



SELECTED ABSTRACTS

Government Affairs



Wednesday 1:00-1:25

The Home Stretch: Implementation Update for Citizens' Consent Decree Program

Olivia Hawbaker, Citizens Energy Group

Citizens Energy Group (Citizens) is currently implementing a Consent Decree to reduce Combined Sewer Overflows (CSOs) by up to 99% by 2025, with a focus on cost containment and impacts to the waterways, people, and neighborhoods of Indianapolis.

This implementation review for Citizens' Consent Decree covers the three amendments and various projects changes and enhancements since approval in 2006 as well as challenges and recent projects, milestones, and a summary of progress.

This presentation will review Citizens' Consent Decree Implementation to provide discussion of:

- Schedule and Milestones Achieved and Remaining
- IDEM and EPA Coordination for Reporting Requirements (e.g. LTCP and FCA Updates and
- Citizens' first Cost Report)
- Design and Construction Progress
- Public Outreach
- Monitoring and Anticipated Level of Control and Compliance
- Benefits and Lessons Learned

This project provides CSO reduction to meet Consent Decree needs with a focus on cost containment and impacts to the waterways, people and neighborhoods of Indianapolis.

Wednesday 1:35-2:00

Wastewater Regionalization – An Opportunity to Use Advanced Treatment Technologies to Improve Water Quality & Operate Sustainable Treatment Plants

Richard Radcliff, Beam, Longest & Neff
Learn about the benefits of regionalizing

wastewater treatment operations, including reduced regulatory costs; elimination of failing plants; opportunities to implement water reuse and recover other natural resources; opportunities to generate heat and power in excess of electrical demand, and economic development opportunities.

The session will focus on use of advanced treatment technologies such as membrane bioreactors and UV-advanced oxidation, which will produce water suitable for reuse, as well as advanced technologies needed to produce heat and power, and natural recovery.

Wednesday 3:50-4:50

Panel Discussion – Modifications to Indiana Water Quality Standards

*Indiana Department
of Environmental
Management*

*Karl Kopec, Mishawaka Utilities
Olivia Hawbaker, Citizens Energy Group
Craig Williams, City of Angola
Tim Healy, Greeley and Hansen*

Note: This topic is being proposed as a 50-minute panel discussion with each participant presenting five minutes of opening remarks and then opening up to both audience questions and prepared question. The Government Affairs Committee may opt to cover the material in two back-to-back 25-minute presentations.

Over 100 communities in the State of Indiana have combined sewer systems. These communities have made long term plans, spent multiple billions of dollars, and will make significant improvements in water quality. Yet even with this historic investment, the future regulatory requirements remain uncertain, with communities relying on enforcement discretion and an unproven Use Attainability Analysis (UAA) process. Furthermore, the Indiana Department of Environmental Management (IDEM) has the challenging task of assessing each of these unique UAAs, gaging compliance for communities that developed Presumptive Long Term Control Plans (LTCPs), and



exercising enforcement discretion.

This discussion will examine the US EPA's 2012 Recreational Water Quality Criteria (RWQC) and the impact that adoption of this criteria or elements of this criteria would have on both the State and the regulated community.

We will open with a brief explanation of the 2012 EPA RWQC, followed by how the 2012 RWQC differs from the current rule, specifically the Statistical Threshold Value (STV) that allows for a 10% exceedance, and how adoption of the 2012 RWQC would impact compliance at the completion of LTCPs for both Demonstrative and Presumptive communities.

Three communities will share details and perspective on how they would be impacted by the adoption of the 2012 RWQC.

Mishawaka has made a tremendous investment in LTCP projects under a Demonstrative Approach, resulting in a nearly 99% reduction in CSO overflow volume since 1990. However the current LTCP and associated Federal Consent Decree call for continued significant investment in LTCP infrastructure that has no measurable impact on the receiving stream water quality. Furthermore, the 2008 recession has had lasting impacts on the community, worsening the financial position, such that Mishawaka is already at a "High Burden" per the EPA 1997 guidance. Adoption of the 2012 RWQC would allow for both compliance with water quality standards and the flexibility to modify the current LTCP, shifting funds from tunnels and tanks to the many other infrastructure needs within the community.

Citizens Energy Group is well on their way to implementing their CSO LTCP using a Demonstrative Approach. The "backbone" of the plan is a system of tunnels currently being mined under the city. Citizens is interested in adoption of the 2012 RWQC, specifically the STV, as a means of complying with water quality standards following implementation of their LTCP. Citizens will speak to the collection system and



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river modeling results that examine how communities can comply with and benefit from the 2012 RWQC under various scenarios.

Angola has completed implementation of their LTCP using a Presumptive Approach. They have made the required investment in their community and the system is performing in compliance with IDEM's April 11, 2008 Non Rule Policy Document 016. Yet the current National Pollution Discharge Elimination System (NPDES) permit for the plant treats the rare remaining CSO as a violation and, as such, Angola is relegated to enforcement discretion. Review of CSO activation data after full implementation of the LTCP suggest that Angola would be in compliance with the 2012 RWQC if adopted by the State, and have far greater regulatory certainty.

IDEM has met with the IWEA Government Affairs Committee to review potential adoption of the 2012 RWQC. IDEM has a number of legitimate concerns about how the rule would be implemented, rule language, unintended consequences, and limited staff, while also seeing the possibility of future benefits and simplification to the regulation of CSO discharges.

O&M

Wednesday 9:30-9:55

Surviving Catastrophic Failure to One Third of Your Treatment System

Randy Hamilton, City of Seymour Water Pollution Control

You notice the rake arm on one of your three 112 foot circular clarifiers is in a bind and not working. The center support is not quite vertical and the center of the bridge is vertically displaced by approximately 3 inches. You have a catastrophic failure to one third of your treatment system. Having just achieved compliance with the Combined Sewer Overflow Long Term Control Plan, steps had to be taken to assure continued operations within the permit parameters. Staff of

Water Pollution Control Department of Seymour, Indiana worked with state regulators through all the pitfalls of dealing with city officials, the legal department, engineering consultants, and insurance companies, to maintain ongoing operations, dewater next to a major river and the construction of a major asset replacement that was not even yet fully depreciated, all while maintaining permit compliance.

Wednesday 10:05-10:30

Effects of a 100-Year (Plus!) Flood on Plant Performance

Bryce Gast, Donohue & Associates, Inc.

In February 2018, the Elkhart River in Goshen, Indiana far exceeded previous flood level records, easily overtopping the 100-year flood level. This presentation will look at the conditions that lead to the flooding, what impact the flooding had on plant performance, and what steps the City of Goshen is taking to address future flooding. We will look at tools and guidance available to understand the threat of flooding, determine facility vulnerabilities, identify mitigation measures, and develop a plan to implement said measures.

Wednesday 10:40-11:05

Bypass Plants: Maintaining Wastewater Service During Major Repairs

John Croom, AUC Group

A discussion of options for maintaining wastewater service during major repairs or upgrades to existing wastewater treatment facilities. Treating existing flow during wastewater treatment plant improvements is critical and in most cases, cannot be stopped or diverted. Procuring an additional treatment facility is expensive and an inefficient use of capital and time. This session will compare timing and costs related to Temporary Bypass Plants vs. Pump and Haul to an alternate facility.

Wednesday 11:15-11:40

Operated... Not Engineered Part II

Tina Wolff, Kokosing Industrial

This session will be an interview-

style forum. Moderator, Tina Wolff, will help up operators tell their story with thoughtful questions that get to the heart of how they did it and why. The intent is to provide a forum where operators can learn from and be inspired by other operators. While each of these stories are short, together they are a full session of continuing education on topics immediately relevant to their work.

Wednesday 1:00-1:25

Ending Pump Ragging Problems Without Changing Pumps or Adding Cutting Equipment

Todd Sturtz, Deragger Inc.

Ragging issues present a plethora of challenges to utilities, such as wasted man-hours used to pull and manually unclog pumps and the associated safety hazards from pathogens or needles/ sharps that may be in the pumps. In addition to the headaches and dangers associated with pulling pumps, running a pump partially ragged is extraordinarily inefficient and costs utilities anywhere from thousands to millions of dollars in wasted energy each year. Fortunately, there is a simple and proven solution to this problem utilizing Real Time Pump Protection that does not require replacement of (or physical modification to) existing pumps, or the addition of cutting or grinding equipment.

Wednesday 1:35-2:00

Biological Odor Control System Used to Treat High Strength Odors from Municipal Wastewater Treatment Plant Headworks

Matthew Smith, Strand Associates, Inc.

Clay Township Regional Waste District added a two stage biological odor control system to address odors associated with long collection system force mains and high strength wastewater. This presentation will discuss the background of the problem, analytical methods used to establish the design parameters of the system, the design of the system and operation and maintenance concerns to be considered with the installation of odor control systems.



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Wednesday 2:10-2:35

Evaluating Change to UV Disinfection Made Simple

Stéphane Jousset, Arcadis

Change is never simple, especially so when it involves final disinfection. Switching to a different type of final disinfection is a difficult decision. Each type has literature claiming to be the greatest disinfection process ever. Comparing all the options is difficult but critical to choosing the most cost-effective product for your plant. Capital cost of equipment should not be the only component of the evaluation. A thorough analysis for each process needs to be performed comparing construction cost, electricity usage, maintenance costs, effluent weir requirements, hydraulic requirements and control conditions.

Wednesday 3:15-3:40

Secondary Clarifier Controls – Alternative Operating Modes at Evansville West WWTP

Omkar Ghavi, Clark Dietz, Inc.

Clark Dietz is currently working with the City of Evansville, IN for the upgrades to the sludge pumping system at the West WWTP which utilized nine RAS pumps to maintain constant RAS flow rate. As a part of this project, advanced RAS system controls with multiple operating modes are provided including Constant RAS Rate, Flow Proportioned RAS Rate, Sludge Level Control, and State Point Control.



This presentation will discuss clarifier state point analysis and then demonstrate how dynamic state point analysis, and other control modes will be used to control RAS and WAS flow rates.

Wednesday 3:50-4:15

Designing Lagoon-Based WWTPs for <1 mg/L Ammonia in <34°F Water: The Case of Michigantown, Indiana

Todd Latchaw, Nexom

In small- and medium-sized communities like Michigantown, Indiana, reliant on lagoon-based wastewater treatment that was never designed for nitrification, operators and consultants need to know what nitrification solutions work for beating ever-falling ammonia limits. This presentation covers why lagoons fail to nitrify – particularly in winter – and the validity of nitrification options (including recent developments in MBBR-based technologies as well as SAGR post-lagoon nitrification). It offers design considerations for cold-water nitrification, including how to overcome fluctuating ammonia levels, high-strength

wastewater, rapid temperature drops, and unexpected operator changes, drawn from the experience of hundreds of lagoon upgrades over the last 20 years.

Wednesday 4:25-4:50

What Does the Wastewater Plant Do and Why Do We Need To Know?

Nara Manor, Anderson Water Pollution Control Utility

Learn how the City of Anderson has shown its local Officials and the local River Watchers group how the treatment process works. Public outreach is necessary to make community members aware of the complex nature of the work done at the wastewater treatment plant. By engaging the community and sharing construction progress city residents can learn more about the need for infrastructure improvements and have input on how this work may affect their daily lives. This helps reinforce the critical nature of work done at the facility and how it affects the river they enjoy.

Stormwater

Wednesday 9:30-9:55

Using Environmental DNA (eDNA) to Make Water Quality Decisions

Greg Bright, Biomonitor

In summer 2017 we collected water samples from the Tippecanoe River in Kosciusko County to determine how useful environmental DNA (eDNA)

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might be in making decisions about water quality and conservation. DNA from pigs and cattle dominated the vertebrate DNA but many fish and amphibian species were also detected. Planktonic DNA was dominated by diatom species but a large contribution from yellow-green algae was also present. Plankton samples near Warsaw were quite different than those upstream and downstream from the city. Human DNA was present but in much lower amounts than from other warm-blooded animals, indicating that human influence on water quality (including *E.coli* bacteria) was low.

Wednesday 10:05-10:30

The Stormwater Benefits of High-Performance Urban Trees

Shane Carpani, GreenBlue Urban
“High-performance” urban trees offer many LID stormwater benefits to our cities. But what are they, why should they be considered BMPs, and how are they produced in our urban areas? What are the key things that specifiers, designers, property owners – and frankly residents – want to see from an increased investment in LID stormwater management? What is the ROI of conventional stormwater management solutions compared to the ROI of LID tree pits? At what point does performance outweigh cost? Along with answering these questions, this thought-provoking presentation analyzes and defines factors that contribute to LID stormwater management using urban trees, and the key to realizing these



benefits through design. It reviews the best practices and design techniques that successfully integrate trees into urban stormwater management, and provides examples from regional and international case studies of how high-performance trees are sustainably managing stormwater.

Wednesday 10:40-11:05

Innovative Illicit Discharge Reporting Concept

Alicia Barnard, Terre Haute Wastewater Utility

The biggest hurdle in illicit discharge reporting is the hassle of the communication process. Virtually everyone, young and old, has a smart phone at his or her side these days. What if reporting illegal discharges could be as simple as taking a photograph? Would more people report issues when they see them? We think they would. Team Storm’s idea of a Community Watch program would allow citizens to report a problem to wastewater management facilities as soon as they see it just by scanning the QR code installed near the curb drain inlet of combined sewer systems or separate storm sewer systems.

Wednesday 11:15-11:40

Is Trout What It’s All About – How to Define Water Quality Improvements

Emily Damian, Citizens Energy Group
Citizens Energy Group (Citizens) is currently implementing a Consent Decree to reduce Combined Sewer Overflows (CSOs) by up to 97 % by 2025. The DigIndy Tunnel System will capture CSOs that would typically overflow into rivers and streams. Each time a tunnel segment comes online and CSOs are reduced, the quality of the receiving streams improves. Citizens wants to communicate the water quality improvements to the public in a manner that is simple, relatable, and defensible. This presentation will review metrics and data used to project water quality impacts of the tunnel system to provide a positive, relatable message to Citizens’ customers.

Wednesday 1:00-1:25

The Best-Laid Plans of Mice and Men: Dreaming Big vs a Grounded Approach in Twin Aire

Jonathan Mirgeaux, CHA Consulting
When masterplanning, a designer is at a crossroads. Take the frugal approach – work within the confines of existing infrastructure. Be realistic, mindful of costs? Or dream big, take a chance, and aim to hit it out of the park! While masterplanning for the Twin Aire Neighborhood – the largest infill development in Indianapolis, former home of the Citizens Energy Group Coke Plant, future home of the Community Justice Campus, and designated Great Place 2020 – residents banded with consultants and dared to dream big, envisioning what this recreational, residential, commercial and industrial re-development could become. This approach yielded successes and setbacks.

Wednesday 1:35-2:00

Utilizing Flow Cytometry Methodology to Quantify Microbial Community Structure Changes and Assimilable Organic Carbon Levels in Drinking Water

Christian Ley, Purdue University
This research project conducted at Purdue University is focused on using conventional culture methods and non-conventional flow cytometry methods to characterize the and quantify the microbial community within a green building that collects and treats rainwater onsite. Potential impacts of this research could yield quicker and more efficient methods for the microbiological testing of drinking water, while also gaining a better understanding of the requirement for onsite treatment of rainwater for potable use.

Wednesday 2:10-2:35

Sustainable Stormwater Design and Implementation: The Blueprint Columbus Evolution

Kari Mackenbach, ms consultants
Blueprint Columbus has many lessons learned to share, including many



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advantages over the City's original Wet Weather Management Plan: it's faster and cheaper; it's greener; it's more affordable; it's more innovative; it's better for the neighborhoods and the local economy; and it's what the community wants. Focus will be on the "benefits" of Blueprint Columbus and lessons learned in five years of implementation.

Wednesday 3:15-3:40

Using Alternative Project Delivery with New CSO Treatment Technology Proves to Be Very Successful for the Rushville WWTP

Steven Gress, Donohue & Associates, Inc.

A presentation on design of the first application in the nation of nominal 5-micron opening size Cloth-Media Disk Filter technology for treatment of CSO discharges at the Rushville WWTP. The City of Rushville wanted to use the guaranteed savings alternative project delivery method to design and construct this project because close coordination and collaboration would be necessary between the engineer, contractor, and equipment manufacturers for the successful implementation of this first in the nation project. Funding deadlines meant a very tight schedule for completing the design and submitting a construction permit application to IDEM within 3 months. The guaranteed savings project delivery method provided resourceful effective value engineering alternatives to control project costs, provided responsive flexibility throughout all project phases, and returned project cost savings to the City.

Wednesday 3:50-4:15

Utilizing a Collective Impact to Communicate the DigIndy Project

Sarah Hurt Evans, Williams Creek Consulting, a V3 company

The DigIndy Tunnel System is a 28-mile long network of 18-foot diameter deep rock tunnels being built 250-feet beneath the city. This network

runs alongside many of Indy's urban waterways, many of which are found in parks and greenways. Long-term, the DigIndy system will help keep the waterway cleaner and safer, but in the short-term, the construction will close portions of parks and impact neighbors. Learn how Citizens Energy Group partnered with Reconnecting to Our Waterways to proactively engage the neighborhoods along Pogue's Run and effectively communicate the upcoming improvements.

Wednesday 4:25-4:50

Making the Old New Again: Retrofitting an 87-Year-Old Lift Station

Aaron Hutton, Wessler Engineering

Fort Wayne's LTCP specifically identified reductions in overflows, at the 120 MGD Morton Street Lift Station, from an average of 60 overflows per year to zero. Upgrading the 1931 undersized and aging wet-weather lift station required special considerations. At the core of this project is replacement of four 150-hp vertical mixed flow pumps with five 500-hp submersible pumps, while utilizing the existing wet-well and electrical room. The design team combined the best elements of highly specialized experts and engineers to solve each challenge and develop a comprehensive project in the heart of Fort Wayne's conveyance network.

Utility Management

Wednesday 9:30-9:55

Internship Program: From 1 to 10 – Creating a Successful Internship Program

Joe Nagy, Citizens Energy Group
Citizens Energy Group (Citizens) has developed a robust internship program to align with its efforts for strategic workforce planning. From its inception in 2013, the program has grown from a single intern to 10 summer interns. When possible, the program matches intern assignments with their interests to gain real-world knowledge and experience working side-by-side

with a mentor through daily tasks. Citizens has hired three full-time employees from the internship program and has had several obtain positions with Citizens' partner vendors. This presentation will describe the program's structure, success stories, and lessons learned.

Wednesday 10:05-10:30

Exploring Rate Affordability

Jeff Rowe, Umbaugh

Given current federal and state mandates with regard to wastewater systems coupled with the need to replace outdated water distribution systems, municipalities are beginning to question affordability of their rates and charges. This presentation will focus on this emerging topic and explore possible rate relief solutions being considered by municipalities.

Wednesday 10:40-11:05

Developing a Business Case for Asset Management

Mike Borchers, Arcadis

Utilities can present a better business case for an overall asset management program to their stakeholders and overcome potential negative perceptions about the associated spending requirements.

Wednesday 11:15-11:40

Fort Wayne's Strategy to Creating a Highly Specialized Engineering Team

Ben Groeneweg, City Utilities

– City of Fort Wayne

Fort Wayne will share how they built an in-house, highly specialized engineering team by focusing on output, collaboration, and individual development. Over the past 10 years, Fort Wayne has increased its engineering department's FTEs by 300%. In addition to an increase in size, the technical specialization of the team has increased significantly (number of PEs by 400%). Fort Wayne's team now includes program managers as well as in-house designers, hydraulic modelers, programmers, and project managers.

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Product Technologies

Wednesday 9:30-10:30

Selecting the Correcting Valve for your Lift Station

David Scott, Dezurik

Pump station valve selection can present a challenge to the engineer and owner. Common considerations include preventing damaging consequences of surge pressure transients (water hammer), related safety issues, pipeline breaks, fitting failures, cross connection, flooding and water loss, and additional concerns. This seminar explains surge wave theory, surge wave propagation, and discusses the implications of surge in a pumping system. Discussion will include: recommendations for the use of reactive check valves versus pump control valves in the context of eliminating or mitigating valve slam and/or surge pressures in normal operation; and Emergency situations, along with the use of surge relief valves for protecting against surge damage. DeZURIK offers applications assistance and valve solutions specifically for pump station design challenges with a broad range of valves. A basic surge investigation of a pump station design is offered free of charge to customers.

Wednesday 10:40-11:40

A Comprehensive Look at the Different Technologies Red Valve/Tideflex can Offer

Joe Merzlak, Red Valves

A company overview will be followed by a Tideflex history and timeline, a discussion of problems and maintenance Issues with traditional backflow prevention technologies (Flap gates, Metal Seated Check Valves etc.) and an overview of Tideflex solutions.

Wednesday 1:00-1:25 PM

Rotork Actuators: What Technology is Best For You?

Randy R. Phares, BL Anderson

A brief overview of electric, pneumatic and hydraulic actuators. See how they function, the different options available,

and why you would choose one type of technology over another.

Wednesday 1:35-2:35 PM

Why Chemical Feed Skid Systems are beneficial

Brian Shchor, SSPE Process Equipment

Latest technology; specification writing; solidworks models; materials of construction; system integration; and examples of skids. Also, what to expect from a SSPE skid system and from a stick build field install.

Wednesday 3:15-3:40 PM

Wastewater Pressure Gauge Selection

John Rushworth, Ashcroft

A brief discussion on the different configurations and options of a pressure gauge. Learn why pressure gauges are important to your process and how properly selecting the correct gauge can make your life easier.

Academic

Thursday 8:00-8:25

Airing on the Side of Caution: Ventilation in the Diglndy Tunnel System

Olivia Hawbaker, Citizens Energy Group

Citizens Energy Group (Citizens) is currently implementing a Consent Decree to reduce Combined Sewer Overflows (CSOs) by up to 97% by 2025. Through transient analysis program (TAP) modeling, surge analysis, and small-scale physical modeling, anticipated CSO flow conditions are generally understood; however, air movement through the tunnel and its ventilation is not known with the same degree of certainty. With a thorough understanding of tunnel inflow and expected surge response, Citizens is evaluating conditions leading to system failure through tunnel geysering or structural failure so as to optimize tunnel implementation and operation. Ultimately, this study will provide a more safe, reliable, and predictable system, along with a model that may have far-reaching benefits to communities undergoing similar construction.

Thursday 8:35-9:00

Characterizing Small-Scale, Constructed Treatment Wetlands

Michelle Marincel Payne, Rose-Hulman Inst. of Tech.

The aim of this study was to compare removal efficiency of total suspended solids, biochemical oxygen demand, and nutrients (nitrogen and phosphorus) through two small-scale, constructed treatment wetlands in the Rose-Hulman Institute of Technology Cook Laboratory for Bioscience Research greenhouse: one free-water surface system and one subsurface wetland system.

Composed of multiple basins optimized to remove certain stormwater contaminants, each wetland was effective in removing total suspended solids, biochemical oxygen demand, and nitrate. The free-water configuration was slightly advantageous for suspended solids, nitrate, and nitrite removal. We did not observe significant phosphate removal. Follow up studies will consider additional wetland configurations and operational methods.

Thursday 9:10-9:35

Changes in Potable Water Chemical Quality within Residential Plumbing that is Switched from Rainwater to Municipal Tap Water

Tolu Odimeyomi, Purdue University

Despite the increased popularity of water conservation in the form of rainwater capture and reuse, the effect of transitioning between drinking water sources in a residential home has not been highly considered. This study monitored levels of organic and inorganic contaminants within a plumbing system before and after a switch from rainwater to municipal water. As society moves to become more water conscious, we must thoroughly understand the consequences that accompany our growth in water conservation.

Thursday 10:20-10:45

Community-Scale Water Treatment Systems in the Dominican Republic

Jessica Puente, Purdue University

The "Water Supply in Developing Countries" course at Purdue University provides a unique learning-environment that



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couples student leadership and international development experiences. Lack of access to safe drinking water burdens population health in developing countries. Our group of interdisciplinary undergraduate and graduate students are working to address this in the Dominican Republic by implementing sustainable water treatment systems. Through iterative design changes and collaboration with community stakeholders, we have implemented working systems at two primary schools, each with the capacity to be used by the surrounding community as well. Our implementation strategy allows for evaluation of the system and implementation process successes, highlights areas for potential improvement, and provides a chronology of health outcomes over time in our partner communities.

Thursday 11:30-11:55

Sludge Reduction & Operational Benefits Using Rare Earth Technology

Pam Cornish, Neo Performance Materials
Rare Earth (RE) technology has emerged as a new coagulant and has proven to be an effective alternative to traditional iron or aluminum based coagulants to reduce phosphorus (P) discharge. WWTFs using RE have shown operational benefits to their plants when dosing RE into the primary clarifier. These benefits include improved settling, visibly clearer primary clarifiers, increased sludge %solids, reduction in overall sludge volume, increased digester output, efficient dewatering of solids, improved filter press performance, and overall solids handling cost reduction. Plants have seen as much as a 60% reduction in the amount of hauled sludge, a 25% increase in the cake %solids, and a 30% reduction in power usage due to more efficient filtration operations. Results of plant trials will be presented.

Collections

Thursday 8:00-8:25

A Sewer Runs Under It – Inspection of the Interceptor Sewer Beneath Indian Lake

Brian Payne, American Structurepoint
The decision, four decades ago to construct a 24-inch DIP sewer interceptor beneath

Indian Lake in Lawrence, Indiana presented an advantage: an easement with no trees or buildings that was easily acquired. It also presented a HUGE disadvantage: the difficulty of maintaining a sewer located beneath a lake, stretching 4,000 feet between the upstream and downstream manholes. This segment had never been inspected... until now. What does a 24-inch gravity sewer installed 20 feet beneath the lake surface look like 40 years later? We'll share the multi-sensor inspection results from RedZone which include CCTV, laser profiling, and sonar.

Thursday 8:35-9:00

Hires Lift Station: Big Benefits Learned on a Smaller Project

Aaron Hutton, Wessler Engineering
The City of Angola took advantage of a small electrical and I&C system upgrade to a critical lift station, to try out Indiana's GSC project delivery method. After the initial design was completed and a provider selected, the City went all in, converting from a wet pit/dry pit configuration to a submersible station. Thanks to the flexibility and benefits of the GSC delivery method, the revised project was able to be designed and constructed on time and under budget, utilizing the City's own labor for additional savings.

Thursday 9:10-9:35

PARKing Two Million Gallons: Citizens' CSO Storage Tank in Brookside Park

Olivia Hawbaker, Citizens Energy Group
Citizens Energy Group (Citizens) is currently implementing the DigIndy Program to reduce Combined Sewer Overflows (CSOs) by up to 97 % by 2025. In addition to the tunnel system, Citizens is designing satellite storage for Pogue's Run to meet the same criteria. This session will focus on the design challenges, operational considerations, benefits, and lessons learned for a two million gallon storage tank located in Indy Parks' Brookside Park.

Thursday 10:20-10:45

The City of Warsaw: Sewer Improvements Needed Yesterday

Megan Carr, Wessler Engineering
The City of Warsaw's \$10 million-dollar collection system improvements project, funded by the State Revolving Fund (SRF) involved managing design and bidding processes within a 6-month timeline. The City of Warsaw maximized the \$10 million SRF loan during bidding and construction of a Sewer Improvements project that includes rehabilitation of over 95,000 LFT of sewer and nearly 600 manholes along with the replacement of approximately 5,000 LFT of sanitary sewer – over 20% of its sanitary sewer system! The completed improvements will reduce and mitigate public health and safety risks, decrease I/I flows, reduce sewer back-ups, lower potential for sewer/road collapses, and provide an efficient and operational wastewater collection system.

Thursday 10:55-11:20

Creatively Exceeding Water Quality Requirements with CSO Storage Tanks

Maithilee Das, Greeley and Hansen
With growing water infrastructure needs around the state, many utilities are in search of innovative and cost-effective solutions to meet their Long Term Control Plan (LTCP) requirements while improving water quality standards for their communities. A CSO storage tank is one such solution to create a "wide spot in the line" for managing Combined Sewer Overflows (CSO). Hear about case studies, best practices and lessons learned during the collaborative design and construction phases of three CSO storage tanks in Indiana. The presentation will showcase features unique to three tanks, including design constraints, illustrations of conceptualized site developments and drone-taken aerial construction photos. Lessons learned and best practices will help upcoming generations of designers and utility planning professionals identify a clear path forward for similar infrastructure needs in the future.

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Thursday 11:30-11:55

Overcoming Challenges of a Deep Pump Station

Bruce Cooley, Black & Veatch Corporation

Technology is moving more quickly than ever before. The workforce of the future continues to rely heavily on technology, seemingly only minutes-a-day without an electronic device in hand. Leveraging benefits of advanced technology; stakeholder involvement and coordination was enhanced during the design of the 240 feet deep, 30 million gallon per day Deep Dewatering Pump Station that is located at the eastern terminus of the Three Rivers Protection and Overflow Reduction Tunnel in Fort Wayne, Indiana. This presentation will focus on the use of technology to optimize the project design, while discussing challenges faced during the project design.

Thursday 1:15-1:40

Seymour – No Longer a CSO Reporting Community & How We Got There

Randy Hamilton, City of Seymour

A focus on the elimination of the City's combined sewers, construction of the Von Fange Ditch diversion structure and storm sewer, and how the Water Pollution Control Facility was affected after construction, including the ultimate elimination of the CSO.

Thursday 1:50-2:15

City of North Vernon – Maximizing the Use of Existing Infrastructure While Solving Wet Weather Challenges

Michael Gangstad, Lochmueller Group

The City of North Vernon has implemented two long term control plan projects over the past five years. Phase I included inline storage upstream of a pump station that experienced overflows. Storing water allowed for the continued use of the pump station without an increase in capacity. Phase II included addition of detention and wet weather treatment at the existing WWTP. Maximizing use of existing available land and infrastructure kept costs down.

Thursday 3:10-3:35

Risk-Based Prioritization for Sewer and Water Capital Planning

Christopher Heltzel, Arcadis

A case study of how Elkhart, IN implemented risk-based prioritization for collection system capital planning.

Thursday 3:45-4:10

Multiple Lift Stations, One Force Main: May the Force be with You

Jeremy Hardy, Commonwealth Engineers, Inc.

A look at a 12-inch Transite force main serving not one but seven lift stations for Aqua Indiana's South Haven Service Area in Porter County. The force main has a high point at its midpoint and then falls 20-feet to its eventual discharge point. Issues reviewed include: (1) internal corrosion of the force main, (2) siphoning, (3) lack of air release and combination valves, (4) low transmission velocities, (5) current/future capacity requirements of various sections of the force main, and (6) undersized lift stations for current/future connections. We will conclude by reviewing recommendations and engineering estimates.

Thursday 4:20-4:45

Making an Old Sewer New Again

Nara Manor, City of Anderson - Water Pollution Control Utility

The City of Anderson and United Consulting discusses the rehabilitation of 3,500 feet of a 84-inch and 96-inch sewer via installation of cured-in-place pipe (CIPP) lining.

Industrial

Thursday 8:00-9:00

Industrial Water Meets the Municipal WWTP

Jim Collins, Brenntag Mid-South

An examination of the interactions between industrial waste water treatment plants and their operators with the municipal POTW and the management of their systems.

Thursday 9:10-9:35

Utilizing Heavy Metals in a Biological System – Part 1

Pat Beamon, Brenntag Mid-South

A look at the utilization of metals and their function in the biological process.

Thursday 10:20-10:45

Utilizing Heavy Metals in a Biological System – Part 2

Pat Beamon, Brenntag Mid-South

A look at the utilization of metals and their function in the biological process.

Thursday 10:55-11:55

I have Industrial waste

Dave Taylor, A. T. Environmental Inc.

A look at how to deal with industrial waste.

O&M New Tech

Thursday 1:15-1:40

Operational Perspectives on Achieving Persistent Low-Level Phosphorus Removal

Anthony Giovannone, CDM Smith

As phosphorus TDML in the Great Lakes region become increasingly stringent, water resource recovery facilities (WRRFs) will be faced with total phosphorus (TP) limits below 0.3 mg/L. To achieve these limits, many facilities will need to optimize their secondary treatment process and install tertiary treatment systems. Fellow water quality professionals will share their lessons learned while operating systems required to achieve low phosphorus limits at two WWTFs in Massachusetts: The Charles River Pollution Control District and Town of Webster WWTFs, required to meet seasonal limits of 0.1 and 0.2 TP respectively. Operators will share their insights on these facilities, which have been operating tertiary treatment for phosphorus removal for over 5 years.

Thursday 1:50-2:15

Using PACs to Achieve Low-Level Phosphorus Requirements

Joseph Carlston, Chemtrade

An exploration of using poly-aluminum



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chloride for phosphorus removal in wastewater, including a comparison of removal mechanisms to traditional coagulants, and several case studies where PACs have been used to reduce phosphorus to ultra-low limits.

Thursday 3:10-3:35

"Transforming Data into Knowledge", "Knowledge" into a Better Performing Plant

Austin Collins, Hach

With today's tight budgets and constantly-changing regulations, the water and wastewater industry faces many challenges. More than 60% of the workforce is expected to retire in the next four years, meaning decades of knowledge retention will need to be passed on to the next generation of water and waste water operators. Additionally, the need for more and more data collection along with analysis of critical data has led to information overload, and a need for data collection to be simplified. We will discuss formulation of how the "water intelligence system" turns your data into powerful operational insights. You can apply these new sources of intelligence across every aspect of operations, whether your plant processes drinking water, wastewater, or industrial water. The result? Unprecedented confidence in water quality.

Thursday 3:45-4:10

Points Clouds and What You Are Missing

Brad Kleaving,

Evansville Water and Sewer Utility

Evansville Water and Sewer Utility department has recently implemented a UAV and a laser scanner into its surveying workflow. We are working with Frontier Geospatial to seamlessly integrate the data from both the UAV and the laser scanner into GIS. An overview of our planning and workflow: how we fly a mission, scan a project, merge data, and use the data collected.

Thursday 4:20-4:45

Wastewater Pumps with Integrated Intelligence – The Next Industry Breakthrough

Kristel Zaman, Xylem

Aging infrastructure, global urbanization, increasing energy costs, and the need for sustainable solutions make cost reduction and reliability a priority in wastewater pumping. Small wastewater pumps can be given a new level of functionality and intelligence by integrating advanced software functions and state-of-the-art hardware into a conventional submersible design. Sensing the operating conditions and the environment, these pumps can adapt pumping performance in real time, making smart decisions and providing feedback to the operator. Attractive customer benefits and significant OpEx and CapEx savings can be achieved at

the end user and specifier levels. Learn about this breakthrough technology as well as the substantial and tangible benefits of integrated intelligent wastewater pumping through proven installation case stories.

Pretreatment

Thursday 1:15-1:40

A Journey through Local Limits Development

Carmen Davis, City of Anderson Water Pollution Control Utility

In September 2015, the City of Anderson WPCU received a new NPDES permit. We were required to re-evaluate the SUO to determine whether it provides adequate legal authority to fully implement the pretreatment program. Many municipalities decide to contract the whole process out to companies who specialize in the local limits evaluation; however, reading the guidance, asking questions, developing a strategy, implementing the sampling plan and crunching the numbers can lead to success. We will explore the local limits journey, highlighting areas where we made mistakes, and lessons learned from back and forth communication with EPA. This technical presentation shall include some calculations and complex pretreatment topics with local limits, all helpful to pretreatment personnel.

Advanced Aquacultural Technologies

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Thursday 1:50-2:15

Lab Results Don't Make Sense-Now What?

John Rigdon,

Element Materials Technology

Tips on how to interpret laboratory data and how to improve interactions with your laboratory.

Thursday 3:10-3:35

Overview of Indianapolis Wastewater's Incident Reporting Process Improvements

Cheryl Carlson, Citizens Energy Group

Chris Kennedy, Citizens Energy Group

Overview of development of a systematic process for identification and investigation of emergency incidents in the wastewater collections system and influent including sampling and notification.

Thursday 3:45-4:10

IDEM Emergency Response What You Need to Know in Case of Emergency

Aaron Green, IDEM

Learn what you need to know about environmental emergency response including reporting and responsibilities.

Thursday 4:20-4:45

Criminal Investigations – Pretreatment Violations

Lisa Matovic,

U.S. EPA Criminal Investigation Division

Overview of criminal violations associated with pretreatment violations.

Residuals

Thursday 8:00-8:25

Moving Solids

Barbara Smith, Wastewater 101, LLC

A discussion of moving solids from one process to another without upsetting your facility or process.

Thursday 8:35-9:00

Sludge Thickening: The Quest to Regain Digester Capacity

Katherine Merkle,

Donohue & Associates, Inc.

With sludge of 2% or less solids,

the Richmond Sanitary District cannot waste enough sludge to their primary anaerobic digesters. This thin sludge occupies a large volume in the digesters and makes the digesters difficult to heat to appropriate temperatures. Thickening the waste activated sludge (WAS) to 6% solids would take up significantly less volume in the digesters and help the heating issue. Thickening technologies examined include a screw press, belt filter press, and rotary drum thickener. This presentation will cover the project background and basic functionality of each technology, why the selected technology was chosen, and additional project design challenges.

Thursday 9:10-9:35

Power Savings at the WWTP

Bridget Philpott, Wessler Engineering

Wastewater treatment is an inherently energy intensive process, with power costs consuming between 25 to 40% of the operational budget of most treatment facilities. This presentation will describe the basics of a power bill from both a peak demand and electrical consumption perspective and present options on how to proactively take steps to manage both. The recommended steps will focus on operational changes that can be made to an existing facility and do not require major plant modifications.

Thursday 10:20-10:45

Bio-Nutrient Removal and Operational Savings Achieved

David Adam Downey, City of Monticello

The City of Monticello recently upgraded their Wastewater Treatment Plant to a full Bio-Nutrient Removal Facility utilizing Enhanced Biological Phosphorus Removal, Nitrification, and Denitrification allowing for total-Nitrogen reduction, reduced aeration power and costs, and reduced chemical consumption. This presentation will explore the process utilized, actual operating data, and results achieved since the facility went online in July 2017.

Thursday 10:55-11:20

The Mystery of Anoxic and Anaerobic Treatment

Kathryn Jackson, Wessler Engineering

With phosphorus limits new to many permits and with future nitrogen limits on the horizon, many wastewater treatment plants are beginning to contemplate nutrient removal. These new limits require modifications to the traditional aerobic treatment schemes common to many in the State. In this presentation we will discuss the common uses of anoxic and anaerobic basins and how they can benefit a treatment plant's process. We will also cover the multiple applications for anoxic treatment, design considerations, and how to optimize the operation of the system, as well as the difference between anoxic and anaerobic treatment.

Thursday 11:30-11:55

Phosphorus Removal: Lessons Learned in Operation and Design

Ashley Getz, Strand Associates, Inc.

This presentation will include lessons learned from several different WWTPs in Indiana and throughout the Midwest; a survey of several operators currently implementing phosphorus removal on what has worked for them and what has not. The presentation will also include a few case studies on phosphorus removal implementation. The presentation is meant to provide valuable insight to operators who currently operate phosphorus removal facilities or may have upcoming limits to meet, as well as to engineers that may be designing these processes.

Day at the Treatment Plant

Friday 8:00-8:25

Take a Little More Off the Top: How Valparaiso, Indiana Optimized its Plant Using a Small-Footprint Primary Rotating Belt Filter

Todd Latchaw, Nexom

How much better would your WWTF perform if it delivered half its current loading to secondary treatment? At Valparaiso IN, engineers needed an effective equivalent to screening



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and primary settling; they turned to EcoBELT, a rotating belt filter that offers small-footprint primary treatment. This presentation explains how the EcoBELT's proprietary advances cut life-cycle costs to a fraction of conventional technologies, how Valparaiso expanded primary clarification and relieved solids loading to the secondary system, and how Glendale, Oregon, provided treatment for combined sewer overflow (CSO), removing 69% of TSS and 59% of BOD.

Friday 8:35-9:00

Simultaneous Nitrification Denitrification (SND) in Oxidation Ditch Applications

Brandon Olson, Evoqua

This presentation will focus on the transfer efficiency of various aeration devices in today's market and the critical role that the biological process has on the transfer efficiency of the total treatment system. These discussions will be guided using third party reports, plant data, and calculations to support the findings.

Friday 9:10-9:35

Making the Most of South Bend's WWTP

John Huston, Arcadis

This presentation will discuss the design and construction of the Secondary Treatment Improvements project at the South Bend Wastewater Treatment Plant. Major improvements were needed to work towards increasing peak flow through the plant as part of the City's LTCP requirements and to improve the current operations along the way.

Friday 10:00-10:25

Another First in Indiana: Dewatering a different way in Kendallville!

Daniel Miller PE,

Pelton Environmental Products

Kendallville, Indiana implemented a first for Indiana in 2017. Dewatering of digested sludge is common at many treatment plants in Indiana, however Kendallville began the use of the first permanent installation of a PW Tech Volute Dewatering Press.

Friday 10:20-10:45

Case study: Using Algal Biofilms to Treat Onsite Commercial Wastewater at a Truck Stop in Rural Indiana.

Daniel Johnson, OneWater

A talk both on the use of algal technologies and on the risks of understanding influent data, specifically TKN versus ammonia. We will outline how to adjust for high TKN loading and the possibility of excessive BOD and TSS in small plants with erratic flow, while also touching on possible remedies for plant that have excessive "rags" and solids loading.

Friday 10:35-11:00

BAF Pilot Test: Pilot Testing of DUO Media and Biostyrene Media with Addition of PAC for Phosphorus Removal for the Evansville West WWTP

*Terrence Boyer, Donohue and
Associates, Inc.*

Donohue has been retained by the Evansville Water and Sewer Utility (EWSU) to perform pilot testing for the DUO media in a pilot biological aerated filtration (BAF) system to compare performance with the main BAF system. Chemical phosphorus removal field trials using the HyperLon 1997 polyaluminum chloride (PAC) product were performed on a whole plant basis as well as the pilot to assess the phosphorus removal capability through the fixed film BAF pilot and main BAF systems. The pilot system was initiated as a first step in expanding the East WWTP from 27 mgd wet weather capacity to 40 mgd.

Friday 11:10-11:35

Using SBRs in Large and Small Scale Applications

*Kwabena Adu-Sarkodie,
Wessler Engineering*

The Sequencing Batch Reactor (SBR) is an effective conventional unit process for wastewater treatment. We will summarize the operation of this unit process, highlighting its ability to achieve nitrogen and phosphorus removal. We will also recommend design considerations for this system,

such as flow distribution, chemical feed, wasting, and drainage. We will present potential capital cost savings of using this treatment method over a conventional flow-through system, along with the evaluation process involved in selecting this process. This presentation will focus on the use of SBRs at two different treatment scales: 1) the expansion of the Westside WWTP to 14 mgd and 2) the use of SBRs for Harbortown, a sub-division in Posey County, with a maximum treatment capacity of 64,000 gallons per day.

Engineering

Friday 8:00-9:00

Ethics in Engineering

*David Vornhem,
Drewry Simmons Vornhem*

This session will address the Indiana Administrative Code 864 IAC 1.1-11-1, Ethical, economic, and legal principles; professional incompetence, and compare and contrast those rules with the National Society of Professional Engineers Code of Ethics for Engineers. A summary of both the Indiana Administrative Code and the Code of Ethics for Engineers will be provided.

Friday 10:35-11:35

Indiana Laws and Statutes

*David Vornhem,
Drewry Simmons Vornhem*

This session will address the laws codified by Indiana statute and the case law applicable to the practice of professional engineering. Summaries of the applicable statutes and case law will be provided to participants.

Laboratory

Friday 8:00-8:25

Laboratory Excellence: Part V - BODs

Tara Washington, City of Carmel

Designed to assist lab personnel with the BOD portion of the IWEA Excellence Award audit. We will explain the analytical and quality control requirements outlined in 40 CFR Part

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136 and Standard Methods for BOD analysis. Some highlights include:

- 1) Writing and/or reviewing your BOD method to comply with current EPA/IDEM requirements
- 2) Analyzing QA/QC Parameters:
 - Updates on Blanks
 - Duplicates
 - Glucose-Glutamic Acid Checks (BOD vs. CBOD)
 - SDS Program and compliance
- 3) Ascertaining accurate results in dilute samples
- 4) 40 CFR Part 136 holding times
- 5) Seeding samples
- 6) Checking for Chlorine
- 7) Reporting limits and MRO records



Friday 8:35-9:00

Screening for Volatile Organic Compounds on the Ohio River

Lila Xepoleas Ziolkowski, Ohio River Valley Water Sanitation Commission

The ability to consistently and continually monitor water quality river conditions over the 981 miles of the Ohio River is an indispensable function and a core directive of the Ohio River Valley Water Sanitation Commission (ORSANCO) compact, established in 1948 to protect the river's designated use for drinking water, recreation, and aquatic habitat. Heavily industrialized and a major transportation corridor, the 981-mile Ohio River presents unique challenges. ORSANCO's Organics Detection System (ODS), established in 1978, is a networked array that relies on the cooperative efforts and partnerships with our fixed facility stations, comprised of public and private drinking water utilities and commercial industry. Currently, there are 18 monitoring stations, calibrated to detect volatile organics with Purge and Trap technology.

Friday 9:10-9:35

A Look at Hold Times in Common Lab Tests

John Rigdon, Element Materials Technology

A look at the history of hold times in analysis. How were they established? Is there a scientific basis for them? How have they changed over the years? It is meant to be a surface level discussion rather than a full scale scientific study.

Friday 10:00-10:25

Clear Results and Accuracy You Can Count On

Eric Link, LabtronX

Inspectors ask "How do you know?" System failures cause valuable downtime. Calibration and maintenance is needed, but where do you start? Eric Link, the owner/CEO of LabtronX, has specialized in the maintenance and calibration of utility laboratory equipment for over 30 years. He has given many lectures on a variety of laboratory equipment subjects and looks forward to sharing his experience and knowledge of calibration and maintenance with you today.

Friday 10:35-11:35

Municipal Wastewater Laboratory Panel: Q & A

Tara Washington, City of Carmel

A one-hour session where Conference registrants will be afforded the opportunity to ask the Lab Panel (some of the most competent water/wastewater professionals in Indiana) anything they want that is drinking water, storm water, or wastewater analysis related.

The Moderator will explore the following:

- Quality Control documentation
- BOD troubleshooting
- BOD:COD:TOC correlation studies
- Nutrient analysis technology
- Laboratory equipment
- DMRQA troubleshooting
- Bench testing nutrient analysis
- Sampling regulations of water and sludge
- CFR/NPDES compliance
- Plus many more!

Product Technologies

Wednesday 8:00-9:00 AM

How Cellular Based SCADA is Changing the Way we Monitor Our Systems

Matt Mancuso, Mission Communications

A presentation on SCADA, types of SCADA systems, and different communication links followed by a demonstration that will use Mission's Real-Time Managed SCADA system and live demo case to show how the web-based, cellular system works in various applications. Other topics cover include alarming options for both water and wastewater emergencies; a Tank and Well feature showing how pumps, and other equipment can be controlled remotely as well as by a other instruments; and live floats showing how quickly alarming can take place in a sewer lift station or manhole emergency. Cellular based SCADA systems utilized on various applications are now becoming the "norm" in the water and wastewater industry.

Thursday 9:10-9:35 AM

Radar Level Measurement for the Wastewater Industry

Justin Mamula, Vega Americas

Gregory Tischler, Vega Americas
A focus on the use of radar technology for level measurement. Users have a lot of options when selecting a sensor for measuring level. The many available technologies each have their advantages and drawbacks. We will briefly explore the history of radar technology, as well as different antennas, techniques, and frequencies used for measuring level with radar, along with the common characteristics that make radar technology desirable for level measurement. Specific wastewater level measurements presented in detail will include sewage pipe, storm water basins, lift stations, and open channel flow.

A demonstration of how radar provides the user with the most robust measurement for these installations will include: using radar for continuous liquid level measurement; accurate measurement



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through foam, condensation and buildup; benefits of small process fittings; and measurement inside crowded vessels.

Thursday 10:20-10:45 AM
Radar Level Measurement for the Wastewater Industry (Part 2)

Justin Mamula, Vega Americas
Gregory Tischler, Vega Americas

This second of two sessions will show that radar provides the user with the most robust measurement for these installations. Participants will leave this presentation with a basic understanding of radar theory. They will be able to have informed conversations with vendors of radar level measurement devices with the intent that they will be able to recognize not only when it would be advantageous to use radar, but also when it would not be advantageous.

Thursday 10:55-11:55 AM
Selection, Care, and Operation of Ion Selective Electrode (ISE) Probes for Online Monitoring of Ammonium and Nitrate

David Fraley, YSI

Online process monitoring systems for continuous monitoring of ammonium

and nitrate using ion selective electrode (potentiometry) technology are available from multiple vendors. This mobile session will detail all aspects of these monitoring systems while providing tips on maintenance and programming of an ISE process monitoring system using a table-top demonstration board.

Thursday 1:15-2:15 PM
Choosing the Right VFD for your Application

Larry Stanley, ABB

Variable Frequency Drives (VFDs) have been and continue to be used in many applications within our water and wastewater treatment plants. Applied correctly, the simple VFD can extend the life of an aging infrastructure and even reduce energy cost. This presentation will demystify VFDs, providing a better understanding as to where and why you would use them through topics such as: not sizing the drive on Hp alone and not forgetting the system voltage; remembering to think about location, altitude and enclosures; considering motor leads and non-inverter motors; exploring problem areas and troubleshooting.

Thursday 3:10-4:45 PM

Wastewater Pumps with Integrated Intelligence

Kristel Zaman, Xylem

Small wastewater pumps can be given a new level of functionality and intelligence by integrating advanced software functions and state-of-the-art hardware into a conventional submersible design. Sensing the operating conditions and the environment, these pumps can adapt the pumping performance in real time, making smart decisions and providing feedback to the operator. Attractive customer benefits and large OpEx and CapEx savings can be achieved at the end user and specifier levels. This presentation will provide an understanding of the breakthrough technology available as well as the substantial and tangible benefits of integrated intelligent wastewater pumping: trouble free pumping, asset management, energy savings, lower life cycle cost. The session will include equipment hands-on experience showing start-up and installation guidelines, also demonstrating technical design differences: N-technology, permanent magnet motor, gateways, built-in controls, etc.

Beam Longest and Neff

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