2024 Western Washington Short School

Date 6/4/2024

Start Time 7:30 AM

End Time 8:30 AM

Track 1A - Wastewater

Drinking Water and/or Wastewater Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Pt. Hadlock Treatment Plant - Starting a New Treatment & Collection System from Scratch**

Abstract

This presentation will outline the unique challenges and considerations to start a new treatment plant and collection system in the Pt. Hadlock Area in Jefferson County, WA. The area is currently served by septic systems and a new modular MBR Treatment Plant is being constructed along with a grinder pump pressure sewer system. This presentation will outline the steps the County and the design team took to fund and construct this capital project, the coordination and timing of construction contracts and the current status of the project's construction which is scheduled to be completed in December 2024.

Relevance

This is relevant for agencies that are considering modular MBR treatment systems or installing grinder pump pressure sewer systems.

Speaker **Eric Dienst; Kevin Dour**

E-mail eric.dienst@tetratech.com

Speaker's Job Title Project Engineer

Phone 206.883-9381

Organization Tetra Tech, Inc.

Primary Job Duties Eric Dienst is a professional engineer with 10 years experience in wastewater treatment and conveyance projects. He is the lead engineer on several projects ranging in size from $1M to $30M in construction costs.

Registrations or Certifications Washington State Professional Engineer

2024 Western Washington Short School

Date 6/4/2024

Start Time 7:30 AM

End Time 8:30 AM

Track 1B - Water / Maintenance

Drinking Water and/or Wastewater Water

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Got Lead? A Journey to Identifying Water Service Line Material**

Abstract

My presentation will cover the steps Silver Lake Water & Sewer District took to identify the utility side and customer side of the water service line. It will provide an overview of the EPA's Lead and Copper Rule Revisions, the records utilized to identify service line material, the technology (GIS and AM) employed to track the identification of unknown material service lines, and the field procedures being conducted during field identification.

Relevance

This presentation is relevant to the water industry as documentation of each service line's material is required to be submitted to the State by October 16, 2024, by the water purveyor. This requirement was established by the EPA in 2021 in response to the Flint, Michigan water crisis and hopes to improve the quality of water through the identification and removal of lead from the water distribution system.

Speaker **Katarina Hirai; Ricky Gordon**

E-mail khirai@slwsd.com

Speaker's Job Title GIS & Asset Management Coordinator

Phone 425-337-3647

Organization Silver Lake Water & Sewer District

Primary Job Duties Coordinate, design, implement, integrate, operate, and maintain the District's Enterprise GIS and Asset Management System.

Registrations or Certifications Washington State Water Operator

2024 Western Washington Short School

Date 6/4/2024

Start Time 7:30 AM

End Time 8:30 AM

Track 1C - Distribution / Collection and Conveyance

Drinking Water and/or Wastewater Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Great Water Views: Shoreline Asset Management Planning for Seattle**

Abstract

As a part of their broader asset management planning (AMP), Seattle Public Utilities developed a specific Shoreline AMP. The goal of the study was to better understand the specific needs of sewers adjacent to waterfront and permanently submerged within waterbodies. Challenges included addressing the physical issues of difficult access for operations, maintenance, and rehabilitation. In addition, other goals of the study included optimizing long term performance of pipes downstream of combined sewer overflows; and improving coordination between existing City programs. The team implemented a process to coordinate with planners, design teams and operations staff to collect information relevant to the planning. As a result of the study, the AMP identified a process to address the pipes with limited access, identified planning costs and provided other programmatic recommendations.

Relevance

The presentation is relevant to engineers and planners involved in managing and maintaining wastewater conveyance in areas with limited access. It is relevant to a process of assessing existing processes and coordination with existing programs to identify programmatic recommendations. And it is relevant to the process of identifying capital budgets and medium to long term scheduling and implementation.

Speaker **David Scott; Caroline Barlow**

E-mail david.scott@tetratech.com

Speaker's Job Title Civil Engineer

Phone 206 883 9418

Organization Tetra Tech

Primary Job Duties Project management

Registrations or Certifications Washington State Professional Engineer

2024 Western Washington Short School

Date	6/4/2024	**Track**	2C - Biosolids / Seismic Hazards
Start Time	7:30 AM	**Drinking Water and/or Wastewater**	Wastewater
End Time	8:30 AM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Biosolids: A Valuable Commodity**

Abstract

Washington Department of Ecology (Ecology) "encourages the maximum beneficial use of biosolids" and "recognizes biosolids as a valuable commodity". Ecology does not support incineration or landfilling of biosolids and it is reported that over 80% of biosolids produced in Washington are beneficially used in agriculture, forestry, soil mixing, and compost operations. This presentation will remind wastewater operators that they are making a product with value that is being used in many applications. The discussion will focus primarily on agricultural land application: operations, benefits, sampling & testing, research.

Relevance

Wastewater treatment facilities generate biosolids and are responsible for their proper management, beneficial use, or disposal.

Speaker	**Jake Finlinson**	**E-mail**	jake.finlinson@kingcounty.gov
Speaker's Job Title	Project Manager	**Phone**	206-477-3524
Organization	King County Wastewater Treatment Division		

Primary Job Duties Manage King County's biosolids agriculture beneficial use contracts including the Boulder Park Project Beneficial Use Facility, which is the largest biosolids beneficial use project in Washington State.

Registrations or Certifications na

2024 Western Washington Short School

Date	6/4/2024	**Track**	2B - Startup, Testing & Commissioning / Mainte
Start Time	7:30 AM	**Drinking Water and/or Wastewater**	Water;Wastewater
End Time	8:30 AM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **GWWTS: Commissioning & Startup Lessons Learned**

Abstract

Share lessons learned from commissioning and startup of a 70 MGD wet weather treatment facility. Georgetown Wet Weather Treatment Station (GWWTS) is King County's Wastewater Treatment Division newest wet weather treatment facility. The facility is a 70 MGD ballasted sedimentation treatment and UV disinfection. Discussion on Georgetown Wet Weather Treatment Station (GWWTS) commissioning and startup activities include equipment issues and redundancy, performance testing and data gathering during startup.

Relevance

Share information and experiences to water and wastewater treatment plant operators and other certified staff on startup activities for new or upgraded treatment facilities to assure a successful transition from project to operating the treatment facility.

Speaker	**Pedro DeArteaga**	**E-mail**	pedro.dearteaga@kingcounty.gov
Speaker's Job Title	Process Analyst	**Phone**	206-972-0788
Organization	KCWTD		
Primary Job Duties	Pedro is responsible for the process analysis and reporting for the CSO facilities for King County Wastewater Treatment Division.		
Registrations or Certifications	None		

2024 Western Washington Short School

Date	6/4/2024	**Track**	1A - Wastewater
Start Time	8:40 AM	**Drinking Water and/or Wastewater**	Wastewater
End Time	9:40 AM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Membrane Systems**

Abstract

This course will cover the basics of Membrane Bioreactor (MBR) process including how to design, operate and troubleshoot. Easy hands-on testing to evaluate the membrane system will also be shown in this class.

Relevance

With treated effluent quality permit becoming stricter around Puget Sound, MBR technology is a viable option. Operators will be shown some case studies to see how other plants have applied and operated the membrane technology.

Speaker	**Hiro Kuge**	**E-mail**	hiroo.kuge@kubota.com
Speaker's Job Title	Technology Manager & Service Group Manager	**Phone**	14259193308
Organization	Kubota Membrane USA		
Primary Job Duties	In charge of regional design work, management of After Servie Group, Technology Advisor for R&D		
Registrations or Certifications	Master on Environmental Engineering		

2024 Western Washington Short School

Date 6/4/2024

Start Time 8:40 AM

End Time 9:40 AM

Track 1B - Water / Maintenance

Drinking Water and/or Wastewater Water

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **PFAS Mitigation Strategy and Lessons Learned by a Regional Water Provider**

Abstract

Like many water systems, Lakewood Water District has detected PFAS in multiple groundwater sources. In order to mitigate impacts of PFAS on the water system, Lakewood has taken several steps including developing a comprehensive strategy to treat or replace impacted water sources. The presentation will cover the considerations, schedule and real-life experience of the District as it has developed and is implementing its PFAS mitigation strategy including a combination of new wells and two GAC treatment systems.

Relevance

This presentation provides information regarding approaches to address PFAS contamination in water sources. Operators will be able to use information regarding monitoring frequency and approaches in their regular duties. The presentation topic is centered around water quality and protecting public health in a cost effective manner.

Speaker **Marshall Meyer**

E-mail mmeyer@lakewoodwater.org

Speaker's Job Title General Manager

Phone 253-588-4423

Organization Lakewood Water District

Primary Job Duties General Manager for the Water District

Registrations or Certifications Washington State Water Operator;Washington State Professional Engineer

2024 Western Washington Short School

Date 6/4/2024

Start Time 8:40 AM

End Time 9:40 AM

Track 1C - Distribution / Collection and Conveyance

Drinking Water and/or Wastewater Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Hydrogen Sulfide Impacts on Infrastructure**

Abstract

What is it H2S and how and when is it produced? This prestation will cover anaerobic conditions at treatment plants and lift stations and discuss how H2S can it impact infrastructure (concrete and steel).Pressentation will also cover:- Concrete pipe, we investigated two 1970's concrete pipelines one upstream of any lift stations with great condition and one downstream with need of repair- Manholes, we repaired three MH's at the discharge of the major system FM that were about 20 years old - MH Drops or turbulent junctions - we investigated several minor system LS discharges and found no impact - Design considerations to mitigate impacts- Pipe and manholes- Treatment - dosing chemicals- BIOXIDE Calcium Nitrate Solution

Relevance

This is often unseen and without proper monitoring and result in significant damage to infrastructure.

Speaker **Doug Schlepp**

E-mail dschlepp@rh2.com

Speaker's Job Title Principal

Phone 206.794.6608

Organization RH2 Engineering

Primary Job Duties Project Management for Municipal Infrastructure Design and Construction Management

Registrations or Certifications Washington State Professional Engineer

2024 Western Washington Short School

Date	6/4/2024	**Track**	2B - Biosolids / Seismic Hazards
Start Time	8:40 AM	**Drinking Water and/or Wastewater**	Wastewater
End Time	9:40 AM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **PFAS - Latest Regulatory Landscape and Treatment Approaches for Municipal Biosolids**

Abstract

This presentation will provide an overview of current and forthcoming PFAS issues in biosolids. Participants will gain knowledge about the concentrations of PFAS in biosolids, toxicity, regulations, potential solutions, and messaging to customers about the issue.

Relevance

Federal and state regulatory agencies have growing concerns about public health and environmental wellbeing associated with per- and polyfluoroalkyl substances (PFAS). As of this writing, the United States does not yet have federally enforceable PFAS standards for drinking water, wastewater, or biosolids. This has left states to develop their own regulations to address PFAS contamination, creating a diverse regulatory patchwork across the country. State regulations on PFAS in drinking water are becoming common, but now a few states are also enacting regulations on PFAS in surface water and biosolids as well. For example, Michigan has developed screening levels for PFAS in biosolids, and Maine has effectively banned biosolids land application due to concerns about PFAS. The EPA plans to complete a risk assessment for two PFAS [perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS)] in biosolids for land application by Winter 2024. PFOS is commonly detected in biosolids at a concentration around 10 ppb, even without any industrial sources. A biosolids PFOS limit below that level could widely restrict land application, having a large impact on our industry. This risk assessment requires knowing many parameters for PFAS toxicity, occurrence, fate, and transport.

Speaker	**Cameron Clark**	**E-mail**	cclark@carollo.com
Speaker's Job Title	Engineer	**Phone**	206-947-5573
Organization	Carollo		
Primary Job Duties	Solids and Energy Technologist		
Registrations or Certifications	Washington State Professional Engineer		

2024 Western Washington Short School

Date 6/4/2024

Start Time 8:40 AM

End Time 9:40 AM

Track 2C - Startup, Testing & Commissioning / Mainte

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Startup - Chaos or order**

Abstract

The presentation will demonstration the need for a well planned out and written startup plan and show why this process needs to start during the design rather than last minute.

Relevance

All water and wastewater facilities are upgraded at times. Having a robust startup process in place improves the likelihood that the facility will operate with minimal issues after it comes on line.

Speaker **Ed Griffenberg**

E-mail egriffen@hdrinc.com

Speaker's Job Title Operations Specialist

Phone 425.591.8436

Organization HDR

Primary Job Duties Water/Wastewater facility startup, writing O&M manuals, operator training

Registrations or Certifications Washington State Wastewater Operator

2024 Western Washington Short School

Date	6/4/2024	**Track**	1A - Wastewater
Start Time	9:50 AM	**Drinking Water and/or Wastewater**	Wastewater
End Time	10:50 AM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Is smaller always simpler? Engineering and Operating considerations for remote WWTPs**

Abstract

Like many states with a high degree of seasonal tourism Washington is home to a number of smaller WWTPs serving very seasonal demands. Quite often smaller WWTPs are seen as simpler but in reality can experience operating scenarios much more complex than their larger counterparts in more stable communities. This presentation will explore design and operating considerations in the design, construction and operations of WWTPs in remote and highly seasonal areas.

Relevance

At its core this presentation will explore the operational considerations that come with operating a highly seasonal WWTP and contending with peak flows during peak tourism with nonexistent diurnal flow patterns. Operational considerations will be both those designed into the WWTPs and those implemented by operations staff. This presentation will be thought provoking for any operators, including those that operate seasonal plants or those who operate more tradition municipal plants by exploring the contrast of the two. Lastly, water quality is of paramount importance everywhere but some could argue even more so in the more pristine, remote areas that these seasonal plants are located.

Speaker	**Kenneth Packard**	**E-mail**	kenneth.packard@hdrinc.com
Speaker's Job Title	Water/Wastewater Project Manager	**Phone**	4256158114
Organization	HDR		
Primary Job Duties	Delivery of water and wastewater infrastructure projects from planning through construction.		
Registrations or Certifications	Washington State Professional Engineer		

2024 Western Washington Short School

Date 6/4/2024

Start Time 9:50 AM

End Time 10:50 AM

Track 1B - Water / Maintenance

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Eating the Maintenance Elephant One Byte at a Time; CMMS, Part 1**

Abstract

Presentation covers the development and value of CMMS with case studies. The selection of CMMS platforms according to needs will be a major take away. The future of CMMS through advanced montoring technologies will be touched on. While helpful, it is not necessary to attend both parts of this presentation to get an understanding of the topic.

Relevance

The reliability of equipment is core to plant performance and permit compliance. Use of CMMS helps to ensure that equipment is monitored and maintained, that equipment life is planned for, and that equipment is maintained at the lowest cost.

Speaker **Chris Maher; Rich Ludlow**

E-mail maherc@cleanwaterservices.org

Speaker's Job Title Senior Operations Analyst

Phone 9703896985

Organization Clean Water Services

Primary Job Duties Engineering and Process Optimization

Registrations or Certifications Oregon Grade IV WW

2024 Western Washington Short School

Date 6/4/2024

Start Time 9:50 AM

End Time 10:50 AM

Track 1C - Distribution / Collection and Conveyance

Drinking Water and/or Wastewater Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Optimizing Collection System Design in Expanding Cities: A Focus on Hydraulic Retention Time, Odor Control, and H2S Mitigation**

Abstract

Growing cities often task engineers to design collection systems that can be implemented for immediate use while maintaining the capacity to handle much greater flows from future development (often decades down the road).This often leads to an oversized force main where low flow means long hydraulic retention times where sulfide potential is greatest to cause H2S and odor issues.While the design constraints present an unavoidable scenario, there are options for addressing the issues presented in the collection system during the years until buildout. Evaluating and addressing the needs for odor control and H2S prevention at the pump station and through the force main are critical.Navigating these methods can prove challenging. For example, control methods for fugitive odors at the pump station typically do not address further development of sulfides in the force main and downstream odors/corrosion. Methods to treat the force main are likewise unable to treat issues at the pump station.This presentation will evaluate each treatment location and the corresponding treatment methods available, using HRT to model the potential for sulfide generation and how that can aid the determination of choosing a treatment location and method. It will further highlight, through use of a case study, the approach of liquid phase treatment using SuperOxygenation by means of a Speece Cone.

Relevance

This presentation is highly relevant to professionals in the water and wastewater industries, as it addresses a critical challenge: designing and managing collection systems in rapidly growing urban areas. With a focus on hydraulic retention time (HRT), the presentation provides key insights into predicting and mitigating hydrogen sulfide (H2S) and odor problems, which are common and significant issues in wastewater management. nt.

Speaker **Ryan Grimes**

E-mail rgrimes@eco2tech.com

Speaker's Job Title Manager - Western US Territories

Phone 214-724-3127

Organization ECO Oxygen Technologies (ECO2)

Primary Job Duties Consulting Sales

Registrations or Certifications N/A

2024 Western Washington Short School

Date 6/4/2024

Start Time 9:50 AM

End Time 10:50 AM

Track 2C - Biosolids / Seismic Hazards

Drinking Water and/or Wastewater Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **City of Wenatchee Anaerobic Digester Project**

Abstract

The City of Wenatchee's solids handling is past due for upgrades. This presentation will cover the path to building a new digester during the pandemic and the steps the City is taking to get ahead of aging infrastructure.

Relevance

The presentation discusses anaerobic digesters, solids handling for wastewater operators, asset management, and managing capital projects at a wastewater treatment plant.

Speaker **Jessica Shaw**

E-mail jshaw@wenatcheewa.gov

Speaker's Job Title Deputy Public Works Director-Utilities

Phone 509883225

Organization City of Wenatchee

Primary Job Duties Oversee water, sewer and stormwater utilities for the City, planning, financials and capital projects

Registrations or Certifications Washington State Water Operator;Washington State Wastewater Operator

2024 Western Washington Short School

Date 6/4/2024

Start Time 9:50 AM

End Time 10:50 AM

Track 2B - Startup, Testing & Commissioning / Mainte

Drinking Water and/or Wastewater Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **TSC of New Plants and Processes, Best Practices from the Trenches and other Horror Stories to Avoid**

Abstract

Testing startup and commissioning considerations of new plant and process to enable project success, minimize stress, and make sure everything works as intended. The process of testing and starting up a new process or treatment plant may have been overlooked in the design or under resourced on the project. The Operator needs skills on how to design a testing program and plan for the startup of new facilities. Most Contractors do not know how to do this, regardless of what the specification says. Presentation will share methods for accomplishing testing and photos of surprises encountered during startup. Presentation is relevant to operators who's facilities are in design or already under construction to help them start the process up right the first time.

Relevance

Presentation is relevant to Operators who's facilities are in design or already under construction to help them start the process up right the first time.

Speaker **Scott Joslyn**

E-mail scott.joslyn@hdrinc.com

Speaker's Job Title Operations Specialist

Phone 19162020166

Organization HDR

Primary Job Duties Managing Startup of Wastewater Treatment Plants and Processes

Registrations or Certifications CA Wastewater and Water Operator, and PE

2024 Western Washington Short School

Date 6/4/2024

Start Time 11:00 AM

End Time 12:00 PM

Track 1A - Wastewater

Drinking Water and/or Wastewater Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Magnesium Hydroxide for Improved Solids Removal - Doug Kelly, Inland Environmental resources**

Abstract

Magnesium hydroxide is known as a nonhazardous alternative to the use of caustic soda for pH neutralization of acidic wastewater. However, the magnesium ion (Mg2+) being added to the system can also provide coagulation benefits that can result in improved capture of TSS, solids settling, and sludge dewatering. This presentation will provide numerous examples of coagulation benefits observed at water resource recovery facilities in Washington State.

Relevance

This presentation will provide operators with new knowledge about a nonhazardous chemical that might provide multiple benefits in their overall wastewater treatment process, even though they might be feeding it simply for pH control.

Speaker **Doug Kelley**

E-mail dkelley@inlande.com

Speaker's Job Title President

Phone 509-679-4637

Organization Inland Environmental Resources, Inc. (IER)

Primary Job Duties President, Chief Technology Officer, Sales Manager

Registrations or Certifications none

2024 Western Washington Short School

Date 6/4/2024

Start Time 11:00 AM

End Time 12:00 PM

Track 1B - Water / Maintenance

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Eating the Maintenance Elephant One Byte at a Time; CMMS, Part 2**

Abstract

The second part of this presentation covers demonstrations of CMMS software and pracitcal examples. While helpful, it is not necessary to attend both parts of the presentation to gain useful information on CMMS.

Relevance

The reliability of equipment is core to plant performance and permit compliance. Use of CMMS helps to ensure that equipment is monitored and maintained, that equipment life is planned for, and that equipment is maintained at the lowest cost.

Speaker **Chris Maher; John Nice**

E-mail maherc@cleanwaterservices.org

Speaker's Job Title Senior Operations Analyst

Phone 9703896985

Organization Clean Water Services

Primary Job Duties Engineering and Process Optimization

Registrations or Certifications Clean Water Services

2024 Western Washington Short School

Date 6/4/2024

Start Time 11:00 AM

End Time 12:00 PM

Track 1C - Distribution / Collection and Conveyance

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Basic Water & Wastewater Math**

Abstract

Basic Water and Wastewater Math power point to help operators pass the certification exam. The power point has examples and each slide takes you step by step how to solve questions typically found in exams and everyday process.

Relevance

This presentation is relevant to water and wastewater because it teaches math used for disinfection, pump curves, tank capacity, and flow calculations.

Speaker **Joe Carter**

E-mail jcarter@awwd.com

Speaker's Job Title WWTF Manager

Phone 425-478-5968

Organization Alderwood Water and Wastewater District

Primary Job Duties Help operators become successful

Registrations or Certifications Washington State Water Operator;Washington State Wastewater Operator

2024 Western Washington Short School

Date	6/4/2024	**Track**	2B - Biosolids / Seismic Hazards
Start Time	11:00 AM	**Drinking Water and/or Wastewater**	Water;Wastewater
End Time	12:00 PM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Earthquake Hazards and Seismic Design Considerations**

Abstract

The presentation will cover the types of earthquakes that occur in the PNW, how they are understood and parameterized, and how they can affect water infrastructure. It will additionally discuss the geotechnical seismic engineering process, and present a few case studies of from real seismic retrofits in the PNW.

Relevance

Its a presentation on the seismic hazard posed to water infrastructure and a description of the geotechnical seismic engineering process. I have presented on this topic multiple times to AWWA.

Speaker	**Jon Cracolici**	**E-mail**	jcracolici@geoengineers.com
Speaker's Job Title	Geotechnical Engineer	**Phone**	425-466-8343
Organization	GeoEngineers, Inc		
Primary Job Duties	Geotechnical engineering with a focus on seismic engineering.		
Registrations or Certifications	EIT		

2024 Western Washington Short School

Date	6/4/2024	**Track**	2C - Startup, Testing & Commissioning / Mainte
Start Time	11:00 AM	**Drinking Water and/or Wastewater**	Water;Wastewater
End Time	12:00 PM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **What's new in the electronic O&M manual world**

Abstract

This presentation will cover the latest changes in electronic O&M manual development and display. How programs such as SharePoint/ConcreteCMS and OpenText can be used for development purposes. The presentation will also look at how PowerBI is used to bring process data to the fingertips of operators making the new eOM manual a process tool that operators can utilize on a daily basis whether at the plant, in the field or at home.

Relevance

Facility O&M Manuals are required by Washington state regulations. Keeping the manual up to date is paramount on meeting the recommendations and ensuring the data is usable. This presentation will demonstrate how electronic O&M manuals improve updating capabilities to ensure the latest data s available for O&M personnel.

Speaker	**Ed Griffenberg**	**E-mail**	egriffen@hdrinc.com
Speaker's Job Title	Operations Specialist	**Phone**	425.591.8436
Organization	HDR		

Primary Job Duties O&M manual development, startup and commissioning, operator training

Registrations or Certifications Washington State Professional Engineer

2024 Western Washington Short School

Date 6/4/2024

Start Time 12:40 PM

End Time 1:40 PM

Track 1A - Odor Control

Drinking Water and/or Wastewater Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Introduction to Odor Control**

Abstract

In this hour-long presentation, we're diving into the nuances of sewer odor control, covering a range of essential topics. We'll start with the basics of sewer odors and explore the complexities of managing hydrogen sulfide, emphasizing safety, corrosion prevention, and identifying sources. Navigating through the regulatory landscape, we'll discuss the laws and regulations governing sewer systems. Our journey extends to liquid phase odor control, including solutions like nitrate solutions for H2S prevention and the significance of pH levels, where we'll examine adjustment controls using sodium, magnesium, and calcium hydroxide. Additionally, we'll explore oxidizers and iron salts, spotlighting hydrogen peroxide, sodium chloride, and iron salts. Transitioning to gas phase odor control, we'll briefly discuss chemical scrubbers, carbon scrubbers, and biofilters. Real-world applications and case studies, featuring projects like Brightwater and ORT Chemical/Carbon Scrubbers, will provide practical insights into odor mitigation strategies and challenges.

Relevance

This presentation holds significant relevance for the water and wastewater industry by addressing challenges in sewer odor control. As odor issues are common in wastewater systems, understanding effective mitigation strategies is crucial for maintaining environmental compliance, ensuring public health, and operation of water treatment processes. The topics covered, including hydrogen sulfide management, corrosion prevention, compliance with laws and regulations, and the application of various odor control technologies, directly align with the concerns and operational needs of professionals in the water/wastewater sector. The inclusion of case studies, such as Brightwater and ORT Chemical/Carbon Scrubbers, provides practical insights into successful implementations, offering valuable lessons for industry practitioners seeking efficient and sustainable solutions in sewer odor management.

Speaker **Gabriel Valea**

E-mail gvalea@kingcounty.gov

Speaker's Job Title Wastewater Engineer - Senior

Phone 2064453441

Organization KCWTD

Primary Job Duties Building Mechanical and Odor Control

Registrations or Certifications Washington State Professional Engineer

2024 Western Washington Short School

Date	6/4/2024	**Track**	1B - Water Loss Reduction / Water Quality / Reu
Start Time	12:40 PM	**Drinking Water and/or Wastewater**	Water
End Time	1:40 PM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Water Loss Reduction Measures**

Abstract

In this course we will review cutting edge solutions to conserving water and reducing non-revenue water in a distribution system. Some topics covered include acoustic leak detection, pipe replacement programs, and pressure management.

Relevance

This course will be applicable to any operations or management staff working in drinking water. We will look at solutions to reduce water loss and improve overall system well-being.

Speaker	**Mike Uthe**	**E-mail**	muthe@muellerwp.com
Speaker's Job Title	Western Technology Manager	**Phone**	4062232192
Organization	Mueller Water Products		

Primary Job Duties I manage sales in 25 states for 4 of Mueller's lines (Echologics, i2O, Hydro-Guard, and Smart Hydrant).

Registrations or Certifications N/A

2024 Western Washington Short School

Date 6/4/2024

Start Time 12:40 PM

End Time 1:10 PM

Track 1C - Distribution

Drinking Water and/or Wastewater Water

Length of Session Half Hour (about 25 minutes with 5 minutes for questions and discussion)

Presentation Title: **Lead Service Line Inventory Overview and Implementation Strategies**

Abstract

Overview of the Lead Service Line Inventory

Relevance

The EPA's lead and copper rule revisions require a development of an initial pipe inventory for a utility's water system. It also requires them to update it annually. This presentation will give an overview of the regulatory requirements and strategies for implementation.

Speaker **Steven Drangsholt**

E-mail Steven.Drangsholt@trinnex.io

Speaker's Job Title Account Executive

Phone (888) 312-9266

Organization Trinnex

Primary Job Duties Account Executive

Registrations or Certifications Washington State Professional Engineer

2024 Western Washington Short School

Date 6/4/2024

Start Time 1:10 PM

End Time 1:40 PM

Track 1C - Distribution

Drinking Water and/or Wastewater Water

Length of Session Half Hour (about 25 minutes with 5 minutes for questions and discussion)

Presentation Title: **Modern, Proven Ozone Water Treatment for Salem, OR**

Abstract

Problem: The City of Salem, Oregon, experienced a do-not-drink advisory in 2018 as a result of cyanotoxins (cylindrospermospin & microcystin) that exceeded existing mitigation capabilities.

Solutions: The city contracted Carollo Engineering to develop a near-term solution as it planned a long-term approach. During this period, they tested the effectiveness of ozone, UV, powdered activated carbon (PAC) and granular activated carbon (GAC). The temporary solution at Salem's Geren Island WTP included PAC adsorption, two-stage biological filtration enhanced with acetic acid, and chlorine oxidation. The permanent solution consisted of intermediate ozonation via high-efficiency sidestream injection following slow-sand filtration to remove cyanobacteria. The 2020 construction project also included expanded roughing filter capacity to meet future water quantity needs; the flexibility of the sidestream injection system will allow it to scale up without the need for additional injectors.Conclusion: Ozone, along with increased filtration capacity, was the most cost-effective and efficacious solution, and also allowed Salem WTP operators to reduce chlorine rates. With a small footprint, low energy consumption, and virtually maintenance-free design, the sidestream injection system delivers precise rates of ozone and mixes the gas thoroughly into the sidestream and main flow. The ozone is generated on-site and does not require chemical delivery or storage. In addition to removing cyanotoxins and disinfecting the North Santiam River water, ozone also makes the water crystal clear, improves taste, and can remove odors. In operation since 2022, this system has offered a robust, cost-effective, long-term insurance policy against cyanotoxins.

Relevance

Ozone is becoming the preeminent treatment technology for treatment of: Disinfection/DBP Precursor Formation Mitigation (i.e. TTHM/HAA reduction), Cyanotoxins, H2S, Color, Odor, Taste, Methane, Microflocculation: Iron & manganese and 1, 4 dioxane

Speaker **Jim White**

E-mail jwhite@mazzei.net

Speaker's Job Title Regional Sales Manager

Phone 661-3755439

Organization Mazzei Injector Company

Primary Job Duties Manage Western US and Asia for Mazzei Injector providing aeration/oxidation solutions to municipal drinking water and wastewater community

Registrations or Certifications No professional registrations

2024 Western Washington Short School

Date	6/4/2024	**Track**	2C - Water Chemistry
Start Time	12:40 PM	**Drinking Water and/or Wastewater**	Wastewater
End Time	1:40 PM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Unveiling the science of polymer activation: exploring the benefits through applications**

Abstract

The optimization of polymer use in water and wastewater treatment processes remains a challenge, leading to high recurring expenses and sub-optimal process performance. This presentation emphasizes the critical role of polymer activation and its direct impact on process efficiency. By selecting suitable polymer and employing appropriate mixing technologies, polymer activation can reduce polymer usage and enhance the downstream separation process, resulting in improved overall performance and substantial annual cost savings.

Relevance

Through a series of compelling case studies, the presentation not only highlights the impact of polymer savings but also demonstrates the effect on the process downstream. Comparisons between different mixing technologies will provide insights for decision-making processes when optimizing polymer activation. Additionally, the discussion will include design considerations and valuable lessons learned, offering practical guidance for implementing effective polymer activation solutions.

Speaker	**Haley Goddard**	**E-mail**	grock@cleanwater1.com
Speaker's Job Title	Sales and Business Development Engineer	**Phone**	(970) 946-4005
Organization	Cleanwater1		
Primary Job Duties	Sales Engineer		
Registrations or Certifications	Idaho State Professional Engineer		

2024 Western Washington Short School

Date	6/4/2024	**Track**	2B - Asset Management / Data Mamagement /
Start Time	12:40 PM	**Drinking Water and/or Wastewater**	Water;Wastewater
End Time	1:40 PM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Using Asset Mangement to make informed decisions.**

Abstract

This presentation will cover in detail the asset management program at Covington Water District and how it has led to using other tools in conjunction with the program. RCM is a tool that has been used in conjunction with Asset Management at Covington Water District and has led to many process improvements in the Operations department, saving both time and money.

Relevance

Asset Management is required to qualify for state funded projects now and is the financially responsible approach for maintaining your distribution systems.

Speaker	**Dan Sleeth**	**E-mail**	dan.sleeth@covingtonwater.com
Speaker's Job Title	Operations Manager	**Phone**	253.867.0950
Organization	Covington Water District		
Primary Job Duties	Operations Manager of public water system, including all duties related to water distribution		
Registrations or Certifications	Washington State Water Operator		

2024 Western Washington Short School

Date 6/4/2024

Start Time 1:50 PM

End Time 2:50 PM

Track 1A - Odor Control

Drinking Water and/or Wastewater Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Odor and corrosion control. Getting the best of both worlds**

Abstract

The presentation will discuss the interrelationship between odor and corrosion control efforts and the potential interactions (both positive and negative). It will introduce the general subject, review liquid and gas phase reactions and then discuss the interrelations of control options. It will then discuss the techniques for controlling odor and corrosion and finish with an application matrix which identifies the effectiveness of each control action on both corrosion control and sulfide production/release.

Relevance

The control of corrosion and odor is increasingly more important from the perspective of protecting facilities and meeting customer expectations. Understanding the options available and ways to optimize both goals helps control costs and still meet the facility needs.

Speaker **Richard Finger**

E-mail dick.finger@att.net

Speaker's Job Title Self-employed consultant

Phone 2536313343

Organization Retired

Primary Job Duties Currently Retired. Previously managed king county's West Point Treatment section and prior to than supervised the process control at the King County South section (previously Renton Section)

Registrations or Certifications Washington State Wastewater Operator

2024 Western Washington Short School

Date	6/4/2024	**Track**	1B - Water Loss Reduction / Water Quality / Reu
Start Time	1:50 PM	**Drinking Water and/or Wastewater**	Water
End Time	2:50 PM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Distribution Network THM Mitigation in Consecutive and Wholesale Water Systems**

Abstract

Elevated trihalomethane (THM) levels are among the most common violations of the Stage 2 DBP Rule in the United States. Systems that employ raw water with high levels of organics, utilize free-chlorine as a network residual and endure warm water temperatures will typically experience difficulties with THMs. For water wholesalers, treatment-plant based solutions such as activated carbon, enhanced coagulation and membranes can have significant capital costs as well as obligate utilities to recurring service and consumable costs that are difficult to bear. Consecutive systems, however, have far fewer options.

Relevance

A number of case studies depicting a variety of equipment options as well as process control options that represent the current state-of-the-art will be profiled to underscore the use of water reservoirs to help manage distribution network THM levels.

Speaker	**Haley Goddard**	**E-mail**	grock@cleanwater1.com
Speaker's Job Title	Sales and Business Development Engineer	**Phone**	(970) 946-4005
Organization	Cleanwater1		
Primary Job Duties	Sales Engineer		
Registrations or Certifications	Idaho State Professional Engineer		

2024 Western Washington Short School

Date 6/4/2024

Start Time 1:50 PM

End Time 2:50 PM

Track 1C - Distribution

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Lets talk hydrants**

Abstract

Talk about hydrant inspection, maintenance and repair and how it pertains to specific systems

Relevance

It is relevant because water systems have hydrants throughout the area needing maintained and developing programs to keep them operating for safety to the drinking system and the community. I t is related to wastewater because wastewater plants often have there own hydrants that need maintained.

Speaker **Pete Miller**

E-mail pmiller@awwd.com

Speaker's Job Title Hydrant Inspector

Phone 4252315194

Organization Alderwood Water and Wastewater District

Primary Job Duties Hydrant Inspector

Registrations or Certifications Washington State Water Operator

2024 Western Washington Short School

Date 6/4/2024

Start Time 1:50 PM

End Time 2:50 PM

Track 2B - Water Chemistry

Drinking Water and/or Wastewater Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Wastewater Chemistry 101**

Abstract

This presentation provides a very basic understanding of general chemistry in relation to the chemicals encountered or used in the wastewater industry. Focus will be given to the chemicals used for pH and alkalinity control (acids and bases), odor and corrosion control in the collection system, and coagulation/flocculation of suspended solids (inorganic coagulants and polymers).

Relevance

The information shared in this presentation will provide wastewater operators with a deeper understanding of the chemicals that they encounter in their daily operations.

Speaker **Doug Kelley**

E-mail dkelley@inlande.com

Speaker's Job Title President

Phone 509-679-4637

Organization Inland Environmental Resources, Inc. (IER)

Primary Job Duties President, Chief Technology Officer, Sales Manager

Registrations or Certifications none

2024 Western Washington Short School

Date 6/4/2024

Start Time 1:50 PM

End Time 2:50 PM

Track 2C - Asset Management / Data Mamagement /

Drinking Water and/or Wastewater Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Reality capture and Emerging technologies**

Abstract

Our presentation will cover the importance of photographic documentation and reality capture within the construction industry along with focusing in on how our services are utilized on waste water treatment plants. We have a slideshow we can present that will cover all the technologies used in the industry along with discussing our own person experiences within the space. We have been documenting projects since 2003 and were the first reality capture company in the industry.

Relevance

We document waste water treatment plants all across north AmÃ©rica and have done several locally in Washington. This will be shared with the attendees.

Speaker **Aaron Weaver**

E-mail a.weaver@multivista.com

Speaker's Job Title General Manager

Phone 4255595964

Organization Multivista

Primary Job Duties managing principal

Registrations or Certifications Reality Capture Specialists

2024 Western Washington Short School

Date 6/4/2024

Start Time 3:00 PM

End Time 3:30 PM

Track 1A - Odor Control

Drinking Water and/or Wastewater Wastewater

Length of Session Half Hour (about 25 minutes with 5 minutes for questions and discussion)

Presentation Title: **Small System with Large Challenges: Operating a Wastewater Treatment Plant that Does Not Follow the Rules**

Abstract

The Stevens Pass Sewer District (SPSD), located in the Cascade Mountains of Washington State, serves a small local community that includes a large ski resort which accounts for a majority of the wastewater flow. The wastewater treatment plant (WWTP), although small (0.1 MGD), was one of the earliest membrane bioreactor (MBR) municipal facilities in the state (constructed in 2003), and is designed for biological nutrient remove (BNR) using a Modified Ludzack-Ettinger (MLE) process. It includes alkalinity addition, influent fine screening, waste active sludge (WAS) pumping and storage, centrifuge dewatering, and ultraviolet (UV) disinfection. Small system WWTPs, such as SPSD, require unique design and operational standards. Norms for flow and load ratios, peaking factors, seasonal wastewater quality and strength, system response time, system access and acute loading incidences must be addressed outside the typical standards. The treatment process, while just as advanced as a larger BNR plant, lacks all the normal "buffering" of a traditional facility with a widespread and diverse service area. What is a modest, easily accommodated inconvenience for a large plant can be a critical, acute failure for a smaller facility, and both design engineers and operators must keep in mind the unique process demands. Simple process improvements, such as carbon addition to improve denitrification, can have extremely challenging logistics, cost, and staffing issues and must be weighed against the value to the local community and the practical sustainability of the process.

Relevance

SPSD provides engineers and operators with a better understanding of the unique design and operational needs for high performance small community wastewater systems, including ways to address key challenges in operation and risk management.

Speaker **Jeffrey Zahller**

E-mail Jeffrey.Zahller@hdrinc.com

Speaker's Job Title Senior Engineer

Phone 4254506284

Organization HDR

Primary Job Duties Professional Engineer responsible for process mechanical design of wastewater treatment systems, including leading conceptual and detailed design as well as construction assistance, field evaluations, start-up, and trouble-shooting of processes.

Registrations or Certifications Washington State Professional Engineer

2024 Western Washington Short School

Date 6/4/2024

Start Time 3:30 PM

End Time 4:00 PM

Track 1A - Odor Control

Drinking Water and/or Wastewater Wastewater

Length of Session Half Hour (about 25 minutes with 5 minutes for questions and discussion)

Presentation Title: **Lake Hills Sewer Relining Project**

Abstract

Spiral Wound Pipe Rehabilitation of Structurally Deficient SewersKing County identified severe corrosion in their 50-year-old Lake Hills interceptor sanitary sewer. This reach consists of 7,200 feet of 48-inch and 54-inch reinforced concrete pipe and 19 maintenance holes, through an industrial corridor in the City of Bellevue, WA. The County needed to maintain as much hydraulic capacity as possible, while having as few construction impacts as possible. An alternatives evaluation process identified the tight fight spiral wound system (SPRTMTF), manufactured by Sekisui SPR, as the preferred alternative. Spiral wound lining is the process of winding strips of PVC into a maintenance hole and "zipping" the strips together, to create a new pipe inside of a pipe. The tight fit lining system used for the Lake Hills project utilized steel reinforced PVC strips tightly pressed up against the host pipe, to provide a full structural repair. The Lake Hill Interceptor runs through the Bel-Red industrial and Spring District area of Bellevue. The eastern part of the interceptor runs westward down a 5-lane major arterial road before jogging through smaller streets, alleys, private property, and a bus terminal. Full bypass pumping was required to successfully rehabilitate the pipes, up to 17 MGD. Along the alignment, the City of Bellevue was completing major roadway reconstruction and building developments around the new East Link light rail system. The rehabilitation and bypass pumping alignment had to coordinate with those design teams, City of Bellevue permitting authorities, get temporary construction easements on private properties, coordinate with two bus terminals, and coordinate driveway closures with over two dozen more private properties.

Relevance

This is relevant to the wastewater industry because it evaluates technical and constructability requirements for spiral-wound trenchless rehabilitation for sewer pipes.

Speaker **Grizelda Sarria**

E-mail grizelda.sarria@tetratech.com

Speaker's Job Title Project Manager

Phone (206) 883-9412

Organization Tetra Tech

Primary Job Duties Project Management

Registrations or Certifications Washington State Professional Engineer

2024 Western Washington Short School

Date	6/4/2024	**Track**	1B - Water Loss Reduction / Water Quality / Reu
Start Time	3:00 PM	**Drinking Water and/or Wastewater**	Water;Wastewater
End Time	3:30 PM	**Length of Session**	Half Hour (about 25 minutes with 5 minutes for questions and discussion)

Presentation Title: **Cross Connection Control for Reclaimed Water**

Abstract

*Provide an overview of why cross connection control is important for reclaimed water.

*Discuss the relationship between waste, reclaimed, and potable water systems.*Give an overview of the rules governing reclaimed water.-Describe best practices and give "real-world"examples of what can go wrong.

Relevance

This session will update attendees on CCC-related portion of the new reclaimed water rule. The presentation topic will provide water and wastewater system managers, certified Water Works and Wastewater Operators, reclaimed water generators, and the decision makers for these entities with an understanding of the relationships between them and how they can help each other comply with the cross connection control regulations.

Speaker	**Bill Bernier**	**E-mail**	William.bernier@doh.wa.gov
Speaker's Job Title	Operator Certification and Training Manager	**Phone**	13602363562
Organization	Washington State Department of Health		
Primary Job Duties	Waterworks Operator Certification and Training		
Registrations or Certifications	Washington State Water Operator		

2024 Western Washington Short School

Date 6/4/2024

Start Time 3:30 PM

End Time 4:00 PM

Track 1B - Water Loss Reduction / Water Quality / Reu

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Half Hour (about 25 minutes with 5 minutes for questions and discussion)

Presentation Title: **MBR-LRV Testing**

Abstract

The use of free chlorine for a disinfection residual, the variability of customer demand and water age, and other factors result in frequent outages in the Brightwater Treatment Plant's (Brightwater's) reclaimed water distribution system. King County Wastewater Treatment Division (WTD) is planning modifications to Brightwater to improve system reliability. WTD is pursuing two tracks to improve reliability: 1) replacement of the chlorine disinfection process with ultraviolet (UV) disinfection and chloramination for a distribution residual 2) achieving the disinfection performance requirement through a combination of membrane bioreactor (MBR) system virus removal crediting and chloramination. This presentation will discuss: challenges with current system operations, disinfection chemistry with free chlorine and chloramines, proposed solutions to improve system reliability, and novel testing currently underway to demonstrate pathogen removal with chloramines and in Brightwater's MBR.

Relevance

Disinfection and residual maintenance with free chlorine, monochloramine, and UV will be discussed with supporting bench-top testing data. Mechanisms for pathogen removal in MBR processes will be presented, as well as data from site-specific testing at Brightwater and other treatment plants. This information will help both water and wastewater operators better understand disinfection and challenges with managing water quality in distribution systems.

Speaker **David Seymour**

E-mail davidseymour@kennedyjenks.com

Speaker's Job Title Engineer

Phone 206/753-3420

Organization Kennedy Jenks

Primary Job Duties David is a vice principal and the Wastewater Community of Practice Leader at Kennedy Jenks. He leads and provides technical oversight of wastewater treatment projects for KJ in Washington, Oregon, Hawaii, California, Colorado and Texas.

Registrations or Certifications Washington State Professional Engineer

2024 Western Washington Short School

Date	6/4/2024	**Track**	1C - Distribution
Start Time	3:00 PM	**Drinking Water and/or Wastewater**	Water
End Time	4:00 PM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Distribution System Water Quality Improvements with Implementation of Active Tank Mixing**

Abstract

Active mixing in drinking water storage tanks has become a proven tool for improving water quality in potable water distribution systems. By ensuring water chemistry homogeneity, properly sized active mixing can reduce disinfectant residual loss, water age, prevent tank icing and, when combined with active ventilation or aeration, remove THMs from finished water.

Relevance

This presentation will point to real-world case studies and data that underscore powerful tank mixing as an important and necessary step to water quality improvement and distribution asset protection.

Speaker	**Haley Goddard**	**E-mail**	grock@cleanwater1.com
Speaker's Job Title	Sales and Business Development Engineer	**Phone**	(970) 946-4005
Organization	Cleanwater1		
Primary Job Duties	Sales Engineer		
Registrations or Certifications	Idaho State Professional Engineer		

2024 Western Washington Short School

Date 6/4/2024

Start Time 3:00 PM

End Time 4:00 PM

Track 2B - Water Chemistry

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **The Fundamentals of Electrochemistry**

Abstract

We will discuss the design and function of meters and electrodes to better understand how they work and what troubleshooting to perform if they aren't working properly.

Relevance

Every lab measures pH and it is the most misunderstood and abused measurement made

Speaker **Mark McElroy**

E-mail mark.mcelroy@thermofisher.com

Speaker's Job Title Regional Sales Manager

Phone 4258940111

Organization Thermo Fisher

Primary Job Duties Helping customers with their electrochemistry and water purification needs

Registrations or Certifications I have been presenting at Short Schools since 2008

2024 Western Washington Short School

Date 6/4/2024

Start Time 3:00 PM

End Time 3:30 PM

Track 2C - Asset Management / Data Mamagement /

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Half Hour (about 25 minutes with 5 minutes for questions and discussion)

Presentation Title: **Collaborative Data System Development to Support Facility Operations and Planning**

Abstract

As data volumes and reporting requirements increase, municipal wastewater utilities are faced with a rapidly changing technology landscape. A comprehensive data management master plan (DMMP) can provide strategic guidance for utilities grappling with core data topics such as governance, architecture, quality, security, integration, and analytics. However, development of a data management master plan can itself be a time-consuming process that may delay integration of systems and delivery of business intelligence products. Based on project experience with a wide array of utilities, this presentation identifies practical approaches to efficiently developing a DMMP for utilities covering a broad spectrum of technology readiness levels. The key to selecting the right approach is to calibrate the process to match the utility's needs and capacities.A traditional structured process will typically feature identification of data sources, quality requirements, and governance policies. This is followed by the design of a data architecture that ensures data integrity, security, and accessibility while meeting the end user's analytical, reporting, and dissemination needs. The design should consider both existing and planned data sources, and often features a platform evaluation component. Finally, a DMMP includes a roadmap for recommended data system improvements that provides sufficient time for development and testing and considers options for phased or incremental development focusing on priority reporting needs first. A critical part of the roadmap is the human side, which covers training, change management, and stewardship.Regardless of the specific approach, thoughtful collaboration and attention to the needs and skills of staff are critical in the design and development of data systems that can efficiently evolve and scale to meet the needs of today's utility.

Relevance

It will cover the challenges faced by utilities when dealing with vast amounts of data related to operations, maintenance and management. It will highlight the importance of having a holistic approach to data master planning and how to roadmap its development in an increasingly data driven world.

Speaker **Nandita Ahuja**

E-mail nahuja@hazenandsawyer.com

Speaker's Job Title Senior Principal Engineer

Phone 5407503284

Organization Hazen and Sawyer

Primary Job Duties Water and Wastewater - Conveyance, Process, Master Planning and Data Management

Registrations or Certifications Florida PE, British Columbia P. Eng

2024 Western Washington Short School

Date 6/4/2024

Start Time 3:30 PM

End Time 4:00 PM

Track 2C - Asset Management / Data Mamagement /

Drinking Water and/or Wastewater Wastewater

Length of Session Half Hour (about 25 minutes with 5 minutes for questions and discussion)

Presentation Title: **How AI and Cloud Technologies Are Driving America's Largest Trenchless Capital Improvement Project**

Abstract

A groundbreaking approach has been implemented which has transformed how the City of Houston is managing its wastewater collection system over the past several years. By integrating cloud-based AI computer vision tools, photogrammetry, edge-based inspection capture software, and collaborative near real-time workflows, these new methods have enabled the City to meet an aggressive regulatory timeline for inspection, assessment, and trenchless rehab planning in America's largest wastewater collection system. In addition to providing a short background on the technologies mentioned above, this presentation delves into the nuts-and-bolts of the City of Houston's Consent Decree program, and covers the end-to-end workflow from inspection project planning, field data capture performed by a team of contractors, AI-assisted assessment, and cloud-based inspection data management and collaboration for rehab planning, resulting in the implementation of the trenchless construction work that enables the City of Houston to abide by its requirements to significantly reduce sewer overflows in the region. Benefits, limitations, and lessons learned will also be shared.

Relevance

An in-depth look at the City of Houston's innovative approach to meeting its demanding Consent Decree obligations through leveraging AI Computer Vision and Cloud tools, involving assessment of a total of ~7,000 miles of wastewater collection pipes and ~150,000 MHs. Enhanced efficiencies and cost savings in pipeline inspections, data processing, collaboration with maintenance and rehab contractors, and capital planning decision support will be highlighted.

Speaker **Eric Sullivan**

E-mail esullivan@sewerai.com

Speaker's Job Title Director of Business Development

Phone 206-457-7610

Organization SewerAI Corporation

Primary Job Duties Director of Business Development

Registrations or Certifications NASSCO PLMACP Trainer

2024 Western Washington Short School

Date	6/5/2024	**Track**	1A - Wastewater
Start Time	7:30 AM	**Drinking Water and/or Wastewater**	Wastewater
End Time	8:30 AM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **A Breath of Fresh Air - Understanding the Importance of Diffused Aeration Systems**

Abstract

Diffused aeration is a very critical system to a wastewater treatment facility. Although the capital expenditure of a diffused aeration system is inexpensive compared to many other parts of a wastewater plant, the operating expense for an aeration system is very significant and accounts for approximately 49% of operating expenditures. In addition, a diffused aeration system highly contributes to meeting treatment goals. The main challenges of a diffused aeration system are to meet effluent treatment objectives while also minimizing energy usage, maintaining diffuser integrity, managing diffuser fouling and clogging, and minimizing O&M costs. Given these challenges and the importance of meeting treatment objectives, the selection of the diffuser system is a very important one for a wastewater treatment municipality. This presentation will summarize main goals, challenges, design, aeration and diffuser fundamentals, applications, importance of quality control, diffuser technologies, and case studies of diffused aeration systems. The goal of the presentation is for the audience to acquire basic knowledge of diffuser aeration system so that when selecting a diffused aeration system they can make a more informative decision.

Relevance

Almost every wastewater treatment plant has an aeration system of some kind. Therefore it is important to understand key principles such as basic design fundamentals, challenges, and goals so one can make an informed decision when selecting an aeration system.

Speaker	**Bryen Woo**	**E-mail**	bwoo@aquariustechnologies.com
Speaker's Job Title	Business Development Director	**Phone**	4143094620
Organization	Aquarius Technologies		
Primary Job Duties	Manage all sales initiatives for Aquarius Technologies		
Registrations or Certifications	California State Professional Engineer		

2024 Western Washington Short School

Date 6/5/2024

Start Time 7:30 AM

End Time 8:30 AM

Track 1B - Water Distribution

Drinking Water and/or Wastewater Water

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Quantifying An Innovative Approach to Improve Water Loss and Carbon Footprint**

Abstract

The Department of Public Works at Sandy, Oregon (DPW) has leveraged innovative technology to simultaneously reduce water loss and the carbon footprint associated with producing potable water for distribution. This presentation will present a case study where an existing AMI Meter networking was augmented with district metered areas (DMA) to determine the amount of water consumed, and then using other technologies like acoustic leak detection, pressure monitoring, and pressure management, to reduce non-revenue water in that metered area. This paper will also review the cost of producing the water, and quantify the amount of energy used at various points in the production and pumping process. Is it intended to highlight the energy saved based on a specific target, and then showing the volume reduction in potable water production that would need to be required to meet this target.

Relevance

This presentation is relevant to every water utility, as it shows an innovative approach to reduce water loss and reduce electricity usage and carbon emissions.

Speaker **Matt Zellers**

E-mail mzellers@muellerwp.com

Speaker's Job Title Territory Manager

Phone 503-310-5993

Organization Mueller

Primary Job Duties Territory Manager

Registrations or Certifications None

2024 Western Washington Short School

Date 6/5/2024

Start Time 7:30 AM

End Time 8:30 AM

Track 1C - Distribution / Collection and Conveyance

Drinking Water and/or Wastewater Water

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Pipe Bursting Water Mains with HDPE**

Abstract

Presetaiton will be case study and lessons leard form pipe bursting water mains with HDPE pipe for King County Water District No. 90 in Renton, WA. Will include discussion of pipe bursting methods and review some specific installations.

Relevance

Pipe Bursting Water Mains with HDPE

Speaker **Craig Christensen**

E-mail cfch@deainc.com

Speaker's Job Title Project Manager

Phone 2069305191

Organization David Evans and Associates, Inc.

Primary Job Duties Project Manager

Registrations or Certifications Washington State Professional Engineer

2024 Western Washington Short School

Date 6/5/2024

Start Time 7:30 AM

End Time 8:30 AM

Track 2B - Biosolids / Water Chemistry

Drinking Water and/or Wastewater Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Emerging Solids Technology**

Abstract

The presentation highlights emerging solids technology that are developed and implemented in the United States from across the globe. Ranging from thickening technologies, dewatering, polymer reduction capabilities, drying, digestion alternatives, digestion enhancement, and beyond Class A solids minimization. These systems supply viable solutions at cost savings options that can be retrofitted into existing WWTP facilities to meet current and future needs. This presentation will touch on current alternatives to address Emerging compounds of concern (PFAS/PFOA/endocrine disrupters/microplastics/pharmaceuticals).

Relevance

The presentation highlights emerging solids technology that are developed and implemented in the United States from across the globe.

Speaker **Chris McCalib**

E-mail chris@tec-nw.com

Speaker's Job Title President

Phone 14256414306

Organization Treatment Equipment Company (TEC)

Primary Job Duties Manufacturers Rep and WW Group IV

Registrations or Certifications Washington State Wastewater Operator

2024 Western Washington Short School

Date 6/5/2024

Start Time 7:30 AM

End Time 8:30 AM

Track 2C - SCADA & Generators

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Using New SCADA Technology to Better Manage Systems**

Abstract

This class is all about New Cellular SCADA systems and how they are implemented. We will go over the exiting way things are being done and then show the pros and cons of the way we have been doing it. then move into the pros and cons of how we are doing it now. this is focuses on the Cloud based salutations and how they are saving time and money. Also how they are more reliable then older technologies.

Relevance

the short answer is every one wants to know what is happening at there stations when they are not there. This is all about how to know and how to trust the data.

Speaker **Andrew Klempel**

E-mail Andrew@weci.com

Speaker's Job Title Outside Sales Manager

Phone 4254920255

Organization Whitney Equipment

Primary Job Duties Outside Sales Managment

Registrations or Certifications Washington State Water Operator

2024 Western Washington Short School

Date 6/5/2024

Start Time 8:40 AM

End Time 9:10 AM

Track 1A - Wastewater

Drinking Water and/or Wastewater Wastewater

Length of Session Half Hour (about 25 minutes with 5 minutes for questions and discussion)

Presentation Title: **Reducing Nutrients from Point Source Discharge to Preserve Receiving Water Integrity**

Abstract

Through case studies focused on nutrients, reuse and auxiliary treatment, pile cloth filters will be featured showing successful situations where discharge limits between 0.1-1.0 mg/L phosphorus are met. Features and benefits for tertiary filters are summarized and compared for inside-out disk filters and outside-in pile cloth filters (PCFs).

Relevance

Determining how to remove nutrients cost-effectively is a challenge that has been mastered by many communities across America. Common features and benefits of disk filters include minimized footprint compared to granular media technologies, which can result in lower equipment cost, lower construction costs and reduced contractor effort during installation.

Speaker **Kristin Faulkner**

E-mail kristin.faulkner@nexom.com

Speaker's Job Title Regional Manager Northwest

Phone 4252294744

Organization Nexom

Primary Job Duties Regional Manager for the Northwest area for Nexom/EDI/Napier-Reid

Registrations or Certifications None

2024 Western Washington Short School

Date 6/5/2024

Start Time 9:10 AM

End Time 9:40 AM

Track 1A - Wastewater

Drinking Water and/or Wastewater Wastewater

Length of Session Half Hour (about 25 minutes with 5 minutes for questions and discussion)

Presentation Title: **Organizational practices and lessons learned for efficient and effective NPDES permit compliance**

Abstract

NPDES permits for municipal wastewater treatment plants involve many routine operational activities important for avoiding and minimizing noncompliance with permit requirements (e.g., training, monitoring and reporting, inspections and performance assessments, maintenance, incident response, etc.). Similarly, ensuring compliance with longer-term permit requirements and the regulatory frameworks of the NPDES permit program (and for anticipated and emerging changes in the regulations) additionally involves a host of planning and capital development activities. The selection of remedial actions for noncompliance (and enforcement response), and in particular anticipating and prioritizing needed advance actions to manage long-term regulatory vulnerabilities, will depend on a utility's coordination with its regulatory agencies and own independent evaluations and engagement on regulatory developments. Effective and efficient compliance as a well-run utility is our goal - coupled with informed and coordinated deployment of resources within all facets of our utility's activities - i.e., leadership, communications, government relations, financial and system planning, scientific research and technology innovation, engineering, development, and operations. This presentation will address some principles, practices, and lessons learned in managing compliance activities - and effectively organizing tasks, assessing risks, and working together to implement our responsibilities in relation to the underlying regulatory provisions of the Clean Water Act and NPDES permits, and related policies, regulations, and guidance.

Relevance

The presentation is relevant for utility staff (particularly wastewater) that are involved in evaluating and managing for effective regulatory compliance activities and enforcement response

Speaker **Jeff Lafer**

E-mail jeff.lafer@kingcounty.gov

Speaker's Job Title NPDES Permit Administrator

Phone 206-477-6315

Organization King County Wastewater Treatment Division

Primary Job Duties Jeff Lafer is an environmental scientist with 30+ years of mixed industry and governmental environmental consulting experience, including the past 7 years with the King County Wastewater Treatment Division. As the NPDES Permit Administrator within the div

Registrations or Certifications n/a

2024 Western Washington Short School

Date 6/5/2024

Start Time 8:40 AM

End Time 9:40 AM

Track 1B - Water Distribution

Drinking Water and/or Wastewater Water

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Onsite PFAS Destruction Solutions**

Abstract

Electro-oxidation (EO) provides a method to mineralize Per- and Polyfluoroalkyl Substances (PFAS) compounds, eliminating them forever. Demonstration studies for destruction of PFAS have been successfully conducted on highly concentrated waste streams, such as AFFF and landfill leachate, but most drinking water treatment plants in the US will experience lower concentrations of PFAS contaminations. In this study, conducted at a water treatment plant on surface water with PFAS concentrations in the parts per trillion range, Reverse Osmosis (RO), Foam Fractionation (FF), and Ion Exchange were used as means to remove and concentrate PFAS followed by EO. Using a concentration process prior to the EO process reduces the liquid volume needing treatment and improves energy and destruction efficiency of EO by orders of magnitude thereby reducing overall costs. The study investigated destruction of PFAS on the RO concentrate, foamate, and IX brine regenerate, including sampling and analysis of byproduct formation and transformation of PFAS compounds from longer chains to shorter chains.

Relevance

PFAS is an emerging treatment concern and current solutions will become more challenging with proposed CERCLA regulation. This presentation will outline and show results from a field trial of a few treatment options that incorporate PFAS destruction for municipal drinking water plants.

Speaker **Katie Henderson**

E-mail katie.henderson@ovivowater.com

Speaker's Job Title Product Group Manager- PFAS

Phone 8019460206

Organization Ovivo

Primary Job Duties Lead all PFAS Product Development and Commercialization

Registrations or Certifications None.

2024 Western Washington Short School

Date	6/5/2024	**Track**	1C - Distribution / Collection and Conveyance
Start Time	8:40 AM	**Drinking Water and/or Wastewater**	Water;Wastewater
End Time	9:40 AM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Sewer Force Mains - A pro-active approach to asset management of this often-overlooked buried infrastructure**

Abstract

Most collection system managers and operations personnel have tried-and-true technologies, methods, and budgets for monitoring, inspecting, and cleaning our gravity sewers. (whether completed in-house or via contracted services) There are ample cost-effective solutions available to communities of all sizes. When it comes to sewer force mains and/or siphons, however, the options become more limited and cost-effective becomes a relative term. This paper showcases three affordable sewer force main inspection and cleaning technologies being utilized today by Cities big and small - Progressive Pigging, Pipers, and SmartFoam.

Relevance

The paper will give thought to various planning considerations when undertaking sewer force main pigging and/or inline condition assessments. Results will be presented from multiple projects completed in 2023. (8-in. and 12-in. DIP force mains. 16-in. DIP and 24-in. C303 BWP force mains.)

Speaker	**Mike Lemmen**	**E-mail**	mike.lemmen@sfeglobal.com
Speaker's Job Title	Director	**Phone**	360.220.7224
Organization	SFE Global		

Primary Job Duties Director of Business and Operations - Mike Lemmen is a director with SFE Global. He started with the company in 1997 as a field technician and subsequently worked in project management and business development roles for SFE through the years. His expertis

Registrations or Certifications N/A

2024 Western Washington Short School

Date 6/5/2024

Start Time 8:40 AM

End Time 9:10 AM

Track 2B - Biosolids / Water Chemistry

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Half Hour (about 25 minutes with 5 minutes for questions and discussion)

Presentation Title: **Centrifuge Scroll Design Improvements and Impact on Biosolids Dewatering Cost**

Abstract

This paper will address scroll and bowl design innovations of decanter centrifuges for wastewater dewatering and thickening. It will also introduce the latest centrifuge scroll design innovation which has proven to increase throughput by up to 15 %, increase cake dryness up to 10% , and reduce polymer consumption and power consumption by 20%.

Relevance

Presentation shows the history of centrifuge advancement and the benefits of new designs. These designs help reduce cost, reduce dewatered solids disposal, and save monies based for these improvements.

Speaker **Michael Stone**

E-mail mstone@flottweg.net

Speaker's Job Title Western Regional Sales Manager

Phone 513-340-1419

Organization Flottweg Separation Technology

Primary Job Duties Sales and Customer Service. Introduce centrifuges to customers and engineers.

Registrations or Certifications WEFTEC

2024 Western Washington Short School

Date 6/5/2024

Start Time 9:10 AM

End Time 9:40 AM

Track 2B - Biosolids / Water Chemistry

Drinking Water and/or Wastewater Wastewater

Length of Session Half Hour (about 25 minutes with 5 minutes for questions and discussion)

Presentation Title: **Application of Measured Rheological Data for Improved Sludge Process Design**

Abstract

Common approaches to size sludge systems do not use plant-specific rheological testing data. Standard rheological values are typically used if plant data cannot be collected. However, this method usually only applies to systems under 100 feet in pipe length. Pump testing is another design approach but requires a constructed pump and sludge system, which must have been installed beforehand.Alternatively, a rotational rheometer can estimate sludge hydraulics by quantifying plant-specific rheological properties to develop a non-Newtonian hydraulic model. Rotational rheometers use a rotating spindle to apply shear force and torque to a fluid. A viscosity and shear stress profile can be generated by varying spindle speed to characterize the rheological properties. The solids concentrations of samples are also recorded to correlate the rheological profile with a specific percent total solids.These profiles can then be input into AFT Fathomâ„¢, a hydraulic modeling software, to develop non-Newtonian hydraulic models. The Power Law, Bingham-Plastic, and Herschel-Buckly fits can be used to determine total dynamic head (TDH) for thickened sludge pumps. This hydraulic model can be used to design new thickened sludge systems or evaluate the impacts of changes to existing systems.

Relevance

Wastewater sludges have fluid characteristics that differ from clean water and exhibit non-Newtonian behaviors that require specific hydraulic analyses. Rheology, the study of matter deformation and flow, can quantify rheological characteristics and improve the hydraulic design of wastewater sludge systems. A solids improvement project at Kitsap County's Central Kitsap Treatment Plant (CKTP) used onsite testing and hydraulic modeling to design various thickened sludge pumps and systems. The results from this design approach support using plant-specific rheological data when designing thickened sludge systems compared to conventional design approaches.

Speaker **Elaine Leonard**

E-mail elaine.leonard@hdrinc.com

Speaker's Job Title Water/Wastewater EIT

Phone 6083300806

Organization HDR

Primary Job Duties Design of thickened sludge systems

Registrations or Certifications Pending Wastewater Operator reciprocity license from Iowa to Washington

2024 Western Washington Short School

Date 6/5/2024

Start Time 8:40 AM

End Time 9:40 AM

Track 2C - SCADA & Generators

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Much Ado About Digital, But What's Right for Me and How do I Adopt It?**

Abstract

Much has been publicized in the industry about the potential for digital or "smart water" technologies to address modern challenges. Some impressive successes have been demonstrated by digital technology providers that are leveraging sensors, data systems and machine learning to optimize systems and backstop operator transitions. A digital roadmap to complement renewal, replacement and upgrade plans for physical infrastructure can help a utility access the value of digital tools, increasing resilience and allowing more to be done with fewer resources. To implement digital technologies, the water utility manager must navigate a myriad of different technology providers and products to evaluate, prioritize and select the right solutions, and then figure out how to implement, integrate, and manage through the associated changes necessary to realize the benefits of the new digital technology products.This presentation will offer an overview of digital water technologies and their potential benefits, explain the scope and importance of a digital roadmap within the master planning context for utility infrastructure, and review methods for selecting and implementing technologies. Several case studies will be reviewed.

Relevance

Utilities are faced with many challenges ranging from a shrinking skilled workforce, to increasing input costs to increasing regulations and cyberattacks. Digital technologies and modernization services can offset these challenges leading to increased efficiencies and resilience.

Speaker **Steve Green**

E-mail greensteve@stanleygroup.com

Speaker's Job Title Practice Leader - Digital Water

Phone 5033189290

Organization Stanley Consultants

Primary Job Duties Support water and wastewater utilities in evaluating and adopting digital technologies that enable increased efficiencies and resilience.

Registrations or Certifications EIT

2024 Western Washington Short School

Date	6/5/2024	**Track**	1A - Wastewater
Start Time	10:10 AM	**Drinking Water and/or Wastewater**	Wastewater
End Time	11:10 AM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Ammonium, Nitrate and Phosphate Analyzer for Nutrient Removal**

Abstract

This presentation delves into the critical role of Ammonium, Nitrate, and Phosphate analyzers in optimizing nutrient removal processes in wastewater treatment plants. As global concerns about water quality and environmental impact escalate, the need for efficient nutrient removal becomes paramount. The discussion will highlight the significance of accurate and real-time monitoring of Ammonium, Nitrate, and Phosphate levels in wastewater, showcasing the capabilities of state-of-the-art analyzers.

Relevance

Analyzer used in Wastewater for Nutrient removal.

Speaker	**Anil Isaac**	**E-mail**	anil.isaac@ecdi.com
Speaker's Job Title	Western Sales Manager	**Phone**	6262508622
Organization	Electro-Chemical Devices		
Primary Job Duties	Regional Sales Manager and Application Engineer at Electro-Chemical Devices		
Registrations or Certifications	Engineering in Training (State of California)		

2024 Western Washington Short School

Date	6/5/2024	**Track**	1B - Water Distribution
Start Time	10:10 AM	**Drinking Water and/or Wastewater**	Water
End Time	11:10 AM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Reducing Non Revenue Water with Automation**

Abstract

Non-revenue water (NRW) is the difference between the amount of water that is produced by a water utility for consumption/use, and the amount of water that is actually billed to customers. Automation can help utilities reduce this loss.

Relevance

The average water utility loses about 20% of its water to Non Revenue Water

Speaker	**Erik Ongstad**	**E-mail**	erik.Ongstad@xylem.com
Speaker's Job Title	Senior Account Development Manager	**Phone**	2063311228
Organization	Sensus a Xylem brand		
Primary Job Duties	Working with utilities in Washington, Oregon, Idaho, Montana, Wyoming and Alaska with metering and automation		
Registrations or Certifications	Automation Specalist		

2024 Western Washington Short School

Date 6/5/2024

Start Time 10:10 AM

End Time 11:10 AM

Track 1C - Distribution / Collection and Conveyance

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: HDPE: Construction, Repair, & Maintenance

Abstract

HDPE adoption for municipal potable water, sewer and storm sewer pipelines isgrowing significantly. For many municipalities, the initial use of HDPE is through a trenchless technology installation, such as HDD, pipe bursting or sliplining.HDPE has a long history of successful use for these challenging installations and many municipalities are now adopting HDPE into their pipe programs through traditional open cut construction, as well.There are many resources available to evaluate the installation of HDPE for both trenchless technology and open cut installations. This paper will focus on providing guidance for typical design "windows" for open cut installations while discussing actual technical analysis for situations that may occur outside of the typical design window

Relevance

IT is very important to be able to maintain, repair, and construct a major pipe type for anyone on the operation or construction side of the industry.

Speaker **Dan Landy**

E-mail dlandy@pepipe.org

Speaker's Job Title Engineer

Phone 4127606608

Organization PE Alliance

Primary Job Duties Engineer

Registrations or Certifications PE Alliance

2024 Western Washington Short School

Date	6/5/2024	**Track**	2B - Biosolids / Water Chemistry
Start Time	10:10 AM	**Drinking Water and/or Wastewater**	Wastewater
End Time	11:10 AM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Meeting Effluent Requirements while Producing Less Sludge with a Multi Stage Activated Biofilm Process**

Abstract

Optimized design, operation, and performance of a secondary treatment process at a wastewater treatment plant is a critical need. If a secondary treatment process is not designed or operated sufficiently treatment objectives such as meeting effluent discharge limits for TSS, BOD, Nitrogen, and Phosphorus will not be met. Biological process issues such as foaming can result in challenges with liquid and solids phase separation in settling tanks such as clarifiers. Facilities can suffer additional costs from excessive energy usage, chemical addition, and sludge disposal. Additional O&M to address secondary treatment process challenges with can strain wastewater treatment plants to the max by limiting staff resources. The purpose of this presentation is to introduce the Multi Stage Activated Biofilm Process (MABP) which could offer a solution to many of these challenges. A MABP utilizes fixed textile sheet media incorporating fine bubble diffused aeration and implements both attached and suspended growth systems in multiple stages of treatment. The biofilm that is embedded on the media has high diversity of various microorganisms that coexist such as heterotrophic and nitrifying bacteria which can carry out various biological treatment functions. This makes it possible for aerobic BOD and ammonium oxidation as well as dentrification processes to be conducted concurrently resulting in excellent BOD and Nitrogen removal to meet effluent limits. Each stage of the process is designed to create environments and conditions to accomplish certain biological functions.

Relevance

Biological process issues such as foaming can result in challenges with liquid and solids phase separation in settling tanks such as clarifiers. Facilities can suffer additional costs from excessive energy usage, chemical addition, and sludge disposal. Additional O&M to address secondary treatment process challenges with can strain wastewater treatment plants to the max by limiting staff resources. The purpose of this presentation is to introduce the Multi Stage Activated Biofilm Process (MABP) which could offer a solution to many of these challenges.

Speaker	**Bryen Woo**	**E-mail**	bwoo@aquariustechnologies.com
Speaker's Job Title	Business Development Director	**Phone**	414-309-4620
Organization	Aquarius Technologies		
Primary Job Duties	Managing sales initiatives for Aquarius Technologies		
Registrations or Certifications	California Professional Engineer		

2024 Western Washington Short School

Date 6/5/2024

Start Time 10:10 AM

End Time 11:10 AM

Track 2C - SCADA & Generators

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Small, Remote Emergency Generator Wetstacking Troubleshooting**

Abstract

Review of how/why a generator wetstacks. How large and small generators work differently, max load vs typical loads for pumps/motors and testing, startup, operations and troubleshooting.

Relevance

Emergency power generators are a common design and maintenance item in our industry. Wetstacking on small generators is unusual and there are some valuable lessons learned from this experience.

Speaker **Dan Burwell**

E-mail dburwell@rh2.com

Speaker's Job Title Project Manager

Phone 360684-1548

Organization RH2

Primary Job Duties Project Management

Registrations or Certifications Washington State Water Operator;Washington State Professional Engineer

2024 Western Washington Short School

Date 6/5/2024

Start Time 12:10 PM

End Time 1:10 PM

Track 1A - Pumps

Drinking Water and/or Wastewater Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Wastewater Sludge Pumping Solutions**

Abstract

Many types of sludge are found in a wastewater system, but why are there so many different pumps? Some do the same application, but why? We will explain why you would want to use specific types f pumps for each application specifically and provide the benefits and solutions for each.

Relevance

Operators offten do not understand what types of pumps are available, and which to use for their sludge application. This presentation shows them not only how the work, but why to use them along with types available.

Speaker **Rich Owens**

E-mail rich@owenspump.com

Speaker's Job Title President

Phone 503-420-8390

Organization Owens Pump & Equipment

Primary Job Duties Sales & Service

Registrations or Certifications Supplier / Servicer

2024 Western Washington Short School

Date 6/5/2024

Start Time 12:10 PM

End Time 1:10 PM

Track 1B - Tanks

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Prestressed Concrete Tanks**

Abstract

Nothing is more vital to our collective health and well-being than clean potable water.DN Tanks provides safe, reliable and low maintenance storage tanks throughout drinking water systems. Prestressed concrete tanks have been constructed for applications such as intake (source), treatment and distribution. Cleaning wastewater and returning it safely to our environment can be done in a variety of different ways. DN Tanks has the experience and customization capabilities to provide storage solutions throughout the wastewater collection and treatment process. Prestressed concrete tanks have been constructed for applications such as collection, treatment, solids/resource recovery, and reclaim/reuse.

Relevance

Prestressed concrete tanks are used throughout the water and wastewater industry for storage of both water and wastewater.

Speaker **Michael Hinshaw**

E-mail michael.hinshaw@dntanks.com

Speaker's Job Title Pacific Northwest Regional Manager

Phone 4064654561

Organization DN Tanks

Primary Job Duties Preconstruction services for prestressed concrete tanks

Registrations or Certifications State of Montana Professional Engineer

2024 Western Washington Short School

Date	6/5/2024	**Track**	1C - Disinfection
Start Time	12:10 PM	**Drinking Water and/or Wastewater**	Water
End Time	1:10 PM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Chloramine Disinfectant Residual Optimization and Management in Distribution Systems: Taming the Breakpoint Curve Automatically**

Abstract

Chloramination as a disinfectant strategy in potable water systems provides benefits such as a lower potential for disinfection byproduct formation (THMs) and improved disinfectant longevity in distribution systems."¯ The significant challenge, however, relates to the shifting chemical equilibrium between ammonia, chlorine and chloramines in utility water distribution systems. Premature decay of chloramine compounds can release free ammonia into distribution systems and lead to nitrification, taste and odor issues as well as other complications as ammonia is consumed as a nutrient. Over chlorination, on the other hand, results in undesirable chloramine species that also result in taste and odor issues.

Relevance

Some of the largest water utilities in the country have turned to automatic RCS systems to solve their disinfectant residual issues. This presentation will discuss chloramine chemistry, automatic chloramine residual management and use several disinfectant residual management case studies.

Speaker	**Haley Goddard**	**E-mail**	grock@cleanwater1.com
Speaker's Job Title	Sales and Business Development Engineer	**Phone**	(970) 946-4005
Organization	Cleanwater1		
Primary Job Duties	Sales Engineer		
Registrations or Certifications	Idaho State Professional Engineer		

2024 Western Washington Short School

Date 6/5/2024

Start Time 12:10 PM

End Time 1:10 PM

Track 2B - Valves

Drinking Water and/or Wastewater Water

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Hydraulic Control Valve Basics: Function and Troubleshooting**

Abstract

This class will include the following: basic hydraulics, valve function, pilot system function, valve components, pressure reducing and relief valves, troubleshooting of common valves. With this foundational knowledge operators will be able to set, troubleshoot, and maintain their system more effectively. This class serves as a prerequisite of sorts for more in-depth control valve education and is designed for those new to the industry, new to control valves themselves, or those who would like a review on the topic.

Relevance

Hydraulic control valves and maintenance are a vital aspect of a functioning water system. Proper understanding and maintenance practices will aid to ensure proper valve performance and prevent valve failure which affects system reliability, community safety, resource (water) protection, and resource conservation. Hydraulic control valves remain a mystery to a majority of operators. This class is designed to build a fundamental familiarity with valve function and piloting systems. When maintenance or troubleshooting is needed, operators are able to approach the valves in an educated fashion and apply remote instruction/support if required.

Speaker **Patrick Miller**

E-mail Patrick@CimcoPNW.com

Speaker's Job Title Regional Manager & Engineering Support

Phone 253-263-3099

Organization Cimco GC-Systems

Primary Job Duties Patrick works with the Cimco-GC Systems's Cla-Val Service Team rebuilding, inspecting, and troubleshooting control valves. He meets regularly with engineers to aid with valve design and selection. Patrick continues to support water and wastewater utilit

Registrations or Certifications N/A

2024 Western Washington Short School

Date	6/5/2024	**Track**	2C - Corrosion Prevention
Start Time	12:10 PM	**Drinking Water and/or Wastewater**	Water;Wastewater
End Time	1:10 PM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **The Great Concrete Cover-Up: The Use Of Resurfacers When Lining Concrete**

Abstract

Concrete surfaces in aggressive water and wastewater structures can deteriorate due to biogenic corrosion, abrasive and erosive forces, and by other environmental factors. Lining these surfaces can protect them from damage and extend their useful service life. When coating a new or rehabilitated concrete substrate, using a resurfacing material prior to coating is an important consideration. Resurfacing can bring a deteriorated substrate back to plane and provide a smooth substrate for a protective coating; while coating directly to the substrate may also be suitable and provide benefits when discussing new concrete structures with minimal surface deterioration. This technical presentation explores the benefits and limitations of resurfacing and direct coating methods, as well as the different types of resurfacer technologies and their suitability for various concrete surfaces and applications. Attendees will learn about the preparation required before and after resurfacing materials are applied and gain a better understanding of the options available for coating concrete surfaces.

Relevance

By attending this technical presentation, the audience will gain a better understanding of the options available for resurfacing and coating concrete surfaces in an aggressive w/ww environment, and the factors to consider when choosing the best method for their application.

Speaker	**Jeremy Sukola**	**E-mail**	jsukola79@gmail.com
Speaker's Job Title	Global Market Manager- Water & Wastewater	**Phone**	6784218076
Organization	Carboline Global, Inc.		
Primary Job Duties	Strategy development for Carboline in the water and wastewater market segment. Technical lead and subject matter expert for technical sales team globally.		
Registrations or Certifications	AMPP (formerly NACE) Senior Certified Coatings Inspector		

2024 Western Washington Short School

Date 6/5/2024

Start Time 1:50 PM

End Time 2:50 PM

Track 1A - Pumps

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Mechanical Seal Fundamentals**

Abstract

Presentation will cover mechanical seal basics including basic component parts, how seals work and seal types and arrangements. Additional topics include enviormental controls options and using external flush water with mechanical seals. Presentation will conclude with discussion of the installtion process for cartridge seals as well as slplit seals with some tips and tricks for proper installation.

Relevance

Basic Mechanical Seal Fundamentals, Operation and Maintenance

Speaker **Eric E. Costner**

E-mail eric.costner@chesterton.com

Speaker's Job Title Area Manager

Phone 3605182324

Organization A.W. Chesterton

Primary Job Duties Supporting Customers with Mechanical Sealing Device solutions.

Registrations or Certifications Industry Professional

2024 Western Washington Short School

Date 6/5/2024

Start Time 1:50 PM

End Time 2:50 PM

Track 1B - Tanks

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Specifying Polyethylene Tanks for Water Treatment Chemical Storage**

Abstract

Presentation will cover critical information to consider when choosing a tank for chemical applications commonly used in water/wastewater treatment plants including informatoin on polyethylene resin choice (HDPE vs XLPE), tank design (ASTM D1998), application review (temperature, pressure, venting, location, nozzle/fitting material choice) and add-on items to consider for specific chemical applications such as Sodium Hypochlorite, Sodium Hydroxide, Suluric Acid, HCL)

Relevance

Owners/Operators use Polyethylene tanks for a wide variety of chemical applications in plants and specifying/choosing the right tank for the chemical application is critical to maximize the useful life of the tank and for safety. As a manufacturer of polyethylene tanks we see specifications/RFQs for tanks on a daily basis that lack critical information to ensure the right tank is selected for the job. Having a basic understanding of the information to include when requesting/selecting a tank can save owners/operating money, time and distress.

Speaker **Jason Harrington**

E-mail jharrington@snydernet.com

Speaker's Job Title Director of Sales - Industrial Tank Division

Phone 402-465-1237

Organization Snyder Industries (a Tank Holding company)

Primary Job Duties Manage Snyder Industries Industrial Tank Division responsible for forecasting, budget, planning and overseeing Snyder's regional sales team and conducting Industrial tank training for Snyder distributors and water/wastewater engineering firms for Snyder's

Registrations or Certifications None

2024 Western Washington Short School

Date 6/5/2024

Start Time 1:50 PM

End Time 2:50 PM

Track 1C - Disinfection

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **3 Methods of Chlorination**

Abstract

Chlorine: it's been around for well over 100 years, protecting our water supply. There are many new methods of disinfection, but to this day, chlorine remains king. It's cheap, effective, and easy to source in one way or another. The question you might be asking is, which method of chlorination would be best suited to your application? Believe it or not, gas is still a very popular option for many municipalities throughout the Pacific Northwest. You don't often see it go into a new facility, but nevertheless, when dealt with properly (safety first), it's undeniably a pure, and inexpensive form of disinfection.Perhaps you're considering liquid hypo - by far the most popular method of chlorination, whether purchased in bulk, or generated onsite - there are many ways to effectively dose liquid chlorine in water and wastewater applications. But if your system - or your budget - is quite small, perhaps a granulated form of chlorine is a good option for you (in powder form or tablets).We'll discuss these options each in greater detail, and help to answer the above questions.

Relevance

This presentation applies equally to water or wastewater applications that require a chemical disinfectant.

Speaker **Jeff Harmon**

E-mail Jeff@tmgservices.net

Speaker's Job Title Territory Manager

Phone 2536867459

Organization TMG Services, Inc.

Primary Job Duties Territory Manager - Sells Chemical Feed Systems to Municipal Water & WW Applications

Registrations or Certifications None

2024 Western Washington Short School

Date 6/5/2024

Start Time 1:50 PM

End Time 2:50 PM

Track 2B - Valves

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Silent Check Valve Investigation and Repair**

Abstract

Review hydraulic modeling of a water supply system, operations, pump station design, check valve and air-vac valve selection, troubleshooting of water hammer concerns, problem solving, revelations and solution.

Relevance

Pumping system design and operation is a key aspect of the industry.

Speaker **Dan Burwell; Kurt Van Burkleo**

E-mail dburwell@rh2.com

Speaker's Job Title Project Manager

Phone 360 684-1548

Organization RH2

Primary Job Duties Project Management

Registrations or Certifications Washington State Water Operator;Washington State Professional Engineer

2024 Western Washington Short School

Date 6/5/2024

Start Time 1:50 PM

End Time 2:50 PM

Track 2C - Corrosion Prevention

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Assisting O&M through Corrosion Control and Mitigation**

Abstract

The cost of corrosion is estimated to exceed $1 trillion nationally, annually. Through proper materials selection, standard details, and coatings & cathodic protection specifications, O&M direct costs can be reduced, while also leveling out the replacement curve for asset management. This session will focus on the very basics of corrosion, and easy to achieve best practices to readily incorporate into any utility, without increasing capital costs. With lifecycle thinking, we can all do our part to reduce corrosion-related costs to public infrastructure, and the load to its burdened workforce.

Relevance

This presentation will discuss how corrosion affects public infrastructure, in both direct cost and workforce labor. It will cover easy to implement best practices, with ways to ensure assets meet and often exceed design life.

Speaker **Robert Hanlon**

E-mail rohanlon@kingcounty.gov

Speaker's Job Title Senior Project Engineer

Phone 2067147198

Organization King County WTD

Primary Job Duties Project Engineer, Corrosion SME

Registrations or Certifications Washington State Professional Engineer

2024 Western Washington Short School

Date 6/5/2024

Start Time 3:00 PM

End Time 4:00 PM

Track 1A - Pumps

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Asset Protection Utilizing Best Practices and Condition Monitoring to Increase MTBR(F)**

Abstract

Condition monitoring sensors and mobile application platforms can safely monitor critical rotating equipment, operating conditions and mechanical sealing devices. This exciting new technology can help detect process and operating instabilities. This technology and maintenance best practices will be reviewed to simplify and improve asset protection and maintenance operations. This training will include applying the IIoT remote monitoring technology, how easy it is to install, where to install it, and what it can do to help increase your equipment MBTR(F).

Relevance

This training will include applying the IIoT remote monitoring technology, how easy it is to install, where to install it, and what it can do to help increase your equipment MBTR(F).

Speaker **Eric E. Costner**

E-mail eric.costner@chesterton.com

Speaker's Job Title Area Manager

Phone 3605182324

Organization AW Chesterton

Primary Job Duties Global Industry Leader - Water & Wastewater Market

Registrations or Certifications Chesterton SME

2024 Western Washington Short School

Date 6/5/2024

Start Time 3:00 PM

End Time 4:00 PM

Track 1B - Tanks

Drinking Water and/or Wastewater Water

Length of Session Half Hour (about 25 minutes with 5 minutes for questions and discussion)

Presentation Title: **Replacement of 100 Year Old Reservoir**

Abstract

The City of Everett's Reservoir 3 was originally constructed in 1923, 100 years ago, as a below-grade, square, concrete reservoir with a capacity of 20 MG. This reservoir receives more than half the water produced by the City's water filtration plant. Approximately 30 years ago, a cover was constructed over the reservoir, which needs repair. As a part of the City's 2020 Comprehensive Water plan, the City determined that retrofitting the reservoir's cover to meet current seismic codes would be cost-prohibitive and difficult to construct. Therefore, the City decided to replace Reservoir 3 as quickly as possible because of the rapidly deteriorating structural conditions of the reservoir's cover. The Reservoir 3 replacement project faced design challenges due to site constraints that limited the feasible construction area including providing protection for existing PCCP pipes, managing steep slopes, seismic considerations and protecting the existing reservoir during construction. To address the challenges with the site constraints, the project is designed to be constructed in two phases. Constructing the Reservoir 3 replacement in two phases allows for the project to progress quickly as this is a schedule driven project to address an immediate need in the City's infrastructure. Phase 1 includes the construction of one 8 MG reservoir, while the existing 20 MG reservoir remains in service. In Phase 2, the existing 20 MG reservoir will be demolished, and a reservoir with 12 MG of storage will be constructed. Therefore, the design had to consider operations for the interim condition when only 8 MG of storage is available. After Phase 2, the two proposed reservoirs will operate in parallel. The design had to consider operation to preserve water quality.

Relevance

This presentation provides utilities and designers lessons learned on how to successfully design and replace existing deteriorating reservoirs in a schedule driven design and construction process, a challenge that many utilities will be facing in the future. By the time of presentation, Phase 1 of the Reservoir 3 Replacement project will be in construction and lessons learned from that construction experience will also be provided.

Speaker **Kali Lee; Bethany Brunny; John R**

E-mail kali.lee@hdrinc.com

Speaker's Job Title Water/Wastewater EIT

Phone 425 468 1590

Organization HDR Engineering Inc

Primary Job Duties Engineer

Registrations or Certifications Engineer in Training

2024 Western Washington Short School

Date	6/5/2024	**Track**	1C - Disinfection
Start Time	3:00 PM	**Drinking Water and/or Wastewater**	Water
End Time	4:00 PM	**Length of Session**	Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **On-Site Sodium Hypochlorite Generation: A Safe and Cost-Effective Solution for Disinfection**

Abstract

The adoption of on-site hypochlorite generation (OSHG) systems for disinfection has experienced significant growth in recent years, driven by safety concerns associated with chlorine gas usage in water and wastewater utilities. However, recent disruptions in the supply chain and rising costs of bulk 12.5% sodium hypochlorite have further accelerated the adoption of OSHG systems for economic reasons. This presentation highlights the economic advantages of OSHG, including excellent return on investment, better cost control, and enhanced operational planning for utilities. By utilizing safe and readily available raw materials such as electricity and salt, OSHG systems offer consistent operating costs over time, in contrast to the unpredictable cost of bleach deliveries.

Relevance

Lessons learned from over 30 years of OSHG installations will also be shared. Key aspects such as salt handling, salt purity, water softener reliability, ongoing maintenance, and system layout will be addressed, offering practical insights to ensure successful implementation and operation.

Speaker	**Haley Goddard**	**E-mail**	grock@cleanwater1.com
Speaker's Job Title	Sales and Business Development Engineer	**Phone**	(970) 946-4005
Organization	Cleanwater1		
Primary Job Duties	Sales Engineer		
Registrations or Certifications	Idaho State Professional Engineer		

2024 Western Washington Short School

Date 6/5/2024

Start Time 3:00 PM

End Time 4:00 PM

Track 2B - Valves

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Polymer 101: A Comparison between Plastics used in Pipes and Valves**

Abstract

The presentation will start out defining the difference between thermoplastics and thermoset materials and why thermoplastics are the material of choice for pipes and valves. We will then explore the difference between thermoplastic polyvinyls (like PVC) and polyolefins (like PE and PP). This will segue into a detailed discussion in the differences between heat welding (PE/PP) vs. cement welding (PVC). Practical field applications and case studies will be given for both PE and PP. Finally, there will be a discussion on fluoropolymers, why they are so UV and chemically resistant, and some practical applications in with some water/wastewater treatment chemicals, including a case study on struvite prevention.

Relevance

The presentation is intended to bring awareness to the strengths and weaknesses between the different plastic materials used in Water/Wastewater chemical treatment processes.

Speaker **Josh Goldberg**

E-mail jgoldberg@asahi-america.com

Speaker's Job Title Business Development Manager

Phone 7816061394

Organization Asahi/America

Primary Job Duties Market development and polymer specialist

Registrations or Certifications Society participation

2024 Western Washington Short School

Date 6/5/2024

Start Time 3:00 PM

End Time 4:00 PM

Track 2C - Corrosion Prevention

Drinking Water and/or Wastewater Water;Wastewater

Length of Session Full Hour (about 50 minutes with 10 minutes for questions and discussion)

Presentation Title: **Protecting Severe Wastewater Infrastructure Using High- Performance Epoxy Linings**

Abstract

Presentation will cover general corrosion challenges in wastewater environments including: * Inflow and Infiltration in wastewater systems* Surface preparation of concrete- Resurfacing and repairing concrete- Structural epoxy linings for concrete - Reinforced-epoxy linings for concrete

Relevance

Corrosion protection of assets in the waste stream is of extreme importance to utility owners.

Speaker **Rick Gilbreath**

E-mail rick@tnwsolutions.com

Speaker's Job Title Principal

Phone 2067775643

Organization TNW, Tnemec

Primary Job Duties Provide Engineering and specification consulting for corrosion protection through proper surface preparation and application of high performance coatings. Provide training and application support to industrial contractors.

Registrations or Certifications AMPP