

ILLINOIS WASTEWATER PROFESSIONALS CONFERENCE (IWPC '18)

April 16-18, 2018

Preliminary Conference Course Schedule

(as of 3-1-18)

Conference Track Key:

(ASST) = Asset Management

(BIOS 1 and 2) = Biosolids Mgmt.

(CLSS) = Operator Training Class

(COLL) = Collection Systems

(ELEC) = Electrical

(LAB) = Laboratory Operations

(LIFT) = Leaders Innovation Forum Technology

(LIQD) = Liquid Treatment Processes

(NRR 1 and 2) = Nutrient Removal and Reuse

(OPS) = Plant Operations

(PRET) = Pretreatment

(RECV) = Resource Recovery

(SHED) = Watershed Mgmt.

(STORM) = Stormwater Mgmt.

(TREND) = Trending Topics

(WKSP) = Workshop

Monday, April 16

Monday 10:30 a.m. - 11:30 a.m.

Opening Conference Keynote

IEPA Course #12872

Dr. William Gonwa, P.E., Ph.D., Associate Professor, Milwaukee School of Engineering

Associate Professor William Gonwa has worked in the fields of wastewater collection, storm water management, and flood protection since 1984. He received his doctorate from Marquette University, his masters from the University of Kentucky, and his bachelors from the University of Wisconsin-Madison, all in civil and environmental engineering. Dr. Gonwa joined the full-time faculty of the Milwaukee School of Engineering (MSOE) in 2010. Before that, Dr. Gonwa spent 25 years as in consulting engineering. He is a registered professional engineer in the State of Wisconsin. Dr. Gonwa teaches a wide variety of courses in the water resources area including a graduate-level applied statistics and modeling course with a special focus on issues related to water resources.

Monday 1:00 p.m. – 1:30 p.m.

(BIOS1)

Using a Chemically Hydrolyzed Biosolids for Co-digestion

IEPA Course #12873

Jeanette Brown, Manhattan College

Chemically hydrolyzed biosolids was seen to improve gas yields in benchscale co-digestion studies at Manhattan College. A hydrolyzed biosolids produced by Lystek was studied with the objective to determine the potentially increase gas yields and methane content. The AD study was divided into two phases; Phase 1, an initial study using a bioassay procedure to determine digestion conditions with Lystek and Phase 2, a more in-depth study of Lystek using bench scale anaerobic digesters. The results of the bioassay indicated that gas yields increase within a Lystek feed volume range of 15-25% with 20% to 25% yielding optimal results. Further research will include evaluating higher percentages of Lystek, dewaterability of the digestate, confirmation of the reduced hydrogen sulfide concentration, and determination of the cause of increased ammonia and orthophosphate concentration.

Monday 1:00 p.m. – 1:30 p.m. (continued)

(NRR1)

Permit Special Condition – Bio-P Where It's Not Designed to Be

IEPA Course #12874

Jackie Christensen, Urbana & Champaign Sanitary District

The Urbana & Champaign Sanitary District's most recent permit contained a Special Condition that required a Phosphorus Optimization Plan. To better understand the biological phosphorus removal capabilities of the Northeast plant, operational changes were made to the activated sludge system beginning in the summer of 2016. Without purchasing equipment or making tank modifications, the plant was forced into Bio-P removal mode. Two secondary treatment processes were run in parallel to increase detention times in the aeration basins. An additional 15-25% total phosphorus reduction has been achieved over the past 18 months, equating to 38,000 pounds/year. The presentation will summarize and discuss the Bio-P removal demonstration results at the Northeast plant.

Monday 1:30 p.m. – 4:30 p.m.

(WKSP)

Laboratory BOD Workshop

IEPA Course #12875

IWEA Lab Committee

The Laboratory BOD Workshop will provide an overview of BOD analysis as well as an opportunity for hands-on practice. Attendees will rotate through five stations focusing on different aspects of the BOD test: sample preparation, dilution water preparation, setting up samples, dissolved oxygen measurement, dissolved oxygen meter use, and calculations. There will also be a Q&A session at the end of the workshop.

Monday 1:30 p.m. – 2:00 p.m.

(BIOS1)

The First Thickening Centrifuge in Illinois; Design, Challenges, and Lessons Learned

IEPA Course #12876

Brent Perz, Baxter & Woodman, Inc.

The belt filter presses at the Belvidere WWTP were reaching the end of their useful life, giving operators an opportunity to look into alternatives for dewatering their waste activated sludge. The thickening centrifuge technology had several advantages over traditional gravity thickening and performed well during pilot testing. Speakers will present the design, advantages and disadvantages, and lessons learned when designing the thickening centrifuge so that attendees may be able to evaluate the process for use at their own plants.

(NRR1)

South Beloit Wastewater Treatment Plant Improvements

IEPA Course #12877

Matthew Johnson, Fehr Graham

The City of South Beloit's (City) Wastewater Treatment Plant (WWTP) needs significant improvements to bring the plant into compliance with IEPA regulations, increase capacity for anticipated population growth, prepare for future requirements, and increase wet weather treatment capability. Our solution includes new preliminary, secondary, tertiary, disinfection, and solids treatment facilities. The new facility will: 1. Produce higher quality effluent containing no more than 6 and 0.075 mg/L total nitrogen and total phosphorus. 2. Improve solids residuals from Class B to Class A. 3. Increase capacity by 33%. 4. Reduce electrical energy consumption by 15%.

Monday 2:00 p.m. – 2:30 p.m.

(BIOS1)

Getting the Most Value from Digester Gas

IEPA Course #12878

Jay S. Kemp, P.E., BCEE, Black & Veatch

The energy value in digester gas can be used on site to offset electrical and heating requirements through combined heat and power systems such as engine generators or combustion turbines. Direct combustion in boilers can be used to produce hot water or steam. The value digester gas as renewable resource can be captured when digester gas is upgraded to renewable natural gas and used as vehicle fuel. Getting the RNG to the end user can be challenging but has the potential to generate significant revenue.

(NRR1)

Multi-Channel Oxidation Ditch Configurations and Operations for Nutrient Removal

IEPA Course #12879

Michael Doyle, Evoqua Water Technologies

The oxidation ditch is an activated sludge process that has traditionally used a long hydraulic and solids residence time to provide a stable, reliable system for removal of BOD, TSS, and ammonia. The multi-channel oxidation ditch technology is a modification of the original oxidation ditch process. This presentation will provide information on process performance and energy usage for various modes of operation of the multi-channel oxidation ditch process.

(PRET)

Phosphorus Source Reduction for Optimization Planning: From Basics to Case Studies

IEPA Course #12880

Dan Small, Strand Associates, Inc.

Optimization planning for low level phosphorus removal involves a variety of tools and techniques. An important piece of the puzzle is to evaluate industrial sources of phosphorus, industrial pretreatment options, and sewer use ordinances to reduce overall costs for achieving phosphorus limits.

Monday 2:30 p.m. – 3:00 p.m.

(BIOS1)

Reduction in Triclocarban and Triclosan Concentrations in Biosolids

IEPA Course #12881

Dominic Brose, Metropolitan Water Reclamation District of Greater Chicago

Pharmaceuticals and personal care products (PPCPs) in the outfall and biosolids of water reclamation plants (WRPs) are generally present in trace concentrations, however, public interest in these compounds led the Metropolitan Water Reclamation District of Greater Chicago to monitor for 11 PPCPs in the District's seven WRPs' influent, outfall, and biosolids. Annual monitoring of 11 PPCPs from 2012-2016 demonstrated a 66% decrease in triclosan loading, 67% decrease in triclocarban loading, but no change in nine other PPCPs loading into the District's seven WRPs. There was also a 55% decrease in biosolids and 71% decrease in outfall for triclocarban.

(NRR1)

Meeting Phosphorus Limits: A Joint EBPR and Struvite Recovery Strategy

IEPA Course #12882

Bill Martin, Donohue & Associates, Inc.

EBPR has become widely adopted at WRRFs as an approach to meeting stricter P limits. A number of WRRFs employing EBPR combined with anaerobic digestion have been reporting a deterioration in dewatering properties and challenges with struvite precipitation. P recovery through struvite harvesting reduces P loads recycled to EBPR and potentially help mitigate the sludge dewaterability. The results of pilot testing of struvite recovery upstream of dewatering at two WWTPs (AirPrex) will be reviewed. The pilot studies show that reducing P through struvite harvesting prior to dewatering can decrease polymer usage and increase cake solids dryness. Financial feasibility for implementation of struvite harvesting will be presented.

Monday 2:30 p.m. – 3:00 p.m. (Continued)

(PRET)

NEW Water Pretreatment Program for Phosphorus Pollution Prevention

IEPA Course #12883

Bill Oldenburg, New Water

Optimization planning for low level phosphorus removal involves a variety of tools and techniques. An important piece of the puzzle is to evaluate industrial sources of phosphorus, industrial pretreatment options, and sewer use ordinances to reduce overall costs for achieving phosphorus limits.

Monday 3:30 p.m. – 4:00 p.m.

(NRR1)

IEPA Course #12884

Optimization of Nutrient Removal Operation at Sangamon County Water Reclamation District Spring Creek WWTP

Nate Davis, Crawford, Murphey and Tilly, Inc.

The Spring Creek WWTP is a 32 MGD DAF facility in Springfield, IL designed for both biological phosphorus and nitrogen removal. These facilities became operational in the summer of 2012. This paper will focus on the operations of the facilities, and operational changes that have been made to fine tune the performance of the plant over the last five years. The presentation will include details on operational changes that have been made over the course of that period and data to demonstrate the impacts.

(LIFT)

Intensification of Algal Bioprocesses for Mainline & Sidestream Treatment

IEPA Course #12885

Dr. Jeremy Guest, University of Illinois, Urbana-Champaign

Microalgal resource recovery systems could significantly advance nutrient recovery from wastewater by achieving effluent nitrogen and phosphorus levels below the current limit of technology. This presentation will provide an overview of algal processes capable of achieving intensive (i.e., small footprint) nutrient recovery that reliably meets the effluent quality requirements of a given locality and that demonstrate reliable performance at laboratory- and pilot-scales.

Monday 4:00 p.m. – 4:30 p.m.

(NRR1)

Optimizing the Upper Blackstone WWTF to Achieve Sustainable Nutrient Removal

IEPA Course #12886

Jane Madden, CDM Smith

Permit limits for nutrients continue to be ratcheted down across the Midwest to reduce eutrophic and hypoxic conditions in receiving waters. Concurrently, utilities are forced to do more with less. The ability to sustainably achieve revised nutrient standards using existing infrastructure is paramount to successful operations and customer satisfaction. The 45 mgd Upper Blackstone Water Pollution Abatement District has optimized their EBNR system to consistently achieve exceptional effluent quality with an A2O process. This presentation will describe the tools the District uses to respond to variable influent conditions and manage stressors on the BNR system to achieve the best possible effluent quality within their existing system.

(LIFT)

Aqua-Rock Business Development Project

IEPA Course #12887

Larry McFall, Rock River Water Reclamation District

When RRWRD decided to enter into a public/private partnership with Aqua Aerobic Systems, Inc., it was due to the significant benefits to both entities as well as the community at large. Public utilities gain exposure to new technologies and improved methods of operation through “outside of the box” ideas. Finally, a successful project is a win for the community’s economic stability.

Tuesday, April 17

Tuesday 9:00 a.m. – 9:30 a.m.

(RECV)

Resource Recovery Facilities: Eight Factors for Success

IEPA Course #12888

David Wrightsman, Energy Systems Group

For resource recovery at municipal wastewater projects, projects there are lessons learned that cause a project to move forward or stop. This presentation will discuss examples that illustrate the eight common success factors for high strength waste codigestion: Leadership & vision, Community drive, Existing digesters or defined need for ones, Available feedstock's, Accessible location for trucks, Use for biogas, Financing, and Alternative project delivery. Examples will be provided from projects in Virginia, Wisconsin, New York, West Virginia and Indiana.

(LAB)

2017 MUR and MDL - Issues and Lessons Learned

IEPA Course #12889

Scott D. Siders, PDC Laboratories, Inc.

With the 2017 Method Update Rule now effective, the speaker will discuss issues the laboratory community has had with methods 608.3, 624.1 and 625.1 and the EPA's response to those issues. Additionally will discuss the implementation of the new MDL procedure and lessons learned from that effort. Lastly, will provide additional updates that are of interest to the wastewater laboratory community.

Tuesday 9:00 a.m. – 10:00 a.m.

(SHED)

Illinois Water Quality Standards Update

IEPA Course #12890

Scott Twait, IEPA

Scott Twait is an Environmental Protection Engineer with IEPA's Water Quality Standards Unit. Scott will be providing an update on water quality standards development in Illinois and will be available for questions and discussion.

Tuesday 9:30 a.m. – 10:00 a.m.

(RECV)

Energy Neutrality Feasibility Study for the Metropolitan Water Reclamation District of Greater Chicago John E. Egan Water Reclamation Plant in Schaumburg, Illinois

IEPA Course #12891

Lou Storino, PE, BCEE, Metropolitan Water Reclamation District of Greater Chicago

The Metropolitan Water Reclamation District of Greater Chicago (MWRD) has established achieving energy neutrality by 2023 as one of its strategic goals. An energy feasibility study was conducted for the John E. Egan Water Reclamation Plant in Schaumburg, Illinois. The presentation will review the plant processes, energy feasibility study approach and recommended process changes and equipment optimization to achieve energy neutrality at the Egan WRP. The recommended alternatives included combined heat and power, aeration upgrades and implementation of biological phosphorus treatment strategy.

Tuesday 9:30 a.m. – 10:00 a.m. (continued)

(LAB)

Fecal Coliform Testing for Wastewater Effluent: Lactose Based Methods Compared to Colilert-18, an Enzyme Based Method. IEPA Course #12892

Gil Dichter, IDEXX Laboratories

Fecal coliform methods are based on either 15-tube MPN or m-FC (lactose base) requiring 24-72-hour confirmation. Colilert-18 (enzyme base) is an 18-hour test and confirmation not required. Methods will be examined and compared. The recently approved MUR and QC will be reviewed. Is there a difference between CFU and MPN?

Tuesday 10:30 a.m. – 11:00 a.m.

(RECV)

Next Generation Resource Recovery: Co-Digestion to Renewable Natural Gas (RNG) Pipeline Injection at the Des Moines WRF IEPA Course #12893

Dustin Craig, CDM Smith

The Des Moines Metropolitan Wastewater Regional Authority (WRA) is a national leader in transforming wastewater treatment into a revenue generating resource recovery operation. Recent upgrades to the anaerobic digestion facilities of municipal sludge and FOG and other organic wastes processed in the co-digestion process has more than doubled WRA's biogas production, and this upward trend is expected to continue. WRA is moving ahead with plans to process up to 2,250 scfm of anaerobically digested biogas into pipeline quality renewable natural gas (RNG).

(LAB)

Overview and Assessment of the Most Commonly Used Cyanide Analysis Methods IEPA Course#12894

Stephan Wood, Ph.D., M.B.A., OI Analytical, Xylem

Overview and assessment of the most commonly used cyanide analysis methods including cyanide species measured, analytical techniques employed, potential matrix interferences, and final determinative steps

(SHED)

Nonpoint Source Program Update IEPA Course #12895

Amy Walkenbach, IEPA

Amy is the manager of IEPA's Watershed Management Section and will provide an update on watershed management and nonpoint source program initiatives throughout the state.

Tuesday 10:30 a.m. – 12:00 p.m.

(WKSP)

Safe Excavation Practices by JULIE Inc. IEPA Course #12896

Brian MacKenzie, JULIE, Inc.

Brian will cover safe excavation practices, reading and understanding a locate request, what to do if there is a damage, etc. He will also go into several of JULIE'S online ticket entry programs such as RTE and REV.

Tuesday 11:00 a.m. – 11:30 a.m.

(RECV)

A Simple and Energy Efficient Approach to Cleaning Biogas IEPA Course #12897

Lindsey Busch, Carollo Engineers, Inc.

One of the leading challenges to the beneficial reuse of natural biogas has always been the contaminants it carries along with it. The biggest difference in our wastewater industry, compared to others that deal with cleaning biogas, is our steady supply and access to water, typically under high pressure from the plant water systems. This pressurized water is being used as part of a new and simple technology for cleaning biogas. The technology was piloted at MMSD's South Shore Water Reclamation Facility as well as the Sanitary District of Decatur's wastewater facility. Results showed close to

100% removal of H₂S, ~30% increase in methane accompanied by about an 80% to 90% decrease in carbon dioxide, and ~65% removal of siloxanes.

Tuesday 11:00 a.m. – 11:30 a.m. (continued)

(LAB)

Clear Results and Accuracy You Can Count On **IEPA Course #12898**

Eric Link, LabronX

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 LabronX, 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.

(SHED)

TMDL Program Update **IEPA Course # 12899**

Abel Haile, IEPA

Abel is the Supervisor of IEPA’s Watershed Management Planning Unit and will provide an update on IEPA’s TMDL development process, initiative and progress.

Tuesday 11:30 a.m. – 12:00 p.m.

(LAB)

10:30 A.M. **IEPA Course #12900**

Using ASTM D 7511 and Other Flow Injection Methods in a Sludge Matrix to Determine Cyanide

Sonia O’Dell, Fox Metro WRD

Due to the complex nature of sludge matrices, cyanide concentrations determined with the traditional digestion methods can be uncertain due to potential interferences. Fox Metro Water Reclamation District uses flow injection followed by gas diffusion amperometry to characterize the amount of cyanide in sludge matrices. The analytical challenges to ascertain cyanide using flow injection will be discussed. Practical advice will be presented to elucidate the method.

(RECV)

11:30 A.M.

Recycling Cooling Tower Blowdown to Meet NPDES Copper Limits in Iowa **IEPA Course #12901**

Kyle Vester, Burns and McDonnell Engineering Company, Inc.

A Client in Iowa recently had copper limits set at 0.0200 mg/L monthly average and 0.0270 mg/L daily max. Blowdown copper concentration ranges from ND to 0.053 mg/L over a 3-yr period. At this site, demineralized water use is over 80% of total water use, making it a potential candidate for recycling blowdown to the raw water system. A treatment system using cartridge filters, GAC, and MBIX polishing meets the Client’s needs and reduces annual water use by over 350,000 gallons. GAC and MBIX rental vessels eliminate the need for onsite regeneration and further wastewater treatment. A recent stormwater sample, and detected copper in well water, indicates copper is in the environment, presenting further challenges to meet the discharge limit.

Tuesday 11:30 a.m. – 12:00 p.m. (Continued)

(SHED)

Water Quality Programs Open Forum Discussion

IEPA Course #12902

Dan Bounds, Baxter & Woodman

Open forum discussion with all Watershed Track participants on water quality programs and initiatives. Bring your questions and ideas!

Tuesday 1:00 p.m. – 1:30 p.m.

(NRR2) IEPA Course #12903

The Systematic Evaluation of a Chemical Phosphorus Reduction Strategy of a Biological Aerated Filter

Ray David, Greeley and Hansen

A topic of importance when pursuing nutrient removal and recovery at a water resource recovery facility (WRRF) is effective planning and decision making such that financial, environmental sustainability, social impacts are appropriately weighed. Evansville Water and Sewer Utility (EWSU) is examining reducing total phosphorus from 4 mg/L to below 1 mg/L using aluminum-base chemicals to explore the short-term and long-term implications of such an investment. A unique item of this project is that EWSU operates a BAF secondary treatment system where the impact of direct-upstream chemical addition is poorly understood. The evaluation of the various chemicals to reduce TP provided further insight that will benefit EWSU, but other utilities.

(ELEC)

Unlocking WWTP Energy Savings IEPA Course #12904

Thomas Johanson, P.E., ComEd Energy Efficiency Program

This presentation will help with identification of key energy-saving incentives and opportunities. Discover how to maximize facility savings through no-cost studies, expert support and other key elements that can best unlock savings potential. Learn about how other industry-leading facilities have worked with ComEd to successfully identify and implement energy and money-saving solutions for their facilities. Build your best practices blueprint for sustainable savings via key elements that can be identified during the study process.

Tuesday 1:30 p.m. – 2:00 p.m.

(NRR2)

Better, Faster, Cheaper: WQT Right Here, Right Now IEPA Course #12905

Gerald M. Keenan, Illinois Pollution Control Board

The concept of a state-wide nutrient trading program has been discussed recently. A Water Quality Trading market could potentially offer a more economical way to meet nutrient reduction requirements and even create a potential source for revenue. The program involves nutrient credit generators (potentially larger water resource recovery facilities, WRRFs) and credit purchasers (potentially smaller WRRFs). In Illinois, the concept is in its infancy and there are still questions to be answered. One of our keynote speakers of the Nutrient Track, Mr. Gerald Keenan of the Illinois Pollution Control Board, will present an overview of the program and discuss some of the opportunities the program presents to the WRRFs.

(ELEC)

Electrical Replacement Planning – Case Studies IEPA Course #12906

Jay Bielanski, Greeley and Hansen

As wastewater facilities continue to age, planning for ongoing equipment maintenance and eventual replacement is an important process to maintaining reliable operation of critical facilities. As facilities age, so do their electrical systems and without proper planning untimely failures of electrical infrastructure can result in disruptions to service and safety hazards. This presentation will provide an overview of the electrical replacement planning process including important considerations and will present case studies from several different facilities.

Tuesday 1:30 p.m. – 2:00 p.m. (continued)

(SHED)

Illinois EPA Permits Section Update

IEPA Course #12907

Brant Fleming, IEPA Permits Section

Brant of IEPA Permits Section will provide an overview of Illinois wastewater permitting status, challenges, comment issues, backlog and future plans.

Tuesday 2:00 p.m. – 2:30 p.m.

(ELEC)

Automation and Safety Monitoring for Treatment Plants

IEPA Course #12908

Thomas Powell, Greeley and Hansen

Water and Wastewater treatment plants require many types of monitoring and control systems for automation and equipment monitoring. Some systems are used only for process treatment, while some are used for systems that supplement the treatment process. This presentation will discuss systems add value, convenience, and safety for treatment facilities. The intent of instrumentation is to provide monitoring and alarming based on measuring conditions and making the information available to Operators in appropriate locations. These locations can be local or remote facility located miles away, requiring communication over a wide area network. While monitoring and control provides value, it may be obtained with unintended costs.

(SHED)

Illinois MS4 Permit Implementation Round Table

IEPA Course #12909

Dan Bounds, Baxter & Woodman

Dan will facilitate a round table discussion on Municipal Separate Storm Sewer System (MS4) program implementation in Illinois.

Tuesday 2:30 p.m. – 3:00 p.m.

(ELEC)

Simply Power - Simplifying the Bowery Bay WWTP Power Distribution System

IEPA Course #12910

Brian R. Goldman, P.E., ENV SP, Greeley and Hansen

Wastewater plants serving many of the communities throughout Illinois are relying on aging, unreliable, and inefficient electrical distribution systems to power processes necessary to maintain plant operations. Failure of these distribution systems could have various consequences, ranging from the shutdown of minor systems isolated to one portion of the Plant, to full treatment process shutdown, or major consequences such as permit violations. Being proactive in simplifying and upgrading these distribution systems will produce a simple and reliable electrical distribution system which will reduce the occurrences of process shutdowns provide safer and simpler systems.

Tuesday 2:30 p.m. – 3:00 p.m. (Continued)

(SHED)

Chloride Water Quality Update

IEPA Course #12911

Lindsey Birt, Huff and Huff

Chloride water quality violations have been routinely recorded across most urban streams in Illinois. This presentation will include an update of regulatory approaches for chloride exceedances, technologies for chloride reduction, and current chloride reduction initiatives and workgroups.

Tuesday 3:30 p.m. – 4:00 p.m.

(NRR2)

The Concept of the Environmental Utility

IEPA Course #12912

David St. Pierre, Metropolitan Water Reclamation District of Greater Chicago

Mr. St. Pierre will discuss the concept of the Environmental Utility. He will provide a blue print on how we can all collectively solve our nutrient issues on a basin wide scale. This concept bring all the parties together from agriculture to wastewater.

(ELEC)

Connecting the Stations – A Communication Case Study

IEPA Course #12913

Thomas Powell, Greeley and Hansen

This presentation will discuss benefits of expanding communication systems for water and wastewater SCADA systems. Implementing communication systems allow for sharing of information throughout the system can improve system efficiency and reliability. Communication increases complexity, and proper implementation of networks is needed to meet SCADA requirements. The presentation will discuss architecture and implementation case studies of remote communication.

(SHED)

Nutrient Trading Framework Concepts

IEPA Course #12914

Deanna Doohaluk, DuPage River Salt Creek Workgroup

DRSCW Basinwide Nutrient Trading Program Framework project assesses the feasibility of traditional point source-to-point source trading to address cost-effective compliance with POTW phosphorus effluent limits, while also analyzing the feasibility of stream restoration crediting for restoration projects that go above and beyond the list of DRSCW Special Conditions projects that were discussed at last year's CRCL conference.

Tuesday 4:00 p.m. – 4:30 p.m.

(SHED)

Nutrient Trading Roundtable

IEPA Course #12915

Watershed Management Committee

The Watershed Management Committee will facilitate a round table discussion on nutrient trading framework development in Illinois.

Tuesday 4:00 p.m. – 5:00 p.m.

(ELEC)

IEPA Course #12916

Electrical Roundtable Discussion – Planning for an Electrical and/or Control Upgrade at Your Facility

Glen Gottardo, Metropolitan Water Reclamation District of Greater Chicago; Chris Morphe, Fox Metro Wastewater Reclamation District; Mike Kahn, CDM Smith

A question and answer discussion of things to consider when planning electrical or control upgrades at your facility.

Wednesday, April 18

Wednesday 9:00 a.m. – 9:30 a.m.

(BIOS2)

IEPA Course #12946

Impact of Upgraded Polymer Mix/Feed on the Performance of Dewatering Process-Two Case Studies

Yong Kim, UGSI Solutions, Inc.

A well-designed polymer system is the key for achieving better performance in thickening and dewatering at wastewater treatment facility. This paper illustrates how the efficiency of polymer solution impacts the performance of sludge treatment process. It includes an extensive review of papers followed by lab test results regarding the effects of dilution water chemistry and different mixing technologies on the effectiveness of polymer solution. Results from field evaluations confirmed that upgraded polymer systems reduced the usage of emulsion polymer by 35% at a water treatment plant in Pennsylvania, and resulted in 42% dry polymer savings and 18% increase of sludge throughput at a wastewater treatment plant in California.

(LIQD)

Tale of Two UVs

IEPA Course #12947

Gerry Ryan P.E., IDCS, LLC

In 2014 the then largest wastewater UV Disinfection System went on line at Lemay Waste Water Treatment Facility for Metropolitan St. Louis Sewer District. Then again in 2015, the new world's largest wastewater UV Disinfection System went on line at O'Brien Water Reclamation Plant for Metropolitan Water Reclamation District of Greater Chicago. This presentation will compare and contrast these two facilities from the Instrumentation and Controls standpoints, as well as a look into the power consumptions at both facilities and go into detail on the design integration of the manufacturer's UV control systems into the overall Plant control system.

(TREND)

Aerobic Granular Sludge: An Innovative Wastewater Treatment Solution

IEPA Course #12948

Brian Bates, Aqua-Aerobic Systems, Inc.

Aerobic Granular Sludge (AGS) technology has been in operation since 2005. Due to the unique advantages of the technology, there are now more than 40 full-scale AGS installations globally. Within a single tank, the AGS system creates conditions to reliably maintain a stable rapid settling (SVI of 30-50 mL/g) granular biomass, without a carrier. The dense microbial community that makes up the granule allow for simultaneous biological phosphorus reduction, nitrification, and denitrification. The granules can withstand toxic shocks and fluctuations in chemicals, load, pH, and salinity better than conventional systems. These unique characteristics of the process result in a footprint and energy reduction of up to 75% and 50% respectively.

Wednesday 9:00 a.m. – 9:30 a.m. (Continued)

(ASST)

IEPA Course #12949

Rehabilitation or Replacement: Using Life Cycle Analysis to Optimize Infrastructure Investment – A case study

Christopher DeSilva, Greeley and Hansen

The Thorn Creek Basin Sanitary District (District) owns and operates a 20 year old mechanical screen. A study was conducted to evaluate whether the District should rehabilitate the existing screen or replace it. Maintenance history, screen performance, replacement alternatives, capital costs, O&M costs, compatibility with existing equipment, and

maintenance considerations were all considered in the evaluation. A life cycle cost analysis was completed for each alternative to recommend the most cost effective solution to the District.

Wednesday 9:30 a.m. – 10:00 a.m.

(TREND)

Biological Nutrient Recovery Challenges in the Great Lakes Region

IEPA Course #12921

Terry Robinson, CLEARAS Water Recovery

Brooklyn Wastewater Treatment and CLEARAS Water Recovery conducted a series of pilot project tests at the Brooklyn, WI WWTP in early 2017 to confirm the performance of Advanced Biological Nutrient Recovery (ABNR™) across a series of core platform capabilities including cold water environments, supplemental-only lighting conditions, and with only naturally present nitrates (non-supplemental) to support photosynthetic uptake of nutrients. Each of these tests produced performance data consistent with typical nutrient recovery from secondary effluent associated with the ABNR technology platform. We will present the details of each study and their associated results.

(BIOS2)

Controlling Odors in Dewatered Biosolids Using Chlorine Dioxide

IEPA Course #12922

Dennis Tomscheck, Water Solutions – A Division of Azure Water Services, LLC

The intent of our paper is to provide both a historic and technical review of how bench scale testing followed by a full scale pilot study, was conducted using chlorine dioxide in an effort to eliminate odors in dewatered biosolids at Fort Worth's Village Creek Wastewater Treatment Plant's biosolids dewatering facility. We will also discuss the impact odor control treatment had on community acceptance of land application with the treated vs untreated biosolids.

(ASST)

County Regionalization of Sewer Treatment using modern Technology

IEPA Course #12923

Cameron Jones, Benton & Associates

The Kentucky Division of Water entered into an agreed order with the Oldham County Environmental Authority (OCEA) requiring OCEA to consolidate three ring-steel, package treatment plants and two private treatment plants into a regional treatment system. Complying with the agreed order required OCEA to review options that included building multiple regional treatment plants, consolidating treatment with the adjoining and larger Louisville and Jefferson County, Kentucky Metropolitan Sewer District, or building a single regional plant. The benefits of building a regional facility will be discussed in detail.

(LIQD)

Simplification of Treatment Processes and Equipment Replacement Results in Energy Efficient Biological Nutrient Removal at the Bensenville WWTP

IEPA Course #12924

Troy Stinson, P.E., Strand Associates, Inc.

The Village of Bensenville, Illinois owns and operates a 4.7 mgd average flow WWTP that has recently undergone a significant construction project to improve process performance, energy efficiency, and hydraulic capacity. Improvements to the treatment process include the conversion of tankage previously used for aeration, final clarification, and aerobic digestion into a biological nutrient removal process. The simplification of the WWTP, along with the replacement of inefficient equipment, has resulted in significant reductions in energy use. This project highlights how a relatively complex treatment plant can be simplified to reduce maintenance and energy requirements while repurposing existing infrastructure to reduce construction costs.

Wednesday 10:00 a.m. – 10:30 a.m.

(TREND)

Optimal Wastewater Management Using Advanced Analytics**IEPA Course #12925***Nina Kshetry, Ensaras, Inc.*

Freshwater quality and scarcity concerns are pressing issues of our time. Wastewater utilities are faced with increasingly stringent discharge standards and a growing focus on resource recovery, while many times also dealing with aging infrastructure. Data analytics and the Internet of Things are poised to play a major role in addressing operational challenges of utilities in the future. We will present our work on using advanced analytics combined with artificial intelligence for optimal wastewater classification, and more broadly, present the potential of using advanced analytics and the Internet of Things for improved wastewater management.

(BIOS2)**Dewatering Upgrades at Robinson WWTP****IEPA Course#12926***Lawrence E. Quick, City of Robinson, IL*

The Robinson Wastewater Treatment Plant had technology in place, but it was a 1982 model belt filter press that - on average - produced a 14-16% solids end-product. Due to that degree of dryness, the sludge would not stay stacked up in the sludge storage building thus drastically reducing the plant's limited storage space. Lawrence Quick and his team at Robinson WWTP knew that it was time to update their sludge dewatering process and they knew that better technology was out there. The solution that Robinson WWTP chose for their technology upgrade was a Huber RoS3Q Screwpress.

(ASST)**WTP & WWTP Funding Alternatives - Lessons Learned****IEPA Course #12927***Howard Johnson, Shive-Hattery, Inc.*

High level summary of public and private funding sources used to fund specific WTP and WWTP improvements projects. Discussion to include: Traditional External public funding programs, and Non-Traditional Public and/or private + public funding programs. Specific Shive-Hattery WTP & WWTP Project Case Studies with Funding Lessons Learned will be covered including a summary of Advantages and Disadvantages for each of the funding sources.

(LIQD)**IEPA Course #12928****Advanced Aerobic Digestion Techniques at the Naperville Springbrook Water Reclamation Center***Nathan Cassity, Donohue Associates*

Naperville Department of Public Utilities - Water undertook a full-scale pilot starting in November of 2015 in one of their six aerobic digesters. The pilot involved installing a submersible mixer to mix one half of the digester for anoxic activity. The objective was to determine if the anoxic / aerobic configuration in the digester could satisfy both anoxic alkalinity recovery and aerobic digestion. The results of the pilot showed several significant process benefits compared to the digesters operated fully aerobic with magnesium hydroxide addition. Elimination of magnesium hydroxide dosing could save Naperville an estimated \$128,000 per year, which would result in a simple payback period under 2 years for the modifications.

Wednesday 11:00 a.m. – 11:30 a.m.**(TREND)****IEPA Course #12929****Utilizing Wastewater Odor Tracking to Guide POTW Improvements and Enhance Public Relations***Karen K. Clementi, ENV SP, Deuchler Environmental, Inc.*

The Fox Metro Water Reclamation District (FMWRD) odor investigation and control study was initiated in 2013 and included both source sampling and treatment at the WWTP along with an ambient sampling program around the perimeter of the plant to study, evaluate, and treat odors emanating from the WWTP and collection system. Ongoing efforts have allowed FMWRD to develop a phased approach to direct ongoing improvements in both the collection

system and WWTP, which has enabled FMWRD to prioritize specific odor solutions in a cost-effective and rapid manner. The study results have also been successfully employed to relate detailed, accurate information to FMWRD's Board of Trustees, local elected officials, and nearby residents.

(STORM)

Siting of Green Infrastructure to Manage Stormwater: Lessons Learned from the City of New York Department of Environmental Protection **IEPA Course #12930**

Paul Hurley, Greeley and Hansen

The Flushing Creek Combined Sewer System overloads the Flushing Creek Combined Sewer Overflow (CSO) Retention Facility in wet weather events, resulting in CSOs. The New York City Department of Environmental Protection (DEP) intends to build Green Infrastructure (GI) in the City Right-of-Way to alleviate the flow to the Flushing Creek CSO Retention Facility and limit the number of CSOs. Greeley and Hansen analyzed the combined sewage system using ArcGIS to calculate the volume of runoff flowing to each catch basin. The goal of the analysis was to select sites for GI installations using the runoff flow calculations to optimize the volume of water diverted from the Flushing Creek CSO Retention Facility.

(ASST)

Developing Solutions to Meet Regulatory Constraints and Long-Term Goals **IEPA Course #12931**

Ted R. Bluver, Greeley and Hansen

The Greater Peoria Sanitary District has been in discussions with the USEPA to address two permitted discharges in Bartonville, Illinois. These discharges, while infrequent, have demonstrated excursions of effluent limits set forth in an NPDES permit. Two alternatives were identified to eliminate permitted discharges – reduction of infiltration and inflow or a new conveyance system. With many factors affecting flow in a separate sewer system, developing solutions to satisfy regulatory constraints with a satisfactory degree of confidence is challenging. This study is useful to municipalities and engineers as it demonstrates a thoughtful approach to build confidence in improvements that dependent on a range of variables.

(OPS)

Optimizing Ammonia ISE Measurements **IEPA Course #12932**

Kenny Smart, Thermo Scientific

This technical presentation will cover the following items for optimizing Ammonia ISE measurements; Electrode characteristics and meter selection; preparation of standards and calibration; measurement of samples with approved methods; optimizing performance; and, how to troubleshoot your procedure.

Wednesday 11:30 a.m. – 12:00 p.m.

(TREND)

Compressible Media Filtration for Wet Weather Treatment **IEPA Course #12933**

Tom Dumbaugh, P.E., WesTech Engineering

Physical treatment can be used for wet weather applications as a cost-effective method solving water body pollution issues. Example facilities are proven to remove 90% particulates and effectuate UV disinfection without chemicals. Facilities operate unmanned, are primarily underground and can serve as a foundation for and to sustain green space and associated public amenities. Interconnected by trails along the waterbody, this approach to water quality protection has changed the face of a community.

(STORM)

Urban Flooding in the South Suburbs

IEPA Course #12934

Katie Lazicki, Arcadis

The Metropolitan Water Reclamation District of Greater Chicago (MWRD) piloted the Little Calumet River/Cal-Sag Channel Master Plan project, where MWRD partnered with local communities and residents to develop community-based plans to develop green and gray solutions for urban flooding. The master plan identified the existing flooding problems within the study area, then analyzed several small problem areas using hydraulic/hydrologic models. This presentation will discuss two of the problem areas as case studies, identify the reported flooding issues, review the existing levels of service of the local municipal conveyance systems, and discuss how relatively similar problem areas can experience flooding to such differing degrees.

(ASST)

IEPA Course #12935

Development of Process Model for the Calumet Water Reclamation Plant as a Planning Tool

Bikram Sabherwal, Black & Veatch

As part of Long Term Capital Planning work, the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) has developed a whole plant process model for the 430 mgd Calumet Water Reclamation Plant (Calumet WRP) to support planning efforts. MWRDGC intends to utilize the process model for capital planning, feasibility studies, and engineering evaluations. The calibrated process model was used for initial evaluation of biological nutrient removal, phosphorus recovery and peak flow treatment. The presentation will focus on the GPS-X model development, initial evaluations and overall usability.

(OPS)

Real World Considerations for Pump Design, Operation and Troubleshooting

IEPA Course #12936

Steve Truitt, P.E., Penn Valley Pump

General discussion of design, operation and troubleshooting of pumping systems. As far from a sales pitch as humanly possible. We discuss info applicable to both centrifugal and positive displacement pumps including: Pipe supports, gauges, switches, valves, TDH, NPSH, cavitation, common pump issues, hydraulic issues and control issues.

Wednesday 1:30 p.m. – 3:00 p.m.

(CLSS)

ERTC Operator Training Review Class 1 & 2 Prep

IEPA Course #12937

Rick Lallish, Program Director, Water Pollution Control, ERTC SIUE

Class 1 and 2 certification exam materials are covered to review skills needed to operate, facilitate process control, and troubleshoot different types of treatment units/processes. Information covered includes activated sludge, biological nutrient removal, sequencing batch reactors, oxidation ditches, aerobic and anaerobic digestion. Word problems and mathematical calculations are reviewed; laboratory analysis is discussed.

Wednesday 1:30 p.m. – 3:30 p.m.

(WKSP)

PLC Workshop IEPA Course #12938

Rockwell Automation

The Basics of PLC, HMI and Integrated Power by Rockwell Automation: This hands on lab is designed to provide the student with the maintenance and engineering basics. *Note: Space is limited to 30 people.

Wednesday 1:30 p.m. – 2:00 p.m.

(COLL)

Jerseyville Illinois Saves Failing 60" Pipe and Road Above It

IEPA Course #12939

Brian Culich, AP/M Permaform

When Jerseyville, IL City Engineer Robert Kincaid, PE, investigated a failing two-lane paved road, he discovered a 60-inch by 100 foot long CMP sewer was in very bad shape. The location and large pipe diameter limited rehabilitation options. Kincaid selected a trenchless, centrifugally-cast concrete pipe (CCCP) solution. Using a spincaster, and specially formulated high-strength fine aggregate composite concrete, a new, structurally sound concrete pipe is cast. Ace Pipe Cleaning Inc., Kansas City, MO contractor, managed the project. Kincaid is pleased with Jerseyville's first CCCP project. Two walk-throughs in the first four months following installation, once after a major rain event, have shown the work to be holding up perfectly.

Wednesday 2:00 p.m. – 2:30 p.m.

(COLL)

Rivers and Robots: Technology Turning the Tide in the Battle with I&I

IEPA Course #12940

Howard Johnson, Shive-Hattery, Inc.

This presentation summarizes two case studies where robotic inspections were used to perform condition assessment of sanitary sewers ranging from 6" to 78". Focus will be on methods and tools utilized, findings, recommended corrective actions, and most importantly on the key lessons learned by all involved (City/Engineer/Contractor).

Wednesday 2:30 p.m. – 3:00 p.m.

(COLL)

Application of the Internet of Things and Data Fusion for Collection Systems

IEPA Course #12941

Greg Quist, Ph.D., SmartCover Systems

This session will discuss how the City of Elgin, Illinois, is using the Internet of Things to provide visibility into Elgin's collection system in dry and wet weather. Elgin adopted the SmartCover Sewer Monitoring System (Escondido, CA) starting in 2011 to monitor CSO overflow structures on the Fox River and also sanitary sewer sites in the City's sewer system. Results and data from the operation of this Internet of Things system deployed by Elgin will be discussed, including the economics of monitoring, the return on investment and risk reduction afforded by sewer system visibility.

Wednesday 3:30 p.m. – 4:00 p.m.

(COLL)

Using New Technology for Fast Collection System Assessment

IEPA Course #12942

Michelle Harrod, Midwest Water Group, Inc.

In 2016 the Village of Algonquin determined that it would complete a full sewer system inspection program to create a benchmark for future Operations and Maintenance intervals and to find any system failures and remedy the problem before it created sewer backups or overflows. Algonquin required a fully digital deliverable for the project that could be integrated into its GIS and Asset Management platform. The project also required that the city be notified immediately of any issues and the way in which this process worked between the Village and Contractor. This session describes the development of the project, the challenges and lessons learned from an "all digital" format and the results of the study.

Wednesday 3:30 p.m. – 4:30 p.m.

(WKSP)

Illinois Municipal Retirement Fund

IEPA Course #12943

Illinois Municipal Retirement Fund

A representative from the Illinois Municipal Retirement Fund will present a brief overview of the plan, provide any updates, and answer questions to participants retirement planning.

Wednesday 3:30 p.m. – 5:00 p.m.

(CLSS)

Operator Training Review Class 3 & 4 Prep

IEPA Course #12944

Jim Winslade, Adjunct Staff, Water Pollution Control, ERTC SIUE

Class 3 and 4 certification exam materials are covered to review skills needed to operate, facilitate process control, and troubleshoot different types of treatment units/processes. Information covered includes biological treatment principles, process control, trickling filters, RBC units, stabilization ponds, disinfection, and operation and maintenance of collection systems. Word problems and mathematical calculations are reviewed; laboratory analysis is discussed.

Wednesday 4:00 p.m. – 4:30 p.m.

(COLL)

Step Up to GIS

IEPA Course #12945

Rocky Horvath, Village of Fox Lake

Fox Lake is a small Village of just over 9,000 people. It is situated in two counties, and due to the lakes it has a very long footprint that is separated by a bridge. As the Village is continuing to grow, Rocky Horvath (Fox Lake's Water and Sewer Supervisor) started looking implementing a GIS to help organize and give better access to the information that the need on a regular basis. Fox Lake's GIS program was built from Rocky's need to build a system to easily collect, update and review water and sewer information. This workshop, "Step Up to GIS", focuses on the Village of Fox Lake's journey of building their GIS from scratch. It also includes key ideas and points that anyone can use when building a GIS.

ILLINOIS WASTEWATER PROFESSIONALS CONFERENCE

“ON THE ROAD TO RESOURCE RECOVERY”

APRIL 16-19, 2018

SPRINGFIELD, ILLINOIS

