Number		Session Description	Date	Start Time	End Time	Credit Type	Total CE Hours	Water			Collections	Stormwater-Weather-Watershed Momt	Supplemental
OGS		SESSIONS - TECHNICAL SESSIONS - TECHNICAL SESSIONS - TECHNICAL SESSIONS - TECHNICAL SESSIONS - TECH Focused on the need for impactful branding, marketing, and communications in the digital age. It is vital that water organizations take a	10/2/2023	8:30 AM	9:30 AM	GCH	NS - TEO 1.0		L SES	SIO	NS - TE		<b>AL SE</b>
200		proactive and modern approach to connecting with the public and to telling the story of our work. This session will address the key priorities from the Biden Administration related to water and will provide the federal partners' perspectives. Senior federal officials from the US EPA, US Department of Homeland Security, and US Centers for Disease Control will address regulatory and policy topics such as resilience, PFAS issues, cybersecurity, affordability, wastewater-based epidemiology, infrastructure funding and implementation, and other important regulatory and policy issues.	10/2/2023	1:30 PM	3:00 PM	PDH		0.5 0	.5			0.5	1.0
201	Understanding and Addressing PFAS in Biosolids	Delving into the connectivity between sources of PFAS and concentrations observed in final biosolids, taking a detailed look into the nuances of various thermal treatment processes, and reviewing the multitude of considerations surrounding the production of biochar will be the objectives of this session. The featured speakers are industry leaders ready to engage in conversations on this state-of-the-art issue that has the potential to reshape the approach for biosolids management into the future. Interactive Session   Conversation & Input	10/2/2023	1:30 PM	3:00 PM	PDH	1.5			1	5		
202	Advances in Anaerobic	Disseminating information from research and development of vacuum-based evaporation for the thickening and intensification of anaerobic digestion processes will be discussed during this session. Attendees will have an opportunity to learn about arrested anaerobic digestion and its role in resource recover. Additional there will be information on lessons learned from the startup of biofilm based deammonification process for the treatment of sidestreams from conventional and thermal hydrolysis processes. Interactive Session: Facilitated Discussion	10/2/2023	1:30 PM	3:00 PM	PDH	1.5			1	.5		
203	The Ultimate Collection Systems Basic Trivia Challenge 2.0	If you have an appetite for fun and aren't afraid of a quiz, this is the session for you! Come and test your knowledge on the collection systems basics, developing a hydraulic model, calibrating a model, performing QA/QC on the model, and ways to utilize the model. You might even learn (and earn) something new! Interactive Session   Trivia	10/2/2023	1:30 PM	3:00 PM	PDH	1.5				1.5		
204	What's Next for Wastewater Surveillance?	During the COVID-19 pandemic, wastewater surveillance was successfully used to characterize community health. It is now expanding with new opportunities to support public health decisions, but also faces challenges such as ethics, privacy, and communication. The speakers will discuss new targets for testing by the Centers for Disease Control and Prevention (CDC), including pathogens like influenza and antimicrobial resistance genes; surveillance programs monitoring other targets like opioids; and monitoring incoming pathogens at locations like airports. Interactive Session   Ask the Experts	10/2/2023	1:30 PM	3:00 PM	PDH	1.5	1	5				
205	Biomass Fermentation for Carbon Efficient Biological Phosphorus Removal	Explore three key considerations for biomass fermentation during this session. The talks will focus on utility and academic perspectives for the measurement and utilization of the apparent fermentation rate. Interactive Session   Facilitated Discussion	10/2/2023	1:30 PM	3:00 PM	PDH	1.5	1	.5				
206	Global Approaches to Tackling Fugitive Methane Emissions	Attendees will witness Danish utility's perspective on sourcing, benchmarking, monitoring, and mitigating fugitive methane emissions at WWRF. The session will also look at estimating sewer-generated fugitive methane gas emissions by Monte Carlo Analysis.	10/2/2023	1:30 PM	3:00 PM	PDH	1.5	0	.5				
207	Aquanomics: Future Economics of Water Risk and Energy Food Nexus	Focusing on the economics of water risk and future resiliency, as part of this study, the authors developed a platform that uses a bespoke model to estimate the future economic impact of water risk from droughts, floods and storms in 10 geographies at both a GDP and sector level. The numbers are staggering - \$5.6 trillion could be lost between 2022 and 2050. This study represents the first time the economic impact of water risk has been calculated at a GDP and sector level. The model also reveals the impact of water risk on five critical sectors within the global economy: agriculture; energy and utilities, banking and insurance; FMCG and retail; and manufacturing and distributions. While these sectors are diverse, with very different types and levels of water risk, they are all expected to face significant output losses in the years up to 2050, and this will have a significant impact on the millions of people who work across these areas. Interactive Session   Panel	10/2/2023	1:30 PM	3:00 PM	PDH	1.5	0	5	o	.5 0.5		
208		Providing background on the industrial pretreatment program, targeting and audience of utility staff and industrial dischargers as well as their consultants will be the focus of this session. Presentations will provide example case studies of POTWs evaluating new IPP loadings, including considerations for slug loadings, abrasives, and metals. The moderators will then host a facilitated discussion with polls and targeted questions to gather feedback and insights on different approaches from utilities represented in the audience. Interactive Session   Facilitated Discussion	10/2/2023	1:30 PM	2:30 PM	PDH	1.0		1	.0			
209	Food & Beverage: Upgrades and Troubleshooting	Built around case study presentations, this session will relate to the food and beverage industrial market. The speakers will share their experiences with expanding, upgrading, or optimizing their WWTP. The final case study goes over troubleshooting the loss of nitrification and development of improved operating practices at a dairy manufacturing plant's WWTP IFAS system.	10/2/2023	1:30 PM	3:00 PM	PDH	1.5		1	.5			
210	Sweat Your Assets Off: BNR Optimization	Creative approaches to maximize existing infrastructure to optimize nitrogen removal. Approaches include improved aeration controls, mixing strategies and hydraulics optimization. Three full scale studies include High Purity Oxygen conversion to BNR and optimizing existing BNR processes. This session will provide Utilities planning for future BNR upgrades with examples of how to optimize their process with minimal infrastructure capital investments.	10/2/2023	1:30 PM	3:00 PM	PDH	1.5	1	5				
211	Technologies: Should We Settle for Conventional Primary	Highly-efficient primary treatment has major impacts on downstream biological treatment design and operation, including reducing required process sizing, footprint and energy consumption. Recent keen interest in removing more carbon in primary treatment, for diversion to anaerobic digestion, has also provided the goal of improved primary treatment. Advanced primary treatment options, as opposed to conventional primary sedimentation, will be presented in this session to demonstrate their performance and applicability.	10/2/2023	1:30 PM	3:00 PM	PDH	1.5	1	5				
212	WEF/AEESP Master Lecture: Belinda Sturm	TBD	10/2/2023	1:30 PM	3:00 PM	PDH	1.5	1	5				
213	Latest in Stormwater Trends	The stormwater panel session will highlight the latest trends in stormwater issues from the perspectives of EPA and WEF, who will highlight regulatory trends and the recent MS4 survey. It will also highlight the topic of urban (pluvial) flooding and the green infrastructure program of our host community (Chicago) that has been being implemented over the past eight years. Interactive Session   Panel Discussion		1:30 PM	3:00 PM	PDH	1.5					1.5	

		The stories of three utilities at various stages on their asset management journey will be shared during this session with the intention that their ideas and thoughts will help you along your own journey. A utility in the early part of their asset management program discusses										
214	Asset Management Journeys: A Tale of Three Utilities	their motivation, planning, and implementation steps. Next, a utility that is 10+ years into their program describes success, failures, lessons learned, and next steps. Finally, a utility that is very far on their asset journey and is progressing on their digital transformation will present on their uses of sensors, data, the information derived, and how their decision making has been enhanced. Lessons from each stage of a utility's journey can give you information to use now where you are.	10/2/2023	1:30 PM	3:00 PM	PDH	1.5	0.5		C	0.5	0.5
215	Optimizing Energy Investments Part I: Energy Master Planning	Tackling the challenging, yet hugely necessary, need for energy master planning for water/ wastewater utilities is the focus of this session. As the first of two integrated energy-planning and energy-case-study sessions, this session begins with a summary of energy planning basics and needs, before moving on to utility-specific energy master plans: • South Platte (CO) Renew's masterplan framework plots their course to address energy decisions and management though a consultant-assisted roadmap and continuous-improvement process. • Then, New York City DEP summarizes plans to meet their energy needs in a City (that never sleeps) transitioning. Interactive Session   Question Fielding	10/2/2023	1:30 PM	3:00 PM	PDH	1.5	0.5		1.0		
216	The Water Reuse Landscape Through the Eyes of Industry Leaders	In collaboration with the WateReuse Association and the Water Research Foundation this session will bring together experts in the forefront of the water reuse and reclamation field. They will explore the main topics propelling the water reuse community, including evolving technologies and applications (membrane-based, carbon-based, or a combination of both) and address factors supporting the implementation of water reuse across the United States. This lively panel discussion will feature brief remarks from panelists to set the stage for an engaging discussion among all. Interactive Session   Panel Discussion	10/2/2023	1:30 PM	3:00 PM	PDH	1.5	0.5 1.0				
217	Nutrient Management: Growing Water Quality	Water quality impacts from excess nutrients have resulted in listed impairments around the United States. Our facilitated discussion will present three complementary perspectives on effective approaches for controlling nutrient impacts at different scales. Interactive Session   Facilitated Discussion	10/2/2023	1:30 PM	3:00 PM	PDH	1.5	0.5				1.0
218	Full-scale Thermal Drying System Implementation	How to recognize various aspects of how thermal drying can be implemented as a bioenergy solution for biosolids management will be the primary learning point for this session's participants. The success of a constructed large-scale rotary thermal drying system will be presented. In addition, the novel integration of hydrogen as an alternative energy source for thermal drying is reported. Lastly, how pyrolysis can be applied after drying for PFAS compound destruction and production of biochar. Participants will be able to evaluate and determine how innovative aspects of thermal drying can be incorporated into full scale systems. Interactive Session   Facilitated Discussion	10/2/2023	3:30 PM	5:00 PM	PDH	1.5			1.5		
	Technology Driven Optimization of Collection Systems	Session participants will have the opportunity to learn from the perspectives of both public and private utilities about how real-time data solutions, predictive operations, and maintenance strategies create a more resilient collection system. Discussion breaks distributed throughout the session will encourage conversation and provide direct access to the speakers. Interactive Session   Facilitated Discussion	10/2/2023	3:30 PM	5:00 PM	PDH	1.5			1	5	
220	Advancements and Optimization with Chlorine, Peracetic Acid, and Performic Acid Disinfection	Increasingly utilities are having to meet various and sometimes competing regulatory limits for disinfection while doing so in a financially responsible manner. This challenge has led utilities to look for opportunities to optimize their disinfection process or investigate new alternatives. This session presents approaches balancing bacteria and disinfection byproduct limits with chlorination, optimizing peracetic acid disinfection, and advances in performic acid based on pilot study results.	10/2/2023	3:30 PM	5:00 PM	PDH	1.5	0.5 1.0				
221	Wastewater Surveillance: How Does the Sewer Impact the Data?	Although the use of wastewater surveillance has grown rapidly over the past few years, many questions remain about the quality and variability of data from a 'dirty' matrix like wastewater. This session will explore the impacts on data quality of degradation of virus genes in sewers, as well as impacts of wastewater components such as industrial discharges and stormwater.	10/2/2023	3:30 PM	5:00 PM	PDH	1.5			1	5	
222	Managing the Third Effluent Part I	The key to identifying odor sources and technologies is to monitor emissions and apply modeling tools to mitigate them. This session explores plant wide monitoring and modeling as well as the Biotrickling Filter odor control technology as a means to mitigate odors. Interactive Session   Conversation & Input	10/2/2023	3:30 PM	5:00 PM	PDH	1.5	1.5				
223	Extracting Carbon for Nutrient Removal	Influent wastewater often has sufficient carbon to drive biological nutrient removal of nitrogen and phosphorous. However, the carbon is not always in the required biodegradable, soluble form and at times (specifically for nitrogen removal) external carbon must be supplemented. Adding external carbon for nutrient removal burdens the rate payers and is considered as source of greenhouse gas emissions. This session explores the extraction of carbon from the primary sludge, RAS and digested sludge via hydrolysis and fermentation. Interactive Session   Panel Discussion	10/2/2023	3:30 PM	5:00 PM	PDH	1.5	1.5				
224	Decarbonization Case Studies	Hear from local, national and global perspectives on utility experiences in decarbonization. Topics to be covered include classification and quantification of carbon footprint, development of climate action plans and decarbonization roadmaps. This session will incorporate breakout discussion on topics raised in each case study where participants will share lessons learned. Interactive Session   Case Study Analysis	10/2/2023	3:30 PM	5:00 PM	PDH	1.5	0.5 0.5		0.5		
225	Water Reuse and Resource Recovery: Brines, Trains, and (EV) Automobiles	While there are no Planes in this session, the focus will be on novel strategies and technologies to help industries treat difficult wastewaters, reuse treated effluents, and recover valuable resources. The session will explore the challenges and opportunities to create a more circular water economy at an EV battery production plant, a locomotive engine manufacturing facility; and looking at advanced lithium recovery.	10/2/2023	3:30 PM	5:00 PM	PDH	1.5		1.5			
226	Alternative Approaches to Intensify Secondary Treatment	Densification is a hot topic in activated sludge design and operation due to its potential to increase sludge settleability and thus decrease the required footprint for achieving treatment objectives. However, densification is just one way to intensify secondary treatment. Several other alternative technologies exist which can achieve similar or more reductions in footprint, including Integrated Fixed-film Activated Sludge (IFAS), Membrane Aerated Biofilm Reactors (MABR), and Membrane Bio Reactor (MBR). During this interactive session, expert practitioners will present recent case studies and updated analysis of these three alternative technologies which will allow audience members to understand the relative advantages and disadvantages of each alternative and where they may be most applicable. Interactive Session   Facilitated Discussion	10/2/2023	3:30 PM	5:00 PM	PDH	1.5	1.5				
227	Thinking Outside the Basin: Auxiliary Wet Weather Treatment	Treating wet weather flows doesn't require a costly secondary expansion, construction of storage or equalization. Through three case studies, participants will learn about strategies to address wet weather flow at the wastewater reclamation facility using peak flow management and auxiliary treatment while meeting regulatory effluent limits. Presenters will describe the strategies used to gain regulatory consensus on the framework or new technology applications.	10/2/2023	3:30 PM	5:00 PM	PDH	1.5	0.5				1.0
228		Maximizing volatile solids destruction and improving biogas production is of critical importance for many utilities for sustainable operations. To accomplish this objective, it is important to understand how bioaugmentation and other technologies such as hydrothermal liquefaction would improve the digestion process. In this session, the attendees will learn about different biosolids treatment technologies for improved volatile solids destruction and biogas generation. Interactive Session   Facilitated Discussion	10/2/2023	3:30 PM	5:00 PM	PDH	1.5			1.5		
229	Understanding the Basics of Stormwater Design	As a fundamental session suitable for young professionals and those whose responsibilities may not focus on stormwater, this session provides an overview of the most significant stormwater design considerations. Three primary topics are included: Rainfall (including selection of design conditions and climate change), Overview of green stormwater infrastructure practices (bioretention, pervious pavements, green roofs, and other treatment technologies), and will conclude with design of conveyance systems and modeling. Interactive Session   Conversation and Input	10/2/2023	3:30 PM	5:00 PM	PDH	1.5					1.5

230	Creative Stormwater Program Management Resources: Finance, O&M, and Asset Management	Understanding the stormwater needs of a community, funding opportunities, and implementation aspects present a constant challenge to community planners, engineers, and public officials as we strive to address water quality and quantity needs. This session will educate individuals on the various resources available to support stormwater program planning.	10/2/2023	3:30 PM	5:00 PM	PDH	1.5					1.	5
231	Optimizing Energy Investments	Following the preceding session's summary of Energy Master Planning, this session will include three example Energy-Use case studies. Each case demonstrates new tricks that designers, operators, and management have used to squeeze the most out of limited energy resources. Each case also emphasizes how, whether optimizing energy use or just saving dollars, success lies in site-specific, geographical, and contextual details. Two of the cases involve onsite power generation (CHP): one from the perspective of design engineers; with the second showcasing tools that allow operators access to information allowing energy-savings decisions on the fly. The third and final case study involves more CHP but also adds sludge drying, landfill gas, and capacity needs to the mix; describing how decisions enable success (and avoid limitations and hard choices). Interactive Session   Case Study Analysis	10/2/2023	3:30 PM	5:00 PM	PDH	1.5		0.5		1.0		
232	Equitable Service Delivery Approaches and Community Bridging	The need to prioritize equity in policy, infrastructure investments and community bridging has grown significantly. Utilities have responded to this need with innovative approaches to keep equity at the center of services through strategies to maintain affordable access to water and sewer service for low-income households and by using equity guiding tools as a framework for ensuring equitable outcomes in policy, zoning, and infrastructure investment decisions.	10/2/2023	3:30 PM	5:00 PM	PDH	1.5	0.5	1.0				
233	Ozonation: Water Reuse on a New Level	Helping utilities to practice water reuse, Integrating the biological and ozonation models was possible to achieve aeration savings, while using less ozone could be dosed at the final treatment step before discharge is the overall objective of this session. We will also discuss how to use CFD-Amozone kinetic model for optimal design the new advanced oxidation reactors.	10/2/2023	3:30 PM	5:00 PM	PDH	1.5	1.0	0.5				
234		Understanding the interconnectedness of wastewater, stormwater, surface water quality, and facility planning is essential to watershed management. Using integrated planning approaches, utilities can holistically address how resources are managed, data is collected and analyzed, and how programs can be improved to better serve and protect communities and the environment. In this interactive conversations and input session, learn, appreciate, and discuss the benefits of integrated planning by hearing case studies of utilities from across the United States that demonstrate best practices for successful watershed management. Hear from Hartford, Connecticut on their integrated plan which includes long term control planning and watershed management; from Milwaukee, Wisconsin on how they integrated facilities planning as part of their water quality improvement initiatives; and from New York City on a stream and wetland restoration project for combined sewer overflow control. Interactive Session   Conversation and Input	10/2/2023	3:30 PM	5:00 PM	PDH	1.5					1.	5
301	Translating Bench Scale to Full- Scale Operations: Is Food Waste Co-digestion Right for You?	Water Resource Recovery Facilities (WRRFs) are increasingly investigating and implementing co-digestion of food waste to maximize biogas production and generate revenue from tipping fees and biogas energy recovery, while reducing organics landfilling and its associated greenhouse gas emissions. This session will provide an introduction on food waste co-digestion covering both the positive and potential negative impacts, an academic perspective describing how co-digestion bench scale studies are conducted and the findings that can be identified, and a utility-centric case study on how bench scale study findings were used to increase the accuracy of the results of a feasibility study. Interactive Session: Facilitated Discussion	10/3/2023	8:30 AM	10:00 AM	PDH	1.5			1.5			
302	Innovative Project Delivery Methods	Not a one-size fits all standard construction project. This session will feature various implementation techniques from new construction design/build, construction manager at risk, and emergency response to a large, failed gravity line.	10/3/2023	8:30 AM	10:00 AM	PDH	1.5						1.5
303	Pathogens and Indicator	We monitor indicator organisms to confirm microbiological safety of wastewater effluent and biosolids. Indicators are not pathogenic, but their presence mimics the behavior of pathogens in wastewater and biosolids. Traditionally the most common indicators are fecal coliform, E. coli and enterococci. However, the removal or inactivation and decay of these indicators does not always reflect that of viruses or spore-forming bacteria, which calls into question their efficacy as indicators. In this session, presenters provide evidence related to the inactivation of viruses by chlorination and the inactivation of endospores in wastewater and biosolids.	10/3/2023	8:30 AM	9:15 AM	PDH	0.75		0.75				
304	The BNR Instrumentation and Controls Selection Adventure	Is there an app for that? Currently, there is no centralized resource detailing the various biological nutrient removal (BNR) control systems, the commercially-available sensors and analyzers that inform the real-time responsive controls, their performance and capabilities, and the associated operation and maintenance (O&M) procedures and costs. WRF Project No. 5087, titled Implementation of Innovative Biological Nutrient Removal Processes through Improvement of Control Systems and Online Analytical Measurement Reliability and Accuracy, aims to fill the current gap in understanding of online, instrument-driven BNR control schemes and their reliability and performance with decision support tools for operators, engineers and utility directors. This session will highlight outcomes of the WRF project and provide the audience with an app they can use to evaluate the applicability of BNR control systems and associated sensors and analyzers at their water resource recovery facilities (WRRFs). Additionally, utility representatives will share their experiences with implementation and operation at their WRRFs. Interactive Session   Case Study Analysis	10/3/2023	8:30 AM	10:00 AM	PDH	1.5		1.5				
305	Sidestream Nitrogen Removal: From Established to NextGen	In this session, attendees will be presented with a review of full-scale experience of sidestream treatment facilities ranging from conventional nitrification/denitrification to deammonification. Startup and operation of multiple manufacturers for each will be reviewed and compared against next generation technologies. Interactive Session   Panel Discussion	10/3/2023	8:30 AM	10:00 AM	PDH	1.5		1.5				
306	Environmental Social Justice: Enduring Issues After the Spotlight	The perspective of the people directly affected by water issues due to systemic inequities is often lacking in environmental social justice conversations. This session brings members from disadvantaged communities impacted by historically relevant environmental disasters to share the story from their lived perspectives. Join us as we explore how communities respond to environmental crises, learn to advocate for themselves, and come to recognize that environmental justice requires continued efforts. Interactive Session   Panel Discussion	10/3/2023	8:30 AM	10:00 AM	PDH	1.5						1.5
307	Operation and Troubleshooting of Flotation Technologies in Petroleum Refinery Wastewater Treatment	The goal of this session is the attendees will be able to identify and implement corrective measures to resolve shortcomings with the performance of Dissolved Gas Flotation (DGF) equipment in petroleum refinery applications. This session will delve into the most common issues associated with the operation of DGF equipment in petroleum refineries and how to rectify/address poor performance of this equipment. This includes: 1. Chemical conditioning of wastewater in the flotation process. 2. Troubleshooting the mechanical flotation process for both wastewater and air emission compliance. 3. The importance and application of gas-to-solids ratio in the flotation process. At the conclusion of the session, the attendees will apply the information obtained during the session to solve common operations and performance problems associated with DGF equipment in petroleum refineries. Interactive Session   Problem Solving	10/3/2023	8:30 AM	10:00 AM	PDH	1.5			1.5			
308	The Big Bad Blower: Huffing and Puffing Air Through Your Aeration Basins	Many factors influence technology selection and sizing of aeration blowers. This session will illustrate a practical methodology for sizing aeration blowers including the use of dynamic process modeling as a tool to assist in sizing aeration blowers; how environmental conditions impact oxygen transfer and blower design, and a users' evaluation of installed blower technologies.	10/3/2023	8:30 AM	10:00 AM	PDH	1.5		1.5				
309		Low dissolved oxygen (DO) operation in biological nutrient removal (BNR) systems will be the focus of this session. Participants will learn about the benefits and challenges of operating BNR systems at low DO levels, including increased nutrient removal efficiency, reduced energy consumption, and decreased sludge production. The session will cover strategies for optimizing BNR performance under low DO conditions. Attendees will also learn about monitoring and control strategies for maintaining stable BNR performance under low DO conditions. The session will be led by experienced wastewater treatment professionals and will include case studies and interactive discussions.	10/3/2023	8:30 AM	10:00 AM	PDH	1.5		1.5				

310	Updates on Microplastics Occurrence, Regulation, and Removal	Join us for an update on the latest in microplastic (MP) occurrence, regulations, and treatment! This session includes speakers with perspectives across water matrices: wastewater, stormwater, and runoff from industrial facilities. Results will be shared from (1) the MP occurrence database from WRF 5088, (2) control strategy development for a manufacturing facility, and (3) a cross-season investigation of MP occurrence and removal at a water reclamation facility. Stay for the facilitated discussion of the consequences. Interactive Session	10/3/2023	8:30 AM	10:00 AM	PDH	1.5		1.5				
311	Flood Modeling Case Studies	Facilitated Discussion Stormwater modeling to make better-informed decisions on flooding will be the focus of this session. Three diverse case-studies with innovative and advanced modeling approaches will be discussed. These applications include use of rain-on-grid 2D modeling to accurately estimate the flood peaks, outline efforts required to continuously use the developed model for watershed evaluations, and use of 2D hydraulic modeling to depict storm and hurricane events and better community engagement for floodplain residents.	10/3/2023	8:30 AM	10:00 AM	PDH	1.5					1.5	
312	Unprecedented Weather Events: Planning for Organizational and Operational Resiliency	During a time of unprecedented weather events, operational and resiliency planning is of the utmost importance to utility management and leadership. Developing a framework in advance of such emergencies will best position a utility to restore essential services. Discussions will include methods to plan ahead of events, important financial considerations, and critical insights gained during past events. Attendees will have an opportunity to have a facilitated discussion after each presentation to get into the issues that are most important to the participants. Interactive Session   Facilitated Discussion		8:30 AM	10:00 AM	PDH	1.5				:	1.5	
313	A National Bioresources Strategy for England	Globally, utilities are seeing increased risks associated with the application of biosolids from various factors including water quality, climate change, decarbonization, regulatory uncertainty, and emerging contaminants such as PFAS, microplastics, endocrine disruptors to name a few. While these factors pose a challenge to manage, there is incredible value in the overall output of biosolids. England's water industry decided that a national strategy was required. This session reviews the county's approach to create a roadmap that will enable the industry to confidently invest in infrastructure to effectively manage biosolids now and in the future.	10/3/2023	8:30 AM	9:15 AM	PDH	0.75			1.5			
314	Capital Project Management in Today's Challenging Times	The purpose of this panel session is to provide attendees the latest on capital project management in today's challenging market environment. Specific topics to be covered include how utilities are executing capital projects in the current environment by utilizing escalation clauses, alternative funding, collaborative delivery, enhanced bid solicitation, and aggressive project management (budget, schedule, and risk). A group of industry panelists has been chosen with each of them bringing unique perspectives to share. Attendees will be provided a resource listing and results from the Utility Management Community survey on this topic. Interactive Session   Panel Discussion	10/3/2023	8:30 AM	10:00 AM	PDH	1.5						1.5
315	Managing the Modern Media Mix to Keep Your Community Engaged	Public expectations for water and wastewater utilities have never been higher. At the same time, utilities are competing just to get the public's attention long enough to share their stories. And once they have attention, understanding what and how to share can seem overwhelming. However, it's critical for utilities to be proactive because if they aren't telling their stories, someone else will. Finding the best ways to reach your customers, community, and other stakeholders must be elevated as an integral piece of a utility's management and operations efforts. This session provides an overview of the current media mix blending traditional and digital channels to help utilities understand the basics and how they can leverage the variety of channels and platforms to reach people where they are. With the knowledge gained in this session, utility leaders, communicators, and others can decide which pieces of the mix work best for their organization and specific needs. Interactive Session   Panel Discussion	10/3/2023	8:30 AM	10:00 AM	PDH	1.5						1.5
316	Water Reuse Regulations Across the States	Come explore the regulatory environment of water reuse. EPA has compiled summaries of state regulations while highlighting their technical basis to provide a snapshot of the national regulatory landscape! EPA will introduce its navigable web tool known as the Water Reuse Regulations and End-Use Specifications Explorer (REUSExplorer), which compiles state regulations where the different water reuse quality metrics can be downloaded for further data analysis. The first portion of this session will provide an overview and key findings of the water reuse regulations included in the REUSExplorer, which is valuable resource to water reuse practitioners and regulators to better understand the variety of fit-for-purpose specifications across the states. This will be followed by presentations from individuals who worked on formulating these state regulations. Presenters will provide insight on the technical basis of regulations, followed by a facilitated discussion. Interactive Session   Facilitated Discussion	10/3/2023	8:30 AM	10:00 AM	PDH	1.5	0.5	1.0				
317	Roadmap! Taking Integrated Planning for Municipal Wastewater and Stormwater on the Road	In this interactive facilitated discussion session sponsored by the WEF Integrated Planning Task Force, the fundamentals of integrated planning will be shared through an overview of the Task Force's integrated planning roadmap, including what integrated planning is, what is included in an integrated plan, and how to get started developing an integrated plan. The Task Force will also share their plans to help utilities and regulators become more knowledgeable about integrated planning and to begin using it for NPDES permitting and enforcement actions. Following the roadmap overview, there will be a facilitated panel discussion of case studies with utility representatives where participants will learn when integrated planning is likely to be most successful, reinforced with case study experiences, and how an integrated plan can be efficiently developed for a community. Interactive Session   Facilitated Discussion	10/3/2023	8:30 AM	10:00 AM	PDH	1.5		0.5			1.0	
400	Utility Leaders Roundtable	Water Sector leaders are navigating their organizations through many facets of uncertainty. This session will engage industry leaders to share their disruptors, tactics, and soft skills that drive change and deliver results. The interactive format of this session will help you connect with other leaders and give you many takeaways to use now.	10/3/2023	3:30 PM	5:00 PM	PDH	1.5						1.5
401	Behavior of Emerging Contaminants in Thermal Treatment Processes	Emerging contaminants in biosolids have often posed challenges and concerns to their beneficial uses regarding the potential impacts on public health and the environment. There are renewed interests in thermal technologies such as incineration, pyrolysis, and gasification for biosolids treatment to address such concerns. The behavior of various emerging contaminants under various thermal treatment is not well known, however. This session presents insights into how some of these emerging contaminants in biosolids may behave when subjected to various thermal treatment processes. Interactive Session   Conversations & Input	10/3/2023	1:30 PM	3:00 PM	PDH	1.5			1.5			
402	Pump Stations: Lessons	Three unique pump station rehabilitation and replacement projects will be discussed during this session, exposing the listener to the lessons learned by each one. The projects vary in size and each improve operations by their type of rehabilitation to specific components within the pump station.	10/3/2023	1:30 PM	3:00 PM	PDH	1.5			1	L.5		
403	Disinfection in the 2020s	In this session, operators speak about issues associated with operating and maintaining disinfection processes while dealing with supply chain issues, staff turnover, increasing budgets, and implementing new technologies. Operations staff from three wastewater facilities will present their specific issues, each using a different disinfection process (Hypochlorite, UV, and PAA). A facilitated discussion on the challenges of operating disinfection systems follows the presentations.	10/3/2023	1:30 PM	3:00 PM	PDH	1.5		1.5				
404	-	Partial denitrification anammox (PdNA) is an emerging approach to provide low carbon nitrogen removal. This session provides an overview of PdNA design and operational considerations resulting from long-term pilot operation and full-scale experience.	10/3/2023	1:30 PM	3:00 PM	PDH	1.5		1.5				
405	Applications of Machine Learning in Full-Scale Nutrient Management Part I	As part one of a two session series, this session will present the findings and results of the WRF Project 5121: Development of Innovative Predictive Control Strategies for Nutrient Removal. This first session is focused on presenting the technical approach the team took to applying machine learning (ML) to nutrient control in full-scale facilities in a controller named ODIN (Operational Decision-making Intelligence for Nutrient control). Interactive Session   Facilitated Discussion	10/3/2023	1:30 PM	3:00 PM	PDH	1.5		1.5				

406	Indigenous Environmental Practices: Lessons from the Past	Indigenous communities from around the globe developed traditions that were suited to their specific environments. This session includes a panel of various indigenous speakers from different countries explaining their cultural values and traditional practices in relation to food, land management, and water, against the backdrop of modern practice. We will explore the drivers and logic behind the traditional practices, their barriers, and how they might inform contemporary solutions for a sustainable future. Interactive Session   Panel Discussion	10/3/2023	1:30 PM	3:00 PM	PDH	1.5						1.5
407	Challenges and Solutions	Invited speakers and topics focused on the challenges faced by the microelectronics industry as it relates to water will be discussed during this interactive session. From the need for ultrapure water for the chip manufacturing process, to the treatment of difficult wastewaters including growing water scarcity in the western U.S. where many chip manufacturing facilities are located there are numerous opportunities for innovative treatment methods and sustainable water management best practices.	10/3/2023	1:30 PM	2:30 PM	PDH	1.0			1.5			
408	The Future of Datacenters: From Water Users to Water Stewards	Water use in datacenters focusing on alternative water sources for evaporative cooling and potential opportunities for reuse will be highlighted during this session. Presenters will discuss the challenges and benefits of using non-potable water sources for evaporative cooling and how a collaborative approach with publicly owned wastewater treatment works (POTWs) is essential. Small group discussions will follow each of the technical presentations. Interactive Session   Facilitated Discussion	10/3/2023	1:30 PM	3:00 PM	PDH	1.5			1.5			
409	Advancing Low-energy Biological Nitrogen and Phosphorus Removal Through	The potential for a low capital investment that achieves nutrient removal and reduces energy is readily applicable to many WRRFs. However, current manuals of practice and historical understanding of operations assume that low DO operation creates process performance challenges. For example, low DO operation has historically been linked to poor settling sludge and lower microbial rates (e.g., low nitrification rates), which results in the design of larger volumes for treatment and undermines intensification outcomes. This traditional understanding has persisted from systems with complete mix activated sludge, but the application of anaerobic selector zones and active carbon management affect biological kinetics and population selection, enabling low DO operation while maintaining good settleability and nutrient removal. It is only when these mechanisms are understood can they be fully exploited to intensify treatment. This session will cover the current state of the industry as well as recent findings from an ongoing Water Research Foundation study (WRF 5083) investigating the benefits and mechanisms of low DO operation. Interactive Session   Knowledge Development Forum	10/3/2023	1:30 PM	3:00 PM	PDH	1.5		1.5				
410	Connecting Molecular Biology Sensors to EBPR Performance	The applications of molecular biological approaches and bio-electrochemical sensors to enhanced biological phosphorus removal (EBPR) processes will be the focus of this session. The presentations will include discussion on pilot studies at full-scale facilities and research into application of advanced tools for assessing the health/operation of EBPR systems. The target audience is research-focused consultants, utilities, academics, and designers. Recent advances in treatment of PFAS in raw and reclaimed wastewater will be covered during this interactive session. It highlights PFAS	10/3/2023	1:30 PM	3:00 PM	PDH	1.5		1.5				
411	Making Forever Chemicals Gone Forever	treatment by adsorption and electrochemical oxidation. It unveils the fate of PFAS through wastewater treatment and reuse systems. The session is appropriate for researchers and practitioners that deal with PFAS in water and wastewater. Interactive Session   Facilitated Discussion	10/3/2023	1:30 PM	3:00 PM	PDH	1.5		1.5				
412	Stormwater Design Case Studies	With a wide range of topics, the innovative stormwater design case studies highlighted during this session will include benefits of stormwater in disadvantaged communities, how utilities can leverage stormwater treatment technologies for positive outcomes for residents and ratepayers, and stakeholder engagement that focuses on sustainable growth. This session will give participants an opportunity to analyze each case study to learn further from it. Interactive Session   Case Study Analysis	10/3/2023	1:30 PM	3:00 PM	PDH	1.5					1.5	
413	Small Communities Utilize Decentralization Effectively	Interest in applications of decentralization and distributed system approaches to help manage wastewater infrastructure is growing internationally. Water reuse is a key driver in some cases. This session will address some of the research and design approaches to implementation of decentralized approaches to utility management. Facilitated discussion throughout the session gets you into the details so you can apply the approaches and ideas to your own situation. Interactive Session   Facilitated Discussion	10/3/2023	1:30 PM	3:00 PM	PDH	1.5		1.5				
414		What does digital transformation really mean? Join us in the session to hear from utilities as they share their own experiences and lessons learned on the range of technologies, tools, and practices all implemented to improve operational efficiency and decision-making. Topics range from deployment of remote sensing technologies to development of performance metrics and visualization tools to leveraging technology for predicting maintenance requirements.	10/3/2023	1:30 PM	3:00 PM	PDH	1.5						1.5
415	Recognize the DRIFT in Asset	Asset Management Practice has been maturing over the last decade. While some of the best practices and principles are consistent throughout these years, it is important to learn from the organizations implementing and advancing their asset management programs. In this session, you will recognize those lessons as well as implement tactical initiatives to address a few selected areas of asset management. Interactive Session   Conversation and Input	10/3/2023	1:30 PM	2:30 PM	PDH	1.0						1.5
416	Reconsidering Biological Treatment for Water Purification: Reuse-nutrient Removal-nexus I	As the first of the two-session series 'Reuse-Nutrient Removal Nexus,' this session will highlight considerations for designing secondary to tertiary treatment processes with the goal of producing feed water for full advanced treatment to produce purified water. There have been limited efforts to integrate the design considerations for biological treatment processes with downstream water purification processes for water reuse even though the impacts of the upstream treatment on the advanced treatment have been recognized. This session will highlight how recent advances in biological nutrient removal processes are integrated into holistic approaches to produce purified water.	10/3/2023	1:30 PM	3:00 PM	PDH	1.5	0.5	1.0				
417	Long-term Control Planning and Consent Decree Orders	USEPA will open this session by providing an overview of the status of long term control planning, CSO plans and the future of both. The session will then have presentations about negotiating post-construction long term control plan compliance work plans to confirm that actual performance of constructed facilities meets anticipated performance identified in LTC Plans, and about successful elements of a 100% complete, 20-year CSO control program, including its private property program, infrastructure coordination efforts, and funding sources.	10/3/2023	1:30 PM	3:00 PM	PDH	1.5				1	.5	
418	Creating Renewable Revenue Streams with RNG	Many utilities are evaluating upgrading biogas to RNG standards for pipeline injection and RIN sales, as an option to continuing to flare excess biogas. Many states and cities are enacting GHG emission reductions and wastewater utilities are often the single largest electrical users and therefore critical for achieving GHG emissions. Upgrading biogas to RNG can provide an additional source of utility revenue while simultaneously reducing overall carbon emissions. Unfortunately, the steps required for successful implementation of converting biogas-to-RNG can be complex. There are multiple contractual agreements required between the utility producing RNG and the gas company pipeline operators including interconnect agreements, operating agreements, and transportation agreements with the required quality of RNG fuels differing regionally. This session will provide a comprehensive review of the many intricacies involved in the upgrading of biogas to renewable natural gas standards for pipeline injection and ultimate distribution and sale of renewable identification number (RIN) credits. Interactive Session: Panel Discussion		3:30 PM	5:00 PM	PDH	1.5				1.5		
419	Perspectives on Inflow and Infiltration Reduction Cost Effectiveness	There has been a national discussion about whether I/I elimination or reduction projects are cost effective. Utilities need better information on the costs and benefits of I/I reduction, including how to measure I/I reduction after construction projects are completed, how to document the effectiveness of I/I reduction measures, and what are the metrics for measuring I/I reduction cost-effectiveness. During this session, attendees will have the opportunity to partake in an open debate to help answer the many questions surrounding this topic. The session will address questions such as: How are utilities currently measuring I/I reduction? How are utilities currently measuring cost effectiveness of I/I reduction work? How are utilities determining system and basin-level points of cost-effective I/I reduction? What the practices of utilities conducting I/I reduction in the most cost-effective manner? Interactive Session   Debate.	10/3/2023	3:30 PM	5:00 PM	PDH	1.5				1	.5	

420	IPEAS Impacted W/REs	In recent years our industry has rapidly gained awareness of the occurrence and challenges associated with per- and polyfluoroalkyl substances (PFAS) in water, wastewater, and wastewater impacted systems. This technical session offers participants an update on alternatives for management of PFAS to below analytical reporting limits in WEF effluents and biosolids, a review of methods used to screen management alternatives and the cost of implementing PFAS treatment solutions, and an update from EPA on the PFAS risk assessment process.	10/3/2023	3:30 PM	5:00 PM	PDH	1.5			:	1.5		
421	Novel Applications of QMRA For Sizing Wastewater UV Systems and Identifying Shellfish Harvesting Zones	Presentations will explore the benefits of Quantitative Microbial Risk Assessment (QMRA) to support public health in surface waters receiving treated wastewater. Case studies are presented from New Zealand, which was one of the pioneers of the use of QMRA to determine site-specific UV dose requirements based on microbial risk as opposed to a standard UV dose requirement. Case studies are also presented using QMRA to identify and manage public health risk in shellfish aquaculture and wild shellfish harvesting downstream of discharges from WRFs using chlorine or UV disinfection and various secondary treatment processes.	10/3/2023	3:30 PM	4:30 PM	PDH	1.0	1	0				
422	Case Studies of Machine Learning in Full-Scale Nutrient Management Part II	The second part of a two session series, this session will present the findings and results of the WRF Project 5121: Development of Innovative Predictive Control Strategies for Nutrient Removal. This second session is focused on presenting three of the full-scale pilot results of the hybrid controller highlighted in the first session known as ODIN (Operational Decision-making Intelligence for Nutrient control). Interactive Session   Case Study Analysis	10/3/2023	3:30 PM	5:00 PM	PDH	1.5	1	5				
423	From Global Best Science to Mitigation of Nitrous Oxide	Global perspectives on the challenges WRRF face when predicting, monitoring, and mitigating N2O emissions will be presented during this session. Featuring perspectives from academia and case studies from the UK, Europe, and New Zealand, this session will include facilitated discussion by industry leaders Julian Sandino and Jose Porro. Interactive Session   Facilitated Discussion.	10/3/2023	3:30 PM	5:00 PM	PDH	1.5	1	5				
424	The A to Z's of Refinery	Wastewater treatment in the refining industry continues to be a challenge since on one hand refineries need to cost effectively manage old and undersized infrastructure that need to maintain effluent regulatory compliance while on the other hand supporting a company's water sustainability goals. Newer technologies and applications also continue to be constantly evaluated against a companies cost, production, and sustainability goals. Therefore, this session reviews examples that challenge conventional technology use at oil refinery's for performance reliability and effluent reuse as well as a case study looking at a complete WWTP design for a Biodiesel Plant that includes effluent reuse.	10/3/2023	3:30 PM	5:00 PM	PDH	1.5			1.5			
425	Membrane Filtration and Zero Liquid Discharge (ZLD) Wastewater Treatment System	Novel strategies, analysis and technologies to treat Industrial and oilfield wastewater utilizing membrane filtration and zero liquid discharge (ZLD) wastewater treatment system will be the focus of this session. The first presentation discusses the performance of proprietary process known as buoyancy-enhanced membrane filtration ('BEMF') for oilfield and industrial water reuse. The next presentation performs a feasibility study technoeconomic assessment for optimization upgrades to a zero liquid discharge wastewater treatment system at a combined cycle power utility in the western US including brine concentrator, crystallizer and emergency evaporation pond.	10/3/2023	3:30 PM	5:00 PM	PDH	1.5			1.5			
426	Design Tools and Technologies for Preliminary and Primary Treatment	Preliminary and primary treatment process design may not be as 'exciting' as advanced biological process design; however, without properly designed preliminary and primary treatment systems, downstream advanced processes are doomed to fail. The design of these processes has traditionally been 'cookbook', based on criteria and approaches long established. However, new and innovative approaches have been developed, and this session presents three technologies or design approaches that improve on traditional methods. Case studies of the technologies will be presented with lessons learned.	10/3/2023	3:30 PM	5:00 PM	PDH	1.5	1	5				
427	Full-scale Continuous Flow	During this session, participants will gain insights into achieving densification in continuous flow systems using commonly used process configurations, based on recent findings from an ongoing Water Research Foundation Study (WRF 5130) investigating the advancement of densification to implement and achieve more efficient BNR. Presentations will focus on the various studies conducted at full-scale facilities, which developed design criteria that resulted in optimized biological and physical selection. These design criteria will also be translated into operating conditions so that operations crews can successfully implement and maintain a densified activated sludge (DAS) system. From this session, attendees will develop a deep understanding of the industry's current state and key considerations when implementing a DAS system. Interactive Session   Knowledge Development Forum.	10/3/2023	3:30 PM	5:00 PM	PDH	1.5	1	5				
428		As the Clean Water Act evolves through litigation and rulemaking, this session will present important developments in stormwater capture and use, permitting in impaired watersheds, and implications of stormwater discharges to groundwater. Speakers will present on EPA's advancement of rules and policy for stormwater capture and use (SCU), as part of the National Water Reuse Action Plan (NWRAP); the application of Residual Designation Authority (RDA) in impaired watersheds to address Commercial, Industrial, and Institutional (CII) discharges; and the emerging implications for stormwater infiltration to groundwater in the wake of the US Supreme Court's 2020 decision in Hawai'i Defenders of Wildlife et al. vs. County of Maui. Participants will be engaged in considering how stormwater can be used as a resource in the context of these evolving approaches to its regulation.	10/3/2023	3:30 PM	5:00 PM	PDH	1.5					1.5	
429		Some of the presentations featured during this session will cover the benefits and challenges of using smart technology to predict stormwater flooding. Experiences from the Hampton Roads region of Virginia and Kansas City, Missouri, the City of Madison, and results from the United States Geological Survey (USGS) Smart Utility demonstration project will give participants an opportunity to learn about and understand current flood detection technologies. Interactive Session   Conversation and Input	10/3/2023	3:30 PM	5:00 PM	PDH	1.5					1.5	
	Communications Plans and Actions: Septics, Source Control, and Stakeholders	Information on the development of communications plans used across a variety of diverse stakeholder groups will be presented during this session. Key topics include how to be adaptive in your communications when the project changes, engaging stakeholders on new issues like PFAS source control, and how to develop a communication plan with very diverse stakeholders and issues you may face.	10/3/2023	3:30 PM	5:00 PM	PDH	1.5						1.5
431	of Decentralization and	Small communities face increasingly challenging requirements associated with management and planning for sustainability, resilience, and reliability. Changes in environmental conditions will necessitate changes to traditional planning and management efforts associated with utility management in small communities. This session will provide examples of the application of small system technology to address emerging wastewater management opportunities in small systems. Interactive Session   Facilitated Discussion.	10/3/2023	3:30 PM	5:00 PM	PDH	1.5						1.5
432	Refining Wastewater Effluent for Purification: Reuse-nutrient Removal-nexus II	In part two of our Reuse-nutrient Removal-nexus sessions, this session will specifically hone in on refining wastewater effluent for water reuse applications. Interactive Session   Conversation and Input	10/3/2023	3:30 PM	5:00 PM	PDH	1.5		:	1.5			
433	Better Outcomes with (SO)	To round out the current discussion on the status of long-term control planning and CSO plans this session will have presentations focusing on re-evaluating, re-opening, and re-negotiating administrative orders and consent decrees to deliver more cost-effective solutions. Program Risk Management and lessons learned from dozens of implemented projects as part of a \$1.5B capital improvements program to reduce CSOs and SSOs will also be discussed during the session.	10/3/2023	3:30 PM	5:00 PM	PDH	1.5				1.5		

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501	Intensifying and Optimizing Anaerobic Digestion	Anaerobic digestion has many advantages for WRRFs and is one of the most used technologies for energy recovery. Although the technology has been used for many years, there is still a lot to learn about this process and how best to achieve the most optimum performance. By attending this session, you will learn recent developments in control strategies, including effects of reducing the system SRT and technologies used in enhancing the rate limiting step of hydrolysis. Interactive Session   Facilitated Discussion.	10/4/2023	8:30 AM	10:00 AM	PDH	1.5			1.	5		
	Balancing Costs vs. Cleaning: Effective Programmatic Sewer Cleaning Approaches	The Operation and Maintenance of a collection system is expensive and sub-optimal in SSO prevention. Current industry criteria, and therefore regulations, have been accepted based on outdated and unproven assumptions. The session objective is to initiate the development of defensible industry standards for collection system preventive maintenance activities that are customizable for various system sizes and cost effective, while meeting the goal of reducing system failures. Please bring your experience for interactive discussions.	10/4/2023	8:30 AM	10:00 AM	PDH	1.5				1.5		
	Design and Construction Challenges for CSO Control Implementatioin	The design and construction challenges of implementing combined sewer overflow (CSO) control technologies will be explored during this session. Three presentations will describe the design and construction of three different CSO control technologies: sewer separation, retention/treatment basin (RTB), and tunnel dewatering pump station. This curated session will explore the facets of design and construction and provide, through structured presentations and discussions, details on how to implement different technologies in various conditions, from ultra-urban to suburban. Design considerations to be described include, among other things, private property disconnection, re-use of existing infrastructure, use of drones, tight construction conditions, deep large capacity pump station construction, and maintenance of operations during construction. Additionally, presenters will describe construction costs in challenging labor and supply chain market conditions. Finally, CSO control effectiveness will be described and project costs presented to understand the overall cost-benefit of large-scale CSO control. Interactive Session   Case Study Analysis	10/4/2023	8:30 AM	10:00 AM	PDH	1.5				1.5		
504	UV Disinfection: Where are we? Where are we going?	Wastewater UV disinfection systems have long been dominated by conventional mercury-based lamp systems. LED-based UV systems have the potential to reduce life cycle costs and eliminate the use of mercury in lamps. This session presents a case study on a conventional low-pressure UV system, a comparison of UVC-LED based and low-pressure mercury lamp systems, and a pilot test using dual wavelength UVC-LEDs on wastewater.	10/4/2023	8:30 AM	10:00 AM	PDH	1.5		1.5				
505	PdNA Whole Plant Considerations	Partial denitrification anammox (PdNA) research and implementation has primarily focused on nitrogen removal considerations. Integration of PdNA as a whole plant solution requires consideration for overall treatment goals. This session focuses on PdNA implementation as part of a whole plant solution.	10/4/2023	8:30 AM	10:00 AM	PDH	1.5		1.5				
506	Intentional Integration of Social Equity into Climate Planning	How do we account for everyone in our actions? Utilities and municipalities must proactively respond to, and mitigate, the climate crisis from continuing harmful impacts to communities and infrastructure. The concept of planning for resiliency while also creating equitable outcomes will be addressed during this session. One focus of this session will be case studies where utilities have successfully implemented or begun to implement programs and plans to serve the needs of their communities. Guided group discussions between attendees will be used to develop conceptual action items and other questions to explore. Interactive Session   Breakout Session	10/4/2023	8:30 AM	10:00 AM	PDH	1.5						1.5
507	Approaches to PFAS Destruction and Centralized Treatment	One day PFAS will no longer be called 'forever chemicals'. Conventional technologies for PFAS removal concentrate or transfer PFAS from the liquid to the solids phase (i.e. GAC, IX, Reverse Osmosis). Newer technologies focus on the destruction of PFAS as a longer term solution. This session will present alternatives for destruction based technology implementation using a regional facility based approach for both electrochemical oxidation and mechanicochemical destruction of PFAS. Recent testing results will be presented as well. Interactive Session   Facilitated Discussion	10/4/2023	8:30 AM	10:00 AM	PDH	1.5		1.5				
508	Food and Aquaculture Wastewater Treatment	High concentrations of organics, salt, and phosphorus in food and aquaculture wastewater present significant wastewater treatment challenges but also opportunities for resource recovery. This research-focused session will explore the technologies that can be used in meeting ultra-low effluent phosphorus concentrations and innovations for resource recovery from high-strength and salty food wastewaters. Pilot and laboratory-scale test methods, including RNA gene sequencing, and results of unique technology applications will be discussed in an interactive format. Interactive Session   Conversation and Input.	10/4/2023	8:30 AM	10:00 AM	PDH	1.5			1.5			
509	Chemical Phosphorus Removal	The goal of this session is to give insights about chemical phosphorous removal, what the target compounds are, which chemical(s) to choose, where and how to dose, and the impact of chemical phosphorous removal on plant processes such as sludge production and alkalinity consumption.	10/4/2023	8:30 AM	10:00 AM	PDH	1.5		1.5				
510	Re-direct Carbon for Better Use	Carbon in the influent wastewater is valuable! Come learn about the latest in carbon redirection that could help improve your facility's energy recovery and reduce the nutrient loading and oxygen demand of the downstream biological process!	10/4/2023	8:30 AM	10:00 AM	PDH	1.5		1.5				
511	PFAS Research Update	TBD	10/4/2023	8:30 AM	10:00 AM	PDH	1.5		1.5				
512	Urban Stormwater Controls Operation and Maintenance	Attendees will be provided with a synopsis of the new Manual of Practice (MOP) titled Urban Stormwater Control Measures Operations & Maintenance. The session will focus on the aspects of O&M that present the greatest challenges to municipalities and utilities. The session will describe best practices for stormwater control measure (SCM) maintenance and will articulate the need for maintenance to address aging infrastructure needs as well as climate change adaptation. In addition, detailed chapter descriptions and case study lessons learned will be provided to inform and engage the audience. A panel discussion is planned to allow the audience to interact with the authors and panelists and ask questions and share lessons learned. Key O&M concepts will be reinforced through planned questions and discussions of the myriad of issues that designers, O&M staff, and sessions participants must consider in the operations and maintenance of SCMs.	10/4/2023	8:30 AM	10:00 AM	PDH	1.5					1.5	
513	MERC/MARC: Equipment Procurement Practices	TBD	10/4/2023	8:30 AM	10:00 AM	PDH	1.5						1.5
514	Qualifications-based Selection: Get What You Need, Show What You've Got	The needs within the water industry are tremendous. Talk to virtually anyone, and you'll hear about the need for infrastructure upgrades, technological advancements, funding, and qualified staff. With all the needs, how do we as an industry think about hiring partners to advance our collective goals? While much of our focus has been on the technical and logistical aspects of meeting our needs, we haven't focused much of a spotlight on the intersection of a utility's needs for professional services support and capabilities that outside professionals can provide. Join us for a session that brings together proposal management professionals, utility procurement professionals, and technical and utility leaders to talk about qualifications-based selection to help all with a role in the procurement process succeed. Interactive Session   Panel Discussion	10/4/2023	8:30 AM	10:00 AM	PDH	1.5						1.5
	Emerging AI Technologies and Ways of Working to Optimize Water	Emerging technologies like Artificial Intelligence (AI) and advanced data analysis are making their mark on the water industry. These tools use machine learning to enable intelligent decision support that optimizes resource use, increases efficiency, and maintains asset capability. However, applying these capabilities has not come without challenges. Women have been instrumental in taking on these initiatives throughout the industry and have had a tremendous impact on the development and adoption of new technologies. These sessions will cover the opportunities, benefits, and challenges of putting these emerging technologies to use along with the impact on the teams that deploy them and the overall organization. Throughout this session, participants will discuss the importance of women taking on leadership roles and how to overcome common barriers. Moreover, the speakers will share their inspirational first-hand experiences in the water industry and the challenges they have faced. Interactive Session   Facilitated Discussion	10/4/2023	8:30 AM	10:00 AM	PDH	1.5	0.5	1.0				

516	Water Reuse: Challenges and Opportunities	The challenges of water reuse, specifically addressing climate change, concentrate minimalization, and the economics of RO application for inland communities will be the focus of this session. The quantification of carbon emissions associated with different operational scenarios over a 50-year period will be discussed, and case studies from the industrial and municipal sectors will be presented to showcase concentrate minimalization and resource recovery across the country. Attendees will have the opportunity to learn techniques for evaluating the economic costs and possibilities of alternative water reuse processes. Additionally, the presenters will discuss the unique factors that inland communities consider when choosing a partial RO concentrate management approach.	10/4/2023	8:30 AM	10:00 AM	PDH	1.5	0.5 1	0				
517	Let Me Know About BMPs	Attendees will have the opportunity to learn how to determine the effectiveness of BMP's and how to select the most effective BMP solution for your location during this session. After the presentations conclude, speakers will interact with the audience through an open panel discussion. Interactive Session   Panel Discussion	10/4/2023	8:30 AM	10:00 AM	PDH	1.5					1.5	
518	Making Money from Biogas: RNG to RINs	Creating value from biogas generation will be the focus of this session. Topics will include a review of the Electrical RIN updates expected in 2024 and two studies depicting how WRRFs are using biogas for RNG and RIN. Attendees will have the opportunity to interact directly with speakers during discussion breaks held throughout the session. Interactive Session: Facilitated Discussion	10/4/2023	10:30 AM	12:00 PM	PDH	1.5			1.5			
519	Public and Private Rehabilitation Strategies for I/I Reduction	As communities face larger challenges with inflow and infiltration (I/I), creative solutions are necessary in order to reduce program costs, and address both public and private sources of I/I. The session will focus on cost effective solutions to I/I removal and how communities are moving toward private I/I removal to meet reduction goals.	10/4/2023	10:30 AM	12:00 PM	PDH	1.5				1.5		
520	BAP Tunnels and Interceptors	Planned repairs on large diameter pipes are challenging while emergency repairs are dangerous. During this session on large diameter tunnel and interceptor projects, we will determine ways to avoid both. Presentations will cover a range of topics, including sediments, odor inspection, maintenance, and construction.	10/4/2023	10:30 AM	12:00 PM	PDH	1.5				1.5		
521	Microplastics Interaction with Pathogens and Other Microconstituents	Recent updates on the risks of microplastics in wastewater and biosolids caused by microplastics acting as a vector for pathogenic microorganisms and by adsorption of organic compounds and other microconstituents will be reviewed during this session. Presentations will also provide an update on EPA's Office of Research and Development efforts to develop methods to identify and quantify microplastics in different environmental matrices.	10/4/2023	10:30 AM	12:00 PM	PDH	1.5	1	5				
	Unlocking Hydrolysis and Internally Stored Carbon Utilization for Nitrogen Removal	The overall objective of this session is to explore the current state of knowledge of hydrolysis mechanisms in activated sludge and utilization of internally stored carbon, for nitrogen removal and have an interactive discussion with the attendees to further the collective understanding of these processes. Interactive Session   Facilitated Discussion	10/4/2023	10:30 AM	12:00 PM	PDH	1.5	1	5				
523	Building A Hydrogen Future	New opportunities for using green hydrogen, providing examples at global, national and research labs will be presented during this session. Including a special presentation from a DOI representative. Attendees will be able to observe new approaches for advancing green hydrogen energy sources in the water industry and key issues regarding supply and demand will be addressed. Interactive Session   Case Study Analysis	10/4/2023	10:30 AM	12:00 PM	PDH	1.5	0.	5	1.0			
524	Using Modeling to Improve Industrial Wastewater Treatment	Predicting the performance of industrial treatment systems without empirical data can be challenging. Modeling is a tool that can be used for assessing treatment performance when there is little to no performance data available. This session will provide attendees two examples of how models can be developed and applied to industrial wastewater treatment to predict treatment performance and aid in engineering design.	10/4/2023	10:30 AM	11:30 AM	PDH	1.0		1.0				
525	Advancements in Anaerobic Treatment of Industrial Wastewater	The presentations in this session will focus on pilot scale data to show optimization of relatively new anaerobic treatment processes for oily wastewater and food & beverage wastewater. The treatability studies include UASB and MBBR technologies. Interactive Session   Conversation and Input	10/4/2023	10:30 AM	12:00 PM	PDH	1.5		1.5				
526	Secondary Clarification Advancements	Beginning with an overview of three WRRF's secondary clarifier performance this session will inform the audience of process model optimization and practical field data, highlight the full-scale clarifier improvements using clarifier's floor improvements, and CFD analysis. The last presentation will focus on design considerations for sludge densification to improve secondary clarifier assessment. Presenters may share some questions during the presentation or end of the presentation to the audience to make more activity and engagements.	10/4/2023	10:30 AM	12:00 PM	PDH	1.5	1	5				
527	Healthy As A Horse? Assessing Bio-P Stability	Outside of your favorite modeling software, Biological Phosphorus Removal will have to react to a changing world - changing effluent targets, changing influent conditions, and changing operations. In this session we will review real-world Bio-P performance under a variety of conditions, including ultra-low phosphorus limits, changing influent and supplemental alkalinity sources, and low SRT.	10/4/2023	10:30 AM	12:00 PM	PDH	1.5	1	5				
528	Pushing the Boundaries of Our Biological Models	With new technologies and processes, new modeling techniques are required to describe observations and mechanisms. New biological models can lead to ways of rethinking design considerations and facilitate pushing the industry forward. This session aims to provide participants with a sneak peak at new biological models that challenge current thinking and approaches as well as an opportunity to discuss these innovative approaches with industry experts. Interactive Session   Facilitated Discussion	10/4/2023	10:30 AM	12:00 PM	PDH	1.5	1	5				
529	Leveraging Stormwater Infrastructure to Build a Better Community	Participants will have the opportunity to look at methods used by communities to take on green stormwater development prioritizing disadvantaged communities. Green stormwater infrastructure has been a common tool for stormwater management for years. Benefits illustrated in these sessions include flooding and water quality improvements along with social benefits (job creation, improved urban aesthetics, increased property values, improved pedestrian safety, and enhanced recreational/green spaces) for the community. This session highlights key issues to consider when retrofitting or redeveloping stormwater infrastructure with community equity and environmental considerations in mind. Interactive Session   Conversation and Input	10/4/2023	10:30 AM	12:00 PM	PDH	1.5					1.5	
530	-	This session will focus on different approaches to address affordability concerns through rates. Through case studies, we will explore how several utilities balance the rates to provide service at affordable costs, examining along the way the impacts and benefits of these different approaches. One approach is a program that considers qualified customers as a separate reduced-rate class. Another example includes an Excel-based tool to consider three different rate programs. Exploring these case studies will help you to address the affordability issue that is so important and key in many utilities, no matter their location or size.	10/4/2023	10:30 AM	11:30 AM	PDH	1.0						1.5
	Project Delivery Challenges: Continued Operations and Commissioning	The focus of this session will be the key aspects of project delivery that are often overlooked or unappreciated: operator involvement during design, keeping plants operational during construction, and final commissioning. The session speakers will describe lessons they learned during the process, provide recommendations for operator involvement, and outline crucial success factors so you can immediately apply this knowledge in your own projects. In addition, Construction Manager at Risk (CMAR) will be discussed as a method of project delivery.	10/4/2023	10:30 AM	11:30 AM	PDH	1.0						1.5
532	Strategies for Transformational Change, Innovation, and Operational Efficiency	Our industry has seen significant innovation in design tools, operational tools, as well as emerging technologies to improve operational performance. The challenge is how to implement and utilize advances in technology to provide transformational change in your organization. This session will explore strategic approaches to evaluating treatment technologies along with technology tools to promote operations and maintenance input during the design process to increase effectiveness of operations, and how to revolutionize your workflows to achieve more with less. The lessons from this session are aimed at increasing operational effectiveness and efficiencies. Interactive Session   Facilitated Discussion	10/4/2023	10:30 AM	12:00 PM	PDH	1.5						1.5

533	Water Reuse: Plan It Properly	When properly planned, water reuse can be an effective way to address future water supply uncertainties. This session will feature experience on planning potable reuse and non-potable reuse nationally based on showcasing California and Florida, and also include an interactive expert panel discussion including perspectives from across the country. The audience is encouraged to share their experience in reuse planning during the facilitated discussion periods. Interactive Session   Facilitated Discussion	10/4/2023	10:30 AM	11:30 AM	PDH	1.0	0.5	0.5					
534	Nutrient Reduction Planning and Implementation Roadblocks	The complexity of nutrient impacts on receiving waters requires the adoption of innovative strategies for nutrient load reduction planning and implementation. This 90-minute panel session sponsored by the WEF Watershed Management Technical Committee, will cover nutrient reduction planning and implementation including challenges in meeting nutrient load reductions, innovative technologies to achieve nutrient limits, watershed strategies to address nutrient-related impacts, and possibilities for removal and valorization of nutrients from source waters. This session will include a panel-based forum to provide an interactive discussion on the case studies presented in the session. Interactive Session   Panel Discussion	10/4/2023	10:30 AM	12:00 PM	PDH	1.5		1.5					
601	Upgrading and Optimizing Thickening and Dewatering	Understanding the intricacies of thickening and dewatering is critical to efficient solids management. Coupled with thickening and dewatering is the need to understand polymers and how polymer addition affects the level of water removal with both processes. The attendees of this session will understand how to make decisions regarding replacement of equipment, learn how process control can improve dewatering, and how to decide which polymer is best suited for a specific sludge type and the effects of proper dosing. Interactive Session   Conversations & Input	10/4/2023	1:30 PM	3:00 PM	PDH	1.5				1.5			
602	Conveyance Modeling	Focusing on hydraulic modeling, this session will cover innovative techniques for modeling rainfall infiltration into sewers, how to size storage components for peak wet weather flow management, and using calibrated models to predict near term impact of rainfall on flows and vary operations to minimize overflow potential. Attendees will be encouraged to share their thoughts during facilitated discussion moments held throughout the session. Interactive Session   Facilitated Discussion	10/4/2023	1:30 PM	3:00 PM	PDH	1.5					1.5		
603	Managing the Third Effluent Part II	The key to identifying odor sources and technologies is to monitor emissions and apply modeling tools to develop a control strategy. This session highlights three communities approaches to the implementation of monitoring and modeling tools to develop wastewater system-wide control strategies. After each presentation, you will have the opportunity to analyze the case study presented to help develop your knowledge. Interactive Session   Case Study Analysis	10/4/2023	1:30 PM	3:00 PM	PDH	1.5		1.5					
604	Advances in Preventative Maintenance	Learn about how innovative technology applications to improve preventative maintenance (PM) efforts in your asset management program can increase your awareness of asset conditions in real-time, as well as optimize the PM schedule for your facilities. This session will present case studies about other utilities that have implemented intelligent systems using Machine Learning (ML) and Artificial Intelligence applications to boost PM efficiency and effectiveness.	10/4/2023	1:30 PM	3:00 PM	PDH	1.5				<u>.</u>	1.5		
605	Building Your Diversity, Equity, and Inclusion Toolkit: WEF DEI Board Committee	TBD	10/4/2023	1:30 PM	3:00 PM	GCH	1.5							1.5
606	Energy Efficiency and Recovery in Industrial Anaerobic Treatment	Two approaches to anaerobic treatment of industrial wastewater with resource recovery will be discussed during this session. Our first presentation will cover an encapsulated biomass two-stage process to increase biological activity and recovery of intermediates like hydrogen gas. The second will look at an anaerobic membrane bioreactor technologies to produce water suitable reuse, and recover methane as well as nutrients.	10/4/2023	1:30 PM	3:00 PM	PDH	1.5			1.5				
607	Conversion of Conventional Activated Sludge to Suboxic (Low DO) Nutrient Removal	Managers, engineers, operators, and maintenance personnel who want to better understand low dissolved oxygen (DO)/suboxic biological nutrient removal (SBNR) operations will benefit from attending this session. Findings from a DOE funded project DE-EE0009509, entitled 'Transforming Aeration Energy in Water Resource Recovery Facilities (WRRFs) through Suboxic Nitrogen Removal (SNR),' which focuses on full-scale technology development as well as pilot- and full-scale demonstration testing will be presented. In this session, we propose providing an extensive overview of existing processes from the national survey and specific case studies, lessons learned from the full- and pilot-scale demonstration testing. Interactive Session   Facilitated Discussion	10/4/2023	1:30 PM	3:00 PM	PDH	1.5		1.5					
608	Applying Hydrocyclones for Densification	Case studies of three full-scale applications of hydrocyclones to achieve activated sludge densification will be covered during this session. The case studies include a variety of base plant configurations including conventional activated sludge plants with and without underlying biological selection pressure for densification as well novel application of hydrocyclones to a membrane-aerated biofilm reactor nutrient removal process. The case studies provide insight on potential benefits from densification and gravimetric selective wasting, ranges of densification outcomes with respect to SVI improvements, and how physical selection may be required to achieve densification despite favorable underlying biological selection conditions. Group analysis of the studies by attendees will compare the applications, results, and implications for treatment plant design. Interactive Session   Case Study Analysis	10/4/2023	1:30 PM	3:00 PM	PDH	1.5		1.5					
609	Planning and Process Improvement Case Studies: Winning with Twinning	Highlighting how emerging technology such as big data, soft sensors and digital twins can supplement and enhance plant operating data and be used to develop control strategies and decision support tools to reduce operational expenditure, effluent nutrient loads, greenhouse gases, etc. will be discussed during this session. The goal is to bring clarity on digital twin applications using case study demonstrations. This session will include an interactive case study analysis. We plan to invite an expert speaker to introduce the digital twin topic from a wastewater treatment perspective. Interactive Session   Case Study Analysis	10/4/2023	1:30 PM	3:00 PM	PDH	1.5							1.5
610	Removing Emerging Contaminants: Beyond PFAS	Presenters will discuss the potential impacts of emerging contaminants (such as pharmaceutical, sub-micron Blue-Green Algae, etc.) on the quality of wastewater and the environment, including their ecotoxicity, bioaccumulation, and persistence. Strategies for mitigating the risks associated with emerging contaminants in wastewater, including treatment technologies and regulatory measures, will also be discussed. Interactive Session   Facilitated Discussion	10/4/2023	1:30 PM	3:00 PM	PDH	1.5		1.5					
611	Creating Resilience with Stormwater Projects	Focusing on case studies, this session will dive into flood resilience planning and implementation on both coasts. The presentations will showcase multiple benefit projects, changing climate scenarios, and holistic design.	10/4/2023	1:30 PM	3:00 PM	PDH	1.5						1.5	
612	Collection System Predictive Analysis	The landscape of viable artificial intelligence and machine learning vendors and solutions can be overwhelming for utilities to get their arms around; and even when they do, the speed at which new applications enter the market continues to increase. In this session, specific case studies will be shared that demonstrate how utilities have successfully leveraged innovative technologies and advanced assessment approaches, including the use of artificial intelligence and machine learning techniques, to support data-driven decision making associated with the deployment of predictive operational support elements, the prioritization of sewer collection system/interceptor asset rehabilitation, and the identification of best-fit mitigation solutions to optimize system performance. Interactive Session   Case Study Analysis	10/4/2023	1:30 PM	3:00 PM	PDH	1.5					1.5		
612	Cybersecurity	As a result of greater reliance on digital solutions, and now, with the move to virtualized services and a remote workforce, cybersecurity systems are being put under extreme pressure. Attacks against Industrial Control Systems (ICS) including water and wastewater utilities are on the rise and they pose serious risk to public health, safety, and national security. Many of these systems operate with outdated hardware and software or patchwork technologies with known vulnerabilities. Most industrial equipment has no cybersecurity feature. Default passwords are widely used for technicians to gain easier access to machines, and many industrial organizations have not isolated industrial networks, leaving these vulnerable devices accessible from IT networks. Join us for a discussion with utility CIOs and government representatives to talk about all things cybersecurity so you can address your system vulnerabilities! Interactive Session   Panel Discussion	10/4/2023	1:30 PM	3:00 PM	PDH	1.5							1.5

614	Advancing Desalination and Treatment of Non-traditional Source Water	The National Alliance for Water Innovation (NAWI) is a six-year, \$110M research hub supported by the U.S. Department of Energy in partnership with hundreds of industries and academic partners. In partnership with their research consortium and Alliance, NAWI is working to advance desalination and treatment of nontraditional source waters for beneficial use in public water supplies by identifying R&D opportunities that help overcome existing treatment challenges. This session will provide a summary of NAWI's research results and outputs from three key research areas: Data, Modeling and Analysis (DMA), Material and Manufacturing (M&M), and Process Innovation and Intensification (PI&I). The session will include facilitated discussion centered on concepts covered in the session and the NAWI Hub-developed Water Treatment Technoeconomic Assessment Platform (WaterTAP). Interactive Session   Facilitated Discussion	10/4/2023	1:30 PM	3:00 PM	PDH	1.5		1.5			
615		Improving water quality without more BMPs and the tools to determine best environmentally sound discharge solutions will be covered during this session. Presentation will also provide insight on how to use models for designing spillways for fish migration and model how to determine the best practices for watershed nutrient discharges.	10/4/2023	1:30 PM	3:00 PM	PDH	1.5			1.5		
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W01	Making Resource Recovery Concepts Come To Life: Operator Education Through Interactive Simulation	Process simulators are a valuable operator teaching tool because they allow operators to explore the consequences of operational decisions across a water resource recovery facility in an interactive, risk-free way. This workshop will demonstrate the strength of simulators to illustrate fundamental resource recovery concepts to operators by offering simulator-based training on operating a nitrifying activated sludge system to achieve year-round nitrification and assessing the impacts of secondary clarifier operation on process performance. Fees: Member - \$240.00 Non-Member - \$270 WEF Student Member - \$45.00 Student Non-Member - \$240.00	9/30/2023	8:30 AM	5:00 PM	CEU	6.0	6	0			
W02	Wastewater Microbiology	Facility operators, managers, and engineers will use staining techniques and phase-contrast microscopes to analyze floc and will identify protozoa, metazoa, and filaments, thereby developing practical information to help these professionals control their processes. This lecture will discuss types of microorganisms, environmental factors affecting the microorganisms, and metabolism and growth characteristics that may affect participants' processes. This combination of learning styles will enable participants to help with related process control problems at their facilities. Fees: Member - \$240.00 Non-Member - \$270.00 WEF Student Member - \$45.00 Student Non- Member - \$240.00	9/30/2023	8:30 AM	5:00 PM	CEU	6.0	6	0			
W03	Fate of PFAS Through Thermal Processes at Water Resource Recovery Facilities	This workshop discusses the fate of perfluoroalkyl and polyfluoroalkyl substances (PFAS) through thermal processes available to the wastewater industry. The audience will be presented with the current knowledge of PFAS and developing research on this topic, as well as examples of utility experience with some of the technologies discussed. Foundational discussions on developing air regulations and the state of the analytical science of PFAS will broaden the audience's perspective on tackling the issue. Fees: Member - \$210.00 Non-Member - \$240.00 WEF Student Member - \$45.00 Student Non-Member - \$210.00	9/30/2023	8:30 AM	5:00 PM	CEU	6.0			6.0		
W04	Refinery and Petrochemical Wastewater Treatment: Operations, Control, and Troubleshooting	The Refinery and Petrochemical Workshop will focus on operational issues, case studies, and troubleshooting of unit operations of a typical refinery wastewater treatment system. A treatment challenge or overview of treatment processes and their function will be presented by a facilitator. Attendees will separate into groups, identify solutions, and present solutions to the other participant groups. The facilitator will then provide real-world examples of how the issue was resolved at a facility. Additional Fees: Member - \$240.00 Non-Member - \$270 WEF Student Member - \$45.00 Student Non-Member - \$240.00	10/1/2023	8:30 AM	5:00 PM	CEU	6.0		6.0			
W05	Aeration Control for Practitioners: Optimization of Aeration, Process, and Energy	Aeration control is complex and directly affects process stability, settling, nutrient removal, effluent quality, permit compliance, and energy consumption. Many aeration systems are inadequately tuned, and water resource recovery facility staff are often insufficiently trained to identify issues and optimize controls. This workshop provides training for operations and electrical, instrumentation, and controls (EI&C) staff and design, mechanical, supervisory control and data acquisition, and EI&C engineers. Participants will learn to apply step-by-step approaches to solve common aeration control challenges in the field. Fees: Member - \$240.00 Non-Member - \$270.00 Student Member - \$45.00 Student Non-Member - \$240.00	10/1/2023	8:30 AM	5:00 PM	CEU	6.0	6	0			
W06	Game-Based Modeling	Teams of five to six wastewater industry professionals will compete for prizes and glory in a process modeling competition at the Game- Based Modeling Workshop. Teams will work together to optimize, strategize, and execute operation techniques in five different simulation platforms. Each platform (BioWin, GPS-X, SIMBA#, Sumo, and WEST) will present an existing facility process model with unique objectives and restrictions. New modelers will be exposed to the capabilities of process simulators with a focus on problem-solving during this very interactive workshop. Fees: Member - \$240.00 Non-Member - \$270.00 WEF Student Member - \$45.00 Student Non-Member - \$240.00	10/1/2023	8:30 AM	5:00 PM	CEU	6.0	6	0			
W07	W07 Wastewater Microbiology	Facility operators, managers, and engineers will use staining techniques and phase-contrast microscopes to analyze floc and will identify protozoa, metazoa, and filaments, thereby developing practical information to help these professionals control their processes. This lecture will discuss types of microorganisms, environmental factors affecting the microorganisms, and metabolism and growth characteristics that may affect participants' processes. This combination of learning styles will enable participants to help with related process control problems at their facilities. Fees: Member - \$240.00 Non-Member - \$270.00 WEF Student Member - \$45.00 Student Non-Member - \$240.00	10/1/2023	8:30 AM	5:00 PM	CEU	6.0	6	0			
W08	Nutrient Removal Process	Leading practitioners will present this comprehensive workshop and share their experiences in an interactive environment. Presenters will cover the basics of activated sludge and biological nutrient removal (BNR). They will focus on overcoming practical design problems that have plagued many systems. Process control parameters, side-stream considerations, and tips for identifying microorganisms and establishing a healthy biomass will be part of the day's demonstrations. The format is informal, and real-life examples and questions are welcomed. Please note, this workshop is held outdoors at a water resource recovery facility. Fees: WEF Member- \$250.00 Non-Member - \$280.00 Student Member - \$45.00 Student Non-Member - \$250.00	10/1/2023	7:00 AM	5:00 PM	CEU	6.0	6	0			
W09	Dewatering Optimization	This workshop will focus on practical solutions to increase dewatering performance, including drier cake solids, better solids capture, reduced polymer consumption, and reduced operations and maintenance costs for untreated sludge, aerobically digested biosolids, and anaerobically digested biosolids. The workshop will be of primary interest to facility managers, superintendents, and operators and maintenance staff from municipalities who need to 'do more for less.' Fees: Member - \$210.00 Non-Member - \$240.00 Student Member - \$45.00 Student Non-Member - \$210.00	10/1/2023	8:30 AM	5:00 PM	CEU	6.0			6.0		
W10	Inflow and Infiltration Program Management: Strategic Approaches for Meaningful Reduction	Given the complex and widespread nature of the problem, successful utilities have approached inflow and infiltration (I/I) remediation within a programmatic framework that maximizes cost-effectiveness through prioritized remediation efforts that align with the objectives of other management programs. Workshop attendees will learn about the strategic methods successful I/I programs use to focus actions that result in measurable progress toward meeting objectives. Attendees will also collaboratively share their experiences and discuss both successes and challenges. Fees: Member - \$240.00 Non-Member - \$270.00 Student Member - \$45.00 Student Non-Member - \$240.00	10/1/2023	8:30 AM	5:00 PM	CEU	6.0			6.	0	

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	Design and Implementation of Membrane Bioreactors in Water Recycling	Membrane bioreactors (MBRs) are powerful tools for enabling water reuse in both municipal and industrial applications due to the simplified process, effluent quality produced, and economics. This workshop will engage participants in interactive activities with leading experts in the industry and will provide a complete understanding of how to implement MBRs in both non-potable and potable reuse projects.	10/1/2023	8:30 AM	5:00 PM	CEU	6.0	3.0	3.0				
W12	Applying Resilience and Implementing Practical Applications in a Changing Climate	The effects of climate change are felt today in communities across the country and increasingly test utilities' resilience. This workshop will provide a method for participants to evaluate the effect of the changing climate and visualize 'what-if' scenarios that are outside of their direct experience. Participants will evaluate options for constructive action to adapt to climate changes already occurring and those to come. The workshop will also provide examples of implementation measures.	10/1/2023	8:30 AM	5:00 PM	CEU	6.0						6.0
W13	Equity in Utility Ratemaking: Math or Affordability?	This workshop will provide participants with an opportunity to explore utility ratemaking and ways to address the big questions of equity, affordability, and policy. Participants will break out into small groups to contemplate utility, social, and economic issues and develop rate design and communications solutions.	10/1/2023	8:30 AM	12:00 PM	CEU	3.0						3.0
W14	Learning to Communicate	Are you an early career engineer, technologist, or operator? Do you deal with communicating technical results to seniors or clients? Join us in an interactive workshop where you will develop excellent storytelling, product branding and communication skills. Expert water communicators will lead the workshop on how to effectively present information about water through storytelling and connection with audiences. Participants will learn best practices directly from subject matter experts through interactive activities. Throughout the session, participants will collaboratively participate in engaging breakout sessions while practicing key lessons presented from fantastic communicators in our industry. This workshop is recommended for non-communication professionals looking to improve their skills in preparing and delivering technical presentations. Fees: Member - \$105.00 Non-Member - \$135.00 Student Member - \$25.00 Student Non- Member - \$105.00	10/1/2023	1:30 PM	5:00 PM	CEU	3.0						3.0
	Facility Tours: Communicating With Public Officials and the General Public	Bad news headlines should not be the reason the public wonders where their wastewater goes. Facility tours provide good publicity and are educational and empowering. This workshop focuses on exchanging practical information from seasoned experts (an operator, an engineer, and an educator) to participants who are new to giving facility tours and/or those who already give tours but desire to make lasting connections with their communities. NOTE: This is an off-site workshop! Transportation will be provided. Fees: Member - \$115.00 Non-Member - \$145.00 Student Member - \$25.00 Student Non-Member - \$115.00	10/1/2023	8:15 AM	12:00 PM	CEU	3.0						3.0
	Measuring and Reducing Water Resource Recovery Facility Greenhouse Gas Emissions	Participants will learn how to calculate greenhouse gas (GHG) emissions and sinks for their water resource recovery facilities (WRRFs) using standard industry models and will gain insight to the best strategies to optimize WRRFs to reduce their carbon footprint. Participants will (1) learn about the basics and latest policies and research relevant to GHG accounting and (2) engage in hands-on GHG accounting and reduction exercises. It is requested that participants bring data on their GHG inventories. Specific details will be sent closer to the event. Fees: Member - \$240.00 Non-Member - \$270.00 Student Member - \$45.00 Student Non-Member - \$240.00	10/1/2023	8:30 AM	5:00 PM	CEU	6.0		3.0		3.0		
W17	WEF/WRF Energy Project Savings: Did it Turn Out Like You Thought?	This workshop will present common issues with estimating projected savings and measuring actual energy savings using research conducted under a recent Water Research Foundation (WRF) project (WRF 5091). The WRF project compared forecasted versus actual energy savings of 30 water/wastewater energy projects and developed a standardized evaluation spreadsheet, which will be used by workshop participants in sample project evaluations to (1) document pre-project economic feasibility and (2) evaluate the project through postconstruction measurement and verification of energy performance.	10/1/2023	8:30 AM	5:00 PM	CEU	6.0		3.0		3.0		
WLI	Water Leadership Institue	The Water Leadership Institute program is aimed at educating and training emerging leaders and providing them with opportunities to build strong, lasting relationships within the water sector. The intensive program allows participants to engage in management training and leadership development through a blended learning approach that includes examining complex challenges facing the water and wastewater industries and networking with public and private sector practitioners.	10/1/2023	8:30 AM	5:00 PM	PDH	6.0	6.0	6.0				6.0
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T1	Stormwater Management: Metropolitan Water Reclamation District's Addison Creek Reservoir	The Addison Creek Reservoir and Channel Improvement projects will provide flood relief in Chicago's western suburbs. These critical stormwater management projects will reduce flooding to approximately 2200 structures along Addison Creek. The Addison Creek Reservoir Project will create a 740 000-m3 (600-ac-ft) reservoir, which includes a control structure, inlet structure, spillway, and pumping station. The reservoir construction started in the spring of 2019, and it is anticipated to be completed and online in the summer of 2023. The tour/presentation will focus mainly on the design and construction of the Addison Creek Reservoir. At the end of the tour/presentation, attendees will get a glimpse of the upcoming Addison Creek Channel Improvement Project.	10/2/2023	2:00 PM	3:30 PM	PDH	1.5					1.5	
Т2	Industrial Wastewater Treatment: Metropolitan Water Reclamation District's Terrence J. O'Brien Water Reclamation Plant	powerful UV light to neutralize microbes in the water. After passing through the UV facility, the water is released to the North Shore Channel.	10/3/2023	10:00 AM	12:15 PM	PDH	2.25		2	2.25			
Т3	Plant Chicago – Circular Economies	This Circular Economy workshop will be a team-based, hands-on workshop that illustrates the difference between linear and circular economies. After working together to complete a concept mapping activity, participants will get an in-depth look at Plant Chicago's aquaponic systems and indoor farm space.	10/3/2023	10:00 AM	11:30 AM	PDH	1.5			-	1.5		
Τ4	Collections Systems Tour: Metropolitan Water Reclamation District of Greater Chicago's Stickney Water Reclamation Plant and the Tunnel and Reservoir Plan McCook Reservoir	Go behind the scenes to view how the MWRD's infrastructure helped transform the Chicago River and area waterways to become an unimaginable prize and cultural asset for the region. Visit one of the world's largest water resource recovery facilities, then make a stop at one of the world's largest combined sewer reservoirs in the making. The tour stops at the MWRD's Stickney Water Reclamation Plant, which provides full secondary treatment for up to 5451 ML/d (1.44 bil. gal/d). Part of the MWRD's famed Tunnel and Reservoir Plan—or "Deep Tunnel"—the McCook Reservoir, went online in 2017 and can hold 13 249 ML (3.5 bil. gal) of combined sewage and stormwater. A second stage of the reservoir, completed by 2029, will hold another 24 605 ML (6.5 bil. gal), making it the largest of its kind in the world.	10/4/2023	9:00 AM		PDH	3.25					.25	
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OC1	Operations Challenge Day - 1	The Water Environment Federation's Operations Challenge is the industry's premier professional skills competition. Held annually at WEFTEC, the event recognizes excellence in wastewater operations. Teams are evaluated in five events that demonstrate the span of skills necessary for contemporary water quality professionals. The event exposes participants to emerging practices and products in a competitive, educational, and social atmosphere. More than 50 teams will participate and must be endorsed by their Member Association. The two-day event takes place Monday and Tuesday during conference.	10/2/2023	8:30 AM	4:00 PM	CEU	6.0		6.0				
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SDC1	Student Design Competition Day -1	The WEF Student Design Competition promotes real-world design experience for students interested in pursuing education and careers in water and wastewater engineering and science. As a program of WEF's Students and Young Professionals Committee (SYPC), the competition tasks individuals or teams of students to prepare and present a design that helps solve a water quality issue.	10/1/2023	8:05 AM	4:45 PM	PDH	6.0		6.0		
SDC2	Student Design Competition Day -2	п	10/1/2023	8:05 AM	4:45 PM	PDH	6.0	6.0			