real-time data on groundwater levels and land subsidence, aiding in adaptive management approaches. Join experts as they talk about the array of technologies to help water managers with sustainable groundwater management.					215
6/12/2024	8:30 AM	8:50 AM	WED18-01	Seeing the Invisible with GROWMAS: A Remote Sensing Approach for Local Groundwater Monitoring	Climate change and growing water demands have raised concerns about groundwater overdraft. In response, California enacted the Sustainable Groundwater Management Act (SGMA) in 2014, which mandates local water agencies to monitor and report groundwater conditions. However, acquiring groundwater can be challenging. In partnership with Stockton East Water District, DCSE investigated the use of remote sensing techniques to track agricultural groundwater use in the district for 2021 and 2022. This case study showcases the capacity of remote sensing to aid local water agencies in SGMA reporting and achieving groundwater sustainability goals.	Kenya	Creer	Remote Sensing Analyst	DCSE Inc	216

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	8:50 AM	9:10 AM	WED18-02	Statewide Mapping of California's Aquifers with Airborne Electromagnetics	The state Department of Water Resources is conducting airborne electromagnetic (AEM) surveys in California's high- and medium-priority groundwater basins, where data collection is feasible, to assist local water managers as they implement the Sustainable Groundwater Management Act (SGMA) to manage groundwater sustainably. The AEM project provides state and federal agencies, groundwater sustainability agencies (GSAs), stakeholders, and the public with basin-specific geophysical data, tools, and analyses. The AEM method can image the subsurface to depths of up to about 1,000 feet. All the statewide AEM survey data is being made publicly available through a public web portal.	Timothy	Parker			217
6/12/2024	9:10 AM	9:30 AM	WED18-03	Interactive 3D Visual Modeling Using Leapfrog to Support Groundwater Sustainability Plan Development and Stakeholder Engagement.	Hydrogeologic conceptual models (HCMs) are a critical step in understanding and numerically modeling groundwater systems. Combining as much information as possible into a 3-dimensional (3D) visual model provides an ideal platform for identifying, discussing, and refining the knowns and unknowns within groundwater basins. The 3D geological modeling software Leapfrog (Seequent) has been successfully utilized for several California Groundwater Sustainability Plans to aid the development of HCMs and numerical models, while facilitating stakeholder engagement. Selected examples of 3D visual models will be presented along with their development process.	Steven	Humphrey		INTERA Incorporated	218
6/12/2024	8:30 AM	11:30 AM	WED20	WED20 - Resilient Urban Waters; Stormwater Management for Climate Adaptive Cities	Explore transformative initiatives in stormwater management designed to fortify urban environments against climate-related challenges. From flood planning to green infrastructure to cloudburst resiliency, this session delves into innovative approaches, partnerships, and community-focused solutions reshaping how cities respond to stormwater-related threats.					219
6/12/2024	8:30 AM	9:00 AM	WED20-01	Praying for Rain and Planning for a Flood: Texas' First Cycle of Statewide Regional Flood Planning	In 2019, in response to Hurricane Harvey, Texas established a regional and state flood planning process. The flood plans identify existing and future flood risks, evaluate flood hazard exposure, and identify and evaluate potentially feasible flood mitigation strategies. An important part of the flood planning process is determination of impacts to water supply and availability from proposed flood mitigation strategies. Performing flood planning in the drought-stricken Upper Colorado River basin presented unique challenges that correlate well with water supply planning. Texas' experience with statewide flood planning serves as a diverse analog for other states seeking to plan for future water supplies and mitigate flood risks.	Paula	Lemons	Water Resources Project Manager	HDR	220
6/12/2024	9:00 AM	9:30 AM	WED20-02	NYC Cloudburst Resiliency: Transformational Community Adaptation through Strong Partnerships	A "cloudburst" is a sudden, heavy downpour that can overwhelm sewer systems and result in flash floods. These intense rainfalls are becoming more frequent and damaging in NYC, devastating residents, destroying homes, and disrupting businesses. NYC's Cloudburst Program will protect vulnerable communities, mitigate flood damage, and improve water quality. Based on recommendations from this project, the city will construct \$400 million of Cloudburst Resiliency Projects to better manage intense rainfalls in flood-prone neighborhoods. This presentation covers: Program Goals; Social and Physical Vulnerability Assessment; Opportunity Screening and Adaptation Analysis; Adaptation Toolbox; and Social, Economic, and Sustainable Design Considerations.	Anni	Luck		Hazen and Sawyer	221
6/12/2024	9:30 AM	10:00 AM	WED20-03	Resilient Houston – Rehabilitation Projects and Green Stormwater Infrastructure	Comprehensive approach for Drainage and Pavement Rehabilitation Projects	Nina	Joshi		City of Houston	222

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	10:00 AM	10:30 AM	WED20-04	A Flood-Soaked History: Harris County Flood Control District's Historic Partnership Response	After Hurricane Harvey devastated Harris County in 2018, voters approved \$2.5B bond to finance flood damage reduction projects. This presentation discusses steps that FCD took to adapt to their changing scale of work – through standardizing estimating and scheduling procedures, implementing new business platforms, and applying risk-based decision-making framework.	Tara	Delagarza	Project Manager	Burns & McDonnell	223
6/12/2024	10:30 AM	11:00 AM	WED20-05	Addressing Climate Change in the Southwestern United States: Master Planning a More Resilient Tempe, Arizona	The abstract will provide an overview of the City of Tempe's efforts to develop the "Resilient Tempe Master Plan", which aims to set a 25-year direction for the City to equitably and effectively manage extreme heat and stormwater. The master plan is developed including two phases: 1) Planning and 2) Engagement. The Planning phase addresses the development of the 25-year roadmap for the implementation of Green Stormwater Infrastructure (GSI), Low Impact Development (LID), Nature-Based Solutions (NBS), and Urban Forestry (UF) initiatives. The Engagement phase will be centered on building enthusiasm and understanding in the community, local government, and key stakeholder groups of the need to build Tempe's resilience to extreme heat.	Fernando	Sarmiento	Vice President	Greeley and Hansen   A TYLin Company	224
6/12/2024	11:00 AM	11:30 AM	WED20-06	Challenges to Assess and Manage Risks of Microplastics in Water Resources of California	Microplastics are omnipresent, including marine and terrestrial environments, drinking water, food, and air. Research has shown potential impacts to human health. Challenges exist in assessing and managing the risks of microplastics; their pervasiveness, persistence, lack of regulations and inconclusive measure method make them an emerging pollutant. Plastics can include chemical additives that can have harmful health effects and can present risk to biota. Regulating microplastics in water resources is difficult due to these challenges and barriers. This paper will discuss microplastics pollution, measurement methods, its potential health effects, and possible pollution mitigation and management efforts.	Rajat	Chakraborti	Principal Technologist	Jacobs	225
6/12/2024	8:30 AM	10:00 AM	WED21	WED21 - Showers to Flowers or Toilet to Tap? Potable Reuse	In the face of unpredictable water supplies in California, water reuse is an increasingly attractive option to diversify water supply portfolios. Monitoring and removal of chemical and microbiological contaminants in reuse source waters is essential to ensure the safety of water reuse. This session will present research on advanced methods to remove contaminants in reuse source waters and methods used to optimize a recycled water recharge project.	Maureen	Hodgins	Regional Liaison	Water Research Foundation	226
6/12/2024	8:30 AM	9:00 AM	WED21-01	Comparing Performance of Microfiltration versus Ultrafiltration for Virus Removal at Orange County Water District GWRS	The absence of a direct integrity test for viruses has hindered assignment of virus removal credits for membranes. To tackle this challenge, our project aims to develop rapid, in-field technologies for virus quantification. This presentation is a case study conducted at OCWD GWRS, comparing virus removal between microfiltration and ultrafiltration.	Rasha	Maal-Bared	Environmental Scientist	CDM Smith	227
6/12/2024	9:00 AM	9:30 AM	WED21-02	Addressing Low Molecular Weight Organics using the Pure Water Southern California Process Train	This presentation discusses removal of spiked and background concentrations of low molecular weight organic compounds, including acetone, formaldehyde, and NDMA, in a 0.5 mgd MBR-based demonstration facility, and how this process could be used to meet chemical reduction requirements in California's upcoming DPR regulations.	Greg	Wetterau	Vice President	CDM Smith	228

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	9:30 AM	10:00 AM	WED21-03	The Future of Water Supply: A Deep Dive into Oceanside's Recycled Water Recharge Project	In response to water scarcity and climate change uncertainties, innovative strategies for sustainable water supplies are paramount. The City of Oceanside's "Pure Water Oceanside" initiative harnesses recycled water to recharge the Mission Groundwater Basin, optimizing key infrastructures in the process. Geophysical methods dictated injection wells as the optimal recharge method. This led to the construction of three injection wells, informed by a calibrated groundwater flow model. The wells successfully inject over 3 million gallons daily, maximizing the use of recycled water.	Logan	Wicks		GEOSCIENCE	229
6/12/2024	8:30 AM	11:30 AM	WED22	WED22 - Embedding DEI: Leveraging a Water Utility Manager's Guide to Community Stewardship	Join AWWA's Diversity and Membership Inclusion Committee on a deep dive into how your organizational culture can set you up for success in your community engagement goals. This session will introduce attendees to the AWWA publication 'A Water Utility Manager's Guide to Community Stewardship' and the important role it can play at their utilities, especially in the HR arena. As providers of an essential community service, utilities can leverage their assets and operations to expand their stewardship role in their communities.	Donnell	Duncan	Associate Vice President		230
6/12/2024	8:30 AM	11:30 AM	WED23	WED23 - Engendering a Modern Water Workforce	Engendering a Modern Water Workforce presents a unique opportunity to address the pressing challenges faced by the water sector while promoting gender diversity and inclusive practices. Through data-driven insights, expert perspectives, and collaborative discussions, we aim to pave the way for a more resilient, sustainable, and gender-inclusive water workforce.	Antra	Bhatt	Statistics Specialist and Researcher	UN Women	231
6/12/2024	8:30 AM	9:00 AM	WED23-01	A Feminist Approach to the Global Water Crisis	Underscores the critical importance of gender-inclusive participation, decision-making, and leadership in water governance and management. This approach seeks to harness the unique perspectives and expertise that women bring to the table.	Antra	Bhatt	Statistics Specialist and Researcher	UN Women	232
6/12/2024	9:00 AM	9:30 AM	WED23-02	Gender Representation in the Water Workforce	The issue of gender representation is a critical concern, highlighted by recent surveys unveiling stark gender imbalances within water utilities. Emphasizing the need for collaboration to understand and mitigate these disparities.	Jennifer	Steffens			233
6/12/2024	9:30 AM	10:00 AM	WED23-03	Promoting Gender Equity through Behavioral Insights	We will explore how behavioral insights, drawn from extensive research and practical applications, can play a pivotal role in driving gender inclusion.	Carolina	Toth	Director of US Programs	Behavioral Insights Team	234
6/12/2024	10:00 AM	10:30 AM	WED23-04	Embracing Holistic Approached for Gender Equity in the Water Sector	Recognizing that addressing this challenge necessitates a coordinated effort spanning academia, government, and industry, we delve into the pivotal role of engaging policymakers, regulators, and utilities in tackling sector-specific challenges.	Angelita	Fasnacht	Vice President of Strategic Transformation	Veolia	235
6/12/2024	8:30 AM	11:30 AM	WED24	WED24 - Technical Solutions to Water Challenges Across the Globe by Charting a Course to a Sustainable Water Future	Communities across the world are facing many common water challenges ranging from scarcity, flood, and poor management. This session will provide a venue for North America attendees and our overseas visitors to share lessons learned, success stories, and insights across a number of projects and geographic settings.	Norhan	Sadik	Program Analyst	World Bank Group	236
6/12/2024	8:30 AM	9:00 AM	WED24-01	Stormwater to Potable – A Blended US/International Perspective on Stormwater Recycling	Urban runoff presents water quality challenges and opportunities for water supply and watershed protection. Within the US, dry and wet weather runoff is increasingly considered as a supplemental source for potable water. In Australia, there are broader goals of large stormwater to potable (S2P) systems to protect waterway values.	Julia	Schmitt		Carollo Engineers	237

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	9:00 AM	9:30 AM	WED24-02	DWMPs, the UKs Strategy for Long Term Investment in Drainage	In 2019, WaterUK published the Drainage and Wastewater Management Plan (DWMP) framework, a UK first for sewerage and drainage management planning. Built on experience gained through WRMPs, Water and Sewage Companies (WaSCs) in the UK were required to adopt this approach. Meanwhile, public scrutiny of the ongoing operation of sewer overflows has risen, culminating in recent legislation imposing stringent obligations on WaSCs to address them. This presentation will discuss the collaborative work done to deliver these plans and how they can be adapted to deliver a "Best Value Plan" in the face of unprecedented change in the UK industry driven by widespread public scrutiny of sewer discharges to water bodies across the UK.	Owen	Carey			238
6/12/2024	9:30 AM	10:00 AM	WED24-03	Jordan's Mega Water Supply Desalination Project: Combating Water Scarcity with International Collaboration	The abstract discusses Jordan's ambitious National Conveyor Project (NCP), aimed at addressing the pressing water scarcity issue. The NCP is a central component of Jordan's National Water Strategy 2023-2040, designed to deliver 200 million gallons per day of desalinated seawater to Amman and other communities. Key points in the abstract include: NPC Overview, International Collaboration, Environmental Considerations, Challenges, Green Energy Integration, Competition and Procurement Challenges, Global Model Jordan's NCP is a significant project aimed at alleviating water scarcity through advanced technology. It is a pioneering effort that has the potential to inspire solutions to similar water challenges worldwide.	KEVORK	MSRLIAN	Deputy Chief of Party/Project Technical Leader	CDM Smith International Inc.	239
6/12/2024	10:00 AM	11:30 AM	WED25	WED25 - Treatment of Inorganics - Mn, AS, Li	The treatment of inorganic contaminants such as manganese (Mn), arsenic (As), and lithium (Li) in water often requires a tailored approach. Join experts as they discuss treatment of these inorganics.					240
6/12/2024	10:00 AM	10:30 AM	WED25-01	Solving the Mystery of Turbidity Spikes in Treated Water (Hint: Follow the Manganese)	The Santa Clara Valley Water District (Valley Water) was experiencing episodic and unexplained turbidity spikes in its finished water which were not present in its filtered water upstream of chlorine addition. After multiple analyses and monitoring activities, it was determined that a high concentration of dissolved manganese, Mn(II), was present in the washwater return flow to the head of the plant, and it was passing through the treatment plant in the dissolved form until it was oxidized with chlorine to Mn(IV), which then precipitated as MnO2. Monitoring of the residuals treatment system determined that the primary culprit is the filtrate from the belt-press process which contained dissolved manganese as high as 4,000 parts-per-billion	Issam	Najm	President	Water Quality & Treatment Solutions	241
6/12/2024	10:30 AM	11:00 AM	WED25-02	Lessons Learned from Installation of Los Angeles County Public Works' First Arsenic Treatment Plant	In order to fortify water supplies during recurring periods of extended Southern California drought, Los Angeles County Waterworks District No. 40, Antelope Valley (District) constructed its first treatment plant to remove high levels of arsenic from three groundwater wells. The treatment plant will increase the District's production capacity by 1,330 acre-feet per year, a much needed boost during a year when a majority of California was experiencing "severe drought" conditions, according to the U.S. Drought Monitor. The water will serve the District's largest service area that provides water to over 200,000 people through 57,000 metered connections in the Cities of Lancaster and Palmdale.	Joon-Young	Jang		Los Angeles County Department of Public Works	242

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	11:00 AM	11:30 AM	WED25-03	Lithium Occurrence and Treatment Efficacy at Full-scale Distribution Systems in the U.S.	This study sampled several water treatment systems to evaluate their ability to remove lithium (Li), an emerging contaminant. To date, there is little information on the removal of Li from drinking water. Data from 37 pilot- and full-scale groundwater and surface water treatment systems, including conventional treatment, lime softening, cation exchange, and biological ammonia and iron removal, were evaluated. Cation exchange was found to achieve limited Li removal, while other processes did not remove Li. Additional sampling from 5-10 membrane facilities is underway. This presentation will provide substantial data on treatment options for an emerging contaminant.	Asher	Keithley			243
6/12/2024	10:00 AM	11:30 AM	WED26	WED26 - Lead Scales in Pipes	Lead scales in pipes are particularly concerning as lead poses serious health risks, and its presence in drinking water can lead to lead poisoning. Research has been ongoing to understand the factors contributing to lead scale formation, such as water chemistry, temperature, and pipe material interactions.					244
6/12/2024	10:00 AM	10:30 AM	WED26-01	Examining Lead Exposure From Galvanized Material	As a part of the Water Research Project 5223 (WRF5223), the Cornwell Research Group and Trussell Technologies are compiling data and information, conducting experiments, and developing guidance on understanding the release of lead from galvanized material (GP). The task will be developed in three parts: how to demonstrate that a line has never historically been lead to indicate Galvanized Requiring Removal (GRR), investigate and obtain water quality data associated with lines defined as GRR that would predict the occurrence of lead and what factors might lead to a GRR not posing a risk for lead release, and determine whether GRRs in systems with LSLs replaced decade(s) ago pose a real risk of lead exposure.	Michael	Sun	Engineer	Cornwell Engineering Group	245
6/12/2024	10:30 AM	11:00 AM	WED26-02	A Comparison of Lead Pipe Scales to Predictions Provided by the SPANA Geochemical Model	The cities of Newark, Pittsburgh, and Rochester all have lead service line pipes showing lead oxide scales that were analyzed in a lab. These utilities also collected an abundance of key WQPs, including oxidation reduction potential (ORP), which is rare for most utilities to collect. The SPANA model is a free geochemical model that utilizes ORP, pH, alkalinity, and concentrations of key cations and anions to predict metal speciation and solubility. A comparison was conducted between the results of the pipe analysis and the predicted results from the model. Interestingly, the model predictions were very similar to actual scale analysis results. This presentation will focus on the comparison and Pros and Cons of the model.	Richard	Giani		CDM Smith	246
6/12/2024	11:00 AM	11:30 AM	WED26-03	Predicting Oxidation Reduction Potential (ORP) for Geochemical Modelling, Pipe-Scale Destabilization, and Lead Solubility	Oxidation Reduction Potential (ORP) is a key parameter that impacts speciation and solubility for lead, manganese, and other heavy metals that may be found on drinking water mains and customer premise plumbing pipe-scales. CDM Smith conducted distribution-wide and bench-scale studies involving several utilities to better understand how these key parameters and other treatment factors impact ORP. From these results, CDM Smith developed a simple model to predict ORP for each system, using common parameters such as pH and disinfectant residuals. Predicting ORP can allow utilities to identify how their current pipe-scales developed over time and better predict how future changes can impact scale release.	Richard	Giani		CDM Smith	247
6/12/2024	10:30 AM	10:45 AM	WED27-03	San Diego County Water Authority's Water Main Assessment Program	The presentation will highlight SDCWA's Transmission Main Assessment Program, including operational and logistical challenges.	Martin	Coghill	Operations & Maintenance Manager	San Diego County Water Authority	248

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	10:45 AM	10:50 AM	WED27-04	North Texas Municipal Water District Water Main Assessment Program	The presentation will highlight NTMWD's Transmission Main Assessment Program, including operational and logistical challenges.	Jayson	Melcher	Water Transmission Engineer	North Texas Municipal Water District	249
6/12/2024	10:00 AM	11:30 AM	WED28	WED28 - Smart Water, Smart Utilities: Advanced Metering Infrastructure from Concept to Deployment	Choosing to go 100% remote is a significant expense for water utilities and the decision is not made lightly. This session examines water utilities as they grapple with ROI, risk of technology, customer impact, and the issues of having completed a meter upgrade. This session takes the attendee from the initial concept to AMI deployment.	Christopher	Tapia	Meter Service Worker	Carlsbad Municipal Water District	250
6/12/2024	10:00 AM	10:30 AM	WED28-01	PRASA Embarks Upon One of the World's Largest Water AMI Projects	The Puerto Rico Aqueduct and Sewer Authority (PRASA) is embarking on a one-of-a-kind water meter replacement and Advanced Metering Infrastructure (AMI) project, representing one of the largest AMI deployments. Through the testing of different water meters and AMI technologies, PRASA intends to select the most advantageous set of meters and technologies to be deployed throughout the entire island of Puerto Rico. This presentation will provide an overview of the project and the current status.	D. Michael	Rotunno		Arcadis	251
6/12/2024	10:30 AM	11:00 AM	WED28-02	Fort Lauderdale's Path to 55,000 Remote Connect/disconnect Water Meters!	The City of Fort Lauderdale has made the choice to go 100% remote meter connect/disconnect for meters 1" and smaller. The key areas evaluated in support of this decision include: 1. Financial cost/benefit, 2. Value extraction, 3. Customer Impact, 4. Maintenance, and 5. Risk of technology. Fort Lauderdale will discuss how and why it ended up deciding on full remote connect/disconnect technology – looking at the complete process and examining the ultimate decision to go with every residential meter on the new technology as well as how they plan to mitigate risk and maintain the system.	Tom	Bohrer			252
6/12/2024	11:00 AM	11:30 AM	WED28-03	Nothing Goes Wrong With Your Water Meters, Right ?	Cleveland recently completed an AMI upgrade, replacing 400k positive displacement (pd) water meters. This brought the expectation among some for a "perfect" metering system, but perfection is not possible. Cleveland has closely studied the problems that occur with its meters, and the results were unexpected. A WRF study showed that pd meters remain highly accurate for a long time. But other problems occur. The drive magnet can fail; excess water hardness can coat the meter chamber; the nutating disk can become scratched; debris can block the disk; in the case of AMI, transmissions can become corrupted; a wrong sized register could be attached during a retrofit. This presentation will show examples and effective mitigation strategies.	Alex	Margevicius	Commissioner	Cleveland Division of Water	253
6/12/2024	10:00 AM	11:30 AM	WED29	WED29 - Applications of Machine Learning in OT System	This session offers a holistic exploration of the transformative role of machine learning in the water industry. From sustainable water resource management and effective decision-making to the integration of emerging technologies, this session provides a comprehensive overview of the implications and applications of machine learning in the context of water resource sustainability and operational optimization.	Prabhushankar	Chandrasekeran	Intelligent Water National Practice Leader, Arcadi	Arcadis	254



Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	10:10 AM	10:30 AM	WED29-02	Evolving SCADA Systems: Enhancing Operator Awareness with Anomaly Detection	This presentation aims to underscore the importance of adopting AI-driven solutions in SCADA systems for the sustainable management of water resources. Presenters will detail a workflow process for time series analysis, demonstrating how standard practices can be applied to create, train, and deploy models on water treatment systems. They will discuss the benefits of computer-assigned alarm thresholds compared with operator-assigned alarm limits, ultimately leading to more effective decision-making. Furthermore, the presentation will include an implementation proposal for edge devices and explore the potential for cloud computing integration. Finally, feedback from utility staff regarding usability will illustrate the practical applicability.	Giselle	Villar		CDM Smith	255
6/12/2024	10:30 AM	10:50 AM	WED29-03	From Point A to Point B: How North American Utilities are Bridging the Gap between Data and Decision Support	Over the last decade, the emergence of new challenges and regulatory changes has greatly contributed to the growing adoption of sensing and data-driven practices in water management. While recent advancements in AI and machine learning continue to offer new ways to harness data for decision support, there still exists a large gap across many utilities as to how to get from point A (data) to point B (decision support). The goal of this presentation is to illustrate through example, the various strategies employed by utilities across North America to bridge this gap and distill those key findings into actionable takeaways for other utilities in the same boat.	Stan	Fong		Digital Water Solutions, Inc	256
6/12/2024	10:50 AM	11:10 AM	WED29-04	Harnessing the Power of Cloud Solutions: Journey from Data to Wisdom for Optimize Operation, Case Study, Loudoun Water, VA	In this era, AI and machine learning are revolutionizing industries, including water industry. This talk focuses on Loudoun Water's transformative use of cloud solutions and ML for operational optimization. We'll chart the journey from raw data to actionable wisdom, emphasizing phosphorus management. Through the Cloud, Loudoun Water ensures secure data storage, predictive modeling, and increased operational efficiency. The discussion will also address challenges in the digital shift and the synergy of data-driven insights with smart water results. Discover how cloud-based solutions can decode data 'noise' for tangible community benefits.	Javad	Roostaei		Hazen and Sawyer	257
6/12/2024	11:10 AM	11:30 AM	WED29-05	Anomaly Detection to Ensure Data Integrity During Water Quality Monitoring	Automated anomaly detection is developed for ensuring high quality and integrity of data that is obtained from primary sensor and analyzer measurements. The user is alerted for any anomalous data that can arise from the sensor or from the process. Automatic suggestions are provided to the user when the sensor is down on the estimated value that the utility personnel can use to manage their process in instances when the sensor/analyzer is down	Vishnu	Rajasekharan	Sr. Innovation Manager	Hach Company	258
6/12/2024	10:00 AM	11:30 AM	WED30	WED30 - Lead POU Treatment and Lead-Free Testing Programs	This session will explore experiences with using point of use (POU) treatment options to reduce lead in drinking water and describe a lead-free testing program.	Darren	Lytle			259
6/12/2024	10:00 AM	10:30 AM	WED30-01	Identifying At-Risk Communities for Lead Exposure and LCRR Cost Benefit Analysis for Compliance with a POU Program	Lead in drinking water is a serious nationwide public health issue. EPA's Lead and Copper Rule Revisions (LCRR) intends to drive more complete lead service line replacements (LSLRs) to reduce lead exposure. LSLRs can take decades to complete and the order in which lead service lines (LSLs) are replaced causes inequities in public health protection. In disadvantaged communities with limited resources for completing LSLRs in a timely manner, these inequities can be even more stark. Point-of-use (POU) filters can provide lead reduction for customers waiting for LSLR. This presentation identifies high risk areas for lead in drinking water, prioritizes at-risk disadvantaged communities, and presents LCRR cost benefit estimates for POU treatment.	Carleigh	Samson	Water Process Engineer	Corona Environmental	260

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	10:30 AM	11:00 AM	WED30-02	Performance Review of NSF/ANSI 53 Certified Water Filters for Lead Removal	Properly certified NSF/ANSI 53 water filters are distributed as a temporary measure to protect residents from risk of exposure to elevated lead levels resulting from water system changes and various activities, such as lead service line replacements, treatment changes, and/or physical disturbances. This presentation summarizes 23 studies that evaluated the ability of NSF/ANSI 53 post-2007 certified filters to reduce lead from water and provides practical guidance on addressing some of the challenges associated with these filters. This information will help utilities, regulators, and other decision makers make informed decisions related to deploying water filters to the public when concerns have been raised on drinking water lead exposure.	Min	Tang	Environmental Engineer	CDM Smith	261
6/12/2024	11:00 AM	11:30 AM	WED30-03	125,000 Lead Test Kits, Over 17 Million Data Points: A Tale of the Largest Consumers-Initiated Free Lead in Water Testing Program	The City of Chicago Department of Water Management (CDWM) is responsible for providing nearly 750 million gallons of drinking water each day to the entire city of Chicago and 41% of the State of Illinois. Like many utilities, Chicago is also faced with the challenge posed by aging water infrastructure, including the presence of hundreds of thousands of lead service lines. As a part of ensuring good and safe drinking water, educating its residents, and ensuring transparency, CDWM has offered the Chicago residents a free water lead testing program since the 1990s. Administrating a program of this size requires much technical development and support. This presentation will outline the details of Chicago's 311 lead testing program.	Neeraj	Nair	Management Consultant		262
6/12/2024	10:00 AM	11:30 AM	WED31	WED31 - PFAs Litigation and the MDL	This moderated discussion focusing on strategies for a resilient Colorado River will include such topics as a review of current compacts, acts, and agreements surrounding the Colorado River, and likely changes to these in 2026. A panel of experts will also discuss the legal, management, and financial aspects of such key Colorado River Basin issues as land use and planning strategies that support greater system resilience, compensated conservation and economic considerations, and trading frameworks and practices that allow for greater system flexibility in the Basin. A discussion on water reuse, desalination, and the future of water supplies in the Colorado River will also be part of the session's discussion topics.					263
6/12/2024	10:00 AM	10:30 AM	WED33-01	The Uncapped Heroes of Leak Detection: Boots-on-the-Ground, the NOT So New Approach!	In the ever-evolving world of technology, where artificial intelligence, machine learning, and remote sensing dominate discussions about the future of the water industries, the humble Boots-on-the-Ground approach often takes a back seat. The Puerto Rico Aqueduct & Sewer Authority is currently investing in automated systems, such as acoustic sensors, pressure analysis software, and satellite-based imagery to detect underground leaks. However, at the end of the day, humans can identify hairline fractures or minor leaks that might not trigger alarms. This level of intuition, knowledge, and experience is why they are the uncapped heroes of leak detection.	Edwin	Rodriguez		The Puerto Rico Aqueduct and Sewer Authority	264

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	10:30 AM	11:00 AM	WED33-02	Optimization of Existing Technologies for Automated and Accurate Water Loss	The City of Fort Worth looks to take the way water loss is calculated and captured to the next level. Fort Worth Water developed new processes to more accurately capture water loss, by integrating GIS and our work order management system to automate water loss calculations and reduce the potential for human error. The integration provides accurate water loss calculations by utilizing line specific pressures based on elevations captured in GIS with algorithms programmed within the work order management system. This allows operators to accurately enter water loss information, eliminating the need for the operator to calculate water loss manually.	Adam	Ferguson	Assistant Water Systems Superintendent	City of Fort Worth	265
6/12/2024	11:00 AM	11:30 AM	WED33-03	Leak Detection ROI Sensitivity Analysis	Pro-active leak detection programs can seem to be a marginal investment for utilities. This presentation will show how a utility can select a technology and determine its potential and actual value proposition. This presentation will preview an ROI calculator that shows the sensitivity of the return on various parameters. The ROI of a pro-active leak detection program is calculated using the cost of service, the performance of the service and the cost of production as the main inputs.	Paul	Gagliardo	Podcast host	The Water Entrepreneur Podcast	266
6/12/2024	10:00 AM	11:30 AM	WED34	WED34 - Crisis Ripples: Safeguarding California's Waterscape from Quakes to Dam Bursts	Dive into the heart of California's water resilience with 'Crisis Ripples.' Explore cutting-edge strategies for earthquake warnings, emergency bypass pipes, fuel contingencies, and dam failure preparedness.	Jim	Wollbrinck		METISIS LLC	267
6/12/2024	10:30 AM	11:00 AM	WED34-02	Emergency By-Passing with Lay-Flat Hose	Attendees will have better knowledge of what it takes to build an emergency preparedness program utilizing lay-flat hose within their organization to respond to water main breaks and planned outages. They will also learn product knowledge and pitfalls to avoid when deploying these systems in the field. Case studies from other cities and water districts will help in understanding the applications. Additionally, how to incorporate other local agencies, for example CalWarn, FEMA, etc...	Isaac	Alatorre	Emergency Pipeline Advisor	Portable Pipeline Systems	268
6/12/2024	10:00 AM	11:30 AM	WED36	WED36 - Gathering Support for Water Reuse Projects	As drought and effluent disposal challenges affect more utilities, potable reuse is becoming a more common and viable water supply strategy. But if you haven't talked to your customers about potable reuse before, there are specific strategies and resources you should consider. This section will feature speakers from different parts of the country who have either implemented outreach programs for potable reuse projects or can offer resources for utility communicators.	Christina	Montoya-Halter	Communications and Marketing Manager	El Paso Water Utilities	269
6/12/2024	10:00 AM	10:30 AM	WED36-01	Building Public Trust for Potable Reuse: Getting Over the 'Yuck Factor'	Proven technical feasibility of producing safe drinking water from recycled wastewater oftentimes is not enough to gain community support. With limited water supplies, Utilities may need to consider recycled water sources as part of their future water supply portfolio. Discover best practices for communications, education and public outreach that resulted in a successful public awareness campaign for direct potable reuse (DPR) in Colorado Springs.	Tara	Kelley		Colorado Springs Utilities	270

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	10:30 AM	11:00 AM	WED36-02	The Importance of Communication – Overcoming the Yuck Factor in a Direct Potable Reuse Project	One Water Polk, Polk County Utilities’ Direct Potable Reuse pilot project is in operation in the heart of central Florida. Even though research affirmatively demonstrates that drinking water supplies can be safely and reliably supplemented with potable reuse, opinions are widely driven by the wisdom of repugnance, otherwise known as the “yuck” factor. Communicating that message in the face of public opposition can be just as challenging as designing and operating the demonstration treatment facility. This presentation will share specific outreach strategies that Polk County is implementing with a focus on practical applications utilities can use to promote public acceptance of drinking water, no matter how it’s produced.	Tania	McMillan	Senior Environmental Specialist	Polk County Utilities	271
6/12/2024	11:00 AM	11:30 AM	WED36-03	The Map and the Library: Living Resources for Water Reuse Communicators	In 2023, a community of volunteers and water associations developed two key resources to help communications professionals talk about their water reuse projects to the public. The first is a Water Reuse Communication Materials Library, a product of the U.S. EPA’s National Water Reuse Action Plan. The second is an interactive Global Connections Map, depicting the locations of all existing and planned potable reuse (purified recycled water) projects worldwide. This talk will outline lessons-learned in developing these two resources, and provide insight on how they can augment local public outreach efforts.	Benjamin	Glickstein		Watereuse Association	272
6/12/2024	10:00 AM	11:30 AM	WED37	WED37 - The Water Research Foundation Research Highlight: Occurrence and Removal of Brominated, Iodinated, and Nitrogenous DBPs	Disinfection Byproducts (DBPs) are an ongoing challenge for many water utilities. Control and removal of DBP precursors are critical for meeting regulatory and health-based treatment goals. Speakers in this session will address precursor occurrence, formation potential, and controls for brominated, iodinated, and nitrogenous DBPs.	Mary	Smith	Research Program Manager	Water Research Foundation	273
6/12/2024	10:00 AM	11:30 AM	WED38	WED38 - Transforming Communities with Assistance Programs	Water sector customer assistance programs play a crucial role in ensuring access to safe and affordable water while addressing the diverse needs of communities. They aim to enhance the overall customer experience by providing equitable access to water services, particularly for vulnerable populations facing economic challenges. Implementing data-driven solutions helps optimize resource allocation and improve the efficiency of water assistance programs. Additionally, public-private partnerships often play a key role in fostering innovation and sustainability in addressing the complex challenges associated with water access and affordability.					274
6/12/2024	10:00 AM	10:30 AM	WED38-01	Enhancing Customers’ Quality of Life Through Assistance Programs and Technology to Improve the Overall Customer Experience	The Pittsburgh Water and Sewer Authority (PWSA) has recently positioned itself as a utility of the future, in particular with respect to customer assistance program offerings for income-eligible residential customers along with technology investments to enhance the overall customer experience. Let’s walk through PWSA’s comprehensive assistance program offerings and use of technology, as well as share lessons learned during implementation and the resulting positive outcomes of this investment.	Julie	Mechling		The Pittsburgh Water and Sewer Authority	275

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	10:30 AM	11:00 AM	WED38-02	Public/Private Partnerships – Lead Free DC Lead Pipe Replacement Assistance Program (LPRAP)	Through the Lead Free DC program, DC Water and the District of Columbia are working to remove all lead service lines by 2030. One of the subprograms is the Lead Pipe Replacement Assistance Program (LPRAP), a customer-initiated discount program for private-side only service line replacements. LPRAP addresses approximately 12,000 existing partial lead service lines. DC Water, in partnership with DOEE, and in collaboration with DDOT, approved local contractors, community members and other interested stakeholders, is facilitating private side lead service line replacements for eligible homeowners at 100% discount via District and BIL funds. DC Water is also working on training contractors to help them market themselves to build local economy.	Lori	Reid		Ramboll Americas Engineering Solutions, Inc.	276
6/12/2024	11:00 AM	11:30 AM	WED38-03	Using Data Driven Disconnections As Part of Your Racial Equity Plan	Utility disconnections disproportionately impact non-white, low-income customers. Utilities often struggle with balancing the financial needs of the utility with the disparate impact on BIPOC communities. By examining the receivable, the community, available assistance, and the institutional racism within the utility, you can find a path forward that protects the revenue stream and vulnerable customers.	Susan	Crosby	Deputy Revenue Commissioner for Water	City of Philadelphia	277
6/12/2024	10:00 AM	11:30 AM	WED39	WED39 - Emerging Local Water Leaders: Making Strides Towards an Equitable, Sustainable Water Future for Their Communities	Mid-level water utility professionals are leading the way on equitable, sustainable water management for their communities. This session will feature three award-winning emerging leaders who are building local resilience through water conservation and green infrastructure. It will also explore new ways of looking at familiar financing approaches for affordable investments at scale.	Cynthia	Koehler	Executive Director	WaterNow Alliance	278
6/12/2024	10:00 AM	10:15 AM	WED39-01	Advancing Equity & Turf Replacements with Data-Based Decision Making	Jenyffer will present on how she spearheaded her utility's data-based approach to increase access to turf replacement rebates for a broader range of customer, making the program more equitable and saving more water.	Jenyffer	Vasquez	Water Policy and Resource Analyst	West Basin Municipal Water District	279
6/12/2024	10:15 AM	10:30 AM	WED39-02	Building Community Resilience & Managing Stormwater with Green Infrastructure	Meagan will present on her leading efforts with the City of New Orleans to invest in green stormwater infrastructure alongside grey options, building community and climate change resilience.	Meagan	Williams	Urban Water Program Manager	City of New Orleans Office of Resilience and Sustainability	280
6/12/2024	10:30 AM	10:45 AM	WED39-03	Expanding Access to Water Use Efficiency Incentives & Building Trust Through Partnerships	Lily will present on her work to engage all of the utility's customers in its incentive programs and build trusting relationships with local CBOs.	Lily	Lopez	Director of External Affairs	Walnut Valley Water District	281
6/12/2024	10:45 AM	10:55 AM	WED39-04	Elevating Emerging Leaders Who Are Accelerating Our Sustainable Water Future	Cynthia will provide an overview of WaterNow's Emerging Leader Awards highlighting the key role mid-level water professionals play in advancing meaningful cultural change in the areas of sustainability, equity, or community engagement.	Cynthia	Koehler	Executive Director	WaterNow Alliance	282
6/12/2024	10:55 AM	11:05 AM	WED39-05	Financing Pathways: How to Pay for Equitable, Sustainable Water Infrastructure	Caroline will cover several innovative finance and accounting techniques enabling public utilities to better access capital markets to finance long-term investments in DI to build resilience while minimizing rate increases.	Caroline	Koch	Water Policy Director	WaterNow Alliance	283
6/12/2024	2:00 PM	2:30 PM	WED40-02	Fixing the White Box – A Practical Guide to Upgrading Filters	Gravity filtration represents the backbone of many surface water treatment plants. These filters require periodic upgrades including media replacement, underdrain replacement and structural repairs. The upgrades can also be used to provide additional capacity and to enable removal of organic contaminants. An important aspect of any upgrade is the impact on plant operations including the residuals handling facilities. This presentation will describe a methodology of upgrading filters, along with a case study where this methodology was applied.	Maria	Borman	Project Engineer		284

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	2:30 PM	3:00 PM	WED40-03	Leaving No Floc Unturned: CFD Modeling Results Provide Insight in Key Pretreatment Design Considerations	The new pretreatment system at the Omohundro Water Treatment Plant in Nashville is an opportunity to take a step forward in the optimization of flash mix, flocculation, and sedimentation processes at large scale. Extensive CFD analysis was employed to dive deep into questions that nag all water plant designers: 1) How can basin geometry be adjusted to maximize particle collisions, promote uniformity of mixing energy, reduce short circuiting, and minimize areas of higher shear? 2) How do the key design metrics change with different mixer styles? Supported by experience and a strong theoretical foundation, CFD facilitates an evaluation of these detailed design considerations.	Brandon	Dunagan		Carollo Engineers	285
6/12/2024	3:00 PM	3:30 PM	WED40-04	Tiny Bubbles Making Everything Fine at the Greenway Water Treatment Plant	The City of Peoria has continually worked to control algae at its Greenway Water Treatment Plant like many facilities throughout Arizona. The City underwent a multi-year pilot effort to explore the feasibility of incorporating nanobubbles with ozone dosing to control algae formation. With promising results, they worked with Carollo Engineers, Canfield Engineering, and Felix Construction to design and construct permanent nanobubble generator systems at their presedimentation and final sedimentation basins with the ability to monitor results. This presentation summarizes the results of the multi-year pilot test, the nanobubble generators' permanent installation, and results of the City's to-date monitoring efforts.	Dylan	Lesan	Engineer	Carollo Engineers, Inc.	286
6/12/2024	3:30 PM	4:00 PM	WED40-05	Improving Anaerobic Bioreactor Performance by Understanding its Microbial Population	Anaerobic bioreactors are increasingly used to remove oxyanions such as nitrate, perchlorate, and selenium in a variety of applications ranging from mine water to FGD wastewater to potable groundwater treatment. Bioreactor performance is variable and often deteriorates with time. Troubleshooting often focuses on mechanical aspects, disregarding the microbial component of the issue. This presentation discusses approaches to investigating the bioreactor's performance through the lense of microbial and biofilm health. We will share a case study where a bioreactor's removal efficiency was improved from 90% to 98% through improving the microbial health.	Ola	Opara		Westech Engineering, Inc.	287
6/12/2024	4:00 PM	4:30 PM	WED40-06	Anoxic Biotreatment for Inorganic Contaminant Removal – 20 Years of Lessons Learned	Anoxic biotreatment converts multiple inorganic contaminants to innocuous end-products using a dosed electron donor and naturally occurring bacteria. While full-scale anoxic biotreatment systems have been applied broadly in Europe since the early 1980s, full-scale systems in the United States are relatively new. Twenty years ago, there were no full-scale biodenitrification plants operating in the US; today there are at least a half-dozen. This paper will detail the technical, regulatory, and practical journey of anoxic biotreatment in the US over the last two decades, with a focus on fixed-bed biotreatment.	Jess	Brown	Director of R&D	Carollo Engineers	288
6/12/2024	1:30 PM	3:00 PM	WED41	WED41- University Forum	Join us for the latest in academic research					289
6/12/2024	1:30 PM	2:00 PM	WED41-01	The Application and Potential Water Quality Impacts of Split Treatment Water Softening	Split treatment provides lime softening water treatment facilities the opportunity to decrease requirements of hydrated lime and carbon dioxide. Implementation of this treatment method at a full lime softening plant requires further analysis of impacts on water quality and infrastructure. This research study will provide an overview of the benefits of split treatment and the considerations that must be addressed prior to a facility proceeding with the treatment change. Disinfection efficacy and scaling and/or corrosion impacts are assessed both theoretically and experimentally. The results of this project are to be utilized by the City of Ames, Iowa water treatment plant to determine whether to proceed with split treatment implementation.	Nicole	Martindale		HDR	290

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	2:00 PM	2:30 PM	WED41-02	Deep Learning-Based Automated Detection of Sewer Defects in CCTV Videos: Comparison of Models for Three Characteristic Datasets	Closed-circuit television is widely employed for examining the interior state of sewer pipes. The filming and video inspection procedures require significant time investment and the process is subjective. We conduct a comparative analysis of several deep convolutional neural network defect classification models applied to three utilities that exhibit distinct data features. The models are tested and evaluated to serve two primary purposes: 1) to conduct a quality and control assessment of previously inspected videos, and 2) to classify defects for videos that have not yet been inspected. For each purpose, the optimal model is identified for each utility. A transfer learning application demonstrates its usefulness in this context.	Barbara	Lence		University of British Columbia	291
6/12/2024	2:30 PM	3:00 PM	WED41-03	One Person's Trash is Another Person's Trash Boom!	To minimize the dispersal of water-born floatable trash into Rose Creek Park in Little Rock, Arkansas, and ultimately into the Arkansas River (located about 1 river mile from the Park), a modular floatable trash boom was installed upstream from the Park proper. Unlike commercially available trash booms, this boom was constructed using discarded materials. Through various modifications and improvements of its design, the trash boom has proved to be an effective means of trapping water born trash in Rose Creek.	John	Czarnecki		University of Arkansas At Little Rock	292
6/12/2024	1:30 PM	4:30 PM	WED42	WED42 - Seismic Resilience: Criteria for Next-Gen Pipeline Engineering	Seismic resilience is a critical aspect of designing next-generation pipelines to withstand the impact of seismic events. Attendees will delve into innovative design strategies, material considerations, and construction techniques aimed at enhancing the seismic resilience of pipelines. The session will also address the incorporation of advanced technologies, such as real-time monitoring and adaptive systems, to dynamically respond to seismic activities. By understanding and implementing these criteria, the goal is to establish a new benchmark for pipeline engineering that ensures reliability and safety in regions prone to seismic activity.					293
6/12/2024	1:30 PM	2:00 PM	WED42-01	Seismic Design Approach for Ductile Iron Pipe Including Alternative to Boltless Segment Joints	This presentation describes practical design approaches to determine the seismic the joint performance requirements for ductile iron pipe and associated installation procedures. The ductile iron pipe industry has been improving seismic joint performance, but the industry is lacking in practical procedures to determine the required strength for ductile iron pipe joints. The approach and procedures described were developed as part of the \$1.6 billion Willamette Water Supply Program (WWSP) which is located in an area at risk for of a magnitude 9.0 Cascadia Subduction Zone earthquake. Challenges associated to delivery schedules and flexibility during installation of the pipe necessitated the development of these new procedures.	Michael	Britch	WWSP Engineering and Construction Manager	Tualatin Valley Water District	294
6/12/2024	2:30 PM	3:00 PM	WED42-03	Innovative Pipeline Design Solves the Problem of Seismic Reliability on a Constrained Urban Site at San Francisco's New State-of-t	Innovative Pipeline Design Solves the Problem of Seismic Reliability on a Constrained Urban Site at San Francisco's New State-of-the-Art Headworks	Kaushik	Punyamurtula		Carollo Engineers	295

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	3:00 PM	3:30 PM	WED42-04	Replacement of Casa Loma Siphon Barrel No. 1 at Fault Crossing Improves Seismic Resilience of Colorado River Aqueduct	This presentation discusses the challenges/solutions to several key aspects of the Project during design and construction, including: <ul style="list-style-type: none"> <li>• Design for Large Fault Displacement: Carollo designed dual 104-inch diameter pipelines for 12.8 feet horizontal and 2.6 feet vertical fault displacement and 3.0 feet of settlement over 50 years.</li> <li>• Novel Application of EPS Geofoam as Pipe Backfill: The design utilizes EPS Geofoam at the fault crossing to distribute pipeline displacement and reduce stress in the pipeline joints.</li> <li>• Challenging Construction: The project team and Contractor overcame several challenges during construction including completing the final tie-in work during the CRA shutdown window of 30 days. Construction was complete June 2023.</li> </ul>	Darren	Baune	Engineer	Carollo Engineers	296
6/12/2024	3:30 PM	4:00 PM	WED42-05	Leveraging AI for Disaster Resilience: Scalable and Effective Algorithms for Strategic Planning	Natural disasters such as earthquakes, winter storms, floods, and other hazard events are global concerns that have already caused widespread disruptions to infrastructures, individual lives, and environment. Water infrastructure is especially critical as it provides access to drinking water, fire departments, and healthcare services. This presentation provides an overview of how Department of Water and Power (LADWP) collaborated with University of Southern California (USC) to leverage AI and Machine Learning to develop a planning tool to identify the layout of seismically robust pipe network to ensure direct water supply to critical customers and certain proximity to water sources for residential areas in the case of an earthquake.	Khadija	Durbas		LADWP	297
6/12/2024	1:30 PM	3:00 PM	WED44	WED44 - Condition Assessment of Water Mains - The Path Forward	This session will review how condition assessment technologies evolve every year and can change the current practices in the industry. The advancements in artificial intelligence/machine learning, in-line ultrasonics, and others have expedited the updates to the M77 – Condition Assessment of Water Mains. Case studies will be presented that detail some of those advancements.	Scott	Jauch	Assistant Project Manager	HDR	298
6/12/2024	1:00 PM	1:30 PM	WED44-01	Hot off the Press: An Overview of the 2nd Edition of M77 – Condition Assessment of Water Mains	Condition assessment technologies evolve every year and can change the current practices in the industry. The advancements in artificial intelligence/machine learning and in-line ultrasonics have expedited the updates to the M77 – Condition Assessment of Water Mains. Other various changes in the industry are addressed in the updates discussed in this presentation. From this presentation, the participant will learn about the changes in the industry and what updates have been made in the AWWA Manual of Practice by the chair of the revision.	Scott	Jauch	Assistant Project Manager	HDR	299
6/12/2024	2:00 PM	2:30 PM	WED44-02	Sound Decisions: Leveraging Ultrasonic Technology for Pipeline Inspections in the City of Grapevine	As its 40-year-old raw water line nears the end of its design life, the City of Grapevine embarked on proactively inspecting the pipeline using ultrasonic technology. The inspection revealed numerous observations, providing better insight into the condition of the pipeline.	Alec	Propst		Freese and Nichols, Inc.	300
6/12/2024	2:30 PM	3:00 PM	WED44-03	Thinking Outside the Pipe: Use of Combined Acoustic and Vibration Imaging to Measure PCCP Deterioration	Historically, technologies for assessing prestressed concrete cylinder pipe (PCCP) have required access to the pipe interior for personnel or tool entry and temporary depressurization for free-swimming tools. A new methodology using acoustic and vibration excitation at existing access points, such as manways, has been piloted. A series of pilot projects were conducted on 36, 48 and 54-inch diameter PCCP while in service with no operational modifications. Collected assessment data were compared with electromagnetic wire break data from others. Results indicate that screening level assessments of PCCP condition are possible with longitudinal resolution of less than 10 feet. Case studies for each pilot project will be presented.	Jerrold	Wade		Great Lakes Water Authority	301



Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	1:30 PM	4:30 PM	WED45	WED45 - Securing the Supply: Modernizing Cross-Connection Control Programs	Cross-connection control programs aim to prevent backflow of contaminated water into the public water supply by identifying and protecting against cross-connections between the public water supply and a source of contamination or pollution. A cross-connection control program is critical to ensuring the safety of drinking water systems. Learn from experts what it takes to achieve compliance, how to modernizing your existing backflow program and requirements for responding to cross-connection incidents.	Luis	Huerta		City of Sacramento Dept. of Utilities	302
6/12/2024	3:30 PM	4:00 PM	WED45-05	Opening Opportunities with Cross-Connected Thinking - DC Water's Path to Enhancing their CCC Program	Cross-Connection Control (CCC) is a vital component for maintaining water quality in water distribution systems. Cross Connections provide pathways for contamination of systems to occur. Elimination of these pathways serves to preserve the integrity of water quality in water distribution systems. This often-underestimate component of system compliance is common to water systems of all sizes, and there is no one-size-fits-all method for controlling this. This presentation will summarize DC Water's journey to improve their CCC Program by undertaking Municipal Regulation changes and updating their CCC Manual.	Mangaliso	Goba		Mott MacDonald	303
6/12/2024	1:30 PM	4:30 PM	WED46	WED46 - Keys to Successful Water Treatment Plant Operation and Maintenance	This session focuses on water treatment plant operation and maintenance strategies and best practices for optimized performance. Participants will explore presentations on the important of maintenance programs, plant start-up, and equipment upgrades highlighting the importance of both to seamless plant performance.					304
6/12/2024	1:30 PM	2:00 PM	WED46-01	The \$1.765B WTP hand-off from the Design-Builder to Houston	The 1st Phase of the \$1.765B NEWPP Expansion is being turned over to Houston's staff to operate and maintain 80 MGD of the 320 MGD facilities, the balance of which will be completed by 2025. The challenges and successes of the Phase 1 hand-off along with lessons learned from staff will be presented and discussed.	Paul	Walker	Senior Vice President	Carollo Engineers	305
6/12/2024	2:00 PM	2:30 PM	WED46-02	Optimizing Maintenance with Asset Management and Reliability Practices	Learn key strategies and steps you can take to keep your systems reliable. To maximize reliability and uptime of two critical systems, SJW conducted 1) a Reliability Centered Maintenance project on a monochloramine production facility, and 2) a Reliability Centered Design project on a PFAS treatment facility. SJW will present the purpose, overall processes, milestones, benefits, and key takeaways.	Andy	Yang	Director of Asset Management	San Jose Water	306
6/12/2024	2:30 PM	3:00 PM	WED46-03	Developing Asset Specific Strategies for Maintenance	An in depth look at how assets fails, how to identify failure modes, and how to develop cost effective methods to ensure asset availability.	George	Williams	CEO	Reliability Excellence LLC	307
6/12/2024	3:00 PM	3:30 PM	WED46-04	Poly Wants a Clarifier – 20 Years of Operational Experience and Upgrades For a Large Dry Polymer System	The Passaic Valley Water Commission's Little Falls Water Treatment Plant has a capacity of approximately 100 MGD. The plant installed a ballasted flocculation system in 2004. A critical component of the ballasted flocculation system is the polymer feed system. Unreliable polymer feed will significantly impact settled water quality. The system can use up to 500 pounds per day of polymer and polymer is stored in supersacks. The original polymer system is still in service and equipment upgrades have been performed. Over the past 20 years the staff have refined operating conditions and will be adding another polymer feed system to further enhance plant flexibility.	John	Civardi			308
6/12/2024	3:30 PM	4:00 PM	WED46-05	Substantial Chemical Costs Changes: How OSHG is Becoming more Cost Competitive	As a result of aging infrastructure, CCW evaluated chlorine gas against sodium hypochlorite and OSHG. In 2018, OSHG was recommended. As a result of supply chain issues and the ever-changing cost landscape, CCW updated the analysis four times from 2018 to 2023. Increases in chlorine gas and sodium hypochlorite make OSHG a more attractive cost option.	Tyler	Hudson	Senior Principal Engineer	Hazen and Sawyer	309

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	4:00 PM	4:30 PM	WED46-06	Integrated Digital Management in WTP and distribution systems provides for Resilient Operations and integrates Engineering.	The common problems to all in the field of operations are transitional generational activities in combination with a larger dependency in digital and technology learning. The challenge we face is creating built infrastructures with resiliency integrated which requires us to change organizations and methods of working which we have done for over millennia so that in a few years be able to build and operate while adapting and transforming. The true resilient Operation and Maintenance infrastructure requires for new methods of evaluation, communication, learning and delivering time and solutions to the systems.	Luis Santiago	Casado	Director Global Industrial Water	Hatch	310
6/12/2024	1:30 PM	3:00 PM	WED47	WED47 - Communicating about PFAS and Emerging Contaminants	Although the EPA's proposed standards for PFAS are not yet approved, utilities are already monitoring the compounds. As some of these results become publicly available, utilities need to be prepared with communication plans and strategies. This section will feature experts offering guidance on how to talk about these and other emerging contaminants and how to maintain public trust.	Michelle	Clements	Public Relations Manager	Portland Water District	311
6/12/2024	1:30 PM	2:00 PM	WED47-01	Developing a Comprehensive PFAS Response Plan to Maintain Public Trust	Communicating with the public about PFAS is inherently challenging. PFAS, termed "forever chemicals" by the media, often make for sensational national news stories. The topic is complicated and not easily explained to the public. Water and wastewater utilities are being thrust into public communications without the benefit of years of proactive planning. This presentation will provide examples of how creating a Comprehensive PFAS Response Plan supports a communication program that builds trust with policymakers and community members so they can understand the issues and be involved in the solutions.	Elizabeth	Bakke	Principal	Conсор	312
6/12/2024	2:00 PM	2:30 PM	WED47-02	Reframing the Conversation around Emerging Contaminants	There is a strong need for clear, timely, and proactive communication on PFAS removal. Public awareness can build support and the understanding water utilities will need to invest in and implement programs to address PFAS and other future challenges. This presentation will show how using best communications practices creates an increased level of engagement and an understanding of PFAS risk in water, wastewater and biosolids.	Kyle	Hay	Municipal PFAS Lead	Brown and Caldwell	313
6/12/2024	2:30 PM	3:00 PM	WED47-03	Communicating the Public Health Context of Chemicals in Drinking Water: Techniques for Visualizing the Unseen and Unknown	This presentation addresses the challenge of understanding and communicating the presence of various chemicals, including Contaminants of Emerging Concern (CECs), in drinking water systems. Using a long-term monitoring dataset comprising hundreds of CECs, tools for effective interpretation and communication of CEC data within the public health context despite challenges with the unseen (occurrence below detection limits) and unknown (human health risk from drinking water exposure) will be shown. The techniques are applicable to a wide range of chemical contaminants in drinking water (such as PFAS, nitrate, and lead).	Eric	Peterson		Hazen and Sawyer	314
6/12/2024	1:30 PM	3:00 PM	WED48	WED48 - Are you CMMS Ready? What's Next After Selecting a Computerized Maintenance Management System	This session will cover implementing a CMMS software from initiation through change management. Including business procedures, roles and responsibilities, and creating an environment of both collaboration and accountability. We will discuss key decisions about system hierarchies, domains (drop-down menus), quality assurance/quality control processes, and workflows.	Jacob	Gardner	US Digital Analytics Lead	Arcadis	315
6/12/2024	1:30 PM	1:50 PM	WED48-01	Change Management for New Technologies	Software implementation is the first step, but what happens next is crucial. We will discuss strategies for organizations to ensure that employees adopt and effectively use new technologies to provide value and prevent expensive purchases from becom	Jacob	Gardner	US Digital Analytics Lead	Arcadis	316
6/12/2024	1:50 PM	2:10 PM	WED48-02	Understanding Hierarchies and CMMS	Presentation on different hierarchy structures used for CMMS implementation, asset management reporting, and financial analyses.	Felicia	James		Carollo Engineers	317

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	2:10 PM	2:30 PM	WED48-03	Selecting & Implementing a CMMS: A Small/Medium Utility's Journey	There are many solutions in the market, and many utilities have trouble selecting a CMMS/EAMS that is right for them. Furthermore, small/medium utilities face greater budgetary constraints that make selecting the right system a bit more challenging.	Daniel	Myers	Operations Manager	Schertz - Seguin Local Government Corporation	318
6/12/2024	1:30 PM	3:00 PM	WED49	WED49 - Improving Water Quality with Distribution System Modeling	Water quality modeling has many applications and benefits for assessing and managing water systems. This session will discuss water quality modeling techniques and showcase real-world examples, providing attendees with valuable insights into improving water quality for various purposes, from optimized flushing to water storage and water age.	Meg	Roberts	Distribution Systems Services Leader, Associate Vi	Hazen and Sawyer, P.C.	319
6/12/2024	2:00 PM	2:30 PM	WED49-01	Scour Power: Using Modeling to Plan Large Diameter Main Cleaning through Flushing	Unidirectional flushing is vital for water distribution pipe maintenance but poses challenges with large mains. Large & small pipes suffer sediment and biofilm issues, particularly at steady flow rates. We discuss using distribution modeling for planning flushing maintenance on large diameter mains instead of pigging. This presentation addresses the need for cleaning and presents two insightful case studies that used modeling and field work to expand flushing beyond hydrants, optimizing tanks, blow-offs, and supply patterns while minimizing service impact.	Christopher	Evans		Hazen & Sawyer	320
6/12/2024	2:30 PM	3:00 PM	WED49-02	System Operations, Water Quality, Resilience, and Modeling the Future for Elevated Storage Tanks	A reminder in the skyline of the essential water sector, elevated storage tanks (EST), or water towers, are common facilities in utilities' potable distribution systems. As operating pressures of distribution systems have increased over time to serve growing demands, many ESTs now have challenges emptying and contribute to high water age, an indicator of water quality. How are utilities currently operating their water towers and overcoming these challenges? This presentation will discuss case studies of several utilities using hydraulic modeling to develop operational and infrastructure related strategies to utilize these historic landmark structures.	Kristiana	Dragash		Carollo Engineers	321
6/12/2024	2:30 PM	3:00 PM	WED49-03	Water Age Model – Two Approaches and Their Applications	Water age (WA) has been accepted as a surrogate to investigate the water quality in the distribution system. Water age is not a physical substance and cannot be measured in the field or laboratory. water age is influenced by several distribution system assets, including by not limited to the distribution system operational aspects; distribution system subsurface assets; and distribution water storage assets; and pressure zone transfer devices; and pumping stations. An example to compare the travel time, storage turnover rate and water age is presented. The WA model has two approaches - 1. stationary demand and operation control and 2. SCADA driven. Examples of the two approaches are presented.	John	Chan		MWRA	322
6/12/2024	1:30 PM	4:30 PM	WED50	WED50 - The Power of Design-Build Partnerships	The power of design-build partnerships lies in the integration of creativity, efficiency, and collaboration throughout the project lifecycle. By fostering a unified vision from conception to completion, design-build partnerships empower teams to navigate complex challenges with collective expertise. This session examines the outcomes of these partnerships from the viewpoints of the partners.					323

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	4:30 PM	5:00 PM	WED50-06	Collaborative Delivery Tools for Traditional Procurement Challenges: Tips from an Innovative Lake Tahoe Water Treatment Project	The Tahoe City Public Utility District (TCPUD) undertook a unique challenge by designing a 1 MGD Water Treatment Plant (WTP) in the pristine Lake Tahoe environment. Their innovative approach focused on minimizing visual intrusion while serving the west shore service area. Notable design features included <ul style="list-style-type: none"> <li>• A submerged pump station.</li> <li>• Leveraging the new intake pipeline as a chlorine contactor.</li> <li>• A direct membrane filtration to UV treatment train.</li> <li>• A backwash water membrane filtration system to maximize water production.</li> </ul> In this presentation, the Owner (TCPUD) and Engineer (Kennedy Jenks) will describe key challenges associated with procurement and how collaborative delivery strategies were used to keep this project on schedule.	Spencer	Archer			324
6/12/2024	1:30 PM	3:00 PM	WED51	WED51 - Lead Material Inventories and More!	This session will address lead service line inventories including assessing methods to identify unknown service line materials	Christina	Devine			325
6/12/2024	1:30 PM	2:00 PM	WED51-01	Guidance for Complying with the Lead and Copper Rule Revisions for Water Systems with No- to Low- Prevalence of Lead Service Lines	As specified in the LCRR, all water systems must prepare an inventory of service lines connected to its distribution system, whether they are owned or controlled by the water system, to identify those service lines that are made of lead or of other or unknown material. Some states have already enacted inventory requirements, which may be more specific than the EPA 2022 Guidance Manual. As a result, some utilities already have inventory experience. The subject WRF 5223 Guidance Manual, completed in early 2024, gathers case studies and captures experience from these utilities who are already completing their inventories and provides a framework to help states develop more workable guidance and to share effective approaches.	Everett	Skipper			326
6/12/2024	2:00 PM	2:30 PM	WED51-02	Full-Scale Development and Implementation of a Stepwise Approach to Lead Service Line Identification	USEPA's Lead and Copper Rule Revisions (LCRR) require public water systems to develop service line inventories. We have developed a stepwise approach to Service Line identification that is accurate and cost effective, and utilizes multiple identification techniques, including records reviews; visual observation; fully flushed and sequential profile sampling; and test excavations. Our project included evaluating accuracy and costs of these techniques at 99 connections that have lead SLs and 60 connections that have non-lead SLs in Bennington VT. A stepwise approach of observations, fully flushed sampling, and sequential profile sampling was as accurate and 50% less expensive than test excavations alone.	Darren	Lytle			327
6/12/2024	2:30 PM	3:00 PM	WED51-03	Transitioning from Service Line Inventories to Implementation of Optimized Corrosion Control Treatment Strategies	This presentation will include a summary of CCT strategies available under the LCRR with a focus on phosphate-based inhibitors. Several case studies will be described to highlight corrosion control studies performed by these utilities to evaluate their CCT and make changes to proactively prepare for the LCRR by implementing or optimizing the use of phosphate-based corrosion inhibitors. Consideration of water quality, chemical availability, cost implications, and impact on downstream wastewater treatment plants will be highlighted.	Bevis	Pigott	Principal Engineer	Hazen and Sawyer	328
6/12/2024	1:30 PM	4:30 PM	WED52	WED52- Stage 3 Microbial / Disinfection Byproduct Rules	Systems need to begin now to prepare for the upcoming Stage 3 M/DBP rulemaking. NDWAC recommended more reliable secondary disinfectant residual maintenance, additional organic carbon removal, increased coordination between wholesale and consecutive water systems, and increased focus on water management in buildings.					329

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	1:30 PM	4:30 PM	WED53	WED53 - Novel Approach for Small System Planning and Management	This session presents new approaches for planning, managing, and source of supply for small water systems.	Irfan	Gehlen	Senior Engineer	Kerr Wood Leidal Assocs. Ltd.	330
6/12/2024	1:30 PM	2:00 PM	WED53-01	Data Visualization - It's Out of Reach – A Small Utility's Access to Big Data	This presentation focuses on one smaller utility's journey into the data visualization space for better data access and usefulness. Like many utilities, the Bedford Regional Water Authority has many different databases storing much of it's useful data. To access for reporting or to utilize for more informed decision making, it can often take hours for staff to access the necessary data required to meet their objectives. As such, they are embarking on a systematic data visualization effort to meet their long term data analysis/visualization goals using readily available visualization tools within tight budget requirements.	Paul	Delphos		Burns & McDonnell	331
6/12/2024	2:00 PM	2:30 PM	WED53-02	Small Utilities Can Stretch their Dollars and Leverage Digital Water Technologies	Small water utilities struggle with limited revenue, retaining highly skilled staff, and maintaining assets that investing in digital water technologies can seem daunting. This presentation will share how small to medium utilities across the country have leveraged funding resources to plan, select, and implement digital water technologies that improve operations, foster capital planning, and prepare communities for future growth all while working on a tight budget.	Robert	Little	National Practice Leader	Woodard & Curran	332
6/12/2024	3:00 PM	3:30 PM	WED53-04	To Treat or To Redrill? Groundwater Alternatives Analysis	To Treat or To Redrill? Groundwater Alternatives Analysis - Well compliance updates required an alternatives analysis and cost effective UV treatment for a System of just over 1000 people. The Village was notified that their well from 1940s was no longer compliant with regulations and must be decommissioned or treated to GWUDI standards. Alternatives including new wells were evaluated and UV treatment was selected as a cost effective and technically sound option. Discussion will cover the alternative analysis process and how the final design was selected. Project funded through State Revolving Funds.	Angel	Gebeau	Drinking Water Engineer	AECOM	333
6/12/2024	3:30 PM	4:00 PM	WED53-05	Uranium Contaminated Groundwater Leads to Alternate Source Development in Rural Alaska	The City of Wales, Alaska is located on the Bering Strait, and has a population of about 150 people. Wales relies on a groundwater source which contains elevated levels of naturally occurring uranium and fluoride. This presentation will discuss benchtop testing for uranium and fluoride removal, and the evaluation of alternate water sources. Details of the design, procurement, and construction of a new water treatment plant and washeteria to this remote village, which is only accessible by small aircraft and seasonal barge service will be discussed.	Rebecca	Venot			334
6/12/2024	4:00 PM	4:30 PM	WED53-06	Successful Reservoir Dredging...and a Whole Lot More!	This presentation describes how a small water system successfully capitalized on a reservoir dredging project to simultaneously implement other water treatment and supply improvements. Before this project began, the City of Carlton was in dire need of restoring its reservoir volume and found itself projecting to be within weeks of water supply shortfalls. The audience for this presentation will hear how emergency agreements were executed for the project, restoration of reservoir volume was accomplished, other water system improvements were completed, and the community's water system resiliency was improved.	Michael	Bomar	Vice President	Tetra Tech	335
6/12/2024	1:30 PM	4:30 PM	WED55	WED55 - Part 1-Planning to Save Water / Part 2- Optimizing Outdoor Water Use-Lessons Learned from Large-Scale Landscape Strategies	In the first half of this session, you will hear from speakers looking to plan for future water shortages and demands, as well an anticipating water quality challenges that could result from less use. The second half of the session will the results of research investigating the effectiveness of strategies undertaken to adapt outdoor water use in the face of growing water scarcity and a changing climate.					336

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	1:30 PM	2:00 PM	WED55-01	Water Shortages in a Tropical Paradise – Maui, Hawaii	Maui County, Hawaii, is known for its tropical climate and as an idyllic tourist destination. However, behind the lush scenery lies water resource challenges. Maui County’s Department of Water Supply (DWS) operates five water districts across the island that rely upon a mix of surface water and groundwater. Water users in certain areas on the island are often subject to water use restrictions due to reduced surface water flow. DWS is preparing a Water Shortage and Conservation Plan (WSCP) to enhance long-term water conservation planning and establish effective mitigation actions during shortages. This presentation will describe the DWS system, the WSCP methodology and its findings. Project changes due to the 2023 wildfires may be included.	Shivani	Shrotriya		Carollo Engineers	337
6/12/2024	2:00 PM	2:30 PM	WED55-02	Quantitative Evaluation of the Effect of Water Conservation Strategies on Design Flows for Different Land Uses in Québec (Canada)	Because of climate change and conservation strategies, it is widely accepted that most cities will have to adapt in several ways to overcome some of its consequences, especially in locations where drought period frequency is increasing. In addition, new technologies for home appliances are being developed as industries move towards more efficient ways to use energy and water. Significant decreases in water demands will increase the water residence time (RT) in the network which, in turn, permits more degradation of the disinfectant used to protect against microbial regrowth. As current design of WDS encourages engineers to be conservative, often resulting in oversized pipes, water quality deteriorates even further by reduced velocities.	David	Celeita		Universite Laval	338
6/12/2024	3:00 PM	3:30 PM	WED55-04	Optimizing Outdoor Water Use: Lessons Learned from Large-Scale Landscape Strategies	Non-functional turf (NFT) is echoing throughout the Colorado River Basin. As water providers scale up investment in landscape transformations, what strategies are working and how well? Learn from ground-breaking research across more than thirty water providers working to adapt their community’s outdoor water use in the face of growing water scarcity and a changing climate.	Liesel	Hans	Director of Programs	Alliance for Water Efficiency	339
6/12/2024	1:30 PM	2:00 PM	WED56-01	Journey to Excellence: Advanced Leak Detection at San Jose Water	San Jose Water’s advanced leak detection program is part of its commitment to maintain and reduce its annual water loss. Hear from highly skilled leak detection technicians and program administrator on a program that is recognized as one of the most large-scale and successful leak detection initiatives in the water loss industry. Attendees will gain practical takeaways that they can apply in their respective journeys toward excellence in leak detection and water loss.	Eric	McNeil		San Jose Water Company	340
6/12/2024	2:00 PM	2:30 PM	WED56-02	Reduced System Input Volume Upon Implementing Permanent Acoustic Monitoring: A Case Study Using Water Treatment Plant Flow Data	We present evidence that the introduction of a permanent acoustic monitoring program by Pennsylvania American Water resulted in substantial reductions in system input volume across three water treatment plants within a period of three to four months. Several leaks were detected by the system, many of which existed prior to the deployment of the acoustic sensors. To support a causal relationship between the detection of these leaks and the reduction in system input volume, we combine daily system input volume data, as measured by Venturi flow meters, with acoustic data from the sensors, and leak flow data estimated during field investigations. We discuss the impact this has had on our plans for expanding our water treatment capabilities.	Mark	Misura	Sr. Superintendent of Operations	Pennsylvania American Water	341

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	2:30 PM	3:00 PM	WED56-03	How Do Our Customers Really Use Water? Collecting Customer Flow Profiles in Indiana's Largest Potable Water System	As a regulated utility serving Indianapolis and surrounding areas in central Indiana, Citizens Energy Group is required by the Indiana Utility Regulatory Commission to perform meter testing to assure its customers are being provided with accurate accounting of their water consumption. Citizens has developed and maintained a robust testing program in which meters of each type and size are tested on an ongoing basis via in-house test benches and a third-party large meter testing contractor, all to the standards of the AWWA M6 Manual. This presentation will detail the method of technology selection, field deployment, data collection and final results. Additionally, lessons learned will be shared for the benefit of other utilities.	Tory	Wagoner		Cavanaugh & Associates, P.A.	342
6/12/2024	1:30 PM	3:00 PM	WED57	WED57 - The Changing Manganese Picture in California	The adverse impact that the presence of manganese (Mn) has on drinking water quality is receiving renewed attention by California regulators and drinking water utilities. The establishment of a health-based standard for Mn in Canada at a level commonly seen in treated drinking water underlies potential health concerns involving Mn. At the same time there is a growing appreciation for the many detrimental effects of Mn that has accumulated in distribution systems. An improved understanding of the implications of presence of manganese in treated water is forcing the industry to better control this contaminant.					343
6/12/2024	1:30 PM	2:00 PM	WED57-01	The Changing Manganese Picture in California – Part 1 Regulatory Activities and Occurrence	An improved understanding of the implications of presence of manganese in treated water is forcing the industry to better control this contaminant. This presentation will summarize the current regulatory landscape and provide regulatory actions with respect to manganese being taken in California. The presentation will also include an overview of the presence of manganese in the USA and in California.	Helene	Baribeau			344
6/12/2024	2:00 PM	2:30 PM	WED57-02	The Changing Manganese Picture in California – Part 2 Implications for Analytics, Treatment, and Distribution System Management	An improved understanding of the implications of presence of manganese in treated water is forcing the industry to better control this contaminant. This presentation will summarize how the current regulatory landscape and regulatory actions in California will impact how manganese is measured, treated, and managed in the distribution system.	Phil	Brandhuber			345
6/12/2024	1:30 PM	4:30 PM	WED59	WED59 - Wildfires Are Here: Learn What Utilities Should Expect and Should Do to Respond and Recover	The most destructive, costliest, and deadliest wildfires have been recorded in recent U.S. history and these require an equally unprecedented response by water utilities. This session will share real-world lessons direct from frontline utilities impacted, offer a concept of operations plan (CONOPS) that all utilities can adopt, worker safety advice from NIOSH, and researcher discoveries.	John	Stufflebean	Director	Maui County Department of Water Supply	346
6/12/2024	1:50 PM	2:10 PM	WED59-02	CONOPS - The Concept of Operations Plan for Water Utility Disaster Response	A strategic CONOPS plan for water utility response and recovery for drinking water chemical contamination events was developed in 2022. This was developed after a wildfire workshop held July 2022 with utilities from California, Colorado, and Oregon.	Andrew	Whelton	Asst. Professor	Purdue University, Environmental Engr.	347
6/12/2024	2:10 PM	2:30 PM	WED59-03	Know When to Ask for Help, How and What to Expect	Large and small water utilities can benefit from learning about how mutual aid and resources typing prepares the water utility for effective rapid response and recovery. Wildfires can overwhelm utility staffing and prompt a host of uncommon questions	Kevin	Morley			348
6/12/2024	2:30 PM	2:50 PM	WED59-04	Research Has Helped Utilities Defend their Communities and Make Decisions	Current knowledge about drinking water contamination associated with wildfires, sources, fate, and recovery actions by affecting utilities and buildings will be shared.	Andrew	Whelton	Asst. Professor	Purdue University, Environmental Engr.	349

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	2:50 PM	3:20 PM	WED59-05	Education Stations - Participants will Rotate Around the Room and meet with speaker groups	Interdependent Systems: Wastewater, Roads, Debris Removal and More – Talk with experts on how other systems impacted their recovery of the water system.	Mickey	Rich	Assistant Director	Paradise Irrigation District	350
6/12/2024	1:30 PM	4:30 PM	WED60	WED60 - Innovations in Aquifer Recharge and Storage: Strategies for Sustainable Water Management	Explore initiatives and leading strategies in aquifer recharge and storage, addressing the challenges of climate change, population growth, and regulatory dynamics. This session presents a journey through diverse approaches and case studies, navigating the complexities of aquifer storage and recovery (ASR) and managed aquifer recharge (MAR) to create resilient water systems in the face of evolving water resource challenges.					351
6/12/2024	1:30 PM	2:00 PM	WED60-01	Achieving Long-Term Water Supply Through Accelerated Drought Response and ASR	How can water agencies secure long term supply reliability in the face of rapid and unprecedented challenges posed by climate and hydrological changes? Join us as we explore how one Central California water district rises to the challenge of balancing water supply deficit, water quality needs and affordability challenges. Learn valuable lessons learned from the successful development of the Accelerated Drought Response Project and how aquifer storage and recovery facilitates multiple project benefits in a disadvantaged community.	Karen	Pappas	Water Program Manager	HDR Engineering Inc.	352
6/12/2024	2:00 PM	2:30 PM	WED60-02	Applied Geophysics for Managed Aquifer Recharge	Demand for managed aquifer recharge (MAR) projects have expanded to provide water supply resilience; however, costs for invasive subsurface investigations to address these factors have increased over the past two decades. This presentation provides a high-level review of the major geophysical methods that can supplement invasive subsurface investigations of the shallow subsurface, providing a cost-effective approach compared to drilling boreholes and installing wells, which laterally only provide information at a single point.	Ian	Gottschalk			353
6/12/2024	2:30 PM	3:00 PM	WED60-03	Water Management Decision Support using Innovative Applications of Integrated Surface Water-Groundwater Models	Under the implementation of Sustainable Groundwater Management Act (SGMA) in CA and hydrologic stresses due to climate change, water managers are under increasing pressure to sustainably manage their water and promote climate resiliency. Water managers have an unprecedented opportunity to proactively pursue new and creative approaches. However, innovative decisions are not easy to make given the plethora of options, uncertainties, and regulatory and political constraints. This presentation showcases some of the state-of-the-art tools developed for integrated water resources models and their applications to real-world examples. The presentation will exhibit how these innovative tools can support a variety of water management decisions.	Mesut	Cayar		Woodard & Curran	354
6/12/2024	1:30 PM	3:00 PM	WED62	WED62 - The Water Research Foundation Research Highlight: Incorporating Equity Considerations into Utility Decision-Making	This session will explore different ways utilities can better incorporate equity into their decision-making process. We will take a deep dive into equity considerations of three topics: workforce, asset management planning, and affordability programs.	Sydney	Samples	Research Program Manager		355
6/12/2024	1:30 PM	3:00 PM	WED63	WED63 - Brand Building and How to Network Like a Pro	This session will help build your personal brand in the industry through networking, reputation building, increasing influence, and creating personal collateral in building relationships.	Pranjali	Kumar		Carollo Engineers	356



Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	1:30 PM	2:00 PM	WED63-01	How to Build your Image as a Leader in the Water-wastewater Industry.	Learn how to build a powerful network in a way that feels authentic and genuine using easy, effective methods to meet new people, make relevant connections, and inspire others to seek you out for your advice and expertise. We'll cover how to establish your reputation, increase your influence, and cultivate your network using online tools and real-world opportunities that will enable you to help others and advance your career.	Carlos	Covarrubias	Regional Manager		357
6/12/2024	2:00 PM	3:00 PM	WED63-02	Maximizing Your Network and Personal Brand	Maximizing Your Network and Personal Brand- In this 60-minute interactive session, we will identify what your brand is and how to leverage your skills to get more from your skills for less effort. We will explore specific ways of networking, leaving a lasting impression, and the power of creating personal collateral in relationships.	Jennifer	Magley	Founder	Magley Mass Media	358
6/12/2024	3:00 PM	4:30 PM	WED65	WED65- How Bench- and Pilot-Testing Inform Treatment	Bench- and pilot-testing play important roles in informing water treatment processes by providing essential insights into the efficacy and feasibility of proposed treatments. Bench-scale allows researchers to analyze the fundamental aspects of a treatment method, such as chemical reactions and removal efficiencies. Pilot-scale testing, on the other hand, bridges the gap between laboratory studies and full-scale implementation, offering a more realistic assessment of how a treatment process performs under operational conditions. These testing phases help identify potential challenges, optimize parameters, and validate the scalability of treatment technologies, ultimately guiding decision-makers in selecting the most effective and cost-efficient solutions for large-scale water treatment applications.					359
6/12/2024	3:00 PM	3:30 PM	WED65-01	Planning for Treatment of the World's Largest Drinking Water Supply: NYC's Preparation for Filtration	NYCDEP has been operating under a Filtration Avoidance Determination (FAD) issued by United States Environmental Protection Agency for its Catskill/ Delaware water supply system since 1993. Due to recent FAD updates, NYC is conducting a comprehensive review of filtration methods and technologies to develop a conceptual design for a filtration facility. This presentation will discuss NYC's planning process, results from bench scale testing, and the protocols planned for year-long pilot testing. It will review the constraints associated with future filtration and how each technology would fit within the existing water supply system and available footprint for the facility.	Eileen	Feldman	Senior Associate	Hazen and Sawyer	360
6/12/2024	3:30 PM	4:00 PM	WED65-02	Enhancing Water Treatment Capacity and Performance at Crescent Hill Water Treatment Plant	Louisville Water Company (LWC), Kentucky's pioneering water utility, has a rich history with 156 years of innovation. LWC upholds very high water quality standards, as evidenced by both of their water treatment plants having achieved Phase IV Status with the Partnership for Safe Water. As regional water demand grows, LWC aims to proactively plan for future conditions while maintaining its commitment to high-quality water. The presentation will discuss the project's goal of analyzing and enhancing water treatment capacity at LWC's Crescent Hill Water Treatment Plant through innovative bench-scale testing of coagulation and lime softening processes. And show how these efforts aim to ensure consistent water production under varying conditions,	Mamatha	Hopanna	Water/Wastewater Engineer	HDR. Inc	361

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	4:00 PM	4:30 PM	WED65-03	Pilot Plants Led to Best Value Advanced Water Treatment Improvements for Toho Water Authority	The Toho Water Authority (Toho) operates 17 water treatment facilities and is the largest provider of drinking water in Osceola County, the fastest growing county in Central Florida. As demand has steadily increased, Toho proactively explored outside-the-box advanced water treatment at four existing facilities that would improve water quality and meet quantity needs of the future. Pilot studies were conducted to further defined the best value treatment train based on the facility-specific raw water characterization and treatment needs. Treatment technologies tested included nanofiltration membranes, adsorptive granular activated carbon, biological granular activated carbon, ion exchange, ozonation, diffused aeration, and media filtration.	Martin	Coleman	Principal Engineer	Hazen and Sawyer	362
6/12/2024	3:00 PM	4:30 PM	WED66	WED66 - Targeting PFAS with Destructive Removal Technologies	Destroying PFAS often involves advanced treatment processes, such as oxidation or thermal destruction, designed to break down PFAS compounds into non-hazardous byproducts. The exploration of destructive technologies is essential to providing a comprehensive approach to PFAS remediation and containment efforts. As the scientific community continues to advance in this field, these technologies represent a vital frontier in the ongoing battle against PFAS contamination.					363
6/12/2024	3:00 PM	3:30 PM	WED66-01	Comparison of Membrane Filtration with Concentration and Destruction of Reject for PFAS Water Treatment	This presentation will highlight advances in developing a complete PFAS destruction treatment train at the pilot scale and associated considerations for scaling the system to a model, large-scale treatment plant. The treatment train consists of 1) nanofiltration to remove PFAS, 2) surface active foam fractionation (SAFF™) to concentrate PFAS from the membrane reject stream, and 3) destructive treatment using plasma, ECO, or HALT. A full evaluation of target PFAS destruction, including life cycle costs and water quality parameters that affect the performance of this treatment train approach, will also be presented.	TAMZEN	Macbeth	Remediation Practice Leader	CDM Smith	364
6/12/2024	3:00 PM	3:30 PM	WED66-02	Electrocatalytic Nanofiltration Membranes for high-throughput PFAS destruction	PFAS are tenacious and hard-to destroy compounds. While past processes that can degrade them do so only slowly, we can achieve rapid removal and destruction by trapping PFAS near a reactive electrode with a nanofiltration membrane.	David	Warsinger	Assistant Professor	Purdue University	365
6/12/2024	4:00 PM	4:30 PM	WED66-03	Evaluating the Efficacy of Electrochemical Oxidation for the Removal of Resilient Fluorinated Pesticides from Water Sources	This study investigates Electrochemical Oxidation (EO) with boron diamond electrodes for degrading fluorinated pesticides in water. The research explores conditions affecting degradation, revealing EO's potential with half-lives of 16.5 to 25.1 minutes. Factors include current density, electrolyte concentration, and water matrix. The study highlights EO as a promising tool for removing persistent pesticides, essential for safeguarding water quality.	Ibrahim	Abusallout		Fraunhofer USA	366
6/12/2024	3:00 PM	4:30 PM	WED67	WED67 - Leveraging AI for W/WW System Analysis and Enhancement	Learn about applying Artificial Intelligence with four examples of AI application in the Water Industry. These case studies will share how AI was applied to various water systems and the benefits provided.	Kedric	Szana		Jacobs	367
6/12/2024	3:00 PM	3:30 PM	WED67-01	Achieving Reliable Real-Time Water Quality Forecasting with Machine Learning	Machine learning models offer an opportunity to generate real-time predictions of the state of complex natural systems, where more traditional models require extensive data inputs for calibration and boundary conditions. This presentation will demonstrate how publicly available data from the National Weather Service and USGS were used to generate real-time predictions of water quality in a large river. The predictions leverage continuously updated machine learning models.	Jamie	Lefkowitz		Brown and Caldwell	368

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	3:30 PM	4:00 PM	WED67-02	How Can an AI-based Tool is Able to Bring Water Network Efficiency and Resilience?	Through a strong collaboration with Nevers city (France) and LACROIX, AQUAWIZE, a “Water Augmented Advisor” has been designed: innovative utility-centric solution based on their dreams and needs. It minimizes the time to analyze all the data from increasing IoT devices by using AI and machine learning based on local users. Some screenshot of the tool will be showcased. Outcome and benefits of this co-innovation will be presented with numbers (time of analysis saved, Non-revenue water saved, ROI...) and with some unexpected consequence (resilience, increased investment...). Moreover, some perspective will also be unveiled showing that, once installed, there is a bounty of new possibilities.	Stephane	Gervais	EVP Strategic Innovation	LACROIX Group	369
6/12/2024	4:00 PM	4:30 PM	WED67-03	From Data Collection to Insights: How the Town of Fort Erie Used AI to Optimize Investments	To ensure that its citizens have continued access to affordable, high-quality Water and Wastewater services in the short, medium, and long terms, the Town of Fort Erie has invested in the past few years to compile good condition data to help determine the state of its infrastructure. This extensive data collection program includes Sewer and Storm assessments, a CCTV program rollout, flowmeters installed in the Wastewater system, and smart hydrants deployed in the Water Distribution network. These high-quality datasets can now be used with Machine Learning and Artificial Intelligence to better understand infrastructure needs and inform planning and investment decisions in the context of legislative changes, future growth, and changing climat	Chris	Pisaric	Manager Water & Wastewater Division	Town of Fort Erie	370
6/12/2024	3:00 PM	4:30 PM	WED68	WED68 - Using a Digital Twin to Improve Water Distribution System O&M	One of the most widely-used areas for digital twins in the water sector is the water distribution network. This session will present three utility examples of water distribution digital twins from various perspectives. Come prepared with tough questions, as this is an interactive session with audience Q&A for the speakers.	James	Cooper	Global Director	Arcadis	371
6/12/2024	3:10 PM	3:30 PM	WED68-02	Establishing a Distribution System Digital Twin: Trust in the System is Necessary for Benefits to Emerge	Hillsborough Water Resources Division (HWRD) is implementing a digital twin to predict system-wide hydraulics and water quality. HWRD has faced head-on the opportunities, and challenges, associated with implementing significant new digital capabilities. One important lesson was that new technologies must be proven first to the workers who will use them. How they work cannot be a mystery, and fidelity with measurements must be high – before staff will engage. This talk provides an overview of this HWRD digital twin journey, and generalizes the lessons learned to the utility industry, focusing on the steps taken to build trust. New adopters of these technologies should anticipate and plan for similar adoption paths and engagement with staff.	James	Uber			372
6/12/2024	3:30 PM	3:50 PM	WED68-03	Transforming Water Modeling Practices: AI-Enhanced and Quality Modeling with Real-Time IoT Data - Houston Water Case Study	This presentation will cover the integration of water distribution modeling, water quality modeling, real-time IoT data, and AI techniques for efficient water planning and management. It further elaborates how this approach enhances water quality, optimizes infrastructure, and ensures resilience in the face of evolving challenges. Collaborative efforts among water experts, data scientists, and technology developers are imperative for the continued refinement and adaptability of these systems, making them indispensable tools in achieving sustainable and resilient water management on a global scale. Case study of City of Houston's effort of "coupling AI technique" to advance water modeling practices will be presented and demonstrated.	Satish	Tripathi	Managing Engineer		373

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	3:50 PM	4:10 PM	WED68-04	Lakewood's Digital Twin: Dynamic Decision-Making in a Virtual Environment	Lakewood, a city in Los Angeles County, CA serving 66,000 customers with 180 miles of water mains, transitioned from a basic hydraulic model to a sophisticated digital twin. Using Qatium as their platform, they integrated real-time data from AMI, IoT, and SCADA, enhancing monitoring and modeling capabilities. With the digital twin in place, Lakewood started using it to verify fire flow requirements and evaluate customer service impacts. This significantly eased the burden on their limited internal modeling resources and empowers Lakewood to streamline operations and make well-informed decisions.	Anthony	Manzano			374
6/12/2024	3:50 PM	4:10 PM	WED68-04	Lakewood's Digital Twin: Dynamic Decision-Making in a Virtual Environment	Lakewood, a city in Los Angeles County, CA serving 66,000 customers with 180 miles of water mains, transitioned from a basic hydraulic model to a sophisticated digital twin. Using Qatium as their platform, they integrated real-time data from AMI, IoT, and SCADA, enhancing monitoring and modeling capabilities. With the digital twin in place, Lakewood started using it to verify fire flow requirements and evaluate customer service impacts. This significantly eased the burden on their limited internal modeling resources and empowers Lakewood to streamline operations and make well-informed decisions.	Luke	Butler	Director of Innovation		375
6/12/2024	3:00 PM	4:30 PM	WED69	WED69 - Conducting Lead Outreach for Daycare and Schools	Among the most sensitive and challenging aspects of the LCRR for utility providers is the mandate to partner with daycares and schools on lead testing. Engaging with schools and daycares as subject matter experts on water quality and supporting them as they prepare to communicate with the public offers a pivotal opportunity for North American water utilities to foster trust among those they serve. Hear the perspectives of regulators, consultants, and utilities on their strategies and tactics to effectively rise to the occasion of these new regulations.	Mandy	Cawby	Director of Customer Relations	Water District No. 1 of Johnson County	376
6/12/2024	3:00 PM	3:30 PM	WED69-01	Effective Communication Strategies for Engaging Child Care Providers in Lead Service Line Replacement Efforts	Communities in Cook County Illinois have some of the highest numbers of lead service lines in the country. Because children are most susceptible to the damaging effects of lead, Cook County Government, in collaboration with the nonprofit Elevate, have partnered together to replace LSLs at 550 child cares. To ensure child care providers feel comfortable having their LSL replaced, the program team interviewed more than a dozen utilities across the country, as well as child care providers and advocates, to develop a suite of communication tools and best practices for the program. During this session, the program team will introduce strategies for effective LSL communication before, during, and after LSLR.	Caroline	Pakenham	Associate Director, Water Programs	Elevate	377
6/12/2024	3:30 PM	4:00 PM	WED69-02	Maximizing Community Buy-In: Lessons Learned from Community Engagement Efforts for the Texas Lead Testing Program	TruePani has collaborated with the Texas Commission on Environmental Quality (TCEQ) to create and implement a voluntary statewide program to help Texas schools and child care facilities test their drinking water for lead. This initiative is funded through the EPA's Water Infrastructure Improvements for the Nation (WIIN) Act and is available for all eligible facilities within the state. This presentation will provide insight on lessons learned from working to develop effective communications methods and build public trust to increase engagement and retention in voluntary testing programs.	Katherine	Melito		Truepani Inc.	378
6/12/2024	4:00 PM	4:30 PM	WED69-03	Top BMPs Learned from Environmental Protection Agency's (EPA) Voluntary School and Child Care Lead Testing and Reduction Grant	This study will illustrate leading best management practices (BMPs) to successfully implement lead testing and reduction programs to reduce lead in drinking water at schools and child care facilities. Top BMP lessons learned from this grant program will ensure effective strategies for future instigation and continuous improvements of sustainable and effective lead testing and remediation programs at school and child care communities.	Ying	Tan		Environmental Protection Agency	379

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	3:30 PM	4:00 PM	WED71-02	Maintaining Your Air Gapped SCADA While Securely Monitoring and Analyzing Real-Time Operational Data	Participants will learn from an actual water/ wastewater use case about technologies that can physically protect air gapped operational data networks (SCADA/ICS) while allowing real-time operational data out to decision support systems (Digital Twins) on the corporate network for monitoring, analytics, predictive maintenance and modeling.	Christian	Hager	Vice President, Sales & Business Development	Fend Incorporated	380
6/12/2024	4:00 PM	4:30 PM	WED71-03	No News Doesn't Mean Good News - How Cloud Services Provide Redundancy For Legacy SCADA Systems	As water and wastewater facilities seek protection from malicious cyberattacks, a new generation of cloud-based monitoring systems provide independent oversight and redundancy – in addition to data backups – for true operational resiliency.	Mark	Puckett	Chief Solutions Officer	XiO, Inc	381
6/12/2024	3:00 PM	4:30 PM	WED72	WED72 - Security and Emergency Response in California	Experts from water industry will go over how they navigate the waters of security and emergency management, ensuring California stays afloat in the face of challenges.	Jim	Wollbrinck		METISIS LLC	382
6/12/2024	3:00 PM	4:00 PM	WED72-01	No Fuel, No Response, No Recovery...a Decade Later!	The impacts from the 2011 Southern California Power Outage and 2012 Super Storm Sandy; demonstrated that critical emergency fuel planning is needed for recover from a sustained power outage. Today, a regional wildland fire, ARK Storm or earthquake in California could seriously impact fuel supplies in California, Nevada and Arizona. Water utilities are not prepared to effectively manage response with limited fuel planning. which could result in the reduction of water production, treatment or other critical operations. This session reviews emergency fuel planning aligned with power resiliency efforts and what your utility can do now and in the future.	Jim	Wollbrinck		METISIS LLC	383
6/12/2024	3:00 PM	4:30 PM	WED73	WED73 - Cyanobacteria/Harmful Algal Blooms Monitoring, Detection and Prediction	Monitoring, detecting, and predicting cyanobacteria or harmful algal blooms (HABs) are critical aspects of safeguarding water quality and public health. Continuous surveillance. early detection, and predictive modeling further enhances the ability to anticipate and manage the occurrence of HABs, allowing for proactive measures to protect water resources and prevent adverse health effects. As climate change and anthropogenic activities contribute to the increased frequency and intensity of HABs, the development and refinement of monitoring, detection, and prediction strategies play a pivotal role in effective water management practices.	Polly	Barrowman		Yokogawa Fluid Imaging	384
6/12/2024	3:00 PM	3:30 PM	WED73-01	Baseline Knowledge of Phytoplankton Populations in Lakes Directs Development of Trigger Levels for Proactive Mitigation	Increases in cold weather HABs now mean that year-round monitoring of lakes and reservoirs is imperative when attempting to catch blooms in their nascent stages. Early detection can allow lake managers to spot-treat lakes, reducing treatment costs and minimizing public health risks. This presentation will focus on the importance of understanding the natural phytoplankton populations of a lake in relation to water quality and why flow imaging microscopy (FIM) is beginning to replace traditional microscopy in monitoring plans. Case studies from three utilities will illustrate how lake managers integrate FIM into their monitoring and response plans and provide examples of the development and implementation of their baseline and trigger levels.	Polly	Barrowman		Yokogawa Fluid Imaging	385

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	3:30 PM	4:00 PM	WED73-02	A Linear Regression Model for Predicting MIB Levels Using Water Quality Parameters	The John Glenn WTP in Monroe, North Carolina has been experiencing high levels of MIB and geosmin in the raw water and, subsequently, higher levels in the finished water. A correlation analysis was conducted between raw water quality parameters and MIB and geosmin levels to develop a model to provide “real-time” predictive model. The results indicated that MIB was positively correlated with temperature and wind speed, while negatively correlated with chlorophyll a, conductivity, and dissolved oxygen. A preliminary linear regression model was developed for predicting MIB levels using water quality parameters. The model would be enriched and become more resilient as applied to other locations and furnished with more quality data.	Hamed	Torkzadeh	Water Process Engineer	Black & Veatch	386
6/12/2024	4:00 PM	4:30 PM	WED73-03	Monitoring of Cyanobacterial Toxins in Various Water Sources Using a Targeted LC/MS/MS Analysis....More Toxins...More Information!	This paper describes the use of Liquid chromatography-tandem mass spectrometry (LC/MS/MS) to analyze for various algal toxins in various water sources (recreational water (lakes and rivers) and intake waters for example). Over the past several years of this method being developed more and more toxins have been added to the targeted screening list in a single method.	Stuart	Oehrle		Waters Lab-Northern Kentucky University	387
6/12/2024	3:00 PM	4:30 PM	WED74	WED74 - Strategies for Water Infrastructure Funding	The renewal, replacement, and protection of aging water and wastewater infrastructure is the number one issue facing our industry. At the root of this challenge is the ability of systems to provide sufficient funding for these needed infrastructure improvements that can withstand the conditions of tomorrow. Join experts as they discuss three different approaches to infrastructure funding.					388
6/12/2024	3:00 PM	3:30 PM	WED74-01	Developing DeKalb County, Georgia’s \$2.4 Billion Infrastructure Investment Program	Facing aging infrastructure, DeKalb County, Georgia encountered a \$2.4 billion capital investment need. At the core of the infrastructure need was the plan to fund this level of capital. DeKalb County developed a comprehensive funding plan, incorporating the use of WIFIA and GEFA loans as well as traditional financing. This presentation provides an overview of DeKalb County’s path to a \$2.4 billion funding plan.	Robert	Ryall	Vice President		389
6/12/2024	3:30 PM	4:00 PM	WED74-02	Pure Water Antelope Valley – A Critical Water Supply Project for a Large Disadvantaged Community	This presentation will describe how Palmdale Water District is successfully navigating the federal and California funding landscape to secure capital for an innovative, regional recycled water program. Content will cover the funding approach, coordination between key stakeholders and team members, integrating compliance into project delivery, and lessons learned. By the end of this presentation, attendees will be able to strategize ways to combine multiple federal and state grant programs to build a capital stack for a project.	Kim	Pugel	Management Consultant	Stantec	390
6/12/2024	4:00 PM	4:30 PM	WED74-03	Show Me the Money - Alternative Funding Options for Your Infrastructure Project	Water agencies are facing a tsunami of repair and replacement cost, especially with the need to replace aging pipelines. Many of these assets were put in the ground over 60 years ago and are beyond their expected useful life. In addition, water sales have significantly dropped due to new water efficiency norms. The outcome is that even with the continual rate increase, water sales are not at the forecasted level. Given these challenges, many water agencies are looking at a new business model of viewing water infrastructure as a service to the property owner. This approach would put a Water Infrastructure Capital Charge on the tax roll, which would fund the critical repair and replacement needs of the community.	Sanjay	Gaur	Principal Consultant	Water Resources Economics	391

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	3:00 PM	4:30 PM	WED75	WED75 - How Federal Water Infrastructure Financing Programs Address Affordability and Assist Disadvantaged Communities	This session will provide an overview of each of several federal water infrastructure funding programs at U.S. Environmental Protection Agency and U.S. Department of Agriculture, including borrower and project eligibilities. Presenters will also describe how these funding programs benefit underserved and disadvantaged communities and accelerate water infrastructure investments.	Kiri	Anderer	Sr. Environmental Engineer	U.S. EPA	392
6/12/2024	3:00 PM	3:25 PM	WED75-01	How the Clean Water and Drinking Water State Revolving Funds Benefit Disadvantaged Communities	The SRFs provide low-interest loans and other types of assistance to address affordability concerns and benefit disadvantaged communities across the country. Co-presented by the DWSRF and CWSRF programs.	Kiri	Anderer	Sr. Environmental Engineer	EPA	393
6/12/2024	3:25 PM	3:40 PM	WED75-02	How WIFIA Funding Accelerates Infrastructure Projects at Lower Costs to Communities	The WIFIA program has several financial benefits, including long loan terms, customized repayments, and a locked-in interest rate that have saved WIFIA borrowers over \$6 billion total.	Dallas	Shattuck			394
6/12/2024	3:40 PM	3:55 PM	WED75-03	Additional Drinking Water Grant Programs for Underserved Communities: Lead, Resilience, Emerging Contaminants	These drinking water grants address, support, and improve America's drinking water infrastructure through investments in lead reduction, climate resilience, and emerging contaminants, especially for underserved, small, and disadvantaged communities.	Michelle	Madeley	Grants Team Lead	U.S. EPA	395
6/12/2024	3:55 PM	4:10 PM	WED75-04	Loan and Grant Programs from U.S. Department of Agriculture – Rural Development Water and Environmental Programs	USDA's Rural Development Water and Environmental Programs provides grants, loans and loan guarantees for drinking water, wastewater, stormwater, and solid waste infrastructure in rural communities.	Daniel	Cardona		USDA Rural Development	396
6/12/2024	10:00 AM	11:30 AM	PST01	PST01 - Fresh Ideas Poster Session	The future of water is here! Join the best and the brightest from AWWA's Sections. These students and young professionals won their Section poster competitions to attend and compete at ACE24.					397
6/12/2024	1:30 PM	3:00 PM	PST02	PST02 - Wednesday Poster Session	Take advantage of this great opportunity to interact directly with presenters at the poster sessions being held in the Exhibit Hall. The poster presenters will be present for the full duration of each poster session to provide attendees with the opportunity for in-depth discussions about their topic.  Topics Covered in this session - Intelligent Water (IW) and Water Resources (WR)					398
6/12/2024	1:30 PM	3:00 PM	PST02-01	(IW) Investigating the Effects of Operational and Environmental Factors on Water Distribution Pipeline Failures Using Survival Analysis	This study systematically and quantitatively assesses the impact of operational and environmental factors on pipe failures in East Bay Municipal Utility District's water distribution system. By integrating pipe data with variables like soil types, groundwater levels, geohazard zones, road quality, and traffic loads, it categorizes pipes accordingly. Utilizing survival analysis methods, such as Kaplan-Meier and Weibull estimations, the research identifies the varying degrees of influence of these factors on pipe failures. This approach offers valuable insights for prioritizing maintenance and replacements in water utility systems.	Shih-Hung	Chiu		University of California, Berkeley	399

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	1:30 PM	3:00 PM	PST02-02	(IW) How Bad are your Water Mains? Improved Management of Critical High Consequence of Failure Assets.	Details how New Jersey American Water utilizes non-invasive, acoustic based, condition assessment information to improve management of critical high consequence of failure water mains. Conventional methods and models, like assessing break rates in a network and invasive condition assessment technologies, should be used as tools alongside a non-invasive condition assessment regimen to plan for replacement/rehabilitation of pipes. This approach follows the pyramid methodology of asset management to better prioritize often limited budgets. The concept is to use cost effective methods to collect information and progress to high resolution, higher cost inspection options, where needed, on a select group of assets identified by the initial data.	Kenneth	Seelig	Senior Project Engineer	New Jersey American Water	400
6/12/2024	1:30 PM	3:00 PM	PST02-03	(IW) PVC Forcemains Under the Lens: Assessing, Analyzing, and Ensuring Wastewater System Resilience	Learn about the first-ever comprehensive assessment conducted in 2022 using advanced technologies, including leak and gas pocket detection, pressure monitoring, and fatigue analysis. Determine how actionable recommendations such as soil assessments and soft start/stop technology optimize asset management and enhance operational confidence in the forcemain's continued success.	Javed	Mukri	Sales Engineer		401
6/12/2024	1:30 PM	3:00 PM	PST02-04	(IW) Asset Management is the Most Understated and Undervalued Benefit of an Advanced Metering Program	Learn how Advanced Metering Infrastructure (AMI) significantly enhances or kick-starts utilities' asset management program and provides utilities with the ability to monitor the health and performance of the assets they own.	Jacob	Jasperson		Utility Metering Solutions (UMS)	402
6/12/2024	1:30 PM	3:00 PM	PST02-05	(IW) Water Quality Prediction Based on Chemical Index, Remote Sensing, and Automated Machine Learning (AutoML) Techniques with Feature	This study focuses on monitoring Total Suspended Sediment (TSS) in the Mississippi River to inform environmental assessments, and water quality preservation. It combines chemical indices, including total nitrogen, total phosphorus, chlorophyll-a concentration, and turbidity, with remote sensing (Landsat imagery) and AutoML techniques to analyze sediment concentration and its connections to algal blooms and water clarity. Data from 56 monitoring stations were used, aligned with Landsat imagery from 1982 onwards. AutoML tools were employed to select predictive models, resulting in an R2 of 0.67. SHAP values were used to assess variable importance. Future work aims to examine temporal trends and provide insights into pollution management.	Sahar	Rezaei		University of Arkansas	403
6/12/2024	1:30 PM	3:00 PM	PST02-06	(IW) Digital Transformation and Human-Centric AI: Revolutionizing Water Leak Detection with The Public Utilities Board of Singapore	This abstract provides an overview of leak detection on transmission pipes using Singapore's Public Utilities Board (PUB) as a case study. The central focus of the study is the Transmission Leak Monitoring System (TLMS), a technology deployed across 200 km of transmission mains in Singapore since 2018. The TLMS leverages Artificial Intelligence (AI) to streamline various operations, such as data collection, analysis, and reporting.	Kanishk	Noel		Mueller Water Products	404
6/12/2024	1:30 PM	3:00 PM	PST02-07	(IW) Predicting Treatment Plant Inflows Using Deep Learning-based Digital Twin for Operational Decision-making	In this presentation we will go present the use of a deep learning-based digital twin solution for predicting flows to the treatment plant.	Abhiram	Mullapudi	Sr. Data Scientist	Xylem	405



Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	1:30 PM	3:00 PM	PST02-08	(IW) Intelligent Water and Modelling Applications: A Synergistic Approach for Sustainable Water Management	As the world grapples with the growing urgency of water scarcity and environment concerns, this conference abstract advocates for collaborative efforts among industry stakeholders to harness the full potential of intelligent water and modelling applications. Together, we can brainstorm and direct our thoughts, musings and acts for a water-secure future for generations to come. The abstract mainly aims at presenting the works that we currently practice at AADC and we see it an opportunity to further augment it with the knowledge and wisdom that will be shared at this conference.	Rahul	Iyer		Al Ain Distribution Company	406
6/12/2024	1:30 PM	3:00 PM	PST02-09	(IW) Smart Customer Service Platform – Macao Water	WeChat has the strongest customer stickiness among all other social media platforms in Macao, which was the reason Macao Water started developing a customer service platform on WeChat. As the WeChat-based customer service platform came out, our customers would not only review latest news and updates on our official account, but also access our different kinds of e-services related to water supply. If a customer has installed a smart water meter, they can subscribe to our smart meter service, receiving notification from leakage alarm and smart care service etc. Macao Water often posts promotional games to encourage our customers to subscribe to our official account and activate e-bill service, to reduce paper usage and promote our smart mete	Lao	Kim		Macao Water	407
6/12/2024	1:30 PM	3:00 PM	PST02-10	(IW) Leveraging Intelligent Water Solutions for Resilient and Efficient Water Management	This presentation explores the transformative potential of intelligent water solutions in enhancing resilience and efficiency in water management. It delves into technologies enabling accurate data gathering, elimination of repetitive tasks, and streamlined workflows, which facilitate enhanced reporting and concise data visualization. The integration of advanced sensors, real-time data analytics, smart water grids, and IoT technologies will be discussed, highlighting their role in automating data collection and analysis, and facilitating data-driven decision-making processes in industrial contexts.	Alireza	Khanizadeh		Bettsm Controls	408
6/12/2024	1:30 PM	3:00 PM	PST02-11	(IW) Revolutionizing Municipal Water and Wastewater Management: Web-Based Remote Monitoring & Control	The presentation offers a comprehensive exploration of how modern web-based remote monitoring solutions are transforming the landscape of municipal water and wastewater management when compared to traditional Supervisory Control and Data Acquisition (SCADA) systems.  Throughout the presentation, attendees will gain insights into the numerous advantages of web-based solutions, with a special emphasis on their ability to streamline operational processes, enhance data-driven decision-making, and facilitate remote access for wastewater operators. Real-world case studies will be presented, illustrating successful transitions from legacy systems to web-based monitoring platforms.	Steve	Frangione		Grundfos	409
6/12/2024	1:30 PM	3:00 PM	PST02-12	(IW) The Technology Evolution in Water Processing: Emerging Instrument & Process Optimization Tools	In today's ever evolving world, the technological tools for optimization that are available to us as humans also continue to evolve. In the past 50 years, there is a stark contrast from where we initiated operationally to where we are today. We have gone from a primarily manual operation to a more advanced, connected, smart operation environment.  In this session, we will focus on the progress of that technology in water processing, on the tools that are available today, and on how these tools can be implemented to improve efficiencies of operation. In addition to exploring the benefits of this technological progress, we will also touch on the necessity of cybersecurity as we continue to advance.	Kathryn	Grimball	Sr Manager, Process Optimization Advisors	Hach	410

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	1:30 PM	3:00 PM	PST02-13	(IW) Navigating Water Resilience: Bozeman's Climate-Driven Approach with KUBRA Dropcountr	Facing shifting climate patterns and urban growth, Bozeman, MT, is turning its focus to building water resilience. Located in a semi-arid zone with just 16 inches of annual rainfall, it relies heavily on snowmelt for water, forcing the city to confront drought risk and potential water shortages. Core to its strategy is water conservation, empowering residents via KUBRA Dropcountr to make informed decisions about water use. By integrating this water analytics solution, the city customizes water conservation goals and irrigation insights allowing residents to control indoor/outdoor water use, which aids citywide conservation. Bozeman's adoption of KUBRA Dropcountr spurs impactful water savings, fortifying resilience amid potential scarcity.	Yara	Alatshan	Senior Product Marketing Manager		411
6/12/2024	1:30 PM	3:00 PM	PST02-14	(IW) Practical Models with Tangible Results at the TRA Tarrant County Water Supply Project	Many facilities are facing the challenge of aging infrastructure. To tackle this challenge, we need to use all of the tools we have available, including advanced tools such as hydraulic, CFD, and BAF modeling. These tools were used to solve aging infrastructure problems at the 87 MGD conventional water treatment, the TRA Tarrant County Water Supply Project (TCWSP).	John	Logan		Hazen and Sawyer	412
6/12/2024	1:30 PM	3:00 PM	PST02-15	(IW) Fistful of Data: Implementing a Platform that Grabs Ahold of AMI Data to Model and Locate Leaks in a Water System	Advanced metering infrastructure and data engineering, when paired with a hydraulic model, can provide valuable insights into the operation and management of a water system. When integrated into an automated data platform with the proper sensors and paired with machine learning techniques and artificial intelligence, these tools can be used to detect and locate leaks proactively.	Andrew	Boyle		Utilimatics, LLC	413
6/12/2024	1:30 PM	3:00 PM	PST02-16	(WR) Source Water Protection in Quebec City: Use of geochemical and isotopic tools for vulnerability assessment	This presentation is part of a larger study that integrates surface and groundwater in the vulnerability assessment of Quebec City's main drinking water source in the Saint-Charles River. Geochemical and isotopic tools were used to estimate natural geochemical background levels of groundwater, to study factors controlling contaminants' distribution and concentration in groundwater, and their potential upsurge in the river. We established a detailed geochemical groundwater portrait considering the origin and distribution of chemical parameters, aquifer type and confinement context. Several parameters measured exceeded acceptable levels set by Canadian water quality standards, such as chloride levels linked to road salt contamination.	Baudelaire	N'DA	M.	UQAT	414
6/12/2024	1:30 PM	3:00 PM	PST02-17	(WR) Source Water Protection in Quebec City: Using an Integrated 3D Hydrological Model to Study Groundwater Pathways and Travel Times	This presentation is part of a larger study that integrates surface and groundwater in the vulnerability assessment of Quebec City's main drinking water source in the Saint-Charles River. Understanding groundwater pathways and travel times from infiltration to upsurges to the rivers is critical because it reflects the time a contaminant might take to reach the water intake. However, such data are rarely available due to the extensive preparatory work required. In this study, a 3D hydrological model is used to estimate groundwater flow paths and travel times at the watershed scale. Various contamination scenarios are simulated to provide stakeholders with a better understanding of the water quality vulnerability of the drinking water source.	Benjamin	Frot		Laval University	415

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	1:30 PM	3:00 PM	PST02-18	(WR) Source Water Protection in Quebec City: Investigating Surface-Groundwater Interactions with an Integrated Hydrological Model	This presentation is part of a larger study that integrates surface and groundwater in the vulnerability assessment of Quebec City's main drinking water source in the Saint-Charles River. The present and future quantitative water resources of the 350km <sup>2</sup> watershed are evaluated using a 3D numerical model. This study examines the connections between surface water and groundwater to facilitate the understanding of seasonal and interannual variability of water resource vulnerability for water source management. The coupled surface/groundwater model generates temporal and spatial outputs including recharge, variations in surface and groundwater volumes, and groundwater discharge to streams for the current conditions as well as 2050 projections.	Laura	Gatel		Université Laval	416
6/12/2024	1:30 PM	3:00 PM	PST02-19	(WR) Reuse in Action - Operational Experience of a Fast-Track Project	Long-term operational data of a fast-tracked water reuse project will be summarized to demonstrate how creative design and delivery can result in a successful installation	Abigail	Antolovich	Director of Sales - Western Region	Wigen Water Technologies	417
6/12/2024	1:30 PM	3:00 PM	PST02-20	(WR) DPR Systems to Meet Proposed PFAS Limits	Potable reuse systems offer U.S. water utilities a resilient solution to water scarcity and PFAS contamination. Advanced technologies align with evolving regulations, making this approach both sustainable and compliant. Despite challenges, these strategies pave the way for a safer, more reliable water infrastructure.	Viraj	deSilva		Freese & Nichols, Inc.	418
6/12/2024	1:30 PM	3:00 PM	PST02-21	(WR) Using Climate Change Modeling to Assess Risk and Resiliency for Two Upland Reservoir Water Sources for Direct Filtration Plants	Climate change models were used to predict the future changes in temperature and rainfall for two undeveloped and protected mountainous watersheds that provide water to two reservoirs that serve as sources for two direct filtration plants for the City of Asheville, North Carolina. The objective of the evaluation was to estimate future increases in temperature and in rainfall induced turbidity spikes that could impact reservoir water quality and subsequent resiliency of the direct filtration treatment.	Peter	Lusardi	Lead Engineer	GHD Inc.	419
6/12/2024	1:30 PM	3:00 PM	PST02-22	(WR) Evaluation of Lake Management Strategies	Thornton will present decades worth of monitoring data and decision-making demonstrating the effectiveness or ineffectiveness of multiple types of lake management strategies. This presentation will review the findings, challenges, and lessons learned from Thornton's lake management experience, including: <ul style="list-style-type: none"> <li>•Development of robust Source Water Monitoring Plans</li> <li>•Development of Harmful Algal Bloom guidance documents</li> <li>•Evaluation of algae prevention and control methods</li> <li>•Evaluation of physical lake manipulation methods</li> <li>•Implementation of Source Water selection tools</li> <li>•Evaluation of Water Quality exchanges</li> <li>•Operation and evaluation of a lakes-in-series approach for natural attenuation of contaminants</li> </ul>	Caleb	Owen		City of Thornton	420
6/12/2024	1:30 PM	3:00 PM	PST02-23	(WR) Filter Marshes: A Nature-Based Solution to Improving Water Quality	Filter marshes are a nature-based solution of constructed wetlands to reduce surface water pollution and improve water quality. They are an effective best management practice helping communities meet regulatory standards for surface water and watershed management, while improving the quality of life within communities. This presentation focuses on the design of filter marshes and how these small, decentralized stormwater management systems aid communities in meeting nutrient-based total maximum daily loads (TMDLs).	Isabel	Hall	Water Resources Engineer	Tetra TECH	421

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/12/2024	1:30 PM	3:00 PM	PST02-24	(WR) Rebuilding from Hurricane Maria: Securing San Juan's Water Supply Resilience through Dynamic Sediment Management	PRASA manages the Carraízo Dam, but sedimentation has reduced its capacity by 45% over 70 years. Water rationing occurs during droughts. Hurricane Maria added 2.35 million tons of sediment in 2017. In 2024, PRASA plans to dredge 2 Mm3 of sediment to extend the reservoir's life. Sediment management is vital to counter the impact of storms and address climate change-related severe weather. The presentation outlines sediment management alternatives, including modified reservoir operation and forecasting tools to optimize sediment releases without affecting water supply refill.	Edwin	Rodriguez		The Puerto Rico Aqueduct and Sewer Authority	422
6/13/2024	11:45 AM	12:45 PM	DROP	The Last Drop	Water 2050 established a vision for a sustainable and resilient future for the water community. The diverse contributors to this initiative developed nearly 50 recommended actions for the water community to implement to transform this ambitious vision into reality – with recommendations grouped under 5 strategic themes, including Sustainability & Resilience. The Last Drop is dedicated to exploring how the water community can advance meaningful change to create our Water 2050 future. Join us for an exploration of the future of water, featuring diverse panelists in engaging conversation with AWWA's Director of Engineering & Technical Services, Barb Martin, covering future priorities, taking action, collaboration and partnerships, and breaking barriers to ensure a secure, sustainable, affordable, resilient, and innovative water future for all. The Last Drop provides attendees with the opportunity to join the conversation about Water 2050 and share their own thought-provoking questions about the future of water.   This session is sure to spark your imagination and leave you hopeful for the future of the water community!	Barbara	Martin	Director ETS	American Water Works Association	423
6/13/2024	8:30 AM	10:00 AM	THU01	THU01 - The Water Research Foundation Research Highlight: Advancements and Applications of UV LED Technology for Water Treatment	This session will offer an in-depth exploration of three ongoing WRF research endeavors focused on assessing the practicality and potential impact of utilizing ultraviolet light emitting diode (UV LED) technology in water treatment. The primary focus of this session is to evaluate the feasibility of integrating UV LED systems within water treatment processes. This involves analyzing the effectiveness of UV LED irradiation in mitigating Legionella, reducing biofilm formation, and enhancing water quality.	Grace	Jang	Research Manager	Water Research Foundation	424
6/13/2024	8:30 AM	9:00 AM	THU01-01	Municipal Applications of UV LED Disinfection for Five Locations Across North America Using the UV Auditing Approach for Assessing (WRF 5173)	This presentation covers a portion of WRF Project #5173 where the feasibility of UV LED disinfection is investigated at several magnitudes of flow. UV auditing was conducted on several source waters from across North America to assess UV LED disinfection efficacy across the UV-C spectrum. Several challenge organisms were used as biosimetry probes for 254, 265, and 280nm wavelengths of germicidal light which provide a clear picture of how LED technologies compare to conventional systems. Additionally, a 10 GPM, 280nm LED pilot system was tested at a utility over the course of several months and sampled to capture a range of influent water qualities and highlights the disinfection treatment flexibility that UV LED disinfection provides.	Sean	MacIsaac	Masters Student	Office D-514, Dalhousie University	425
6/13/2024	8:30 AM	10:00 AM	THU02	THU02 - University Forum - Advances Process Optimization	Join us for the latest in academic research.					426

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	8:30 AM	9:00 AM	THU02-01	Evaluation of Pre-Chlorination, Biofiltration, and Post Chlorination Strategy for DBP Control in Drinking Water	Drinking water disinfection is vital but produces toxic disinfection byproducts (DBPs). Conventional methods like precursor removal have their limitations, necessitating more effective solutions for DBP removal. This study explores a Prechlorination-Biofiltration-Post-treatment strategy for controlling various DBP formation during the drinking water treatment. Results show biofiltration removed up to 57% of preformed total organic halogen (TOX). Compared to chlorinated water without biofiltration, this new DBP control strategy reduced formation by 71-90% for HAAs, 37-83% for DHANs, 43-44% for unknown DBPs, and 10-17% for THMs. The strategy offers a promising solution for reducing overall DBPs in drinking water systems.	Peng	Dai	Postdoc	Clemson University	427
6/13/2024	9:00 AM	9:30 AM	THU02-02	Cl <sub>2</sub> O Concentration Model and Its Application in Free Chlorine Speciation and Micropollutant Abatement	High chloride-containing wastewaters including saline sewage resulting from seawater toilet flushing in Hong Kong and concentrated leachates, may contain elevated concentrations of micropollutants and pose adverse impacts on human and aquatic organisms. From our previous study, high concentrations of chloride drive the in-situ transformation of free chlorine to Cl <sub>2</sub> O, providing a potential to develop a safe, low-cost and practical strategy which makes use of high concentrations of chloride in wastewaters to form Cl <sub>2</sub> O to degrade recalcitrant micropollutants. To apply this strategy, accurately estimate the concentrations of Cl <sub>2</sub> O and determine the second-order rate constants between Cl <sub>2</sub> O and micropollutants are consequently important.	Chuanjing	LIN			428
6/13/2024	9:30 AM	10:00 AM	THU02-03	Transitioning from Ortho- to Blended Polyphosphate	Transitioning between corrosion control treatment (CCT) chemicals can lead to changes in pipe scale and, as a result, water quality. A recirculating pipe loop study on harvested lead pipe on the transition from orthophosphate to blended phosphate (ortho- and poly-) was conducted with ICP-MS data and pipe scale analysis to measure changes to the scale in the process.	William	Pennock	Assistant Professor	New Jersey Institute of Technology	429
6/13/2024	8:30 AM	8:50 AM	THU03-01	Employing A Visualization Tool To Implement A Robust And Sustainable Asset Management Program	The Albuquerque Bernalillo County Water Utility Authority (Water Authority) centralized more than 15 asset management programs into the powerful Asset Insight application. This digital tool streamlines data, expedites decision-making, and frees up staff for essential tasks. The application's dynamic planning capabilities enhance cost estimation and asset utilization, ensuring long-term sustainability.	Marcela	Sion	Sr. Principal Engineer	Hazen and Sawyer	430
6/13/2024	8:50 AM	9:10 AM	THU03-02	ARMED! Reducing Risk and Improving Data Collection Using Unmanned Aerial Vehicles (UAVS) for Condition Assessment Inspections	In the Wastewater and Water Industry, it is common for condition assessment inspections to take place in structures, facilities, and pipelines that are considered a permitted confined space, due to the potential exposure to toxic gases, liquids, or chemicals, insufficient oxygen levels, poor visibility, and communication. Planning for entry into these environments requires specialized skills and/or training, equipment, system set up, and additional safety crews, making work in these locations a personnel safety challenge, just to get a first look at the asset.	Crystal	Schiffbauer-Bowles	GIS Specialist and FAA Commercial UGA Part 107 Pil	Black & Veatch	431

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	9:10 AM	9:30 AM	THU03-03	From Paper to Digital: Digitizing Chicago Department of Water With Less Impact to Operations	The Department of Water Management (DWM) is responsible for overseeing the maintenance and enhancement of an extensive network of assets, including over 4,300 miles of water mains, as well as 4,400 miles of sewer mains. To effectively manage these assets, the City of Chicago employs a work order management system to document efforts in maintaining or replacing aging infrastructure. Additionally, for public engagement and reporting service needs, the city relies on 311, CRM system to track service requests. On average, the DWM processes over 100,000 work orders annually. This presentation will detail the data infrastructure, integration components, and workflow design of an integrated service-request-driven work order system for the DWM.	Bo	Li	Sr Digital Solution Manager	AECOM	432
6/13/2024	9:30 AM	9:50 AM	THU03-04	A Building Information Modelling and Common Data Environment Pilot for Toronto Water Capital Projects and Asset Management	Toronto Water has recognized the opportunity to proactively adopt BIM and CDE in their water and wastewater infrastructure projects. The Division decided to implement a pilot study, using the Swansea Pumping Station as a pilot facility to assess the feasibility of a large-scale BIM/CDE implementation. A digital solution, called CityAssets was developed. This portal has the capacity to store 3D models for all the City's water and wastewater facilities in an accessible, user-friendly platform. Documentation associated with each facility can be centralized within CityAssets for internal and external use. A full-scale implementation will allow Toronto Water to share asset information with internal and external parties securely.	Alonso	Hurtado	Engineer	Toronto Water	433
6/13/2024	8:30 AM	10:00 AM	THU04	THU04 - The Challenges of Condition Assessment - Promising Solutions an Success Stories	This session will highlight some of the challenges associated with performing condition assessment and management of a water system and discuss recent strategies and case studies for how those challenges were overcome.					434
6/13/2024	8:30 AM	9:00 AM	THU04-01	First Fix Your Valves-Then Assess Your Pipe!	The abstract is about the challenges the water and wastewater industry experiences when trying to plan maintenance activities, CIP work, or reactive work, and they cannot successfully isolate a pipeline or plant facility due to unreliable water system valves.	Britt	Klein	Business Development Manager	Xylem Inc	435
6/13/2024	9:00 AM	9:30 AM	THU04-02	The Water Mains We See and Still Neglect... the Tale of Water Mains on Bridges	Water utilities are faced with a unique set of challenges in inspecting, coding defects, prioritizing, and renewing water mains on bridges. DC Water owns and operates 3.1 miles of water mains distributed across 57 bridges in Washington DC. An annual water main on bridges inspection program was implemented in 2013, and since then, water mains suspended from those bridges have been inspected at least once. The utilities will learn about: pipe condition assessment and how to start a condition assessment program, risk analysis, asset prioritization as a function of condition and risk, typical defects on water mains on bridges, and design considerations for the renewal of water mains on bridges.	Sonia	Oton	Senior Project Manager		436
6/13/2024	9:30 AM	10:00 AM	THU04-03	Investigating the Effects of Pipe Properties and Missing Failure Records on Statistical Models for Water Distribution Systems	Efficient management of water utility systems relies on accurate likelihood of failure (LOF) models for pipes to effectively optimize maintenance and replacement budgets. However, prevailing LOF models primarily address pipe groups rather than individual pipes. Furthermore, current approaches encounter challenges related to the left truncation issue, where pipes installed long ago lack systematic failure data. This study aims to investigate the impact of pipe properties and the absence of historical records on LOF models employed in water distribution systems by exploring several common statistical methods for modeling pipe failures in water distribution systems, including survival and regression analyses.	Dayu	Apoji			437

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	8:30 AM	11:30 AM	THU05	THU05 - R&D Project: CIPP Lining of Asbestos Cement Pipe for Seismic Resiliency and Rehab of Aging Pressure Pipe Infrastructure	This panel will introduce this R&D project's goals and objectives, and engage utility owners on the challenges and concerns associated with improving their aging ACP infrastructure via CIPP. The discussion will help refine the outcomes needed for the project, helping utility owners, who are often working with limited budgets and options, to implement researched proven solutions for aging ACP.	Joy	Eldredge	Deputy Utilities Director	City of Napa	438
6/13/2024	8:30 AM	11:30 AM	THU06	THU06 - Steel Tanks, Water Meters, and Sodium Hypochlorite for Chlorine Dioxide Production: New and revised AWWA standards	This session highlights the release of new AWWA Standards and Manuals on steel tanks, water meters, and sodium chlorite as a precursor for chlorine dioxide production.	Andrew	Chastain-Howley		Black & Veatch	439
6/13/2024	8:30 AM	9:00 AM	THU06-01	Best Practices for Designing Welded Steel Tank Roofs for Increased Life Expectancy and Improved Asset Preservation Performance	Conventional roof systems on welded steel storage tanks commonly consume a large portion of the time and money spent on maintenance, rehabilitation, and asset preservation of these important water system components. The AWWA D100 standard for welded steel storage tank contains minimum requirements, but those requirements primarily relate to safety and structural issues without consideration for long-term maintenance and asset preservation issues. This presentation will educate water industry professionals about recommended solutions to avoid the problem of high maintenance effort and costs associated with conventional roof systems on ground supported, flat bottom welded steel storage tanks.	Leslie	Scott		Tank Industry Consultants	440
6/13/2024	9:00 AM	9:30 AM	THU06-02	Comprehensive Evaluation of the Viability of Corrugated Steel Tanks for Use in the Water Industry	Corrugated steel tanks, comprised of a corrugated steel shell and an internal membrane liner, have been used for various water storage applications such as irrigation, rainwater collection, impoundment, or fire protection storage. However, AWWA did not have a standard for this type of tank, so their use in the water industry was limited. The AWWA Standards Council authorized the creation of a new committee to evaluate these tanks for use by water utilities and to issue a Committee Report with their findings and recommendations. This presentation will educate water industry professionals about the special considerations for these tanks, results of the Committee's research, and recommendations regarding their use in the water industry.	Leslie	Scott		Tank Industry Consultants	441
6/13/2024	9:30 AM	10:00 AM	THU06-03	Benefits, Issues, and Recommendations for Antenna Installations on Water Towers: Providing guidance and better solutions for Tank	Telecommunications antenna installations on water towers can provide benefit to both the tank owner and the telecommunications company, but the potential impact on the structural integrity, operation, and maintenance of the water tower can be negatively impacted if the installation is not well planned. AWWA's Steel and Composite Tanks Committee created a special subcommittee to develop recommendations to provide guidance to the telecom industry regarding the special requirements that must be included when developing construction documents for installations on water towers. This presentation will provide an overview of the development and status of these recommendations.	Leslie	Scott		Tank Industry Consultants	442

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	11:00 AM	11:30 AM	THU06-06	AWWA B303-Sodium Chlorite as a Precursor for Chlorine Dioxide Production	As on-site production of disinfection chemicals becomes more prevalent in the water industry, the importance of the AWWA B303 sodium chlorite standard is highlighted. Sodium chlorite is most commonly used as a precursor chemical in the production of chlorine dioxide (where the water disinfection is accomplished from the resulting chlorine dioxide solution) through one of two methods: 1.) A multi-component kit is utilized, where the components are mixed (with water) to produce chlorine dioxide solution. 2.) A chemical generator, with accompanying sodium chlorite feed stock, is utilized to produce chlorine dioxide solution.	Blake	Stark	Senior Manager	Water Treatment Chemicals Certification, NSF International	443
6/13/2024	8:30 AM	11:30 AM	THU07	THU07 - Safe by Design: Integrating Safety into the Work Environment	Workplace safety involves the establishment of safety protocols, training programs and the implementation of effective communication channels for reporting and addressing safety concerns. Leadership plays a crucial role in fostering a safety culture, where employees are actively involved in safety initiatives, and continuous monitoring and improvement strategies are in place to adapt to changing work conditions and emerging risks. Ultimately, a commitment to workplace safety contributes to a secure and healthy work environment, promoting employee well-being and organizational success.					444
6/13/2024	8:30 AM	9:00 AM	THU07-01	Ensuring Safety is Part of Your Training Program	Board members, management, human resources, and senior field leadership must be aware of the consequences and outcomes when everything is not okay. In most cases, organizations and trainers have legal and ethical obligations to provide a safe training environment. Negligence in this regard can lead to legal liabilities, fines, and damage to professional reputations. Assuming safety is present in the curriculum and assuming employees are working safely can be deadly assumptions.	James	McPherson		Competency Training Systems	445
6/13/2024	9:00 AM	9:30 AM	THU07-02	Weighing Operability Factors During Design to Optimize Functionality & Improve Safety	In designing new treatment facilities, significant effort is directed at proper process selection, spatial accommodations, capital costs, and operational costs. However, a decision that saves significant capital cost could also be one that drives routine labor costs, or more safety risk. This presentation will focus on steps in the design process, such as safety and operability reviews, that were taken to improve operational outcomes of a new surface water treatment facility. These included optimized chemical feed areas, improved equipment accessibility, and accommodations for equipment maintenance. This presentation will revisit the different milestone reviews, and how the operational considerations evolved during the design process.	Renee	Lanza			446
6/13/2024	9:30 AM	10:00 AM	THU07-03	Protect your Workforce with Data-Driven Connected Safety	Discover how connected safety has revolutionized the water and wastewater industry, prioritized worker well-being while improving productivity. Learn how wearable devices and sensors enable real-time data collection to better protect workers. Explore the benefits of connected safety in gas detection and lone worker applications. Gain insights into best practices that support effective implementation, adoption, and measurement to drive long-term success from an investment in connected technology.	Bradley	Kemp		Blackline Safety	447
6/13/2024	10:30 AM	11:00 AM	THU07-05	Improving Safety Through Leadership, Analytics, Communication, and Involvement	Transitioning an organization takes time, resources, commitment, and strong leadership. In this session you will hear about Louisville Water Company's journey in transforming its safety culture and reducing the number of employee injuries as it strives to become one of the safest places to work. Since 2002, Louisville Water has reduced the number of annual employee injuries by almost 90%.	David	Vogel	VP Customer Service & HR	Louisville Water Company	448



Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	11:00 AM	11:30 AM	THU07-06	Hazard and Operability Study (HAZOP) and its Use in the Water Industry as a Design Tool	This presentation will be a brief overview of HAZOP, how it is utilized, and how it can be used in the water industry. There will also be examples and a case study of a chemical system design with emphasis on how the procedure is a great aid in increasing the safety and reliability of a system.	David	Soffer		Passaic Valley Water Commission	449
6/13/2024	8:30 AM	11:30 AM	THU08	THU08 - Getting the Most out of your PFAS Bench Testing	As water utilities across the country are grappling with the proposed National Primary Drinking Water Regulation and whether treatment changes will be needed for them to stay in compliance, many projects are being rolled out both to better screen best available technologies for PFAS treatment and understand how much these potential solutions will cost. Bench-scale methods to collect and utilize information regarding the efficacy of treatment options are an attractive first step for water systems given the comparatively low cost to perform, and rapid accessibility of results compared to pilot or full-scale trials. The craft of designing, performing, and interpreting bench tests is developing rapidly, and water utilities, consulting engineers, and the research community could all stand to benefit from effective sharing of potentially meaningful and cost-saving insights by the many parties currently striving to solve the problem of PFAS in drinking water.	Issam	Najm	President	Water Quality & Treatment Solutions	450
6/13/2024	8:30 AM	9:00 AM	THU08-01	Strengths and Weaknesses of Bench-Scale Testing of PFAS Removal with IX Resin	Bench-scale testing of PFAS removal with Ion Exchange (IX) resins and specialty adsorbents were conducted and results were compared to pilot-scale and full-scale results treating multiple groundwater sources for drinking water production.	Issam	Najm	President	Water Quality & Treatment Solutions	451
6/13/2024	9:00 AM	9:30 AM	THU08-02	Prediction of Full-scale PFAS IX Breakthrough Using RSSCT Data	Presentation discusses scaling-up RSSCT data of IX PFAS removal performed using Quantitative Structure-Property Relationship (QSPR), pseudo-single solute models, and major water matrix components (e.g., TOC, inorganic ions) on IX resin use rates.	Lan	Cheng	PhD student	North Carolina State University	452
6/13/2024	9:30 AM	10:00 AM	THU08-03	Bench Scale Assessment of GAC and Alternative Adsorbent Performance to Remove PFAS from Groundwater for Drinking Water Supply	Eight GAC and one alternative adsorbent were evaluated with bench-scale PFAS testing on several groundwaters. Results suggest that BV to breakthrough for different adsorbents was inversely proportional to the dissolved organic carbon of the water	Manmeet (Meeta)	Pannu	Senior Scientist	Orange County Water District	453
6/13/2024	10:00 AM	10:30 AM	THU08-04	Bench Study of Powdered Activated Carbon on PFAS treatment at Louisville Water	Lessons from the evaluation of PAC treatment for PFAS removal, by a comprehensive bench study using Jar testing was conducted to investigate the effect of carbon type, dose, source water, competing treatment processes, and application location.	Eric	Zhu			454
6/13/2024	10:30 AM	11:00 AM	THU08-05	Jar Testing of PFAS Removal Performance using Powdered Absorbents	Presentation will share results of Black & Veatch's evaluation of the performance of several powdered adsorbents, including a novel powdered ion exchange resin, for removal of PFAS from a Columbia, SC Surface Water Treatment Plant.	Paul	Hargette			455
6/13/2024	8:30 AM	11:30 AM	THU09	THU09 - Generative AI for Water: A Hands-On Dive	This interactive session introduces water practitioners to the burgeoning realm of Language Models (LLMs) and Generative AI, showcasing their growing significance in water management. Through a blend of insightful presentations and hands-on roundtable discussions, attendees will explore customized LLMs, gaining practical insights into leveraging these technologies for water challenges.	David	Lynch	CEO	Klir	456
6/13/2024	8:30 AM	8:50 AM	THU09-01	TBD	Introduction to Klir's Boots model and uses.	David	Lynch	CEO	Klir	457
6/13/2024	8:50 AM	9:10 AM	THU09-02	TBD	Introduction to Regbot model.	TBD	TBD	TBD	Water Utility Climate Alliance (WUCA)	458

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	9:10 AM	9:30 AM	THU09-03	TBD	Introduction to Pipechat.	TBD	TBD	TBD	Water Utility Climate Alliance (WUCA)	459
6/13/2024	8:30 AM	10:00 AM	THU10	THU10 - Finding Efficiencies with Digital Twins	Three examples of real applications are presented focused on applying digital twin intelligent water technology to pumping, storage, and operations of water distribution systems.	James	Cooper	Global Director	Arcadis	460
6/13/2024	8:30 AM	9:00 AM	THU10-01	Digital Twin Pilot for Water Loss and Pump Efficiency	<p>A Digital Twin pilot was conducted for a medium sized system in Kankakee, IL. The Kankakee system serves a population just under 100,000 with an average production of 13 MGD.</p> <p>The goals of the pilot were:</p> <ol style="list-style-type: none"> <li>1. Quantify water loss in each zone through hourly net flow patterns, minimum night flow trends, and monthly water audits.</li> <li>2. Establish automated alerts on flow anomalies to improve leak detection and repair time.</li> <li>3. Improve energy efficiency by quantifying power usage, identifying inefficient or worn pumps, and evaluating pumping strategies.</li> <li>4. Better understand system operations through near-realtime modeling.</li> <li>5. Evaluate benefit in adopting a Digital Twin in other Aqua systems.</li> </ol>	Stephen	Jackson	Senior Software Engineer, Water Infrastructure	Bentley Systems	461
6/13/2024	9:00 AM	9:30 AM	THU10-02	Digital Twin for Distribution System Operations: Real-Life Applications of a Real-Time Hydraulic Model	MWS partnered with Xylem to develop a real-time decision support tool to aid in operational efforts. The resulting effort, integrated into the Xylem Vue Powered by GoAigua platform, provided the opportunity to optimize water distribution operation efforts by employing a flexible and configurable "live" hydraulic modeling solution configured to Nashville's needs. After the deployment of the digital twin solution MWS has been able to address operational issues and improve its efficiency. Some of the success stories, as well as the software solution, will be presented in detail.	Marcelo	Cusacovich		Xylem	462
6/13/2024	9:30 AM	10:00 AM	THU10-03	A Web-Based GIS Digital Twin to Update Pumping and Storage Requirements in Real Time	The purpose of this digital twin, developed for the Elsinore Valley Municipal Water EVMWD (EVMWD), is to actively calculate and inform the utility's staff of the need for new or expanded storage and booster pump stations in the water system, and lift stations in the wastewater system as a result of expansions. This presentation will discuss the development, implementation, and use of this customized GIS digital twin, which has assisted EVMWD in responding to hundreds of proposed developments within its service area. Others will learn about the use of digital twins for tracking the impacts of development on facility needs in Southern California.	Matthew	Huang	Principal Planning Engineer, Associate Vice Presid	Carollo Engineers	463
6/13/2024	8:30 AM	10:00 AM	THU11	THU11 - Can't Stop. Won't Stop. Maintaining Plant Operations During Major Upgrades	This session will present unique solutions and lesson-learned from making major WTP modifications while effectively maintaining water supply to meet system demands.	Mark	White	Drinking Water Practice Leader	CDM Smith	464

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	8:30 AM	9:00 AM	THU11-01	Overcoming Challenges to Replace the City of Lewiston's WTP	This presentation describes the Lewiston WTP Replacement project. The Lewiston WTP replacement is now complete and operating successfully and there is much to share about overcoming challenges to successfully replace critical water supply infrastructure. This project was delivered using the progressive design-build method and has been selected by the Design-Build Institute of America for a National Award of Merit. The WTP advanced treatment includes coagulation with aluminum chlorohydrate, membrane filtration, disinfection with ultraviolet light and chlorine. Performance testing and reporting has been completed that will be described in the presentation.	Bryan	Black			465
6/13/2024	9:00 AM	9:30 AM	THU11-02	From Conventional to Direct Filtration: Unraveling Complex Construction Sequencing Challenges to Rebuild Utah's Oldest WTP	The oldest municipal water treatment plant in the State of Utah, City Creek Water Treatment Plant, is a 16 MGD conventional plant that must be completely rebuilt without taking it offline. The existing plant was built in the only suitable location within the confined canyon. This presentation will discuss how temporary direct filtration allowed the plant to rebuild within the existing footprint. It includes engineering, construction, and operational challenges of converting to temporary direct filtration. Implementing temporary direct filtration required pilot testing, converting two of the existing four filters into flocculation basins, rethinking how disinfection CT is achieved, and training operators to run a completely new process.	Adam	Jones		Brown and Caldwell	466
6/13/2024	9:30 AM	10:00 AM	THU11-03	How to Overhaul a Water Plant Without Compromising Operations	For Nashville Metro Water Services, extended reductions in water production capacity are not an option. So how can their two water treatment plants undergo massive upgrades on tight, crowded sites? The Operational Necessity Plan! Detailed sequencing and construction planning were built into project development since the earliest planning phase. During final design, the design team and CMAR developed precise plans for construction, including the detailed Operational Necessity Plan for startup and commissioning of new facilities while maintaining service to critical parallel existing facilities.	Jeff	Riley			467
6/13/2024	8:30 AM	10:00 AM	THU12	THU12 - Lead and Corrosion Control Measurement Methods	This session will present methods and approaches to assess corrosion control.	Ian	Robinson			468
6/13/2024	8:30 AM	9:00 AM	THU12-01	Online pH Probes for Corrosion Control	Corrosion control is becoming a topic of ever-increasing importance in water systems today. In 2020, Denver Water implemented the Lead Reduction Program to reduce lead levels from customer owned service lines. One of the components of this program was to adjust pH to a narrow bandwidth at the treatment plants: This uncovered the need for more reliable and accurate pH probes, and the pH Pilot Study was initiated.	Alvin	Johnson	Sr. Tech	Denver Water	469
6/13/2024	9:00 AM	9:30 AM	THU12-02	Lead Pipe Scale Assessment: Powdered versus In-situ Analysis	Testing of lead pipe scales was conducting comparing powdered analysis techniques to in-situ epoxy preserved techniques. For powdered analysis , XRD, SEM/EDS, amd EPMA/WDS was used with all methods explained in the presentation,especially EPMA/WDS which is not widely used. For in-situ pipe analysis, EPMA/WDS in a scan mode was used to identify the elements present in the cross-section in-situ layers. the results showed the two methods compliment each other and neither method by itself showed the complete picture.	David	Cornwell			470

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	9:30 AM	10:00 AM	THU12-03	Towards Continuous Monitoring of Lead in Drinking Water	This presentation is about the development of an electrochemical method for on-site sample preparation and quantification of lead contaminants in drinking water. These electroanalytical techniques have the features that are required for continuous monitoring of toxic metals that includes particulate forms of lead in contaminated drinking water.	Noe	Alvarez		University of Cincinnati	471
6/13/2024	8:30 AM	11:00 AM	THU13	THU13 - Preparing for Per- and Polyfluoroalkyl Substance Regulations	The PFAS drinking water standard and CERCLA Hazardous Substance designation for PFOA and PFOS has significant implications for drinking water systems. This session explores the current state of PFAS regulations and treatment options for PFAS and PFAS contaminated waste streams.	Chris	Moody	Regulatory Technical Manager		472
6/13/2024	9:00 AM	9:30 AM	THU13-02	What Do the UCMR5 PFAS Results Tell Us That We Wish We'd Known Earlier?	Since the release of EPA's PFAS draft regulations in March 2023, the forthcoming UCMR5 PFAS data have been highly anticipated to inform the regulatory implications, which were developed based on sparse and geographically biased PFAS data availability. Our efforts assess the UCMR5 data to provide an understanding of national PFAS occurrence and implications for the EPA PFAS draft regulations, and leverage historical data to answer questions of other co-occurring contaminants. While the first data release is not particularly representative, it indicates EPA previously underestimated small systems' and overestimated large systems' impacts. Our analysis addresses key questions with corresponding answers.	Chad	Seidel			473
6/13/2024	9:30 AM	10:00 AM	THU13-03	A Moving Target: PFAS Treatment Residuals Management	With the EPA's proposed MCLs for PFAS compounds, it is expected that many public water suppliers will begin treating for PFAS, resulting in an influx of waste management needs and emerging technologies for destruction of PFAS residuals. Under CERCLA, a number of PFAS compounds are expected to receive hazardous designations that will change the outlook for residuals handling, disposal options, cost, and associated liability. This presentation will provide an overview of the most up-to-date regulations, proposed policies, disposal options including cost and liability concerns, a New England utility survey results for waste management of PFAS, and emerging technologies for destruction of PFAS.	Liz	Garvey	Project Engineer	Stantec	474
6/13/2024	8:30 AM	10:30 AM	THU16	THU16 - Leveraging Customer Portals for Tracking and Engagement	This session will describe how utilities can use AMI and associated portals to track water use through their utility operations and engage the consumers to provide them with more information on how they are using water.					475
6/13/2024	8:30 AM	9:00 AM	THU16-01	Optimizing Customer Engagement Through Data-Driven Communications Strategies	Water utilities are faced with the challenge of communicating to their customers that their engagement has a direct impact in water conservation in sustainability. Walnut Valley Water District (WVWD) is collaborating interdepartmentally and pooling together our resources to highlight the success. Our goal is to meet customers where they are and lead them toward a sustainable water future using data-driven outreach strategies.	Lily	Lopez	Director of External Affairs & Sustainability	Walnut Valley Water District	476
6/13/2024	9:00 AM	9:30 AM	THU16-02	AMI: Leveraging the Power of Data	Since the rise of Advanced Metering Infrastructure, we have consistently heard one word: data, so much data. Utilities have a great deal of information and so many data points it can be overwhelming to consider what to do with it all. In this presentation one utility will share its story of the powerful success of using AMI data to set useful customer alerts, drastically reducing water lost to leaks and protecting our precious resource. We will share how we first implemented manual customer notifications and ultimately have a solid automated and escalating usage notification system in place. We have saved revenue related to water loss and increased customer satisfaction and will share our results.	Nicole	Bates	Customer Services Manager	Mount Pleasant Waterworks	477

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	9:30 AM	10:00 AM	THU16-03	Leveraging Advanced Water Intelligence to Promote Sustainable Conservation	With a drought that has lasted more than two decades, water conservation and efficiency are central themes at the Las Vegas Valley Water District (LVVWD). While LVVWD has had robust conservation initiatives for years, with the advent of advanced metering infrastructure (AMI) technology, there was an opportunity to expand beyond the boots on the ground approach. With more than 300 million meter reads monthly, LVVWD has built robust programs to autonomously analyze usage trends to generate customer notifications or even fines for unresolved leaks. With the insights gleaned from this data, LVVWD has been able to transition portions of its water waste program to being fully autonomous, further enhancing conservation initiatives.	Christopher	Merrill		Las Vegas Valley Water District	478
6/13/2024	10:00 AM	10:30 AM	THU16-04	Next Generation Cloud-Mobile Water Analytics AI/ML and Compliance Management Platform	AquaTrax offers a robust, modular, and integrated climate tech solution to utilities that includes intuitive dashboard tools and modules to track water loss and promote energy savings. The cloud-based platform has both: an end-customer-facing dashboard as well a utility-facing dashboard. This innovative and knowledge-based technology platform will include strategic and purpose-built tools that target a fragmented customer base, consisting of approx 52,000 water districts across the US to help them comply with state water and energy-saving regulations. The target market must adhere to budgetary constraints and this platform offers water districts a clear ROI by reducing water loss, streamlining system integrations, and saving electricity.	Amit	Sharma	Founder	Aquatrax	479
6/13/2024	8:30 AM	9:00 AM	THU17-01	Digitalization and NRW Reduction: Lessons Learnt in Italy With the Recovery Plan Funded by EU and Inputs for American Utilities	The presentation describes the advancement so far of the projects, selected at national level in a competitive bid, to upgrade 30 Italian water networks, digitizing and transforming them into "intelligent networks" for the optimal management of water resources and water loss reduction. Above projects have been funded with 1 billion euros by the Government of Italy thanks to the Next Gen EU plan, the largest stimulus package ever financed in Europe to recover after COVID-19 pandemic. The objectives are: Reduce water losses; Increase resilience of water systems to climate change; Strengthen the digitization of networks, to be transformed into "intelligent networks", Promote optimal management of water resources and limit inefficiencies.	Marco	Fantozzi	managing director		480
6/13/2024	9:00 AM	9:30 AM	THU17-02	What Is the Carbon Impact of Increasing Leak Rates in a Changing Climate?	Climate change, present and projected, indicates increasing volatility in weather conditions. These stresses have the potential to impact the leakage rate of water pipes. More leaks left unrepaired lead to greater losses of treated water and a larger carbon footprint in the electrical cost of moving water. This presentation examines an aggregate dataset across several utilities serviced by permanent acoustic leak detection, and presents the increasing leak rates from 2018-2022. The aggregate leak dataset indicates a steady increase in the leak rate of 8.57 leaks per 100 miles of pipe per year, with the estimated loss from main leaks at 57%, and smaller leaks at 43%. This provides a strong case for proactive leak management.	Emily	Tyhurst		Echologics	481
6/13/2024	9:30 AM	10:00 AM	THU17-03	Bringing New Energy to Energy Reduction: The Leakage Emissions Initiative and the New Funding Sources through the Leakage-Carbon N	This presentation will include the methodology established, freely available models for quantifying leakage-based carbon emission reductions, and case studies where these new tools have already been deployed. Updates and a look ahead on the establishment of certifiable Carbon Leakage Credits in North America will also be presented.	Steve ,	Cavanaugh	President & CEO; IWA Committee Chair on the Leakag	Cavanaugh Solutions	482

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	8:30 AM	11:30 AM	THU18	THU18 - Tackling Hexavalent Chromium Release, Treatment and Disposal	In 2022 California proposed a Maximum Contaminant Level for hexavalent chromium of 10 ppb, which is expected to take effect in 2024. This session will discuss cost of compliance, and experience with treatment methods.	Tim	Worley			483
6/13/2024	9:00 AM	9:30 AM	THU18-02	State of the Art in Hexavalent Chromium Treatment Based on Full-Scale Operational Experience and Optimization	The State of California released a draft hexavalent chromium (Cr6) MCL and intends to finalize it in 2024. Since the initial research campaign to identify and test potential technologies for Cr6 removal from drinking water that began in 2001, significant refinements have occurred through technology testing at many water agencies and operation of full-scale facilities. This presentation will provide attendees with an up-to-date understanding of the key features of Cr6 technologies and advancements since the release of the last MCL.	Nicole	Blute	Vice President	Hazen and Sawyer	484
6/13/2024	9:30 AM	10:00 AM	THU18-03	Bench- and Pilot-Scale Testing Stannous Chloride without Filtration to Meet the Anticipated Hexavalent Chromium MCL	Outcomes of a pilot test designed to answer unknowns surrounding stannous chloride application for Cr(VI) reduction will be presented. Key unknowns that were addressed include a better understanding of the fate, accumulation and potential release of chromium and tin particulate in the distribution system and premise plumbing.	Craig	Gorman	Water Process Engineer	Corona Environmental Consulting	485
6/13/2024	8:30 AM	11:30 AM	THU20	THU20 - The Evolving Water Reuse Landscape: Resilient Solutions for a Sustainable Future	This session showcases diverse projects and programs across different regions, providing insights into challenges, successes, and paradigm shifts in the realm of potable water reuse and reclaimed water utilization. Explore the evolving landscape of water reuse, from strategic reclamation efforts to comprehensive feasibility studies, and discover how these endeavors contribute to drought resilience and efficient water resource management.					486
6/13/2024	8:30 AM	9:00 AM	THU20-01	EPA's Water Reuse Program: State Potable Reuse Regulations, Case-studies, and Technical Assistance	This presentation will provide an overview of the mission and accomplishments of EPA's Water Reuse Program and how we're working with states and communities to build capacity to support water reuse projects. Trends in state regulations will be detailed, including recent developments in potable reuse regulations and the science and research that serves as the technical basis for those regulations.	Justin	Mattingly	Research Manager	USEPA	487
6/13/2024	9:00 AM	9:30 AM	THU20-02	Florida's Experience with Potable Reuse: What Have we Learned?	As the nation continues to experience increased population growth in many of its urban areas, it is becoming clearer to water purveyors that traditional conventional water supplies are unable to keep pace with the projected demands. This has caused many communities to begin pilot and demonstration testing different types of potable reuse systems to better understand the requirements. This presentation summarizes potable reuse and its current state in the US, market drivers utilities are seeing for potable reuse implementation, and potable reuse case studies and some of the lessons learned from three Florida potable reuse projects.	Michael	Bomar	Vice President	Tetra Tech	488
6/13/2024	9:30 AM	10:00 AM	THU20-03	Strategic Water Reclamation: Clay County Utility Authority's (CCUA) Journey from 75% to 100% Reclaimed Water Utilization	Clay County Utility Authority (CCUA), serving one of the U.S.'s fastest-growing counties, aims for 100% beneficial reuse of water resources amid a booming population. With six WRFs operating independently over 20 years, challenges arose from a need for unified protocols and a merged distribution/transmission system. A forensic analysis using SCADA data, field insights, and Innovyze InfoWater Pro modeling guided capital and operational projects, targeting optimal water transfers and minimized augmentation well use. The implementation phase is underway, with \$11 million in capital projects and SCADA improvements, signifying the evolution of the facilities into a fully optimized water resource system.	Marcel	Dulay		Jacobs	489

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	10:00 AM	10:30 AM	THU20-04	Aqua Pura: Adapting to Climate Change in Northern New Mexico	As the adoption of potable reuse spreads, a greater understanding of the issues that smaller utilities are facing is needed. This presentation discusses the challenges and solutions for implementing potable reuse in a small community. Some of the challenges encountered include an absence of existing regulations for potable reuse, limited financial resources, scarcity of operators knowledgeable in advanced water treatment processes, limitations for residual (brine) disposal, and salinity management.	Patricia	Bolliger			490
6/13/2024	10:30 AM	11:00 AM	THU20-05	When Wastewater Runs Dry: A Roadmap for Expanding Recycled Water Supply	Conditions have changed significantly since Dublin San Ramon Services District (DSRSD) and East Bay Municipal Utility District (EBMUD) first envisioned the San Ramon Valley Recycled Water Program. Reduced wastewater flow due to water use efficiency has greatly decreased the recycled water supply available, prompting a moratorium on new connections. The DSRSD-EBMUD Recycled Water Authority is preparing a roadmap to reliably meet near- and long-term demands. Various alternatives include demand management, storage, and supply augmentation (e.g., with wastewater from a neighboring agency). Participants in this session will learn about the tradeoffs of different options, each with varying technical, policy, and institutional challenges.	Katherine	Ruby			491
6/13/2024	11:00 AM	11:30 AM	THU20-06	Current and Future Water Reuse Opportunities for Drought Resilience in Santa Barbara County	The Santa Barbara Countywide Potable Reuse Evaluation surveyed the 18 wastewater utilities to understand the current state of water reuse throughout the drought-prone region. Using the survey results, four different projects were developed to understand the feasibility of implementing indirect or direct potable reuse in parts of the County who had not yet implemented or studied water reuse. This presentation will overview the wastewater survey results, discuss current and future water supply within Santa Barbara County, and summarize the four projects studied in this evaluation.	Madison	Rasmus		Carollo Engineers, Inc.	492
6/13/2024	8:30 AM	11:30 AM	THU21	THU21 - The Latest and Greatest in Microplastics	Microplastics are an important emerging contaminant, particularly in California, which is implementing a state-wide monitoring program for drinking water systems. However, many critical questions remain the subject of research. This session focuses on key updates with respect to our understanding of health risks, treatment, customer communications.	Brent	Alspach	VP and Director of Applied Research	Arcadis	493
6/13/2024	8:30 AM	9:00 AM	THU21-01	Placing Potential Microplastic Health Risks into a Drinking Water Context	Specific chemical additives have been shown to be primary drivers of toxicity across a range of microplastics. Tolerable daily intakes, which serve as the basis for deriving health-based guidelines in drinking water, are typically expressed in terms of the mass of a given contaminant intake by an individual. This presentation describes the application of pyrolysis-gas chromatography-mass spectrometry to quantify the mass and type of microplastics in treated drinking waters across North America. Information is combined with the known chemical compositions of specific polymers in order to better characterize the level of risk associated with microplastics in drinking water.	Husein	Almuhtaram	Postdoctoral Fellow		494
6/13/2024	9:00 AM	9:30 AM	THU21-02	Microplastics Treatment: Dissecting Disparities in the State-of-the-Science	Water Research Foundation (WRF) Project 5185 – Fate of Microplastics in Drinking Water – to facilitate better understand of the capabilities of various unit treatment processes to removal microplastic particulates. An initial literature conducted to inform the research identified wide disparities in process performance, ranging from negative removal (i.e., increase in microplastics) to complete rejection. The purpose of this presentation is to highlight and discuss the factors underpinning these disparities and chart of course for greater harmonization of microplastics research practices.	Brent	Alspach	VP and Director of Applied Research	Arcadis	495

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	9:30 AM	10:00 AM	THU21-03	Occurrence and Removal of Microplastics Across Drinking Water Treatment Facilities in North America	This presentation describes the occurrence and removal of microplastics (as small as 2 µm) across a wide range of conventional and advanced treatment facilities in North America. This extensive sampling campaign involved the collection of raw and treated water samples as well as following individual unit processes. Microplastic removal associated with specific treatment processes, as well as present in the distribution system was evaluated for each site. Following sample cleanup to isolate microplastic particles, analysis using Raman spectroscopy was used to determine microplastic concentrations, polymer types, and particle sizes. As such, this study represents the most extensive known investigation of microplastics in drinking water.	Robert	Andrews			496
6/13/2024	10:00 AM	10:30 AM	THU21-04	Removal of Microplastics by Ultrafiltration Membranes	Irrespective of pre-treatment methods which may be applied, it is anticipated that ultrafiltration (UF) membranes will remove microplastic particles which are larger than the nominal size cutoff,. The fate of retained microplastics on the UF surface following hydraulic and chemical cleaning, however, has yet to be investigated. This presentation quantifies the removal of environmentally relevant concentrations of high and low-density polyethylene fragments (as small as 1 µm), as well as their release from UF surfaces following cleaning. This information is of importance as backflush water may potentially be reintroduced upstream, as well the presence of residual microplastics present in waste streams must be considered.	Tyler	Malkoske			497
6/13/2024	10:30 AM	11:00 AM	THU21-05	Changes in Quantity, Composition, and Morphology of Microplastics in a Philadelphia Stream	This presentation features the results of an ongoing study in microplastics in a stream that flows into one of Philadelphia's water sources. Through three sampling locations, there were changes in the composition, quantity, and morphology of microplastics. For example, some particles were only found in one or two locations. It was also discovered that sample processing is critical since the compositions of some particle types can be sensitive to how samples are prepared for characterization.	Adam	Eyring	Research Manager	Philadelphia Water Department	498
6/13/2024	11:00 AM	11:30 AM	THU21-06	Comprehensive Resources for Microplastics Messaging: What Utilities Need to Know	With the State of California mandating microplastics sampling in drinking water supplies over the next four years, and requiring the disclosure of this data in CCRs, occurrence information is poised to proliferate rapidly -- inevitably prompting consumer inquiries. This presentation will discuss the main results and conclusions of Water Research Foundation Project 5155, along with the work done by the Consumer Messaging Workgroup. These initiatives represent an unprecedented proactive effort to develop appropriate consumer messaging resources for utilities in advance of inquiries, while simultaneously building water industry institutional knowledge about microplastics in drinking water.	Alma	Beciragic	Management Consultant	Arcadis	499
6/13/2024	8:30 AM	10:00 AM	THU22	THU22 - Staying Ahead of the Games	The way customers want to receive and hear updates from their utilities continues to evolve. Utility communicators need to know the latest strategies and approaches to engage a distracted public. This section will feature a variety of communications best practices from across the country.	Michelle	Zdrodowski	Chief Public Affairs Officer	Great Lakes Water Authority	500



Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	8:30 AM	9:00 AM	THU22-01	Approaching Zero Complaints: Successful Public Engagement Strategies for High Impact Construction Projects	With the pervasive use of social media and the 24-hour news cycle, expectations for effective stakeholder engagement during construction is increasing. This project provides a model for other utilities to deploy on high impact construction projects to minimize public push-back during construction while increasing public understanding of infrastructure needs and investments. Attendees will learn the business case for investing in proactive, timely, and accurate outreach during high impact construction projects, and how that outreach will build long-term trust and awareness for infrastructure needs. They'll also be able to specify successful engagement and communication strategies for high impact construction projects in their community.	Tara	Bettale		HDR Engineering, Inc.	501
6/13/2024	8:30 AM	9:00 AM	THU22-01	Approaching Zero Complaints: Successful Public Engagement Strategies for High Impact Construction Projects	With the pervasive use of social media and the 24-hour news cycle, expectations for effective stakeholder engagement during construction is increasing. This project provides a model for other utilities to deploy on high impact construction projects to minimize public push-back during construction while increasing public understanding of infrastructure needs and investments. Attendees will learn the business case for investing in proactive, timely, and accurate outreach during high impact construction projects, and how that outreach will build long-term trust and awareness for infrastructure needs. They'll also be able to specify successful engagement and communication strategies for high impact construction projects in their community.	Aimee	Housh			502
6/13/2024	9:00 AM	9:30 AM	THU22-02	Water 2.0: Successfully Engaging a Citizen Advisory Council to Transform Lincoln, Nebraska's Water Future	Can a level "playing field" of knowledge about water issues be created among members of a citizen Advisory Council, especially when their experiences range from water rights to simply having turned on a faucet. The City of Lincoln, Nebraska was tasked by the mayor with gathering community input on a recommendation to secure a second water source to meet the City's projected water capacity needs. This presentation will offer lessons learned as part of the interactive process developed by the City and the project team that resulted in well-considered and defensible outcomes at regular steps along the way to a final recommendation. Attendees will leave the presentation with successful techniques for a variety of citizen-driven processes.	Terry	Fairchild		Cole Fairchild Consulting, LLC	503
6/13/2024	9:30 AM	10:00 AM	THU22-03	Hydration Station Initiative Program	LADWP has a rebate program for the installation of hydration stations.	Steven	Schuricht		Los Angeles Department of Water and Power	504
6/13/2024	8:30 AM	11:30 AM	THU23	THU23 - Leveraging Data, Science, Collaboration and Federal Funding to Advance DEI	Delivering high quality water means you need the highest quality people, data, and solutions. Learn from utilities, regulators, consulting engineers, and academic researchers on how incorporating DEI led to better service outcomes and a stronger workforce.					505
6/13/2024	8:30 AM	9:00 AM	THU23-01	Advancing Equity and Inclusion through Microbial Ecology Determination in Underserved Drinking Water Systems	Our research focuses on establishing the microbial ecology in the drinking water system of an underserved community facing water contamination challenges upstream their water source, by implementing cutting-edge lab techniques, including 14S rRNA, 16S rRNA and 18S rRNA amplicon sequencing, as a more accurate indicator of microbiological loads than traditional water indicators. We underscore the need for recognizing microbial ecology in water sources and end users and their potential link to water contamination, working towards greater equity and inclusion of vulnerable populations through collaborative and community-led research.	Caroline	Reed			506

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	9:00 AM	9:30 AM	THU23-02	Approaches to Developing Metrics-Based Recruitment Strategies to Target Diversity in the Water Sector	Tracking diversity, equity and inclusion (DE&I) KPIs helps water utilities improve workforce diversity and recruitments. Metrics like representation of women and minorities in workforce and leadership positions enable utilities to set goals, identify gaps, and implement strategies to boost diversity. Monitoring retention rates sheds light on inclusion issues and prompts culture improvements. Analyzing pay equity reveals practices to address. Tracking customer satisfaction provides insights on how utility DE&I efforts are perceived. Overall, leading data-driven utilities, establish diversity initiatives allow utilities to benchmark, demonstrate accountability, and drive strategies that quantifiably improve equitable recruitment.	Isaias	Espinoza	Senior Management Consultant	Kennedy Jenks	507
6/13/2024	9:30 AM	10:00 AM	THU23-03	It Takes a Village: Cook County, Illinois Lends a Hand in Lead Service Line Removal	In today's climate, utilities are faced with the need for significant water and sewer infrastructure improvements, and they have access to a variety of funding options; however, our industry's underserved utility leaders are plagued by the need for resources, both monetary and human, to support the delivery of this critical funding. This presentation explores how Cook County, IL stepped in to assist their resident municipalities, providing access to additional resources in a LSL removal program for both residents and daycares. Help was extended to provide access to funding such as the Bipartisan Infrastructure Law (BIL) and the American Rescue Plan (ARPA). By stepping in and bridging the gap, these funds are now finding their intended use.	Andrew	Williams		Cook County, IL Bureau of Asset Management	508
6/13/2024	10:00 AM	10:30 AM	THU23-04	Moving from Recommendations to Reality in Diversity, Equity, and Inclusion	Given national attention on the disparities associated with race and gender equity, the Water Replenishment District embarked on a journey to ingrain DE&I into the culture of the District. What began with an equity study, transformed into a participatory paradigm that is fostering a more inclusive workplace. This transformation is championed by leadership and has trickled down to every employee. As a small District, WRD has the advantage of managers and staff working together on DE&I strategic planning, trainings, committees, and activities. The inclusion of every voice in moving from recommendations to reality has been key to this process. WRD will share insight gained on the journey to embed DE&I into the overall organizational framework.	Nicole	Reed	DEI Coordinator	Water Replenishment District of S. Calif.	509
6/13/2024	10:30 AM	11:00 AM	THU23-05	A Reliable Workforce for Reliable Water Infrastructure	There is a critical connection between resilient water systems, infrastructure investments, and jobs needed to support those projects. The California Urban Water Agencies (CUWA) is studying current and future workforce development needs and creating collaborative opportunities to attract historically underrepresented groups to the water industry. This presentation will highlight how diversity, equity, and inclusion (DE&I) programs can strengthen workforce development programs and how utilities have used data to inform priorities and next steps for their DE&I journey. This presentation will help stakeholders better understand how they can contribute to building a robust and diverse pipeline of talent for the water industry.	Katie	Porter	Executive Engineer	Brown and Caldwell	510

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	11:00 AM	11:30 AM	THU23-06	Advancing Racial Equity and Environmental Justice at the California Water Boards	The Water Boards play a key role in regulating water resources in California and have taken various actions to address water resource inequities, such as the 2021 Racial Equity Resolution and associated action plan, with key goals of evaluating impacts, creating inclusive spaces, and engaging effectively. In this session, we will discuss progress we have made on our racial equity action plan and what we have learned through our experiences. We will discuss: 1) leading with race to benefit all, 2) the importance of 1-on-1 engagement and community storytelling, and 3) infrastructure to support ongoing coordination. We hope our experiences will encourage other organizations to continue to engage in racial equity and environmental justice work.	Aidan	Cecchetti	Water Resources Control Engineer		511
6/13/2024	8:30 AM	10:00 AM	THU24	THU24 - Investing in Workforce Development	Implementing targeted workforce development programs can become a low-cost/high-return investment. A well-developed workforce is better equipped to meet evolving industry demands, positioning the utility for long-term success. Ultimately, investing in workforce development is an investment in the human capital that propels innovation, strengthens organizational resilience, and drives sustainable growth.					512
6/13/2024	8:30 AM	9:00 AM	THU24-01	Everyone Needs Development - Leading the Utility of the Future	Leadership in many ways is more of an art than a science. Various styles and techniques exist and they can all lead to success when it comes to leading and developing people. This presentation will focus on the attitudes, behaviors, and practices that can be used to succeed in leadership, management, and everyday life.	David	Vogel	VP Customer Service & HR	Louisville Water Company	513
6/13/2024	9:00 AM	9:30 AM	THU24-02	Develop and Effective Supervisor Development Program	Managing others in any industry is challenging. In a municipal water utility, this becomes even more challenging when many of the new leaders are promoted from within the existing teams. The first step of leadership for most is as a front line team supervisor. In this new role, they are usually internal hires that find themselves caught between their previous roles as peers and front-line experts to their new role leading the work of their "work buddies". This new relationship creates several unique challenges that, without a strong development plan and proper coaching, can be disastrous for the new supervisor and the members of the team.	Patra	Brodie		City of Richmond Public Utilities	514
6/13/2024	9:30 AM	10:00 AM	THU24-03	Bridging the Gap: How DC Water's Workforce Development Program Helped Meet the Utility's Strategic Goals	There is an urgent demand within the utility sector for skilled workers who can contribute to high-performance construction, maintenance, engineering, technology, and design professions. To fill this void, robust and targeted workforce development and training programs are imperative in areas such as: renewable energy technologies, energy efficiency, sustainable construction, and green building practices.  This session explores how DC Water's workforce development initiatives are leveraged to transition hard-to-employ individuals to the workplace. The discussion will focus on risk factors associated with such programs, how these efforts can be scaled/replicated, and leveraging external resources for training, placement, and ongoing sup	Rina	Dalal		Camp Dresser & McKee Inc	515

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	10:00 AM	10:30 AM	THU25-01	Process Optimizations Reduce Polymer Consumption for Challenging Mechanical Dewatering of Water Treatment Residuals	This paper/presentation will present a case study of a mechanical dewatering project and focus on the challenges of dewatering alum / powder activated carbon (PAC) sludges generated from the Erie, Colorado water treatment facility (WTF) and process optimizations to reduce polymer use during normal dewatering operations. The Town of Erie (Town), JVA Inc., and Fischer Construction recently completed the project. The WTF treats water from multiple sources with varying water quality. The residuals from the process include alum and (PAC), resulting in numerous process challenges (dewatering, conveyance, polymer use).	Michael	Katalinich			516
6/13/2024	10:30 AM	11:00 AM	THU25-02	Two for the Price of One – Dual-Purpose Centrifuges	The City of Houston’s 320-mgd Northeast Water Purification Plant Expansion Project capitalizes on dual-purpose centrifuges to increase reliability and operational resiliency at no additional cost, which is accomplished by operating the centrifuges in two modes: 1) recuperative thickening mode, or 2) dewatering mode.	Rajeev Datta	Kamalampet		CDM Smith	517
6/13/2024	11:00 AM	11:30 AM	THU25-03	Fate of Manganese Through the Residuals Treatment Trains at Three Water Treatment Plant Using Mechanical and Non-mechanical Drying	The Santa Clara Valley Water District (Valley Water) operates three surface water treatment plants that treat water containing significant levels of manganese. The three plants also employ different sludge handling and treatment systems. Manganese profiling at one plant showed that a significant amount of dissolved manganese was being released through the residuals treatment system and returned to the head of the plant. The two other plants, which have different dewatering technologies, did not experience this challenge. A monitoring program was initiated to closely track the fate of dissolved manganese through the sludge treatment systems at the three plants. The monitoring program and its results will be presented and discussed.	Issam	Najm	President	Water Quality & Treatment Solutions	518
6/13/2024	10:00 AM	10:30 AM	THU26-01	Water Importation into Arizona: From Desalination of the Sea of Cortez to Atmospheric Water Extraction	We consider water quality and uses of water important to Arizona via pipelines or extracted from the air for regional use in potable water systems for domestic use or direct use by commercial, industrial or institutional (CII) water users.	Paul	Westerhoff	Professor	Arizona State University	519
6/13/2024	10:30 AM	11:00 AM	THU26-02	Machine Learning-Enhanced USBR Research for Pathogen Removal in Potable Reuse MBRs	To protect public health, potable reuse treatment systems must dependably reduce pathogens, including viruses, Cryptosporidium, and Giardia , below very low concentration thresholds. Laboratory analysis necessary to demonstrate the reduction is resource and time-intensive. Machine learning offers a viable alternative by predicting pathogen removal through expedited, cost-efficient, predictive data analytics. This study demonstrates that the application of machine learning to microbial and operational data from a demonstration-scale reuse membrane bioreactor (MBR) is superior in predicting the measured Cryptosporidium and Giardia removal when compared to traditional linear models.	Samarth	Suresh	Water/Wastewater Engineer	Carollo Engineers Inc.	520
6/13/2024	11:00 AM	11:30 AM	THU26-03	One Water Program Management: Guidance on the Programmatic Delivery of Resilient, Reliable, and Community Centered Solutions	Implementing resilient, reliable, community-centered multi-benefit solutions is complex, involving innovative technologies, and the navigation of financial, regulatory, community, institutional, and workforce challenges. Extensive stakeholder engagement and interagency collaboration are vital for success. Many utilities use a programmatic approach to address green and gray infrastructure needs. This WRF 5196 Study enhances water industry program management knowledge, using LADWP's Operation NEXT as a case study. It offers a standardized, adaptable framework, tools, processes, and controls to address pressing water infrastructure renewal needs.	Jacquelin	Reed	One Water Planning Lead	HDR	521

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6/13/2024	10:00 AM	11:30 AM	THU27	THU27 - Using the Envision Sustainable Infrastructure Framework to Transform our Water Future	Water scarcity issues are escalating globally, and federal rules are reflecting urgency to implement solutions. The?Envision Sustainable Infrastructure framework and related tools, developed by the Institute for Sustainable Infrastructure are helping water infrastructure projects assess how to meet climate resiliency global challenges, help Transform our Water Future and meet Water 2050 goals.	Justin	Waples	Civil Engineer	Central Contra Costa Sanitary District	522
6/13/2024	10:00 AM	11:30 AM	THU27	THU27 - Using the Envision Sustainable Infrastructure Framework to Transform our Water Future	Water scarcity issues are escalating globally, and federal rules are reflecting urgency to implement solutions. The?Envision Sustainable Infrastructure framework and related tools, developed by the Institute for Sustainable Infrastructure are helping water infrastructure projects assess how to meet climate resiliency global challenges, help Transform our Water Future and meet Water 2050 goals.	Colin	Averill	Civil Engineer	City of Long Beach Public Works, Stormwater	523
6/13/2024	10:00 AM	11:30 AM	THU27	THU27 - Using the Envision Sustainable Infrastructure Framework to Transform our Water Future	Water scarcity issues are escalating globally, and federal rules are reflecting urgency to implement solutions. The?Envision Sustainable Infrastructure framework and related tools, developed by the Institute for Sustainable Infrastructure are helping water infrastructure projects assess how to meet climate resiliency global challenges, help Transform our Water Future and meet Water 2050 goals.	Melissa	Wu	Project Manager	Jacobs	524
6/13/2024	10:00 AM	11:30 AM	THU27	THU27 - Using the Envision Sustainable Infrastructure Framework to Transform our Water Future	Water scarcity issues are escalating globally, and federal rules are reflecting urgency to implement solutions. The?Envision Sustainable Infrastructure framework and related tools, developed by the Institute for Sustainable Infrastructure are helping water infrastructure projects assess how to meet climate resiliency global challenges, help Transform our Water Future and meet Water 2050 goals.	Anthony	Kane	CEO	Institute for Sustainable Infrastructure	525
6/13/2024	10:00 AM	10:20 AM	THU27-01	Transforming Organizations to Transform our Water Future	Central San, a public water resources recovery utility in the San Francisco Bay Area, is pursuing a transformative journey, a journey to develop more sustainable, more resilient and more equitable water infrastructure via the use of Envision.	Justin	Waples	Civil Engineer	Central Contra Costa Sanitary District	526
6/13/2024	10:20 AM	10:40 AM	THU27-02	Urban Runoff with an Extra Helping of Sustainability	The Long Beach Municipal Urban Stormwater Treatment Project extended its sustainability goals through Envision to exceed City initiatives, achieving project goals and earning Envision Platinum.	Colin	Averill	Civil Engineer	City of Long Beach Public Works, Stormwater	527
6/13/2024	10:40 AM	11:00 AM	THU27-03	San Francisco Water Biosolids Digester Facilities Project	San Francisco Public Utilities Commission used Envision to demonstrate their sustainability commitment on the \$3 billion dollar Biosolids Digester Facilities Project. Learn how Envision addressed climate & risk, community engagement and benefits.	Melissa	Wu	Project Manager	Jacobs	528
6/13/2024	10:00 AM	11:30 AM	THU28	THU28 - Utility Perspectives on Asset Management Success	This session includes Utility Managers discussing their Asset Management Program success stories during Implementation. The session provides a valuable opportunity for participants to learn from real-world examples and best practices in asset management within the utility sector.					529

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	10:00 AM	10:30 AM	THU28-01	Why in the World Are You Replacing Those Water Mains?	Conventional wisdom holds that a water main has a fixed life of perhaps 75 or 100 or 120 years. And as a consequence, you better replace 1% a year in order to keep up with the replacement tsunami coming. Break rates are assumed to forever increase into the future. But long term break rates at Cleveland Water suggests the story may not be so simple. If break rates eventually plateau to a steady state, it may be far cheaper to continue to repair such a main than it is to ever replace it. Level of service that you deliver to you customers may be better reasons to pick which mains to replace. At Cleveland Water, we use multiple criteria when selecting mains for replacement: disruption to customers, fire flow and water quality, among others.	Alex	Margevicius	Commissioner	Cleveland Division of Water	530
6/13/2024	10:30 AM	11:00 AM	THU28-02	Embrace Change With Delta Squad!	This presentation introduces the "Delta Squad," Puerto Rico's water system saviors. Managing a complex network with 20,000 miles of pipelines, 200,000+ SCADA tags, 1,500+ pump stations, 1,500+ tanks, 122 Treatment Plants, 500+ wells, and 1.3 million SAP accounts is no small feat. Delta Squad, composed of: FAVAD, the leak detection expert. Delta P, armed with pressure metering powers, and its sibling, Delta Q, a leak detective using flows and finally Telemetry, data gatherer and system manager. The abstract invites readers to join in witnessing the story of Delta Squad and their efforts to save Puerto Rico's water system.	Edwin	Rodriguez		The Puerto Rico Aqueduct and Sewer Authority	531
6/13/2024	11:00 AM	11:30 AM	THU28-03	Optimizing Infrastructure: Los Angeles County Waterworks Districts' Asset Management Program	The Los Angeles County Waterworks Districts (LACWD) provide drinking water to more than 260,000 residents in various communities with the goal to provide a reliable water source and optimal customer service.  LACWD has initiated a comprehensive Asset Management Program to better identify and prioritize maintenance needs and capital improvement projects for each community. LACWD has established a data-based system to assess probability and consequence of failure for all critical assets. This program will help identify and prioritize maintenance routines, resource allocations, and capital improvement projects.	Jack	Husted		Los Angeles County Public Works	532
6/13/2024	10:00 AM	11:30 AM	THU29	THU29 - OT Systems for Resiliency, Sustainability, and Emergency Response	Explore cutting-edge approaches to enhance the resilience, sustainability, and emergency response capabilities of water systems in in this session. Topics cover innovative strategies, such as migrating modeling platforms to the cloud, upskilling staff, implementing digital resilience and response systems, and leveraging technology for accurate water data management. Discover how organizations are advancing in operational technology to address challenges, improve system reliability, and ensure robust emergency preparedness in the ever-evolving landscape of water resource management.	Sri	Kamojjala	Senior Civil Engineer	Las Vegas Valley Water District	533
6/13/2024	10:10 AM	10:30 AM	THU29-02	Fostering Water Supply Resiliency Through Digital Transformation	Through partnership with the Water Research Foundation and UMass Amherst's Hydrosystems Research Group, San Francisco Public Utilities Commission developed a state-of-the-art suite of models to improve simulation capabilities to explore impacts of climate change and regulatory uncertainty on the reliability of the Hetch Hetchy Regional Water System. This presentation will focus on recent work assisting with migration of this modeling platform to the cloud (Azure) and helping their planning staff upskill with focused training on using best practices from software engineering and data science (DevOps/MLOps) to proactively manage change in their modeling platform and effectively organize simulations.	Gregory	Coyle			534

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	10:30 AM	10:50 AM	THU29-03	Leveraging Digital Systems to improve Puerto Rico's Water System Resiliency and Sustainability	The Puerto Rico Water and Sewer Authority (PRASA) owns and operates one of the largest and more complex water and sewer systems in the United States. Puerto Rico is an island with high vulnerability to natural disasters such as hurricanes earthquakes, and droughts that pose a high risk to the system operations. PRASA is implementing a Digital Resilience and Response System (DRRS) that leverage PRASA's existing digital tools and integrate these into a holistic state of the art digital platform that supports planning, preparation, and response to catastrophic events with a strong focus on business continuity.	Godofredo	Canino			535
6/13/2024	10:50 AM	11:10 AM	THU29-04	A Data Platform for Urban Water Efficiency in California	The California Data Collaborative (CaDC), a nonprofit established in 2016, aims to offer reliable data to water suppliers through community and technology integration, facilitating well-informed decisions in water management. The necessity for precise, timely water production and demand data was underscored during California's 2012-2016 drought, leading to the adoption of water conservation regulations and legislation which necessitate regular reporting from local agencies. CaDC, funded by the USBR WaterSMART program, recently introduced a software platform to support local water suppliers in tracking, analyzing, and quality-controlling their water data.	Christopher	Tull		California Data Collaborative	536
6/13/2024	11:10 AM	11:30 AM	THU29-05	Bad Data = Bad Decisions: Resolving the Hidden Crisis in Water Management	Accurate water data is key for efficient water system management and precise reporting. Collecting reliable data from diverse sources like SCADA systems, asset management programs, billing records, and manual inputs is complex. Human errors and equipment inaccuracies threaten data integrity. Technology and communication challenges can make sharing data difficult. However, there is hope! Jordan Valley Water Conservancy District has pioneered a solution to these challenges. Come see how our comprehensive Water Accounting System manages water data, while addressing validation and storage to reduce errors and improve accessibility. Learn how to harness your data to enhance accuracy, foster better metric tracking, and boost reporting efficiency.	Clifton	Smith	Conservation Garden Park Manager	Jordan Valley Water Conservation Dist.	537
6/13/2024	10:00 AM	11:30 AM	THU30	THU30 - Water Distribution Modeling in California	Water distribution models are actively being developed and used by utilities throughout California for a variety of applications. This session provides case studies from local California utilities and how these models are being utilized to advance planning and operations.	Melissa	Brunger	Associate	Freese and Nichols, Inc.	538
6/13/2024	10:00 AM	10:30 AM	THU30-01	Balancing Hydraulics and Water Conservation: Planning for Santa Monica's Future Domestic Water Distribution System	Master planning is critical to maintaining water service into the future, but physical infrastructure improvements can also be supplemented by water conservation efforts to allow for more effective water stewardship. The City of Santa Monica is a recognized leader in the field of sustainability and for its progressive water conservation policies. During their recent water master plan development, a calibrated water distribution system model was used to evaluate performance under existing and future demands. Hydraulic criteria identified very few capacity limitations, pointing to redevelopment's offset by water conservation efforts, and allowing future localized conservation efforts to be made in parallel with pipeline improvements.	Ben	Chenevey	Senior Water Engineer	Arcadis	539
6/13/2024	10:30 AM	11:00 AM	THU30-02	Mining for Gold in Oroville's Data: Modeling A Large Industrial Customer with Seasonally Variable Demand	The California Water Service Oroville Water System serves a wide variety of land use types. One particular industrial customer draws a wide range of water throughout the year; sometimes, over 40% of the total system demand. This seasonal variability presented challenges in calibrating the system's hydraulic model. This presentation outlines the approach to and lessons learned from analyzing production and consumption data and modeling a large industrial customer with seasonally variable demand.	Elaheh	Esfahanian	Water Resource Engineer	California Water Service Company	540

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	11:00 AM	11:30 AM	THU30-03	Hydraulic Modeling of Energy Use Optimizes Potable Water Distribution System Operations	This presentation will discuss energy modeling using potable water distribution system hydraulic models to save energy costs. Using El Toro Water District as an example, results for hydraulic modeling will be shown to discuss how energy models can be used to optimize distribution system operations. Optimizing energy usage in their system may save up to \$10,000 per year and may provide additional redundancy for their water operations.	Matthew	Huang	Principal Planning Engineer, Associate Vice Presid	Carollo Engineers	541
6/13/2024	10:00 AM	11:30 AM	THU31	THU31 - Unique Approaches for Delivering Distribution Projects	The Cascade Water Alliance Program, a century-old \$350 Million Project in Montreal, and the Lanham Station Road Water Main Replacement Project were each faced with difficult challenges. Each team focused on creative solutions to develop unique approaches to the planning, design and construction aspects of each project. The results were extremely positive including the tallest reservoir of its kind in the Pacific Northwest, an AWWA Landmark Award-winning project, and a pioneering initiative offering a blueprint for more efficient and cost-effective water main replacement in the future.	Trooper	Smith		Freese and Nichols	542
6/13/2024	10:00 AM	10:30 AM	THU31-01	Cascade Ground Water Alliance And Building The Tallest Prestressed Reservoir On The West Coast	The Cascade Groundwater Alliance is a partnership between the City of Gresham and the Rockwood Water People's Utility District to establish self-sufficient ground water supply for their customers. Their joint program includes nine packages, three water treatment facilities, at least five groundwater wells, and adds resiliency and cost efficiency to their systems. The program includes Cascade Reservoir No. 2: A 6.0MG, 66ft tall AWWA D110 prestressed concrete reservoir. This reservoir is roughly double the height of a typical D110 reservoir, which led to unique design requirements and construction practices. This presentation will cover the planning, design, and construction of this reservoir, as well as its function in the program.	Ethan	Alton	Senior Project Manager	Peterson Structural Engineers	543
6/13/2024	10:30 AM	11:00 AM	THU31-02	Increasing the Resiliency and Efficiency of a Century-Old Pumping Station While Keeping It in Service	How do you increase the resiliency and efficacy of a century-old pumping station, while keeping it in service the entire time? These are just a few of the challenges that the city of Montreal water services faced, and are still facing, for the complete reconstruction of the McTavish pumping station in the middle of downtown Montreal. The following topics will be covered: <ul style="list-style-type: none"> <li>• Objectives of the project</li> <li>• Pump configuration and its impact on operations and energy efficiency</li> <li>• Increased efficacy in production by eliminating losses in ageing infrastructure</li> <li>• Complete overhaul of building structure</li> <li>• Decontamination of hazardous materials</li> <li>• Coordination and establishment of best practices with Operations to maintain water distribution during work</li> </ul>	Sarah	Elaraby		Ville De Montreal	544
6/13/2024	11:00 AM	11:30 AM	THU31-03	Pipe Bursting Proof of Use for Water Main Replacement: Insights from WSSC Water Pilot Project	WSSC Water used Lanham Station Road Water Main Replacement Project as a testbed for expanding the application of water main pipe bursting techniques. The project involved a meticulous comparison of pipe bursting, relocation, and relay methods. Various PVC types were tested, covering different site conditions. The project, completed in 2020, revealed the benefits of pipe bursting, including cost savings, shorter timelines, minimal disruptions, and reduced pavement restoration. However, challenges like deflection issues, utility conflicts, and soil conditions need further examination. This initiative showcases the potential of innovative construction methods and offers recommendations for future water main replacement.	Yudu	Wu	Senior Lead water resource engineer	WSP USA	545



Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	10:00 AM	11:30 AM	THU32	THU32 - LCR Compliance Sampling	This session will explore LCR compliance questions concerning sampling.	Meg	Roberts	Distribution Systems Services Leader, Associate Vi	Hazen and Sawyer, P.C.	546
6/13/2024	10:00 AM	10:30 AM	THU32-01	Comparing 1st and 5th Liter Lead Samples and Using Find and Fix Procedures to Optimize Corrosion Control Treatment for the LCRR/I	In April 2019 the Pittsburgh Water and Sewer Authority (PWSA) commenced the use of orthophosphate for corrosion control treatment (CCT). While the CCT resulted in compliance sampling below the action limit, PWSA continued adjustments to the CCT, monitoring (including 2 compliance rounds of 1st and 5th L lead sampling) and optimization to get the results lower. Also, PWSA instituted a Home Visit program for individual exceedance locations. This presentation will talk about PWSA's 1st and 5th liter comparison, customer home investigations, and how they are using this data to ensure lead levels remain below 5 µg/L when the new LCRI is in full implementation and in the future when all lead service lines have been replaced.	Daniel	Duffy		East Woods Consultants, LLC	547
6/13/2024	10:30 AM	11:00 AM	THU32-02	Leveraging Technology for Lead & Copper Rule Compliance	Investigating and identifying water service lines for replacement as part of LCRR compliance is a complex effort that requires streamlined coordination and comprehensive documentation. To supports its LCRR compliance program, the Springfield (MA) Water and Sewer Commission leveraged its Geographic Information Systems (GIS), Computerized Maintenance Management Systems (CMMS) and Business Intelligence (BI) systems to optimize workflows for customer outreach, service replacement logistics, records revisions, and progress tracking. Creating and optimizing strategic connections between its technological applications has supported an efficient and expeditious implementation of its LCRR compliance efforts.	Michael	Olkin	Application & Database Support Manager	Springfield Water & Sewer Commission	548
6/13/2024	11:00 AM	11:30 AM	THU32-03	Many Samples, One Dashboard – Leveraging Data Management to Streamline LCR Compliance Sampling	To prepare for the LCR Revisions while addressing these challenges, the Connecticut Water Company (CWC) developed a dynamic LCR compliance sampling dashboard directly integrated with the LSL inventory. CWC operates over 80 water systems in the state, resulting in numerous simultaneous tap sampling campaigns. A PowerBI dashboard, integrated with the ESRI ArcGIS Online lead service line inventory, was developed to provide a dynamic tool to identify and review tap sampling sites. This dashboard prioritizes and highlights systems in which additional Tier 1-4 sampling sites are required for standard monitoring. The presentation will describe the data management techniques and explain how the dashboard simplifies LCR compliance for CWC.	Roger	Arnold		Hazen and Sawyer	549
6/13/2024	10:00 AM	11:30 AM	THU34	THU34 - Checking in on PFAS: A Mid-2024 Update of PFAS Related Litigation, Treatment & Funding Developments	This interactive session between legal, regulatory, and water utility experts focuses on updating attendees on the status of PFAS litigation relating to public water suppliers that is pending across the country. Moderator and panelists will also review key PFAS regulations at the state and federal level and their implications for public water suppliers, and explore and explain various sources and uses of PFAS funds - - from grants to loans to settlement monies.	Ashley	Campbell		Sher Edling, LLP	550

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6/13/2024	10:00 AM	11:30 AM	THU35	THU35 - Progressive Tactics to Mitigate Non-Point Sources of Pollution	This session showcases progressive tactics to mitigate non-point sources of pollution, featuring innovative approaches from diverse regions. From Appalachia's farmers leading source water protection efforts to the strategic implementation of green infrastructure for sewer overflow mitigation, and the economic and environmental benefits of riparian buffers in urban water production. Attendees will gain insights into practical solutions, unexpected benefits, and strategic methodologies, contributing to the broader understanding of sustainable water management practices and pollution reduction strategies.					551
6/13/2024	10:00 AM	10:30 AM	THU35-01	Farmers in Appalachia Caring for Source Water	The 2014 Farm Bill included funding for the Regional Conservation Partners Program. This program held great potential for source water protection. A small watershed protection organization in the mountains of North Carolina was already working with farmers to implement small BMPs on their farms to prevent sediment and pollutants from entering the Mills River. The NGO applied and was awarded new funds to take on the big job of restorations. Until then, large scale restorations were not in the budget. Having access to restoration funds was exciting but then the hard job of convincing farmers to drastically change their methods and streambanks began. It turned out that the farmers led the way.	Maria	Wise		Mills River Partnership	552
6/13/2024	10:30 AM	11:00 AM	THU35-02	Enhancing Stormwater Management: Prioritizing Green Infrastructure for sewer overflow Mitigation in Drinking Water Protection	The presentation is on the development of a sewershed prioritization method for sewer overflow (SO) control. This method serves as a pivotal instrument in facilitating the implementation of mitigation strategies directed towards reducing the impacts of SOs on surface water, a pressing concern in urban planning. Two different methods are developed, compared, and combined. These combined methodologies serve as the foundation for the creation of a forward-looking prioritization index, to align with the challenges of climate change context. Our ultimate objective is to align present decision-making processes with future expectations, enabling the deployment of mitigation measures at a strategic location on the territory to enhance resilience.	Justine	Petrucci			553
6/13/2024	11:00 AM	11:30 AM	THU35-03	Enhancing Economic Benefits and Reducing Carbon Footprint through Source Water Nutrient Reduction	This study analyzed the impact of riparian buffers on the waterworks operation in the Raccoon River watershed based on 17 years of historical records by a watershed model, regression, and cost analysis. Our findings indicate that the presence of riparian buffers in agricultural land can lead to a 9% -19% decrease of nitrate concentration in the water intake of the waterworks during crop growing season. These reductions can result in less nitrate treatment time in the plant and significant energy and material savings and avoid 86.9 metric tons (CO2 equivalent) of greenhouse gas emissions, lowering the carbon footprint of the waterworks. The total cost savings were \$327,326, with the highest potential savings in May (\$215,100).	May	Wu		Argonne National Laboratory	554
6/13/2024	10:00 AM	11:30 AM	THU36	THU36 - The Business Case for Water Affordability: A Quantitative Approach	Utilities' concerns about the cost of providing low-income discounts have inhibited the adoption of robust, local water affordability programs. However, low-income discounts can actually provide a net financial benefit to the utility and to its ratepayers as a whole. Attendees will learn how to quantify those benefits to help build support for adopting new utility-level affordability programs.	Tony	Searls	Superintendent, Commercial Services	Greater Cincinnati Water Works	555
6/13/2024	10:00 AM	10:20 AM	THU36-01	The Business Case for Water Affordability	By improving collectability of low-income customers' bills, a low-income discount program can generate financial benefits to a utility financially. Quantifying these benefits can strengthen the legal and political justification for a program.	Lawrence	Levine	Dir., Urban Water Infrastructure & Sr. Attorney	NRDC	556

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	10:20 AM	11:00 AM	THU36-02	Using the Business Case Tool	The developer of a free Excel-based tool for modeling financial impacts of a low-income discount program will explain the design of the tool and walk through how to use it.	Roger	Colton	Principal	Fisher Sheehan & Colton, Public Finance and General Economics	557
6/13/2024	11:00 AM	11:30 AM	THU36-03	Cincinnati Case Study	Greater Cincinnati Water Works will show how they the Business Case Tool to support development of a new low-income discount program.	Tony	Searls	Superintendent, Commercial Services	Greater Cincinnati Water Works	558
6/13/2024	10:00 AM	11:30 AM	THU37	THU37 - Career Builder: Tools to Get Ahead	This session review real-life examples of young professionals (YPs) leveraging available tools to grow and advance their career meaningfully, ranging from leading through local and international service work, sharing the principles of project management that can benefit all, and reviewing a case study of a personalized YP program facilitated by Walnut Valley Water District in California.	Brian	Van Nortwick		American Water	559
6/13/2024	10:00 AM	10:30 AM	THU37-01	Water Great Start! How to Supercharge Your Career with Local and International Service	Drawing upon six years of experience from engineering design in Chile and Nicaragua, working with Texas non-profits, serving as an ACE Diversity Panelist Speaker, AWWA Education Chair and now AWWA VP, the speaker will engage with young professionals to showcase how to strengthen their career through service. This presentation will focus on growing your passion for water and service to local and international communities, the importance of mentorship, diversity in leadership, and seizing new leadership opportunities. Young professionals will be empowered to make a difference in their area of expertise and not be afraid of taking risks in saying "yes" to opportunities that can propel them forward as an individual and learning professional.	Helen	Salama	Civil Engineer	Arcadis, Inc.	560
6/13/2024	10:30 AM	11:00 AM	THU37-02	Guess What? You're a Project Manager	Even if you are not a "Project Manager" there are PM techniques that can help you do your job better.	Mark	Graham			561
6/13/2024	11:00 AM	11:30 AM	THU37-03	Personalized Development Experiences Within Walnut Valley Water Districts Young Professionals Program	Personalized development experiences within Walnut Valley Water District's (WVWD's) Young Professionals Program (YP Program) have emerged as a pivotal strategy in cultivating the next generation of professionals. This presentation explores the significance of curating developmental paths to individual aspirations and needs. WVWD's YP Program recognizes that the journey of each young professional is unique, and shaped by diverse backgrounds, skill sets, and career ambitions. In response, the program has shifted from a "one-size-fits-all" approach to a personalized framework that focuses on individual strengths and growth areas. Each participant's skills and aspirations are assessed, forming the basis of a targeted development plan.	Stephanie	Fu			562
6/13/2024	1:30 PM	3:00 PM	THU38	THU38 - Recent Developments in Membrane Research	Recent developments in membrane research have seen significant strides in the design and fabrication of advanced materials with enhanced separation properties. Innovations in nanotechnology and materials science have enabled the development of next-generation membranes, exhibiting improved selectivity, permeability, and durability. Join experts as they discuss the novel materials and application of membranes showcasing their potential for contaminant removal.	Chandra	Mysore	Vice President & US South Regional Lead	Jacobs	563

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	1:30 PM	2:00 PM	THU38-01	Experimental Double-Acting Piston Batch Reverse Osmosis	This study presented the lab-scale reciprocating double-acting piston batch RO experiment for seawater salinities. In short, the high-pressure pump pressurizes the feed to fill in the inactive side of the high pressure tank that pressurizes the RO system during permeate production. The feed is then used as a working fluid for the next cycle after flushing the high-concentrated brine. Notably, this eliminates the mixing process between the feed and brine, by which semi-batch RO is inflicted, and reduces downtime as the next feed volume is simultaneously in reserve. Tests were conducted using synthetic seawater with permeate flux of 10 to 15 LMH at a recovery ratio per pass of 15 to 50%.	Sultan	Alnajdi			564
6/13/2024	2:00 PM	2:30 PM	THU38-02	Hydrophobic Carbonized Wood Membranes: A Sustainable Alternative for Membrane Distillation	Conventional polymeric membranes employed for membrane distillation use potentially hazardous fluoropolymers, and are hard to dispose of sustainably. It is imperative to consider alternate materials to transition towards a more sustainable future. In this work, we introduce a first-of-its-kind hydrophobic carbonized wood-based membrane tailored specifically for membrane distillation.	Waqas	Alam		Purdue University	565
6/13/2024	3:00 PM	3:30 PM	THU38-03	Optimizing Membrane Selection in Integrated Forward Osmosis-Alkaline Water Electrolysis for Sustainable Hydrogen Production	Integrating membrane technologies with alkaline water electrolysis (AWE) enables green hydrogen production from non-potable water, addressing freshwater scarcity. This work evaluated polytetrafluoroethylene (PTFE) membranes integrated with AWE compared to conventional thin film composite membranes. Experiments showed PTFE membranes significantly reduced reverse salt flux to negligible levels and improved impurity rejection when using saline feed water, reducing the AWE specific energy consumption from 5.1 kWh to 4.5 kWh per Nm <sup>3</sup> of hydrogen generated. This work advances knowledge on membrane integration for efficient and sustainable non-freshwater hydrogen production.	Gabriela	Scheibel Cassol		The Hong Kong University of Science and Technology	566
6/13/2024	1:30 PM	3:00 PM	THU39	THU39 - Climate Change Adaptation - Resilience, Preparation Efforts	Climate change adaptation research in drinking water utilities seeks to improve comprehension of its impact on system reliability. Specifically, studies on solar-driven desalination, the resilience of drinking water treatment technology in the aftermath of severe wildfires, and the effects of fire on water treatment systems. The findings provide valuable insights for enhancing the reliability and sustainability of drinking water systems in response to changing environmental conditions.	Kenan	Ozekin	Sr. Research Manager	Water Research Foundation	567
6/13/2024	1:30 PM	2:00 PM	THU39-01	Drinking Water Utility-Level Understanding of Climate Change Effects to System Reliability	Climate change hazards, including increased temperatures, drought, sea level rise, extreme precipitation, wildfires, and changes in freeze-thaw cycles, are expected to degrade drinking water utility system infrastructure and decrease the reliability of water provision. Interviews were conducted with a geographically diverse sample of drinking water utility managers to discover how these managers perceive effects of these climate hazards on utility system reliability. The interviews were also used to assess the status of climate adaptation planning across the United States.	Zia	Lyle		Carnegie Mellon University	568
6/13/2024	2:00 PM	2:30 PM	THU39-02	Solar-Driven Desalination: Finding Upper Efficiency Limits for Reverse Osmosis Power by Solar Energy Technologies	Analytical study to identify the most efficient solar-driven reverse osmosis desalination system alternative by conducting a comparative analysis of the combined second law efficiency of batch reverse osmosis with multiple alternatives for solar energy generation such as Stirling engine, organic Rankine cycle, and photovoltaics cells.	Sandra	Cordoba Renteria		Purdue University	569

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	2:30 PM	3:00 PM	THU39-03	Fire and Water: Drinking Water Treatment Technology Resilience Following Severe Wildfire	Wildfire is occurring with increased frequency, magnitude, and severity in many regions and can have serious consequences for source water quality and negative implications for drinking water treatment. Source water quality parameters, such as carbon levels, turbidity and nutrient quantities may be affected in post-fire scenarios. While the impacts of fire on source waters is generally understood, more information is needed to gain a better understanding of how post-fire source waters may be effectively treated to provide adequate quality drinking water. This research aims to demonstrate that severely deteriorated water quality following wildfire may be treated if the appropriate treatment technologies are employed.	Jesse	Skwaruk			570
6/13/2024	1:30 PM	3:00 PM	THU40	THU40 - Resilient Infrastructure Solutions for Storm-Prone Areas	Demand Driven Distribution combines pumps, intelligent controls and monitoring solution to form a unique management system to save energy, save water, and save piping infrastructure. City of Houston's Northeast Water Purification Expansion adopted resilient microgrids powered by underground natural gas, allowing uninterrupted operation in a storm prone area. Florida Department of Emergency Management disaster response after Category 5 Hurricane Ian, and their successful approach to emergency restoration of services among nine water and wastewater utilities in Lee County.					571
6/13/2024	1:30 PM	2:00 PM	THU40-01	Dramatically Reduce Energy Consumption and Non-Revenue Water (NRW)	Traditional water distribution systems are inherently inefficient as they rely on large pumps and motors running 24 x 7 to ensure water flow and pressure at the far reaches of the piping networks, regardless of whether there is demand or not. This results in immensely inefficient systems that waste energy unnecessarily, while exerting unneeded stress on the piping systems frequently causing pipe bursts that results in leakage of valuable, treated water (NRW). To combat this challenge, Demand Driven Distribution combines pumps, intelligent controls and monitoring solutions, and system surveillance packaged together to form a unique pressure management solution, where pumps and motors operate at their best efficiency point and only operate	Robert	Montenegro		Grundfos	572
6/13/2024	2:00 PM	2:30 PM	THU40-02	City of Houston Launches US's Largest Microgrid for a Water Treatment Facility	Facing heightened weather threats, aging grids, and cybersecurity risks, water and wastewater facilities emphasize resilience. Houston's Northeast Water Purification Plant (NEWPP) plans to add 320 million gallons daily by 2025, adhering to local mandates and ensuring operation during power outages.  Houston adopted resilient microgrids powered by underground natural gas, allowing uninterrupted operation regardless of surface disruptions, which is vital for storm-prone areas. This choice offers cost-effective resilience, making this the largest microgrid-backed US water pumping plant. Our session dives into Houston's decision, covering technical, cost, and compliance aspects, offering insights for any facility needing reliable backup power.	Addison	Jump		Enchanted Rock	573

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	2:30 PM	3:00 PM	THU40-03	Restoring Utilities Following a Category 5 Hurricane: Florida's Hurricane Ian Success Story	Hurricane Ian was a Category 5 Atlantic hurricane making landfall on Florida's Southwest coast in Lee County on September 28, 2022. The storm had reported sustained winds of 150 mph (240 km/h) and approximately 12-18 feet (3.7-5.5 m) of storm surge along the coast. In response to the Hurricane's impact in Lee County, the Florida Division of Emergency Management, in close coordination with nine water and wastewater utilities, took the lead managing resources needed for emergency restoration of services and the development of detailed site damage assessment reports. This presentation will describe this unique approach providing needed resources to promptly restore services while allowing local utilities to focus on other emergency matters.	Michael	Bomar	Vice President	Tetra Tech	574
6/13/2024	1:30 PM	4:00 PM	THU42	THU42 - Pipe, Hydraulics, Valves, and Water Conservation: New and revised AWWA Standards	This session highlights the release of new AWWA Standards and Manuals on PVC pipe, applied hydraulics, valves and copper fittings, and water conservation & efficiency in urban water utilities.	Paul	Olson	Senior Manager of Standards	American Water Works Association	575
6/13/2024	1:30 PM	3:00 PM	THU43	THU43 - Advancing the Science of PFAS	Utilities are exploring novel analytical techniques and AI to detect and quantify the presence of PFAS compounds, enabling a more comprehensive assessment of system contamination. Advancements in full-scale treatment are also providing lessons-learned and a rethink. Join us for a thoughtful session on the how, where and why of PFAS are investigated.					576
6/13/2024	1:30 PM	2:00 PM	THU43-01	PFAS Leaching in Drinking Water System Components	NSF/ANSI/CAN 61: Drinking Water System Components-Health Effects (NSF 61) is the North American flagship standard for evaluating components of the drinking water system from source to tap for potential leaching of contaminants into drinking water. This presentation will provide an update on the current state of PFAS health effects requirements within NSF 61 and its reference standard, NSF 600. It will also provide a look at new PFAS compliance requirements on the horizon for these standards which are so fundamental to the safety of North American drinking water.	Kathryn	Foster	Technical Operations Manager, Municipal Products	NSF International	577
6/13/2024	2:00 PM	2:30 PM	THU43-02	Leveraging Machine Learning to Identify PFAS Signatures in Groundwater and Surface Water	With escalating concerns around groundwater and surface water contamination, there is an increased need to address issues around contamination with well-informed data-driven practices. Complexities can arise in identifying distinct chemical signatures across varying geographies, parsing mixed plumes from multiple contamination sources, or characterizing background concentrations. This presentation aims to demonstrate machine learning methods that can enhance the identification of PFAS signatures along geospatial coordinates. Participants can expect to gain a general understanding of how machine learning can enhance traditional analytical methods and see examples for how it has been applied to improve insight into large data sets.	Kyong	Song		Barr Engineering	578
6/13/2024	2:30 PM	3:00 PM	THU43-03	Rethinking Ion Exchange: The First Suspended Ion Exchange (SIX) Pilot in the US for PFAS, TOC, and TDS Removal in Potable Reuse	Recent innovation has redefined a better ion exchange (IX) process for anionic contaminant removal. Suspended ion exchange (SIX) is a novel steady-state process that keeps the resin fluidized in the reactor and regenerates the spent resin at a high frequency. A 6-month SIX pilot study at the Howard F. Curren Advanced Wastewater Treatment Plant in Tampa, FL assessed the effectiveness of SIX in removing TOC, TDS, and PFAS as a pretreatment process in a reuse train. This marks the first pilot test of SIX in the US for potable reuse. This presentation explores the potential of resin regeneration using solar salt, seawater RO concentrate, and NaHCO <sub>3</sub> in SIX and the resulting water quality improvement associated with anionic contaminant removal.	Yun	Yu		Carollo Engineers	579

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	1:30 PM	4:30 PM	THU44	THU44 - War Stories: Best Practices and Lessons Learned From the Front Lines of Digital Transformation	This special topic session focuses on how delivering digital projects differs from delivering traditional engineering planning and design projects, and associated best practices and lessons learned from the utilities projects of focus in the special session.	Nass	Diallo	Engineering Division Manager	Las Vegas Valley Water District	580
6/13/2024	1:30 PM	2:00 PM	THU44-01	Las Vegas Valley Water District UPS Its Digital Game With Management Tools	This presentation will describe how the LVVWD is using artificial intelligence and advanced analytics to optimize its pipeline replacement program.	Nass	Diallo	Engineering Division Manager	Las Vegas Valley Water District	581
6/13/2024	2:00 PM	2:30 PM	THU44-02	Long Beach, Calif: Drinking from the Digital Well	The audience will better understand the power and process of integrating digital solutions into their utility through leadership and innovation of Long Beach Water.	Patrick	Haney	Project Manager	Stanley Consultants	582
6/13/2024	3:00 PM	3:30 PM	THU44-04	Toronto Improves Data Collection, Eliminates Silos	Toronto Water implemented a digital tool with the purpose of optimizing water distribution pressure and customer demand.	Thomas	Butler	Director of Business Development	Go-Aigua	583
6/13/2024	3:30 PM	4:00 PM	THU44-05	Tucson Water Undergoing a Digital Transformation	It has fostered an innovation culture within the organization, encouraging continuous improvement and adaptation to evolving technologies and industry trends.	Silvia	Amparano	Deputy Director	City of Tucson Water	584
6/13/2024	1:30 PM	3:00 PM	THU45	THU45 - AI In The Water Sector...The Good, The Bad & The Ugly	Dive into the future with 'AI in Water: Matrix, Oracle or Terminator...Let's Explore' Explore the pros and cons of AI applications, from optimizing resource management to tackling challenges. Join us for an insightful session on navigating the dynamic waters of AI in the industry!	Cris	Perez	Dir. of Tech. Services	Santa Clarita Valley Water Agency	585
6/13/2024	1:30 PM	3:00 PM	THU46	THU46 - Hydraulic Modeling for Proactive Planning	Water distribution modeling is a critical tool in effective planning for water utilities. Modeling discussions during this session will include advanced techniques and case studies that will provide valuable insights into optimizing water distribution systems for sustainable urban development.	Matthew	Huang	Principal Planning Engineer, Associate Vice Presid	Carollo Engineers	586
6/13/2024	1:30 PM	2:00 PM	THU46-01	If You Plan it, They Can Come The City of Frisco's Journey through Proactive Planning and Progressive Growth	Follow along with the City of Frisco, Texas, as they emerge from a small outpost on the edge of Dallas to a booming hotspot in the Dallas-Fort Worth metroplex with national attention. We will discuss the changes in the City through the rapid growth and the proactive water and wastewater system planning that has enabled the City to support this growth.	Mazen	Kawasmi	Water/Wastewater Engineer	Freese and Nichols, Inc.	587
6/13/2024	2:00 PM	2:30 PM	THU46-02	Threading the Needle: Boosting Transmission Capacity & Making Crucial Connections at a Multi-User Storage Site	The Widefield, Colorado area is a growing suburb located south of Colorado Springs. The 2021 Master Plan for the Widefield Water & Sanitation District recommended construction of two new parallel transmission mains to create redundant feeds to the central storage tank farm serving multiple pressure zones. The joint-use tank farm includes 6 ground storage tanks and 1 elevated storage, with four different ownership arrangements between neighboring utilities and the Bureau of Reclamation. Hydraulic modeling was used to determine transmission main sizing and outage sequencing for critical infrastructure serving four different utilities. Challenges associated with construction logistics and inter-agency coordination are covered.	Douglas	Ashworth	Project Manager	Garver	588
6/13/2024	2:30 PM	3:00 PM	THU46-03	A Chip Off the Old Block: Using a Hydraulic Model to Plan for Rapid Increase in Water Demand from Chip Manufacturing Plants	This abstract details the planning and hydraulic modeling efforts for two cities in Texas to efficiently serve the significant increase in water demands associated with new and expanding chip manufacturing plants. The expansion of chip manufacturing in Texas due to increased need, funding, and legislative support has triggered many water system project needs in host cities to support the expansions. In both case studies the cities' hydraulic water model was utilized to quickly and efficiently determine projects needed to serve the significant water demand increase from the chip manufacturing plants and coordinate with design teams, city staff, and key stakeholders.	Geneva	Caponi	Engineer	Freese and Nichols, Inc.	589

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6/13/2024	1:30 PM	3:00 PM	THU47	THU47 - Eureka! Advanced Treatment Innovation Leading the Way to Water 2050	Innovation in technology and treatment techniques are leading the way to meet the challenges of Water 2050. This session provides case studies using innovation with various advanced treatment technologies to successfully address current and emerging water challenges.	Jennifer	Osgood		CDM Smith	590
6/13/2024	1:30 PM	2:00 PM	THU47-01	Deployable Resilient Installation water Purification and treatment System (DRIPS) Unit	The Deployable Resilient Installation Water Purification and treatment System (DRIPS) Unit DRIPS is a small footprint mobile water treatment system. The DRIPS is a critical asset in disaster response and military operations, providing a reliable and effective means of producing potable water and disinfectant in challenging and unpredictable environments. Its adaptability, mobility, and comprehensive water treatment capabilities are proven to be an invaluable resource for addressing water-related emergencies and ensuring the well-being of affected installations during times of crisis response, training operations, and emergency preparation.	Ilea	Diaz Llubes		Army Corps of Engineers/Hecsa Library	591
6/13/2024	2:00 PM	2:30 PM	THU47-02	Oxidant/UVT Predictive Modeling to Optimize UV AOP System Design	UV AOP systems can vary significantly in process design, especially in oxidant and UVT monitoring. Black & Veatch will present a case study on a full-scale UV AOP system utilizing a predictive algorithm that calculates the oxidant concentration and UVT, optimizing UV AOP system layout and operations.	Anthony	Pimentel	Process Engineer	Black & Veatch	592
6/13/2024	2:30 PM	3:00 PM	THU47-03	Overcoming Permitting Challenges for 1,4 Dioxane and PFAS removal in groundwater at City of Monterey Park	The City of Monterey Park provides drinking water to its customers from the production wells located in San Gabriel Basin in Los Angeles County, California. The Basin is impacted by VOCs, and to a less extent, by perchlorate and arsenic. More recently, wells sampling for 1,4 dioxane and PFAS showed concentrations above the CA notification levels (NL). In August 2019, during commissioning and startup phase of a centralized treatment plant that addressed the VOCs and 1,4-dioxane, California State Water Board lowered the notifications levels for PFOA and PFOS to 5.1 ppt and 6.5 ppt, respectively. The treatment system was reevaluated for consideration of PFOA and PFOS treatment. The permitting was a multi-year roller coaster journey.	Silvana	Ghiu	Senior Associate	Hazen and Sawyer	593
6/13/2024	1:30 PM	4:00 PM	THU48	THU48 - Get the Lead Out	This session will explore programs to remove lead service lines.	Simoni	Triantafyllidou			594
6/13/2024	1:30 PM	2:00 PM	THU48-01	Service Line Inventory Reporting: Finishing Touches Before Inventories Are Due	CDM Smith has assisted 46 water systems in meeting New Jersey's accelerated compliance deadlines in July 2022 and 2023. Many of the lessons learned from achieving compliance for the accelerated deadline will be useful to prepare for the EPA's upcoming federal lead and copper rule revisions' (LCRR) deadline on October 16, 2024. This presentation will outline key tasks to complete in the four months leading up to an inventory deadline to guide the accuracy and completeness of your water system's inventory.	Carolyn	Loudermilk	Environmental Engineer	CDM Smith	595
6/13/2024	2:00 PM	2:30 PM	THU48-02	A Journey Through Lead, Challenges and Solutions	This presentation will share experiences with lead service line replacement over the past seven years and how that knowledge helped to build an inventory program. It will cover the key challenges associated with lead service line replacement and lead service line inventories and how to create opportunities and solutions to make this process efficient.	Marianne	Bain		Greeley and Hansen LLC	596



Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	2:30 PM	3:00 PM	THU48-03	Getting to Full Lead Service Line Replacement	Lead service lines frequently are owned by water utilities and the homeowner. Under the EPA's Lead and Copper Rule Revisions (LCRR), utilities must offer full lead service line replacements (LSLR) during planned infrastructure and emergency work that replaces the publicly owned portion of the lead service line. Additionally, water utilities with 90th percentile lead concentrations above the trigger or action limit will have mandatory annual replacement goals, and only properties where the full LSLR, including the privately own portion, will count towards these goals. Using case studies from around the US, this presentation will address funding and legal considerations for utilities developing programs to replace full lead service lines.	Kristin	Epstein		CDM Smith	597
6/13/2024	3:00 PM	3:30 PM	THU48-04	Lead Safe Chicago: A Deep Dive into the Various Lead Service Line Replacement Programs in the City of Chicago	The City of Chicago Department of Water Management (CDWM) is responsible for providing nearly 750 million gallons of drinking water each day. Like many utilities Chicago is also faced with the challenge posed by aging water infrastructure, including the presence of hundreds of thousands of lead service lines. As a part of ensuring good and safe drinking water CDWM is offering various lead service line replacement programs for the citizens of Chicago. Administrating all these programs requires much technical development and support. This presentation will outline the details of Chicago's Lead Service Line Replacement Programs explaining the various key performance indicators, progress and cost analysis for LSL replacements.	Kiran	Udayakumar		AECOM	598
6/13/2024	3:30 PM	4:00 PM	THU48-05	Tucson Water's Implementation of the LCRR Find-and-Fix Protocol	The EPA's 2021 LCRR included multiple requirements to reduce lead exposure from drinking water. One key requirement is the "Find-and-Fix Assessment." This assessment is designed to address lead levels exceeding 15 ug/L in customers' homes. The presentation discusses the initial three assessment steps: utility water assessment, site assessment, and root cause analysis that Tucson Water is implementing. Tucson Water serves multiple systems and is using a comprehensive flowchart to respond to lead exposure, conveying risks and actions. Attendees will gain insights into implementing the Find-and-Fix assessment for lead concentrations exceeding 15 ug/L in water samples and employing visual aids for effective communication and implementation.	JESUS ALEJANDRA	FRAIJO	Water/Wastewater EIT	HDR Engineering	599
6/13/2024	1:30 PM	4:30 PM	THU49	THU49 - Treatment Complexities of Small Systems	Novel treatment techniques for small systems will be discussed in this session. Discussion of treatment to meet primary requirements to challenging contaminants like PFAS, nitrate and DBPs.	Stephanie	Elliott			600
6/13/2024	1:30 PM	2:00 PM	THU49-01	A Journey from Boil Water Advisory To Meeting Drinking Water Requirements - The Story of Lynn Lake Water Treatment Plant	To meet future growth and address the water quality and boil water advisory challenges, the small community of Lynn Lake, Manitoba initiated a feasibility study followed by detailed design, construction and commissioning of a DAF based water treatment system to treat a challenging surface water source. The paper highlights the success story of overcoming challenges with the development of a suitable water treatment system while addressing the boil water advisory and also showcases the planning, process design, construction challenges and the operating results from the guaranteed performance testing data and on-going operations of the Lynn Lake WTP.	Saibal	Basu		Stantec Consulting Ltd.	601

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	2:00 PM	2:30 PM	THU49-02	A Quick Response to a State PFAS Regulatory Limit.	The paper presents the steps taken by the Town of Cohasset to able to comply with the State of Massachusetts regulation for six PFAS compounds in water from their Ellms Meadow shallow groundwater supply. The Town received a grant for testing, treatment technology selection and final design of a PFAS removal system. The performance of the RSSC testing and results will be presented along with the analysis and selection of the treatment process. The final design of the system to integrate it into the existing groundwater supply will also be presented.	James	Christopher		Tetra Tech, Inc.	602
6/13/2024	2:30 PM	3:00 PM	THU49-03	The Nuts and Bolts of Adsorption Piloting for PFAS Treatment	As PFAS limits come to fruition, adsorption piloting is being thrown into the spotlight. As with any pilot program, an established plan is vital for success. This discussion will focus on the unique details that need to be considered during an adsorption pilot as well as case studies and lessons learned from small and large water systems.	Molly	McManus		Intuitech	603
6/13/2024	3:00 PM	3:30 PM	THU49-04	Guideline to Treat Nitrates in Ground Water – Canadian Experience	This presentation is dealing with the treatment of nitrate laden groundwater for a small community in Southern Ontario, Canada. This presentation also includes the details of a pilot study to determine overall performance of the ion exchange nitrate removal system treating the raw water from the Wells. The recommendation for the water treatment system will also be discussed.	JEGANAESAN	JEGANATHAN		TYLin	604
6/13/2024	3:30 PM	4:00 PM	THU49-05	Corrosion Control for Groundwaters: A Tale of Two Towns	The LCRR introduced a new 10-ppb Trigger Level for Lead that, when exceeded, requires systems to conduct a corrosion control study. While surface waters are often implicated in corrosion control, groundwater supplies are also susceptible. This study will focus on two OCCT groundwater systems that exceeded the new Action Level. A practical and streamlined approach to assessing water quality data to determine root cause of corrosivity will be reviewed, as well as the outcomes of desktop water quality modeling to screen alternative treatment approaches. Secondary compliance factors were also a factor, including discoloration management. Rationale for recommended treatment approach and sizing will be discussed, which included a combination of	Simon	Horsley			605
6/13/2024	4:00 PM	4:30 PM	THU49-06	Uncontrollable Contaminants Migration from HDPE Pipes	The present research introduces biofilm formation's effect on the HDPE pipes' inner surface in drinking water distribution networks. The study has focussed on the small diameters at the dead ends.	Hatem	Fadel	Head of Sanitary Engineering Department	MISR Higher Institute For Engineering and Technolo	606
6/13/2024	1:30 PM	3:00 PM	THU50	THU50 - Saving Water in Utility Operations	Water conservation and efficiency are not only needed on the customer side of the meter. Utilities can also look for opportunities to save water in their own operations – saving resources, money, and setting a good example for the community.					607
6/13/2024	1:30 PM	2:00 PM	THU50-01	Solving Water Scarcity Challenges with Advanced Analytics	In 2016, Provo Water Company Ltd. implemented advanced analytics, specifically Advanced metering infrastructure and data analytics. This decision changed the modus operandi of the company at the time. It greatly improved how we addressed water scarcity challenges and maximised resource utilisation. This presentation and the video explore and evidence the impact of advanced analytics and data analysis on our daily operations and future monitoring and demand utilisation of the very scarce commodity in our environment of the Turks and Caicos Islands ( <a href="https://events.tpn">https://events.tpn</a> ). The hope is that this presentation will provide some lessons learnt and guidance for other utilities endeavouring to walk the road of advanced analytics and data analysis,	Cora	Malcolm	Project & Data Mngmnt. Mngr	Provo Water Company Limited	608

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	2:00 PM	2:30 PM	THU50-02	The Only Potable Water Main Flushing And Jetting Technology That Can Remove Tuberculation And Biofilm Without Wasting Water	NO-DES water main flushing is now coupled with a new jetting technology to remove tuberculation and biofilm from the insides of potable drinking water mains, renewing the inside diameter; with less disruption to the customers, with virtually no impacts on the environment (no digging or paving) and at a fraction of the costs of pigging or replacement! Details of how the simple debris removal is performed, our new camera process is employed, plus leak detection and locating will be discussed. This new Jetting process will improve fire flows, system disinfectant residuals while improving water quality, safety and conserving precious drinking water.	Chris	Wilkinson	President	NO-DES, Inc.	609
6/13/2024	2:30 PM	3:00 PM	THU50-03	No Water, No Rum, What's in your Mojito?	Explore PRASA's visionary water conservation initiative, a journey powered by technology, sustainability, and innovation. Witness the creation of a sophisticated Monitoring System Project, spanning 395 miles of pipelines, designed to anticipate and address water anomalies swiftly. Join us on a mission to secure our region's water future, setting audacious standards and inviting industry leaders to embrace water neutrality. This is a blueprint for progress, unity, and innovation, showcased at ACE 2024, shaping a sustainable tomorrow.	Edwin	Rodriguez		The Puerto Rico Aqueduct and Sewer Authority	610
6/13/2024	1:30 PM	2:00 PM	THU51-01	The Florida Water Loss Program : Continuing the Trend of Voluntary Water Loss Training and Technical Assistance Programs	The key objectives of this presentation will be to identify the partnerships and strengths critical for the success of a large scale water loss training and assistance program, as well as diving into the current water management scenario in Florida, shedding light on the different approaches taken by water utilities.	Andrew	Blackwell	Non Revenue Water Program Director	Cavanaugh & Associates, P.A.	611
6/13/2024	2:00 PM	2:30 PM	THU51-02	Listen Up: Reverse Water Loss and Improve Operational Efficiency with ALD	In this session, Kamstrup and Oneida come together to share their experience with acoustic leak detection, from choosing the Kamstrup solution to turning it on and using it to identify, prioritize and fix leaks. Join Stephen Owens from the Town of Oneida, as he shares insights for developing and deploying a leak detection program.	Penny	Cannon			612
6/13/2024	2:30 PM	3:00 PM	THU51-03	Benchmarking Leak Detection in the Digital Age: A Comparative Analysis of Methods in 2023	Leak detection technology has evolved significantly since the days of divining rods and listening sticks. Handheld correlators led the way to fixed-based continuously active acoustic systems which gave way to satellite inspection technology. This presentation compares these various methods to help utilities make informed choices. Both quantitative and qualitative metrics, including leaks found per crew day, per mile, and cost, as well as capital and operational expenses, flexibility, turnaround time, testing frequency, complexity, and performance are used to compare techniques.	Paul	Gagliardo	Podcast host	The Water Entrepreneur Podcast	613
6/13/2024	1:30 PM	4:00 PM	THU52	THU52 - Source Water and Distribution System Challenges and Solutions in California	California faces unique challenges in treating source water and maintaining distribution system water quality in the face of severe drought. Proposed changes in California's regulatory environment for manganese also present utilities with new treatment and distribution system management challenges. This session will update participants on California's regulatory activities, provide guidance on water main flushing as a distribution system management strategy, and discuss strategies for treating and managing water quality concerns during drought, including issues with cyanobacteria, nitrification, and taste and odor.	Kambria	Tiano	Associate Engineer	West Yost Associates	614

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	3:30 PM	4:00 PM	THU52-05	It's a Royal (Unidirectional) Flush for the City of Sacramento: Beating the Odds with Proven Unidirectional Flushing Solutions	The City of Sacramento developed a Unidirectional Flushing (UDF) program to clean and maintain over 2 million linear feet of water system distribution pipe. Efficiently utilizing limited operations staff time, keeping costs and water usage manageable, and implementing a flushing program on such a large scale provides significant challenges. This presentation offers lessons learned from the team's experience overcoming those challenges through the UDF program development and implementation. UDF is the process of closing targeted valves and opening targeted hydrants to direct flows that create scour velocities through specific sections of water pipe to remove pipe deposits, all without disrupting service to customers in the vicinity.	Thomas	Suesser		Brown and Caldwell	615
6/13/2024	2:00 PM	2:30 PM	THU53-02	Sites Reservoir: A Behind the Scenes Look - What It Takes to Build Big Water Storage in California	Sites leadership will share their experience bringing together 22 water districts, the state of California and the Bureau of Reclamation to advance a 1.5MAF surface water reservoir that benefits families, farms, fish and fowl. Water leaders from across the nation need to hear about the California example of Sites to inspire their own innovative collaboration approach.	Sarah	Rossetto	Senior Director	Katz & Associates	616
6/13/2024	1:30 PM	3:00 PM	THU54	THU54 - Building Water Supply Reliability through Integrated Water Supply Strategies	The session will highlight integrated water supply strategies as part of an overall program to secure a diversified portfolio of water supplies for the future. Ensuring a reliable, resilient and sustainable water supply is becoming more challenging due to climate change, seismic risks and increasing regulations. Attendees will explore case studies for California and Florida to gain insights into practical solutions, benefits, and strategies for sustainable water planning.					617
6/13/2024	1:30 PM	2:00 PM	THU54-01	Building Water Supply Reliability through Water Supply Diversification and Regional Partnerships: A Case Study of Santa Cruz Water	The City of Santa Cruz is evaluating water supply strategies as part of an overall program to secure water supplies for the future. In 2022, the City adopted a policy resolution that outlined four strategies, including aquifer storage and recovery (ASR), indirect and direct potable reuse, and seawater desalination, to be more fully evaluated in a Water Supply Augmentation Implementation Plan. Recent climate change modeling was used to provide a deeper understanding of current source water reliability and compare with new water demand projections to identify future needs. Santa Cruz is committed to a future water supply portfolio that is nimble and resilient to address climate change and uncertainty.	Kristi	Shaw	Senior Professional Associate	HDR Engineering	618
6/13/2024	2:00 PM	2:30 PM	THU54-02	Tucson Water – The One Water 2100 Plan for Long-Range Water Resource Management	This presentation will cover Tucson Water's One Water 2100 Plan (Plan). With long term reductions expected to impact all Colorado River water users, Tucson Water has developed an ambitious long-range water resource management plan to identify opportunities to further diversify the water supply portfolio through 2100 by increasing the use of locally controlled and distributed sources, such as recycled water, and stormwater harvesting. The Plan is built on the One Water integrated water resource management approach which values all types of water resources, and through an active and collaborative stakeholder-driven process that included scenario planning, workshops, surveys, and interviews.	Warren	Greco		Carollo	619

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	2:30 PM	3:00 PM	THU54-03	How to Fast-Track the Implementation of Your Integrated Water Resources Plan	JEA is the 8th largest municipal owned utility in the U.S. serving 514,000 customers for electric, 391,000 for water and 311,000 for wastewater and is also the second largest water utility in Florida. As JEA looks to meet future growth, bring on alternative water supplies, maximize use of reclaimed water and continue to drive conservation, they developed a comprehensive program that linked their Integrated Water Resources Plan (IWRP) with their Demand Side Management DSM program. This presentation will overview JEA's IWRP program, highlight how the IWRP was modified to meet the regulatory mandated 2032 deadline of SB-64 and share results and lessons learned from fast-tracking several elements of the program.	Shayne	Wood	Water Resources Engineer	CDM Smith	620
6/13/2024	1:30 PM	4:30 PM	THU55	THU55 - Advancements in Water Reuse: Projects, Processes, and Partnerships	This session delves into technical aspects and innovations in water reuse. Explore projects ranging from direct potable reuse (DPR) implementations to advanced water purification processes. Understand the challenges faced and solutions developed by utilities, emphasizing collaborative partnerships for sustainable water practices. Gain insights into feasibility studies, treatment technologies, and operational strategies, offering a technical deep dive into the realm of water reuse.					621
6/13/2024	1:30 PM	2:00 PM	THU55-01	Planning for DPR in Colorado: Aurora Water's Approach to DPR	Aurora's direct potable reuse (DPR) project will likely blaze a path as the first DPR application in Colorado. Leveraging an existing reclamation and advanced treatment system with a proactive and comprehensive approach positions Aurora Water to implement the new state regulations and set a precedent for carbon-based DPR. Attendees will learn the key considerations and elements for implementing DPR, particularly in the context of the recently approved DPR regulations in Colorado. Although the project approach was tailored to meet the Colorado DPR regulations, the concepts for treatment, public outreach, ESCP, and TDS management broadly apply to any system considering DPR.	Jason	Assouline		Carollo Engineers	622
6/13/2024	2:00 PM	2:30 PM	THU55-02	DIY DPR: How the City of Santa Monica Plans to Implement Direct Potable Reuse	The City of Santa Monica's is augmenting its groundwater supply by leveraging alternative water sources – stormwater, brackish groundwater, and sanitary sewage. But new direct potable reuse (DPR) regulations in California present a pathway towards water self-sufficiency while protecting public health. This presentation will discuss Santa Monica's drivers towards DPR and implementation strategy as an example for other municipalities to consider.	ALEX	Waite	Supervising Civil Engineer	City of Santa Monica	623
6/13/2024	2:30 PM	3:00 PM	THU55-03	City of Phoenix: Journey Towards Advanced Purified Water	The City of Phoenix is taking active measures to ensure the long-term sustainability and reliability of their drinking water supply. This presentation will focus on key aspects of the City's journey towards potable reuse including initial feasibility studies, design modifications to the City's existing Cave Creek Water Reclamation Plant (CCWRP) to incorporate advanced water purification processes, future demonstration testing and public outreach activities.	Arun	Subramani		Black & Veatch	624

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	3:00 PM	3:30 PM	THU55-04	Pure Water Soquel: The Little District with Big Solutions	The Soquel Creek Water District (District) is a small utility serving 40,000 customers that relies solely on groundwater, which is at risk of seawater intrusion. After engaging the public in developing a Community Water Plan, one alternative involved using purified water to help prevent seawater intrusion and increase water supply resiliency for the District. The solution – Pure Water Soquel – is multi-faceted and includes extensive stakeholder engagement, strong partnerships, state and federal funding, alternative project delivery, environmental documentation, treatment, conveyance, and seawater intrusion prevention wells. This presentation summarizes these elements from concept through construction and looks ahead to operations.	Melanie	Holmer	Reuse National Practice Lead	Brown and Caldwell	625
6/13/2024	3:30 PM	4:00 PM	THU55-05	Data Driven Exploration of Water Reuse Partnership Opportunities in South Orange County	Presenters will highlight wastewater, water, and stormwater agencies partnering to leverage data to explore direct potable reuse and stormwater capture opportunities. The OASIS Water Resource Center envisions multiple forms of water reuse to create new local water resource supplies that will provide water reliability and resilience for future generations.	Alex	Thomas		Moulton Niguel Water District	626
6/13/2024	4:00 PM	4:30 PM	THU55-06	Regional Collaboration For a Drought Resistant Water Supply	This presentation features key findings from a conceptual study of an Advanced Purified Water Facility proposed by the City of Phoenix. The study includes a water and wastewater conveyance evaluation, treatment train selection, framework for multi-partner facility governance, and a cost-share dashboard as a decision support tool.	Corin	Marron	Associate Vice President	Carollo Engineers	627
6/13/2024	1:30 PM	3:00 PM	THU57	THU57 - Approaches to Water Utility Planning	Today's municipal water utilities are facing unprecedented challenges ranging from current and emerging regulatory drivers, climate change impacts, and affordability challenges while striving to achieve the levels of service that customers expect. In particular, the regulations are continually evolving with expansions in science and technology leading to a diverse set of requirements that impact drinking water, wastewater, stormwater, and reuse utilities. Utilities are exploring means to meet multiple objectives while prioritizing equity and health concerns, regulatory obligations, and affordability constraints to provide higher-value investments for their customers.					628
6/13/2024	1:30 PM	2:00 PM	THU57-01	Evolution of a Water Utility: Holding On to G.S.D. to Steward and Trusted Provider	The Pittsburgh Water and Sewer Authority has undergone an evolution. Operating for years in a maintain and react mode lead to a loss of confidence in the Authority. After external scrutiny, PWSA moved into a Get Stuff Done (G.S.D.) mode to address short-range issues and shore up the system. Many small changes including, staffing, customer service, engineering, finance, community relations, compliance, and ethics have been coordinated along with implementation of strategic water reliability projects, corrosion control and lead service line removals aiding in PWSA's evolution as a steward and trusted service provider. These efforts will be discussed to provide attendees with examples for use in evaluating their own utility evolution.	Frank	Sidari	Chief Environmental Compliance & Ethics Officer	Pittsburgh Water & Sewer Authority	629
6/13/2024	2:00 PM	2:30 PM	THU57-02	Navigating One Water Planning through Municipal Water Programs: Meeting Multiple Objectives and Regulatory Challenges   WRF 5175	Navigating One Water Planning through Municipal Water Programs (WRF Project 5175) is exploring One Water strategies for municipal water utilities to achieve regulatory requirements and multiple social and environmental benefits. This interactive presentation will provide an overview of the research approach, approaches for tailored One Water solutions to address current and future regulatory obligations and achieve multiple benefits, and techniques to prioritize investments with triple-bottom line objectives. Attendees will also gain practical One Water insights through early project engagement with water utility, regulatory agency, and water sector association engagement.	Trent	Stober	Navigating One Water Planning   WRF 5175	HDR, Inc.	630

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	2:30 PM	3:00 PM	THU57-03	Reality-Based Water Planning Practices: An Investigation by the City of Ontario CA	The City of Ontario, California, has been confronting variable water demand over the last decade. The realities of residential water demand include improving water efficiency practices, drought-induced emergency water curtailments, global pandemic effects, and sustainable construction and development practices. With older parts of the City largely built out, the newly developing Ontario Ranch section instantiates very recent construction and development practices that lead to materially different residential demand load requirements. When historical averages provide poor guidance to the future (a.k.a., the Flaw of Averages), how can water planning practices adapt to predictable and unpredictable dynamics?	Thomas	Chesnutt	President	A & N Technical Services, Inc.	631
6/13/2024	1:30 PM	3:00 PM	THU58	THU58 - Current Hot Topics: Desalination, AI, and Equity in LSL Replacement	Young Professionals (YP) actively working in the areas of the industry that are evolving at lightning speed – desalination, lead service line replacement, and artificial intelligence (AI) will present on the insights gained from their experiences.	Hayden (Hei Tsun)	Tse		CDM Smith	632
6/13/2024	1:30 PM	2:00 PM	THU58-01	Desalination in Point Hope: Overcoming Design Setbacks and Working to Find a Solution for a Village North of the Arctic Circle	This presentation discusses water treatment challenges in a remote Alaskan village and the steps taken to resolve these challenges and move forward with design. The village of Point Hope, Alaska has a population of ~700 people and has relied upon a freshwater lake seven miles away that thaws only in the summer months for their drinking water supply. However, the reliability of the existing water supply is uncertain. Studies have shown that water is receding, and quality in the lake is deteriorating. After viewing this presentation, attendees will understand the unique site, water quality, and disposal challenges at Point Hope and the steps taken to provide a reliable and long-lasting treatment solution.	Julia	Cummings	Water/Wastewater EIT	HDR Engineering Inc.	633
6/13/2024	2:00 PM	2:30 PM	THU58-02	Prioritizing Vulnerable Populations in the Lead Service Line Replacement Program for Greater Cincinnati, Ohio	Greater Cincinnati Water Works (GCWW) and a research team from the University of Cincinnati (UC) developed a lead service line replacement program (LSLRP) that attempts to systematically identify and prioritize vulnerable consumers. To develop the LSLRP, the research team reviewed LSLRPs in 77 US cities. In the end, 10 socioeconomic risk factors were chosen for the LSLRP, and an advanced hierarchy process (AHP) was used to determine the relative importance of the different indicators. The LSLRP was also developed in such a way to be updated in the future with additional stakeholder input.	Max	Linder			634
6/13/2024	2:30 PM	3:00 PM	THU58-03	Flowing Forward: Harnessing AI to Revolutionize Water Utilities	Artificial intelligence (AI) and natural language processing (NLP) technologies are poised to greatly impact the operations of drinking water utilities. AI can help address timeless challenges faced by utilities through real-time monitoring, predictive maintenance, improved customer engagement, regulatory compliance automation, and data-driven decision-making. In an era of accelerating technological advancement, AI-driven digital transformations can aide utility professionals in enhancing the efficiency and sustainability of drinking water systems.	Tim	D'Agostino	Senior Engineer	P.W. Grosser Consulting	635
6/13/2024	3:00 PM	4:30 PM	THU59	THU59 - Ozone Biofiltration Process for Taste and Odor Control	Three treatment plants, one problem, and a solution found in an ozone biofiltration process.					636

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	3:00 PM	3:30 PM	THU59-01	Enhance the Removal of Taste and Odor Compounds with Partial Ozone/Hydrogen Peroxide Advanced Oxidation	Gwinnett County operates two direct filtration water production facilities which are impacted by taste & odor event during Fall. Due to limited ozone treatment capacity, T&O compound broke through when receiving raw water containing high T&O concentration. This study served as a proof-of-concept for a partial AOP process with Ozone and peroxide in a pilot scale trial to mitigate the T&O issue. The findings of this study are expected to enhance the design of new potable water facilities which will utilize ozone for the removal of taste and odor compounds and to increase the removal of taste and odor compounds by utilizing an ozone/hydrogen peroxide advanced oxidation process when ozone contact time is limited.	Shih-Chi	Weng	Scientist	Gwinnett County Dept. of Water Resources	637
6/13/2024	3:30 PM	4:00 PM	THU59-02	Peroxone Biofiltration Process Monitoring and Performance. A Colorado Utility's Experiences with Treating Challenging Water	This presentation will focus on experiences with per-oxone and biofiltration processes since 2020 at the 20 MGD Thornton Treatment Plant (TTP) which treats surface water containing high levels of Taste and Odor (T&O) and Total Organic Carbon (TOC) due to discharge influences. For monitoring as well as optimization, operations staff use zeta potential, Adenosine Triphosphate (ATP), filter run, and online instrumentation data. Geosmin and methylisoborneol (MIB) T&O compound removal results among other water quality parameters are used for guiding chemical dosing through process performance data and models. The biofilters are able to reduce T&O, TOC, and manganese while achieving 99% water efficiencies without nutrient supplementation.	Jonathan	Campos	Process Specialist	City of Thornton	638
6/13/2024	4:00 PM	4:30 PM	THU59-03	Get the Funk Out! Optimizing Ozone and BAF to Address Taste & Odor Issues for Maryville, MO	The City of Maryville, MO is currently experiencing issues with harmful algal blooms (HAB) in Mozingo Lake, their surface water supply, resulting in significant taste and odor (T&O) events with geosmin concentrations exceeding 2,000 ng/L. The long-term solution selected by the City is construction of a new WTP designed for treating surface water with T&O. The City recently completed an 11-month pilot scale study to prove and optimize the selected treatment process of ozone followed by biological filtration. The pilot scale project was designed to test the process against multiple challenges including seasonal water conditions, induced extreme T&O events, and even intermittent operations.	Aaron	Robison	Civil Engineer	HDR	639
6/13/2024	3:00 PM	3:30 PM	THU60-01	Bench-Top Comparison of Passive Sampling Materials for Detection of Viruses in Wastewater	A bench-top apparatus, the Sewage Circulator, was developed to bridge the gap between batch-adsorption experiments and sewershed deployment of passive sampling materials for wastewater surveillance. Electronegative membranes, cotton mesh, and granular activated carbon were tested alongside an autosampler. A fecal indicator, Pepper Mild Mottle Virus, was used as a biomarker to characterize adsorption kinetics. Results were contextualized with existing batch-adsorption experiments literature to evaluate the impact of flow on overall adsorption kinetics. Experiments will be used to develop a computational fluid dynamics model with the goal of improving and optimizing passive sampling techniques.	Natalie	Niro	Masters of Applied Science Student		640
6/13/2024	3:30 PM	4:00 PM	THU60-02	WRF 5120: Utility Field Guide for Developing a Cyanobacteria and Cyanotoxin Monitoring Program	This presentation will focus on the research outcomes of Water Research Foundation Project 5120 on developing utility guidance for cyanobacteria and cyanotoxin monitoring. The discussion will include details about different tasks performed as a part of the project - risk assessment, monitoring methods, data interpretation and resolution of discordant results.	Susheera	Pochiraju	Assistant Engineer II	Hazen and Sawyer	641



Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	4:00 PM	4:30 PM	THU60-03	Evaluation of Digital Graphical Techniques for Baseflow Separation on Emba-Madre Watershed, Ethiopia	Background: This study assesses the applicability of three graphical methods for differentiating base flow from river discharge, crucial for water resource management. Objectives: Evaluate and rank the three graphical methods for distinguishing base flow from river discharge in this basin. Evaluate methods using 30-year discharge data, calibrate procedures, and assess model performance using standard error, coefficient of determination, and flow duration curve. Three methods differentiate base flow from river discharge; Sliding Interval Method outperforms others, with average base flow indices 0.78. Conclusions: All three methods can differentiate base flow worldwide. The Sliding Interval Method excels in the examined basin.	ALEBACHEW	ASSEFA		Shoolini University	642
6/13/2024	3:00 PM	4:30 PM	THU61	THU61 - Managing PFAS Issues from Source to Operations	Effectively managing PFAS issues from source to operations requires a comprehensive and integrated approach across the entire lifecycle of these substances. Learn from the experts as they share challenges, victories and lessons learned from the discovery of PFAS contamination, through changing Health Advisory Levels and public notices, to new sampling programs and treatment strategies, to securing funding and preliminary design for PFAS removal processes.					643
6/13/2024	3:00 PM	3:30 PM	THU61-01	Tracking the Source – GenX Investigation and Treatment Upgrades at the Spring Hollow WTF	This presentation will describe the source investigation and granular activated carbon (GAC) treatment upgrades by Western Virginia Water Authority (WVWA) to address HFPO-DA (often known as GenX) in the source water. GenX is not used in manufacturing processes in Virginia, and this project is the first occurrence of GenX in drinking water in an area distant from a fluoropolymer manufacturing facility. This story poses widespread implications for PFAS monitoring for utilities nationally without known PFAS sources. RSSCTs were performed to optimize GAC design and evaluate multiple media types, including an alternate adsorbent. To meet proposed PFAS regulations, WVWA is implementing GAC facility upgrades using a design-build delivery method.	Roger	Arnold		Hazen and Sawyer	644
6/13/2024	3:30 PM	4:00 PM	THU61-02	The City of Thornton's Journey to address PFAS	The city of Thornton, is a north suburb of Denver, serving approximately 170,000 people. It operates two surface water treatment plants with a design capacity of 70 mgd. Follow along as they detail their experiences since discovering PFAS in its drinking water supply. We'll describe our challenges, victories, and lessons learned as we managed through changing Health Advisory Levels and public notices, to new sampling programs and treatment strategies, to securing funding and preliminary design for PFAS removal processes.	Martin	Kimmes	Senior Water Treatment Specialist	City of Thornton	645
6/13/2024	3:00 PM	4:30 PM	THU62	THU62 - Using Digital Twins to Improve Water Treatment and Reuse	Advanced technologies such as digital twins, AI, and ML are being used to improve monitoring, control, and operator training for water treatment. Applications presented represent traditional water treatment and direct potable reuse.	Peter	Martin	Client Solutions Manager		646
6/13/2024	3:00 PM	3:30 PM	THU62-01	Enhancing Water Treatment Plant Operator Training with Replica Simulation: Improving System Resilience and Performance	In this project, Replica Operations, combined with Ignition software, was used to create a dynamic and realistic training environment for water treatment plant operators. By crafting training scenarios aligned with Standard Operating Procedures (SOPs), this innovative approach enhances operator skills and decision-making abilities, ultimately strengthening the resilience and performance of water treatment systems.	Jackson	Corley	Digital Solutions Technologist	Jacobs	647

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	3:30 PM	4:00 PM	THU62-02	We Need Artificial Intelligence and Machine Learning in DPR Projects More then Ever – A Case Study	This study proves predictive power of the artificial Intelligence (AI) and machine learning (ML) and how essential to use AI/ML to support decision making, while maintaining process performance, boosting regulatory and public confidence and making potable reuse project more resilient than ever. Despite substantial changes in feed water quality and operational parameters, the ANN models have successfully predicted the specific flux of the UF system and RO permeate TOC quality of the pilot potable reuse train, and power consumption of RO trains in a full-scale potable reuse facility. Findings of this study indicate that AI/ML could be a powerful tool to enhance asset management, boost revenues, and support decision making.	Zeynep	Erdal			648
6/13/2024	4:00 PM	4:30 PM	THU62-03	Machine Learning Soft Sensors for Potable Reuse	Many water quality parameters important in potable reuse are expensive or slow to measure. “Soft Sensors” are one way of applying machine learning for water quality and treatment. By modeling challenging water quality variables, soft sensors can reduce monitoring costs or make treatment more adaptive. Attendees will learn about different types of machine learning and their potential uses within advanced treatment control, such as classification models for alerts and regression models for soft sensors. Two soft sensors case studies will cover reuse systems on both the West and East coasts, as well as both reverse osmosis-based and carbon-based advanced treatment.	Kyle	Thompson	Reuse Technologist	Carollo Engineers, Inc.	649
6/13/2024	3:00 PM	4:30 PM	THU63	THU63 - Next Level Strategies for Robust Source Water Protection Planning	This session delves into next-level strategies for robust source water protection planning, featuring real-world experiences and scientific approaches. From crisis management and emergency response in the aftermath of a train derailment in Ohio to the development of a regional Source Water Protection Program in Sacramento, and a comprehensive vulnerability assessment in Quebec City considering surface-groundwater interactions. Attendees will gain valuable insights into practical responses, collaborative programs, and innovative scientific methods shaping the future of source water protection planning.					650
6/13/2024	3:00 PM	3:30 PM	THU63-01	Our Response to the East Palestine Ohio Train Derailment Focused on Source Water Protection, Resiliency, and Emergency Response	February 3, 2023, in East Palestine OH, a Norfolk Southern train derailed and several rail cars carrying hazardous chemicals ruptured. We focus on the impact to one water utility along the Ohio River in Huntington, WV that is owned and operated by West Virginia American Water. The Ohio River Valley Water Sanitation Commission notified us that the Ohio River was impacted and Butyl Acrylate had been detected. Our response started with the formation of an Incident Command Team; relied heavily on our Source Water Protection Plan; involved a dynamic crisis communication plan; required coordination with multiple agencies; utilized strong contractor relationships; and was ultimately successful due to the resiliency of our plans and our employees.	Robert	Burton		West Virginia American Water	651
6/13/2024	4:00 PM	4:30 PM	THU63-03	Source water protection in Quebec City: Vulnerability Assessment Considering Surface-Groundwater Interactions	In keeping with the highest standards of sustainable management, the vulnerability assessment of Quebec City's main drinking water source in the Saint-Charles River went beyond the regulatory requirements by considering the integration of surface and groundwater. An extensive field monitoring network of wells and stream gauging stations was installed, and the connections between surface and groundwater were studied using geochemical characterization and isotopic tracers. A numerical hydrological model was used to simulate the temporal variability of water flows and mass transport to understand the transient nature of water source vulnerability in the context of climate change and urbanization development.	Yohann	Tremblay	Research professionn	Université Laval	652

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	3:00 PM	4:00 PM	THU64	THU64 - Public Engagement Strategies and Best Practices	This panel discussion will focus on why public engagement is important, best public engagement management practices that are adaptable and affordable for utilities of all sizes and budgets, determining meaningful key performance indicators, and how to start the process.	Darcy	Burke	CEO	Water Mark Associates	653
6/13/2024	3:30 PM	5:00 PM	THU65	THU65 - Chloraminated Distribution Systems	Chloramines have been employed as an effective disinfectant in water treatment processes since the early 20th century and their adoption rate has witnessed a notable uptick. As more systems in the west are faced with concerns such as drought, disinfection byproduct formation, resiliency, and disinfectant stability, chloramine use has become an advantageous and viable alternative to free chlorine.					654
6/13/2024	3:30 PM	4:00 PM	THU65-01	When and How to Do a Free Chlorine Burn in Chloraminated Distribution Systems to Mitigate Nitrification	Many utilities across the US, utilize chloramines as a disinfectant to minimize microbial activity in the distribution system since chloramines provides longer-lasting disinfection as the water moves through pipes to consumers, compared to free chlorine. This work highlights the proactive steps to maintain high water quality in the distribution system. Trends of water quality parameters related to nitrification in the distribution system along with results of annual free chlorine disinfection event, flushing efforts, sampling plan and switch back to a chloraminated system will be discussed.	Veronica	Llaneza	Regional Process Engineer	Jacobs	655
6/13/2024	4:00 PM	4:30 PM	THU65-02	Success with Chloramine Conversion: A Case Study from Meridian Metropolitan District	Chloramines have been used in water treatment since the 1930s and their use has been increasing due to a number of factors including disinfectant stability, resiliency, and reduction in disinfectant byproduct formation. This presentation will provide an overview on chloramination and the conversion experience from the Meridian Metropolitan District.	Jennifer	Liggett		Jacobs	656
6/13/2024	4:30 PM	5:00 PM	THU65-03	Catalyst or Breaking Point - Dechloramination Decision	The City of Sandy, Oregon (Sandy) is a wholesale customer of the Portland Water Bureau (PWB) and currently receives free chlorinated water. Due to regulatory requirements, Sandy will need to switch to a chloraminated supply from PWB. Sandy has two other sources that use free chlorine and will have significant challenges to add ammonia at those sites. To maintain free chlorine in Sandy's system, they have explored use of dechloramination techniques including catalytic granular activated carbon, zeolite, and breakpoint chlorination on the PWB supply. This presentation will review bench and pilot results for dechloramination, implementation costs, and simulated distribution system test results for DBPs from the different options tested.	Andrew	Nishihara			657
6/13/2024	3:30 PM	5:00 PM	THU66	THU66 - Saltwater at the Doorstep: Assessing and Solving Seawater Intrusion	As sea levels rise and coastal populations expand, the risk of seawater intrusion intensifies, jeopardizing the quality and quantity of potable water. Mitigating seawater intrusion requires a comprehensive understanding of local hydrogeological conditions, coupled with effective management strategies such as the controlled extraction of freshwater and the implementation of barriers to prevent saltwater intrusion. Addressing this complex challenge is crucial for ensuring water security in coastal communities and necessitates sustainable water management practices to safeguard this vital resource.					658

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	4:00 PM	4:30 PM	THU66-02	Seawater Desalination - Recent trends to address water quality changes due to climate change	Climate change is impacting seawater quality, with increased frequency, severity of algal blooms, jelly fish and high suspended solids. These have significant impact on design and performance of seawater desalination plants. To address this, several treatment alternatives are being implemented around the world and examples from six operating desalination plants will be presented. These plants use various pretreatment alternatives that include DAF, DAFF, DAF w/ lamella clarifiers, lamella clarifiers, gravity/pressure media filters and ultrafiltration. The water quality, bathymetry of intake location, reliability of various processes in meeting necessary productivity and costs that impacted the process selection for these will be presented.	Srinivas	Veerapaneni	Associate Vice President	Black & Veatch Corporation	659
6/13/2024	4:30 PM	5:00 PM	THU66-03	Exploring Strategies to Mitigate Seawater Intrusion in Sunset Gap, Orange County: Lessons Learned from Flow and Transport Modeling	Orange County Water District faces a new threat from seawater intrusion in Sunset Gap, Orange County. Our presentation delves into the understanding of suspected intrusion pathways using advanced groundwater modeling. We'll share insights into hydrogeological realities, calibration processes, and future scenarios to safeguard the Orange County Water District from this issue. Join us for a pragmatic discussion on this important topic.	Nathan	Hatch		INTERA	660
6/13/2024	1:30 PM	3:00 PM	THU68	THU68 - Exploring the Opportunities and Challenges of Water Markets in the West	Water markets or voluntary transfers offer an opportunity to allow water users to optimize economic, environmental, and water supply reliability benefits to the parties. Transfers from uses of lower to higher priority water users can provide a win-win if third-party impacts are identified and mitigated up front. On this panel three experts will discuss water markets in the western prior appropriation states as well as the challenges facing widespread adoption of the process.					661
6/13/2024	10:30 AM	12:00 PM	PST03-01	(WQT) Investigating Poly/orthophosphate Blends for Sequestration and Lead Corrosion Control	Orthophosphate is widely considered a reliable corrosion inhibitor for common distributed water qualities, and polyphosphates are often blended with orthophosphate to sequester iron, manganese, and calcium. Polyphosphates are generally effective as sequestrants but are considered risky for lead control. This work seeks to understand blended poly/orthophosphate for two-dimensional optimization of lead control and iron and manganese sequestration through bench and pilot scale studies. We expect this presentation will be relevant to water suppliers and will advance our understanding of Pb, Fe, and Mn management in drinking water distribution systems.	Kalli	Hood	PhD Student	Dalhousie University Library	662
6/13/2024	10:30 AM	12:00 PM	PST03-02	(WQT) Evaluating Different Mitigation Methods to Minimize the Exposure to Lead from Drinking Water Consumption in Large Buildings.	This presentation summarizes the results of sampling Lead in drinking water that was completed in 18 buildings of 11 multipurpose facilities located in British Columbia, Canada. The buildings were constructed in different years as old as 1958 to recently built in 2018. Copper piping, solder connection, and brass fittings were the main plumbing components and none of them had service lines made of galvanized iron or Lead. The region health guideline, Drinking Water Officers' Guide 2022 was followed for selecting the sampling protocols and interpreting the results.	Adel	Hajimalayeri		AECOM	663

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	10:30 AM	12:00 PM	PST03-03	(WQT) WQ and Hydraulics Modeling, Coupon Testing and Pipe Loop Testing for the City of Phoenix's Drought Resiliency Program	This presentation shares the experience of how utilities can leverage coupon tests and pipe rig tests to evaluate risks and develop mitigation strategies for lead corrosion associated with changes in water supply. Bench testing was conducted using copper couplings with lead/tin solder and leaded brass coupons. Pilot scale pipe rig testing was performed using pipe rigs fabricated using new copper pipes. Although the coupon test showed historical high CSMR conditions could exceed 7, both tests concluded that maintaining pH ~8 helps mitigate potential increases in lead corrosion from pipes exposed to SRP water, especially when the system is receiving SRP water with higher CSMR >3 and dosing of corrosion inhibitors is not determined necessary.	Qun	He	Vice President	Carollo Engineers	664
6/13/2024	10:30 AM	12:00 PM	PST03-04	(WQT) Simplified Method of Scale Analysis	This research evaluates a novel sequential extraction procedure to analyze scales and estimate lead association in the scales with carbonates, phosphates, iron and Mn, and organic matter. Determining these associations can provide insights into possible lead release due to a chemical change that could upset for example iron in the scales. If phosphate is used we can estimate the percentage of lead associated with P in the scales as opposed to still associated to carbonates. One of the main advantages of this procedure is that utilities could perform it in their own lab.	David	Cornwell			665
6/13/2024	10:30 AM	12:00 PM	PST03-05	(WQT) Conversion from Blended Phosphate to Orthophosphate for Corrosion Control Optimization on the Great Lakes	This presentation shares several corrosion control studies on Lake Michigan in Illinois and Wisconsin and summarizes testing results when converting from blended phosphate to orthophosphate. Three harvested pipe loops studies and two full scale studies will be presented summarizing lead testing data, including sequential sampling results. This presentation provides valuable guidance to utilities that will undertake pipe loop studies or need to achieve corrosion control optimization.	Amrou	Atassi		CDM Smith Inc.	666
6/13/2024	10:30 AM	12:00 PM	PST03-06	(WQT) Pipe Loop Studies Identify Corrosivity Impacts of a New Water Source and Possible Mitigation	Introducing groundwater to an existing surface water system leads to changes in water quality. A series of pipe loop studies were performed in three phases with four loops to evaluate the effect of switching to a new water source. Different blend of current surface water and new groundwater were used in the loop studies to observe the effect of water quality shifts in the system and to evaluate the release of the metals. For the purpose of this study the well with the highest water quality shift were used as the groundwater source. Water quality parameters measured, and solubility indices were calculated to observe the changes in the precipitate formation. Galvanic corrosion indices were calculated throughout the process.	Atosa	Vahdati Nikzad	Senior Wastewater Engineer	Stantec LLC.	667
6/13/2024	10:30 AM	12:00 PM	PST03-07	(WQT) Effects of Acid Type and Condition on Lead Dissolution for Drinking Water Applications	Analysis of common lead form digestion using various acids and conditions. This study aims to better understand drinking water sample preparation for lead detection.	Elizabeth	Jacobia		Duke University	668

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	10:30 AM	12:00 PM	PST03-08	(WQT) Bench- and Pilot-Scale Studies to Validate Design of Advanced Treatment with ZLD to Meet Internal Reuse Requirements	Jacobs was contracted to develop a design for a new WRF to meet stringent discharge requirements for selenium and sulfate present in process wastewater. Prior to design, the process was validated by bench- and pilot-scale studies to understand the quality and the performance of the unit processes, specifically pre-treatment (ultrafiltration) before closed circuit reverse osmosis (CCRO) membranes. This paper also focuses on strategies to control membrane fouling and optimize performance. The results from this study provide a comparison of the performance of low- and high-pressure membranes, concentrate treatment by ZLD process, criteria used for their selection and design for incorporation in the full-scale plant.	Chandra	Mysore	Vice President & US South Regional Lead	Jacobs	669
6/13/2024	10:30 AM	12:00 PM	PST03-09	(WQT) Quantitation of Sub-ppb Perchlorate Using IC-MS/MS	Monitoring of perchlorate began in 1997, and showed perchlorate to be a widespread drinking water contaminant, occurring in several hundred wells, mostly in southern California. With the previous lowering of the public health goal to 1ppb, California implemented a state DLR of 1ppb, effective January 1, 2024. This DLR is below the capabilities of previous established IC methods, so the Water Quality Lab at the Los Angeles Department of Water and Power developed a method combining the tandem mass spectrometry aspects of EPA Method 331 and the ion chromatography aspects of EPA Method 332 to establish a method with a DLR of 0.100ppb.	Kelly	Brown		Los Angeles Department of Water and Power	670
6/13/2024	10:30 AM	12:00 PM	PST03-10	(WQT) Highly Stable Chitosan-Lignosulfonate/MXene as a binder-free electrode for enhanced capacitive deionization	Capacitive Deionization (CDI) is a water treatment technology that uses electrodes to remove dissolved ions from water. CDI is considered to be a simple, efficient and cost-effective technology for removing dissolved ions from water. Additionally, it is also environmentally friendly as it does not generate any chemical waste and it consumes less energy compared to traditional ion exchange methods. One of the drawbacks of CDI is using Polyvinylidene fluoride (PVDF) as a binder for the electrode's active material. PVDF has negative impact to environment and need hazardous solvent to be dissolved. In this study, we used Chitosan-Lignosulfonate/MXene as a binder free cathode electrode for CDI.	Radwan	Alfahel			671
6/13/2024	10:30 AM	12:00 PM	PST03-11	(WQT) Effect of Sodium Hypochlorite Cleaning on Silicon Carbide Membranes Prepared by Low-Pressure Chemical Vapor Deposition	The presentation will focus on the preparation of silicon carbide membranes by chemical vapor deposition. The deposition conditions and their effect on the chemical robustness of the membranes will be discussed.	Asif	Jan	PhD Candidate	Delft University of Technology	672
6/13/2024	10:30 AM	12:00 PM	PST03-12	(WQT) Removal of Perfluoropentanoic Acid by Nanofiltration: Effects of pH, Ionic Strength, and Background Concentrations	Per- and polyfluoroalkyl substances (PFASs) are persistent in the environment and accumulated in organisms and human body. Regulations have been implemented to reduce the concentrations of PFAS in the environment. Industries moves to utilize alternatives to Perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA). Various technologies are being reviewed for removal of PFAS from drinking water sources. Nanofiltration, the high-pressure membrane filtration process, is efficient in removing both long-chain and short-chain PFASs. Few research has been conducted to the short-chain PFASs. This study aims to investigate removal of PFPeA by nanofiltration under different pH, ionic strength, and background concentrations.	Chehyeun	Kim		Konkuk University	673

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	10:30 AM	12:00 PM	PST03-13	(WQT) The Intersection of the Pretreatment Program and One Water	The Industrial Waste Management Division (IWMD) administers the pretreatment program for the City of Los Angeles. The City manages and operates the largest water reclamation/treatment system on the west coast with over 6,700 miles of pipe, four water reclamation plants that process 320 MGD of wastewater, and permitting nearly 16,000 industrial users. IWMD supports the City's one water planning through their local limits, reclamation plant response, collaboration with other P2 professionals, and numerous outreach programs. IWMD's outreach programs include LA Industry, the Sector Champions, and Environmental Justice. IWMD's work can serve as a model to other agencies on how to drive one water initiatives forward.	Amanda	Lujan		LA Sanitation and Environment	674
6/13/2024	10:30 AM	12:00 PM	PST03-14	(WQT) The Role of Zeta Potential in Optimal Water Treatment Operation	Water treatment process is getting challenging by deteriorating source waters. This presentation shows when monitoring Zeta potential in a range of -4mV to 0 mV at flash mix phase and from -6 mV to -9 mV at sludge dewatering would help to optimize operation and cost benefit.	Lilian	Nguyen			675
6/13/2024	10:30 AM	12:00 PM	PST03-15	(WQT) Monitoring Adenosine Triphosphate Concentrations in a Chloraminated Drinking Water Distribution System for Risk and Asset Manageme	The preentation highlights the potential value ATP monitoring could provide in triggering preventative or corrective actions in the drinking water distributions system. It hightlights overall value of ATP across the dristribution system and provides recommendations for utility managers and operators.	Rasha	Maal-Bared	Environmental Scienstist	CDM Smith	676
6/13/2024	10:30 AM	12:00 PM	PST03-16	(WQT) Navigating PFAS Treatment Options Under Strict Time Constraints	Rapidly evolving regulations have been pushing many utilities to evaluate options for interim and long-term compliance of PFAS. Hazen was contracted by Aquarion Water Company (AWC) to evaluate performance of PFAS treatment and access cost at their surface water systems. With limited time, Hazen utilized a recently developed Machine-Learning based modelling approach to quickly and accurately evaluate GAC treatment options at each site. This presentation provides the results of using this machine-learning based tool to accelerate planning at four of AWC's treatment plants, including a performance comparison of various carbon products to achieve multiple treatment goals as well as the cost implications of each treatment alternative.	Darline	Tenney		Hazen and Sawyer	677
6/13/2024	10:30 AM	12:00 PM	PST03-17	(I) Investigating the Effects of Imidazole, BAC, and Monochloramine in Premise Plumbing Systems on the Inactivation of Bacteriophages	The chemical disinfectants imidazole, benzalkonium chlorine (BAC), and monochloramine were studied in terms of their effectiveness at inactivating bacteriophages Phi6, MS2, P22, and PhiX174 in water. Imidazole is an organic compound that is found in many medications. Testing was done to determine its antiviral properties in terms of inhibiting the activity of enzymes or proteins involved in viral replication that could translate to a practical use in premise plumbing. BAC is a quaternary ammonium compound (QAC). QACs are the active ingredient in many common household cleaning products. Monochloramine is a popular alternative to free chlorine because it does not generate chlorinated carcinogenic disinfection byproducts.	Jennifer	Lavin	Student	Marquette University	678
6/13/2024	10:30 AM	12:00 PM	PST03-18	(I) Finicky Filters – Designing Filters around Existing Infrastructure Constraints for Water Treatment Plant Rehabs	Sometimes the cost to replace existing infrastructure dictates the alternatives that are selected. This presentation will discuss how hydraulic limitations in the filters and backwash systems dictated some of the design decision at two facility rehabilitations: the 133 mgd CAW Jack Wilson WTP in Little Rock, AR and the 87 mgd Trinity River Authority Tarrant County Water Supply Project (TRA TCWSP) in Euless, TX.	John	Logan		Hazen and Sawyer	679

Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	10:30 AM	12:00 PM	PST03-19	(I) Potential Energy Savings of Global Reported Seawater Reverse Osmosis Facilities	Currently, seawater reverse osmosis (SWRO) facility consume electrical energy to produce permeate pure water for municipal and industrial use. There have been many novel reverse osmosis (RO) system designs that show great potential in further reducing the energy consumption of RO. Thus, it is essential to apply state-of-the-art technologies to actual SWRO facilities as there remains uncertainty to the extent to which improvements can be made. We have modeled both semi-batch and batch RO processes as a reduced order non-linear model to view the potential of energy savings in actual SWRO facilities. In addition, utilized state-of-the-art and practical limits in sub-processes (e.g., intake, pre-treatment, membrane properties, etc.).	Sultan	Alnajdi			680
6/13/2024	10:30 AM	12:00 PM	PST03-20	(I) Recent Advances in Water-based Coatings and Their Impact on Infrastructure Protection and Sustainability Goals	Many stigmas persist in the industry as it relates to water-based technologies and their use for the long-term asset protection of key water infrastructure assets. However, recent advances in water-based coating technologies are now causing asset owners to rethink some long-standing paradigms within the industry. This presentation will discuss many of the current views of water-based technologies and provide data about how newer water-based products, such as the first ever NSF Standard 61 approved water-based zinc rich primer and epoxy topcoat for immersion service, are now available and are challenging these traditional ways of thinking.	Brian	Cheshire	Director of Sales-Water/Wastewater	Tnemec Co.	681
6/13/2024	10:30 AM	12:00 PM	PST03-21	(UM) DEI & Customers – Doing Your Own Customer Experience Self-Inventory	Are all customer touchpoints in your organization inclusive, equitable, and mindfully reflecting diversity? Hear how WaterOne systematically and inclusively conducted its own self-inventory of all customer-facing services, spaces, materials, and visuals. WaterOne will describe the process and findings of its own recent Customer Experience Inventory, how it communicated findings to organizational leaders, and advocated for enhancements in various areas of the utility. Don't miss out; this is potentially the template your team has been looking for.	Kelly	Fry		Waterone	682
6/13/2024	10:30 AM	12:00 PM	PST03-22	(UM) Engaging Community Stakeholders to Define a Water Supply Alternatives Plan	Engaging a wide range of stakeholders in a transparent and highly technical planning process can be challenging and complex, but when done deliberately and thoughtfully, water suppliers gain valuable insight from those who are impacted by decisions the most. This presentation will focus on how the city of Santa Rosa successfully facilitated 15 stakeholder and community workshops over a year-long effort to inform the future of their water supply. The outcome of this work yielded Santa Rosa's Water Supply Alternatives Plan, which outlines the adaptive pathway that helps the city build resiliency into their supply portfolio while minimizing impacts to customers even during the driest years.	Katie	Cole	Water Resources Planner	Woodard & Curran	683
6/13/2024	10:30 AM	12:00 PM	PST03-23	(UM) What To Do When Your Stakeholders Hate You? Going Beyond the Usual Tactics to build Trust	Nobody likes construction, but what do you do when stakeholder feelings go beyond the usual frustrations? This session will walk through various examples of how we have worked with stakeholders to build relationships and resolve issues so that when those projects do roll in, we can keep them moving. It will include lessons learned and practical steps you can take when faced with these all-too-common challenges, along with thoughts on how to build the internal buy-in needed to go beyond the usual.	Melissa	Brasfield	Owner		684



Session Date	Session Start Time	Session End Time	Session Code	Session Title	Session Description	Presenter First Name	Presenter Last Name	Presenter Job Title	Presenter Company	#
6/13/2024	10:30 AM	12:00 PM	PST03-24	(UM) Successful Water Crisis Communications: Lessons Learned from The Texas & Southern Freezes"	The presentation will show how to handle internal and external communications during water crises, using the lessons learned during the days-long water outages experienced by Asheville, NC during Christmas 2022, and by Austin, Texas during the 2021 Texas Freeze. During both events, the public COMMS was spotty or, at times, non-existent, due to decisions made by the Incident Commanders and/or elected officials in charge.  WaterPIO was brought on board by both the cities of Asheville and Austin to evaluate their internal and external communications before, during, and after the outages. Our extensive reports are being used to improve their overall crisis communication plans, as well as update their messages and materials.	Mike	McGill	Owner	WaterPIO	685
6/13/2024	10:30 AM	12:00 PM	PST03-25	(UM) Customer Sampling Program	LADWP frequently addresses water quality inquiries in-person with sample collection for analysis in its own certified testing laboratory.	Kawana	Key			686
6/13/2024	10:30 AM	12:00 PM	PST03-26	(UM) Multiple Funding Sources Minimize Financial Impact on EJ Community for Lead Service Line Inventory and Replacement	Creating a comprehensive lead service line inventory and plan for replacing these assets is no small undertaking, and the process and implementation is costly. The City of Fall River, Massachusetts was awarded nearly \$11 million in grant funding, from a variety of programs in order to complete this work while minimizing financial impact to its environmental justice community members. Attendees will learn how this community scoped and divided portions of the City's needs to leverage available funding in order to accomplish this important work.	Renee	Lanza			687
6/13/2024	10:30 AM	12:00 PM	PST03-27	(UM) Regionalization Best Practices for LCRR Stakeholder Outreach – Lessons Learned from St. Petersburg, Florida	St. Petersburg Water Resources Department serves a city of 250,000+ with nearly 100,000 service connections. This presentation will present best practices and strategies for regionalizing stakeholder communication for LCRR and applications for related regulatory projects like it that can benefit from stakeholder meetings that inform prioritization, consensus and aligned messaging.	Ameerah	Palacios	Strategic Communications Business Class Lead - KY/	HDR	688