



2017

MID-YEAR CONFERENCE

NOVEMBER 14, 2017

8:00 AM - 4:00 PM

Utah Cultural Celebration Center
1355 West 3100 South
West Valley City, Utah

The Water Environment Association of Utah is dedicated to the professional growth of its members and the preservation and enhancement of the water environment.

CONFERENCE **ANNOUNCEMENTS**

- *Young Professionals Dinner - See below.*
 - *Annual conference will be held April 17 - 20, 2018 in St. George, Utah. Call for abstracts has been issued. Abstracts can be submitted at www.weau.org.*
 - *2018 Operations Challenge Kickoff Meeting - December 5th, 2017 at 11:00 AM at Central Valley Water Reclamation Facility.*
 - *Door prizes will be awarded after the last session of the day. Your entry is your name tag and lanyard. Must be present to win,*
-

Young Professionals **DINNER SOCIAL**

Who: Young Professionals

Where:



Valley Fair Mall, 3601 S. 2700 W

When: November 14, 2017, 5:00 PM

Why: Networking, meeting with those in the industry, and **FREE FOOD!**



LinkedIn

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WEAU YP's & weauyp

CONFERENCE **SCHEDULE**

CONFERENCE SCHEDULE	
TIME	EVENT
8:00-8:30	Registration and Continental Breakfast
8:30-10:00	Morning Sessions
10:00-10:20	Break
10:20-11:50	Late Morning Sessions
12:00-1:20	Lunch and Keynote Speaker
1:30-3:00	Afternoon Sessions
3:00-3:20	Break
3:20-4:00	Late Afternoon Sessions
4:00	Return Lanyards and Prize Drawing

KEYNOTE **ADDRESS**



MyWaterLegacy

Clint Rogers - WEAU President & Invited Guests

As part of a national marketing campaign targeting the value of water and the unsung heroes of our industry that deliver clean water back to the environment, the Water Environment Federation wants all of us to consider what legacy are we creating? Then tell, share, post, tweet, snap, or insta your story in order to highlight the critical work done each day to protect public health, educate the general public and recruit people to the industry.

A little closer to home, what is WEAU's water legacy? What are we doing to improve the water environment here in Utah, put the spotlight on our unsung heroes, educate the public, and recruit new faces to the industry. Utah is one of the fastest growing states in the nation and the next twenty years is going to test and stretch our water resources and require innovation to meet demands while at the same time providing nutrient removal and protecting beneficial uses of our open waters.

It's time to revisit the mission statement of WEAU and determine what we do well and what can we do better going forward to meet the challenges facing our organizations and our state over the next 20 years. It's time to establish our water legacy.

PRESENTATION **SCHEDULE**

TIME	SESSION A1	SESSION B1
8:00 - 8:30	REGISTRATION AND CONTINENTAL BREAKFAST	
Topic	NUTRIENT REMOVAL	WASTEWATER FACILITY PLANNING
8:30 - 9:10	"The Right Water for the Right Purpose" (Cory Dow - Carollo Engineers)	"Turbo Blowers: Real Cost Savings or Just Hot Air?" (Peter Zemke - Brown and Caldwell)
9:20 - 10:00	"Pilot Testing Nutrient Removal at Central Valley WRF" (Bryan Mansell - Brown and Caldwell)	"Organics Management and Energy Recovery: The Future of Solids Processing" (Rashi Gupta - Carollo Engineers)
10:00 - 10:20	BREAK	
Topic	NUTRIENT REMOVAL	STUDENT PRESENTATION
10:20 - 11:00	"Taking Advantage of Processes Intensification for Nutrient Treatment" (Tanja Rauch-Williams - Carollo Engineers)	"Studying Nutrient Management Using a Pilot Scale Bardenpho Process at Central Valley Water Reclamation Facility" (Sunayna Dasgupta - University of Utah)
11:10 - 11:50	"The Challenges of Implementing BNR - A Real-World Example" (Chris Mountenay - Stantec Consulting)	HARMFUL ALGAL BLOOM "Cyanobacteria-The Good, the Bad and the Ugly" (Ken Burgener - North Davis Sewer District)
12:00 - 1:20	LUNCH AND KEYNOTE ADDRESS	
TIME	SESSION A2	SESSION B2
Topic	NUTRIENT REMOVAL	HARMFUL ALGAL BLOOM
1:30 - 2:10	"Biological Nutrient Removal Applications for Monitoring Oxidation Reduction Potential" (Robert Smith - YSI/Xylem)	"Utah's Response to Harmful Algal Blooms" (Ben Holcomb - Utah Division of Water Quality)
2:20 - 3:00	"Analysis of Startup and Long Term Performance of a High Throughput Deammonification System" (Mudit Gangal - Ovivo Water)	REGULATORY "DWQ's Utah Lake Study: A Framework for Effective Stakeholder Involvement" (Carl Adams, Scott Daly - Utah Division of Water Quality)
3:00 - 3:20	BREAK	
Topic	ENERGY EFFICIENCY	REGULATORY
3:20 - 4:00	"Efficient Treatment without New Toys: Reducing Energy Intensity through Strategic Energy Management" (Matt Jensen - Cascade Energy / Kevin Hall - CWSID)	"DWQ TBPEL Variance Applications" (Ken Hoffman - Utah Division of Water Quality)

TIME	SESSION C1	SESSION D1
8:00 - 8:30	REGISTRATION AND CONTINENTAL BREAKFAST	
Topic	OPERATIONS	COLLECTIONS
8:30 - 9:10	"Pumping System Operating Efficiency vs Energy Efficiency - In Relation to Impeller Designs and Ragging" (Ron Aceto - Cornell Pump Company)	"Sustainability of PVC (Vinyl) Pipe: A Comprehensive Environmental Review of PVC Pipe" (Kyle Wroblewski - Uni-Bell)
9:20 - 10:00	"NPSH and Cavitation" (Ron Aceto - Cornell Pump Company)	"Web Based GIS Management for Collection Systems" (Darren Stone, Karl Faulkner - Mt. Olympus Improvement District)
10:00 - 10:20	BREAK	
Topic	OPERATIONS	COLLECTIONS
10:20 - 11:00	"Progressive Cavity Metering Pumps Allow Users to Optimize Chemical Consumption While Improving Process Control" (Kevin Thomas - SEEPEX)	"How to Permit Your Next Sewer Project" (Kara Cash - Brown and Caldwell)
11:10 - 11:50	"CVWRF's BNR Pilot Plant: The Mechanics That Built It and the Operators Operating It" (Jared O'Brien, Sharon Burton, & James Magill - Central Valley Water Reclamation Facility)	"I&I and Multi-Sensor Sewer Inspections" (Doug Jenkins, Emma McGowan - CH2M)
12:00 - 1:20	LUNCH AND KEYNOTE ADDRESS	
TIME	SESSION C2	SESSION D2
Topic	OPERATIONS	COLLECTIONS
1:30 - 2:10	"Spreadsheet and Graphs" (John Gallagher, Weston Youd - South Valley Sewer District)	"Why We Clean and Televisе Sewer Pipelines" (Sheldon Teeple - RS Tech Services)
2:20 - 3:00	"Which Level Measurement Technology Should I Choose?" (Scott Lee - Siemens Process Instrumentation)	"Sewer Lift Station Alternatives" (Gary Vance - JUB)
3:00 - 3:20	BREAK	
Topic	OPERATIONS	COLLECTIONS
3:20 - 4:00	"SVSD Flow Metering Systems" (Mike Foerster - South Valley Sewer District)	"Collection System Rehabilitation - Sliplining Case Studies" (Mike Kobe - Brown and Caldwell)

Ron Aceto

Cornell Pump Company

NPSH and Cavitation

(Session C1)

This discussion defines NPSH in both flooded and suction lift pumping systems. The topic includes examples of pump curves and NPSHR, friction loss calculations and piping systems effects on NPSHA as well as the effects of cavitation on pump efficiency and wear.

Pumping System Operating Efficiency vs Energy Efficiency - In Relation to Impeller Designs and Ragging

(Session C1)

The discussion compares pumping system energy efficiency versus operating and maintenance costs based on different impeller design options. Comparisons between less efficient recessed and open impellers and higher efficiency enclosed impellers or cutter options. The topic of discussion takes a look at choosing the best option for lowering system operating costs.

Carl Adams, Scott Daly

Utah Division of Water Quality

DWQ's Utah Lake Study: A Framework for Effective Stakeholder Involvement

(Session B2)

Utah Lake is the third largest open body of water in Utah by area and within the fastest growing county of the state which presents many challenges for this critical natural resource. Due to its many unique features including shallow depth, carbonate rich water chemistry, and the rapid development occurring nearby, new tools and approaches are required to ensure that limited financial resources are put to their most efficient use. The most important element of any large scale water quality project is the buy-in of local residents to a vision of what's possible, tempered by what's feasible. Given the recent concerns and controversy surrounding water quality in Utah Lake, the Division of Water Quality has embarked on a formalized process for sharing information, providing a venue for input from community leaders, and directing research to better understand the steps needed to improve and protect the lake into the future.

Ken Burgener

North Davis Sewer District

Cyanobacteria-The Good, the Bad and the Ugly

(Session B1)

The relationship between bacteria and protists is well understood. The relationship between cyanobacteria and protists is less understood and yet in this time of Harmful Algae Blooms (HAB) it becomes more important. Understanding the relationship of food predator relationship may offer a simple but not well understand way to lesson the impact of the events.

Kara Cash

Brown and Caldwell

How to Permit Your Next Sewer Project

(Session D1)

Collections system flow monitoring is commonly made with area/velocity (A/V) flow meters. The ability to measure both water depth and velocity make this technology a popular choice in the absence of a primary device. The proper sensor selection and correct mounting practices can make a large difference in the success of a collection system flow monitoring program. This presentation will discuss common submerged and non-contacting area/velocity flow metering technology including continuous-wave Doppler, time-gated/pulsed-Doppler and non-contacting technologies. Site selection, proper sensor installation, QA/QC of data and implementing remote telemetry at permanent sites will be included in the presentation.

Sunayna Dasgupta

University of Utah

Studying Nutrient Management Using a Pilot Scale Bardenpho Process at Central Valley Water Reclamation Facility

(Session B1)

A biological nutrient removal scheme (BNR) was constructed in Central Valley Water Reclamation Facility (CVWRF) to perform removal of biological phosphorous (P) and nitrogen. The concept of generation of organic carbon from return activated sludge (RAS) was tested based on two generalized ideas: 1) Westside: 100% of RAS returned to anaerobic cell and 2) Barnard: 10% of RAS returned to anaerobic cell. In both the above cases, the primary sludge fermentate containing volatile fatty acids (VFAs) was directed to the anaerobic cell and primary effluent to the anoxic cell. This schematics was designed to enrich a particular group of microorganism responsible for enhanced biological phosphorous removal (EBPR) commonly known as polyphosphate accumulating organisms (PAOs). The current study was conducted to track the biological development and activity of PAOs by using microbial tools. Experiments were performed to check the release/uptake kinetics commonly exhibited by EBPR performing plants.

Cory Dow [RETURN TO "PRESENTATION SCHEDULE"](#)

Carollo Engineers, Inc.

The Right Water for the Right Purpose

(Session A1)

Population increase and extended periods of drought are depleting water resources. Although water technology is becoming more efficient, water agencies are still faced with seeking additional supplies to meet water demands. Water reuse is one solution for extending water resources. Whether the need is for irrigation, commercial or industrial purposes, or augmenting a drinking water supply, reusing water can safely provide the right water for the right purpose. This presentation will highlight key areas of interest for water reuse in the State of Utah. Furthermore, an industry update on the latest regulations, technology, and projects will be provided, as well as effective ways to improve the public's perception of water reuse.

Mike Foerster

South Valley Sewer District

SVSD Flow Metering Systems

(Session C2)

This presentation will provide an overview and theory of open channel flow measurement, how to tell if flow data are correct, show how to understand hydraulics in the sewer being monitored, and provide examples of how flow data are used by engineers and operations staff. A broad range of benefits of accurate flow knowledge will be demonstrated based on data from actual sewer flow monitoring sites including: detecting and quantifying areas of excessive Infiltration & Inflow (I/I) and Base Infiltration (BI).

John Gallagher, Weston Youd

South Valley Sewer District

Spreadsheet and Graphs

(Session C2)

Everyday new and ever changing influent enters our reclamation facilities forcing operators to constantly monitor and change the treatment process in order to keep our effluent clean and on permit. The same way our facilities must adapt to constant influent change, our methods must adapt to new technology. This new technology is changing how operators are able to view and interpret data. With data collection, data viewing, and data use, operators can see and understand what is happening every minute of every day in their reclamation facilities. South Valley Sewer District's Jordan Basin Water Reclamation Facility uses technology such as Historian, SCADA, and Excel to collect and view real time data. With this information we can check and trend multiple data points at once allowing us to make the most informed decisions to our process. This presentation will show you how JBWRF collects views, and uses that data.

Mudit Gangal

Ovivo Water

Analysis of Startup and Long Term Performance of a High Throughput Deammonification System

(Session A2)

Deammonification is a cutting edge sidestream treatment technology that utilizes the power of the Anammox bacteria to treat high nitrogen concentration sidestreams in a compact, specially designed and energy efficient reactor. The paper discusses the details of several installations including the operational aspects and data/results during both startup as well as stable operation. Of particular note is the Waterstromen Olburgen installation in the Netherlands which has been in operation for over 10 years. The system has able to consistently and stably achieve greater than 92% Ammonia-N removal at a high influent loading rate as high as 2 kg-N/m³/d. In another plant (the largest in Europe), the system consistently produced greater 85% TIN and 92% Ammonia-N removal even with a concentrated influent (influent Ammonia-N in excess of 1,500 mg/l).

Rashi Gupta

Carollo Engineers

Organics Management and Energy Recovery: The Future of Solids Processing

(Session B1)

Regulatory changes in several states are pushing organics like fats/oils/grease (FOG) and food waste out of landfills, but where can they go? Co-digestion at wastewater treatment facilities is one option being seriously considered in California and other regions around the country. Digesting these high strength wastes can increase digester gas production, which can then be used to produce renewable gas and vehicle fuel. Treatment plants in Oakland, CA and Gresham, OR obtained energy-neutral status in part due to the co-digestion. Many other plants have implemented co-digestion as they transition towards resource recovery and energy neutrality. However, the impacts of co-digestion and external feedstock on treatment plant operations and processes must be considered and those impacts have to be mitigated for the systems to be successful. In this session, we will discuss regulatory drivers, co-digestion basics, lessons learned, and new technologies to consider as part of a co-digestion system.

Ken Hoffman

Utah Division of Water Quality

DWQ TBPEL Variance Applications

(Session B2)

UAC R317-1-3.3 requires all discharging non-lagoon treatment works produce effluent with mean annual average total phosphorus (TP) concentration of 1.0 mg/L by January 1, 2020. DWQ may authorize variances from the technology based phosphorus effluent limitation (TBPEL) rule under five conditions. Variances can be given where: (1) TP concentrations are already governed by water quality based standards, e.g., by a TMDL; (2) the TBPEL imposes a demonstrated economic hardship on the community; (3) the TBPEL requirement is shown to be unnecessary to protect waters downstream; (4) the facility can achieve commensurate TP reductions by other means; and (5) where, in spite of the its due diligence, the facility is unable to meet the compliance deadline of January 1, 2020. Variance applications must be made by January 1, 2018. DWQ will discuss the different variances, what is needed to request a variance, the approval process, and examples of variance applications.

Ben Holcomb

Utah Division of Water Quality

Utah's Response to Harmful Algal Blooms

(Session B2)

The Utah Department of Environmental Quality (DEQ), Division of Water Quality (DWQ) has identified over two dozen waterbodies in the State of Utah that are at-risk of excessive algal production including cyanobacteria. These blooms can pose a health risk to the public, including the release of liver and/or neurotoxins in some cases, and can result in broad economic and ecological hardship for Utah citizens. Not only are harmful algal blooms (HABs) a concern for recreational users, but the majority (>80%) of these waterbodies are protected as source water for drinking water supply or are used for secondary water sources downstream. This presentation will provide background information on cyanobacteria and cyanotoxins and the State of Utah response to protect drinking water and recreation from HABs.

Doug Jenkins, Emma McGowan

CH2M

I&I and Multi-Sensor Sewer Inspections

(Session D1)

The multi-sensor inspection (MSI) platform is a robust large-diameter pipeline inspection program that can be retrofit to accommodate a wide range of data collection technologies. The MSI tool was used to inspect and assess a combined 37,200 linear feet (LF) of 36 to 78-inch diameter pipelines associated with Salt Lake City's 1200 West Trunk Line and their respective manhole structures. Technologies chosen for the 1200 West Trunk Line included: high-definition closed circuit television (HDCCTV) using the side scanning digital universal camera (DUC), light detection and ranging (LiDAR), and digital sonar technology.

This presentation will concentrate on the MSI results and analysis of these inspections for each pipe segment (asset) for all three trunklines. These results and conclusions will be used by the City to make recommendations and schedules for preventative maintenance activities that may include: re-inspection, rehabilitation, point repairs, or full replacements. Additionally, the information will be used to estimate the remaining useful life (RUL) of each pipe segment inspected.

Matt Jensen, Kevin Hall

Cascade Energy, CWSID

Efficient Treatment without New Toys: Reducing Energy Intensity through Strategic Energy Management

(Session A2)

Energy efficiency means capital projects, right? New turbo blowers and VFDs, expensive diffusers and premium motors, LED retrofits and HVAC upgrades, and more? It certainly can mean that, but it doesn't have to! Come learn how facilities in Utah are reducing costs while maintaining and even improving effluent quality without capital projects. Working individually and with peer groups, wastewater professionals have reduced their plants' annual energy consumption from 5%–15% through a focused, facilitated review and optimization of their operations. Strategic energy management best practices and tools create energy awareness and action within the O&M crew, while energy models and metering allow results to be quantified and shared. The results are impressive, the costs are low, and the opportunities are everywhere.

Mike Kobe

Brown and Caldwell

Collection System Rehabilitation - Sliplining Case Studies

(Session D2)

Many utilities are facing similar challenges related to their large diameter sewers. These sewers are often now in poor condition, in areas of high utility conflicts, and convey significant amounts of flow. In addition, they are often deep and in areas of high groundwater. These realities make open cut dig and replace very expensive.

Innovative 'no-dig' trenchless rehabilitation techniques will be discussed including case studies of recent challenging rehabilitation projects for Central Valley Water Reclamation System and Salt Lake City Department of Public Utilities.

Scott Lee

Siemens Process Instrumentation

Which Level Measurement Technology Should I Choose?

(Session C2)

So many choices. There are so many different ways of solving a problem in measuring the level in a tank, vessel or sump. Which one do I use? Which one will involve the least amount of maintenance? Which one gives me the best value?

For more than 40 years, Ultrasonic Level Measurement and Hydrostatic Pressure measurement has been used in the Water and Wastewater industries for tanks, vessels, lagoons, contact basins, weirs, flumes, rivers and ponds. In recent years Radar Technology has been introduced as an additional solution. Although Radar works better than Ultrasonic in some cases, it is not a good choice in 100% of the applications. We will explore choosing the right level technology for your application, by discussing the "6 questions to ask in every level application". An overview of the basics of how each technology works with the similarities and differences between them. An explanation will be given of where Ultrasonic technology is still the best solution and where other alternatives are a better choice. Take this opportunity to dig down into the details of choosing the right solution based on your circumstances.

Bryan Mansell

Brown and Caldwell

Pilot Testing Nutrient Removal at Central Valley WRF

(Session A1)

Central Valley Water Reclamation Facility is planning to implement biological nutrient removal to address future phosphorus limits. Early concept design using a biological process model, BioWin, indicated the need for readily biodegradable carbon to drive the phosphorus removal process. Bench scale testing at CVWRF in 2016 suggested this carbon could be produced by fermenting primary solids and/or food waste. In 2017, CVWRF elected to construct a full scale pilot plant to test various process configurations and the use of onsite generated fermentate for biological phosphorus removal. This presentation will discuss how BioWin was used to design the pilot, the pilot startup, and troubleshooting; preliminary findings will be reviewed. Data collection is ongoing.

Chris Mountenay

Stantec Consulting

The Challenges of Implementing BNR - A Real-World Example

(Session A1)

Biological nutrient removal (BNR) can improve effluent water quality and offers the opportunity for nutrient recovery. But, implementation is complex and expensive. The presentation will discuss project drivers, process selection rationale, and provide an overview of the design improvements for a 36 mgd BNR plant expansion. Challenging design and construction work is being conducted at a functioning facility with many related process upgrades over the 100+ acre site, including:

- Primary clarification
- Primary influent & effluent conveyance
- BNR reactors
- Secondary clarification
- Effluent filtration
- Ultraviolet disinfection
- Effluent outfall
- Sludge thickening and fermentation
- Waste activated sludge dewatering
- Thermal hydrolysis
- Biogas management
- Flood protection

The new plant will accommodate 325,000 people, bringing the total service population to 1.25 million.

Jared O'Brien, Sharon Burton, & James Magill

Central Valley Water Reclamation Facility

CVWRF's BNR Pilot Plant: The Mechanics That Built It and the Operators Operating It

(Session C1)

CVWRF's TF/SC process will not be able to meet the new nutrient removal guidelines, as a result, CVWRF will need to change processes. There are several different processes that will work but which one should CVWRF go with? It was determined that a pilot project was needed. The mechanics at CVWRF were tasked with building the plant. There were many challenges along the way. This presentation will explain, from the mechanic's perspective, the challenges met and the solutions found. Upon completion of the plant, the plant now needed to be operated. Through team effort, the bugs were worked out and a pilot plant was successfully put into operation. The pilot plant posed numerous challenges on the staff, some foreseen and others not so much. Not only have we learned what the pilot plant can do nutrient wise, the operators will be able to share their experiences with the engineering group prior to design of the final process upgrade.

Tanja Rauch-Williams

Carollo Engineers

Taking Advantage of Processes Intensification for Nutrient Treatment

(Session A1)

Over the past few years several process intensification technologies have entered the domestic wastewater market, that allow meeting treatment objectives at significantly reduced footprint and/or energy demand.

This presentation will describe the motivations of water resource recovery facilities to consider, test, and implement intensification methods. New ballasted activated sludge treatment processes will be compared to more established methods such as IFAS, membrane, and activated sludge treatment in terms of their advantages and disadvantages and nutrient removal treatment performance. The technologies will also be compared based on footprint requirements, costs, and energy requirements. Lastly, general considerations and barriers will be discussed that utilities typically face when deciding on whether to implement innovative intensification processes. These include unfamiliarity with technologies, operational and permitting uncertainties, as well as sole-sourced procurement. The presentation will finish with recommendations on how utilities have started to better manage these risks.

Robert Smith

YSI / Xylem

Biological Nutrient Removal Applications for Monitoring Oxidation Reduction Potential

(Session A2)

Online monitoring of oxidation reduction potential, ORP, provides valuable feedback on the status of biological nutrient removal. An ORP sensor is most similar to a pH sensor in design and function but more similar to a dissolved oxygen sensor in application. The understanding of ORP is less intuitive than DO because it is a relative measurement. However, the benefit of ORP is that it provides much greater resolution of the conditions in the reactor at very low DO concentrations. For example, monitoring the value of and the change in ORP allows determination of the endpoints of nitrification and denitrification and when suitable conditions exist for phosphate release, a critical step in the Enhanced Biological Phosphorus Removal (EBPR) process. In addition to applications, the webinar will discuss ORP measurement principles and proper ORP sensor maintenance and calibration.

Darren Stone, Karl Faulkner

Mt. Olympus Improvement District

Web Based GIS Management for Collection Systems

(Session D1)

A demonstration of MT Olympus Improvement District's Custom web based GIS facility Management. Featuring live updates in the field and live updates from the field, tv videos in the field and work order management, GIS for everyone.

Sheldon Teeples

RS Technical Services

Why We Clean and Televiser Sewer Pipelines

(Session D2)

During this session we will discuss the "whys" of cleaning and maintaining sewer collections pipelines and review the difference between single and multiconductor cable connections to the video equipment.

Kevin Thomas

SEEPEx

Progressive Cavity Metering Pumps Allow Users to Optimize Chemical Consumption While Improving Process Control

(Session C1)

The progressive cavity pump's ability to provide constant, non-pulsating flow against varying suction and discharge pressures has long made them among the best suited for dosing, or blending, chemicals into many different processes. For many years their development and use was stifled by the high cost of exotic materials required to withstand aggressive acids and drives/controllers that could be used to accurately control the pump speed to precisely dose a chemical into a process flow.

Today, the economics of building a pump with exotic materials such as titanium, hastelloy, Viton and Aflas (fluoropolymers) make it possible for progressive cavity pumps to be used in applications such as, Sodium Hypochlorite, Ferric Chloride, Sulfuric Acid and other chemicals. New VFD technologies control motor speed to the RPM, not just plus or minus 5%. The advent and development of economical, easy to use, realtime, inline analyzers and meters makes it possible to make continuous minute adjustments to the pump speed, or dosing rate. The end result for the user is a product that is more consistent and has less residual, or excess chemicals. Product quality and consistency is improved with a minimal amount of chemical addition, or in other words saving money by not wasting, or over dosing chemicals.

Gary Vance

J-U-B Engineers

Sewer Lift Station Alternatives

(Session D2)

There are numerous types and configurations available when it comes to the design of sewer lift stations. This presentation will give a brief overview of the various technologies and arrangements that may be considered by a municipality or district, including submersible, wet pit/dry pit, and suction lift stations. The presentation will also discuss pump alternatives and safety/maintenance considerations. Helpful design information will be offered and potential pitfalls will be identified. Discussion will include the balance between planning for future flow rates while needing to serve much smaller initial flows. Photos of constructed lift stations will help illustrate the differences between the various alternatives. While there is increasing interest in this disinfection technology, there guidance with respect to implementation of this technology. Thus, as facilities are introducing this technology into their processes to meet National Pollutant Discharge Elimination System (NPDES) permit requirements for disinfection, it is necessary to develop engineering design criteria that will aid decision-makers understanding the technical aspects of PAA disinfection, cost implications, and local regulatory requirements for implementation of PAA disinfection. This paper provides an overview of the chemistry and a summary of several current US pilot projects and applications of PAA. This paper also describes testing methods to establish full-scale design criteria, including methods for bench-scale and pilot plant design and testing to compare PAA against other more conventional disinfectants.

Kyle Wroblewski

Uni-Bell

Sustainability of PVC (Vinyl) Pipe: A Comprehensive Environmental Review of PVC Pipe

(Session D1)

This PVC pipe Life Cycle Assessment (LCA) industry study sets a new benchmark for evaluating underground piping systems in North America based on a 100 year life cycle. It was peer reviewed and conducted according to life cycle assessment (LCA) standards ISO 14040 series and combined with an Environmental Product Declaration (EPD) in compliance with ISO 14025 standards and independently certified by the National Sanitary Foundation (NSF). Data was collected from 7 producers and 21 facilities representing 20% of PVC pipe manufacturing capacity in the U.S. and Canada. The life cycle of piping is examined including materials, manufacturing, installation, use phase benefits, and end of life. Design, construction and key sustainability aspects are explored that address durability, corrosion, energy use, and other factors, and how this contributes to sustainable construction practices, codes and standards. A life cycle systems approach to project design covers more than just pipe materials; but rather, employing life cycle analysis to design, install and operate systems sustainably for 100 years.

Peter Zemke

Brown and Caldwell

Turbo Blowers: Real Cost Savings or Just Hot Air?

(Session B1)

Aeration usually accounts for over fifty percent of a wastewater treatment plant's total electricity consumption. High-speed turbo blowers, including integrally geared and direct-drive magnetic bearing and air bearing types, offer significant electricity savings over multistage centrifugal or positive displacement blowers. However, their capital and maintenance costs are much higher.

This presentation provides a brief comparison of current blower technologies and presents a case study completed for Central Valley WRF evaluating the 20-year life cycle costs of three types of high-speed turbo blowers against multi-stage blowers. The life cycle cost analysis considered equipment costs, electricity consumption, maintenance, building and infrastructure costs, and energy efficiency rebates. The results showed 1) the 20-year lifecycle costs of established turbo blower technologies are similar, and 2) while new high-speed turbo blowers would have a lower life-cycle cost than new multi-stage blowers, their lifecycle costs are similar to existing multi-stage blowers.

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THANK YOU!

We would like to **thank our sponsors** for supporting us in the 2017 WEAU Mid-Year Conference!



J-U-B ENGINEERS, Inc.





Thank You

for your participation in the



2017

**MID-YEAR
CONFERENCE**

PROFESSIONAL DEVELOPMENT HOURS

Hours of Training: _____ Date: _____

Authorized Signature:
