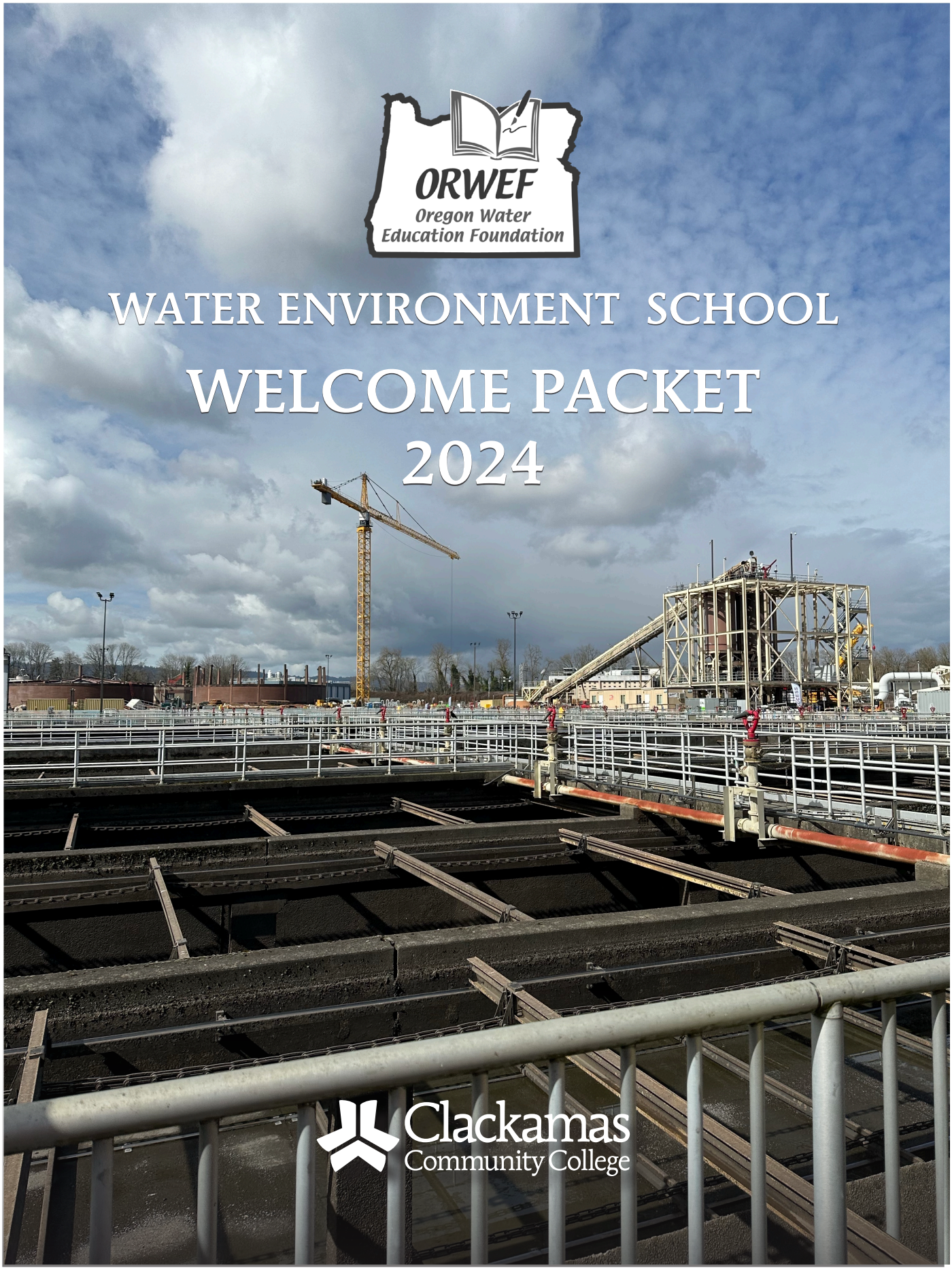

ORWEF
Oregon Water
Education Foundation
WATER ENVIRONMENT SCHOOL
WELCOME PACKET
2024
Clackamas
Community College

ORWEF WATER ENVIRONMENTAL SCHOOL SCHEDULE AND SESSION DESCRIPTIONS

SCHEDULE AT A GLANCE

DAY ONE: TUESDAY, JUNE 25, 2024 Virtual Only

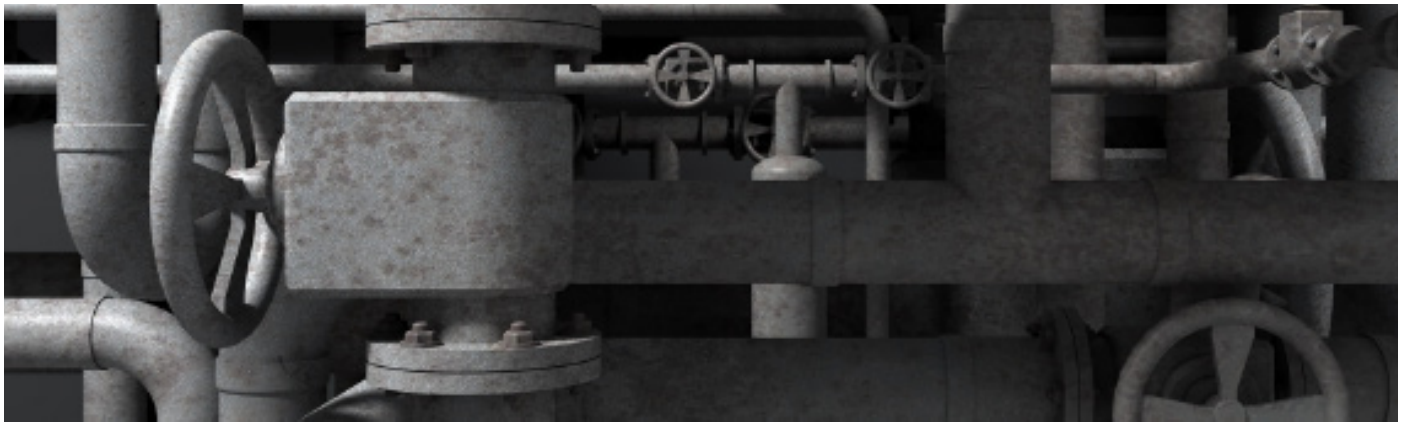
7:00-8:00 am	Registration/Opening Announcements
8:00-9:00 am	Keynote
9:00-12:30 pm	Sessions
12:30-1:00 pm	Lunch (On Your Own)
1:00-4:30 pm	Sessions

DAY TWO: WEDNESDAY JUNE 26, 2024 Virtual or In-Person

7:00-8:00 am	Registration/Opening Announcements
8:00-9:00 am	Keynote
9:00-12:30 pm	Sessions
12:30-1:30 pm	Lunch & Vendor Event (Catering is available for In-Person only)
12:30- 2:00 pm	Vendor Raffle (collect your stamps!)
2:00 pm	Turn in Raffle Cards
1:30-5:00 pm	Sessions
2:30 pm	Raffle Prize Drawing (Welcome Desk)

DAY THREE: THURSDAY JUNE 27, 2024 Virtual or In-Person

7:00-8:00 am	Registration/Opening Announcements
8:00-9:00 am	Keynote
9:00-12:30 pm	Sessions
12:30-1:30 pm	Lunch (Catering is available for In-Person only)
1:30-5:00 pm	Sessions
5:00-6:00 pm	Certificates will be sent out via e-mail



WELCOME INSTRUCTIONS

We are glad you are here and ready to learn. Now, let's get you going to earn some CEUs! The next few pages are the campus map to get an idea of where your courses and activities will be, the schedule to get an idea of what you are about to learn, and your award sheet.

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1 CAMPUS MAP

Please review the maps to gather where your track will held, where the restrooms are, and where the lounge/networking spaces will be.

2 SCHEDULE

This schedule is a review of each track's program and speakers.
First Day: The first day is virtual. There is a 10-minute break between each session and a 30-minute lunch from 12:30 to 1:00. Lunch is not provided during the First Day.

Second Day & Third Day: There is a 10-minute break between each session and a 60-minute lunch from 12:30-1:30. Catering is provided (in-person only) in P-165. the STEM Center. The Vendor Event will be happening on the Second Day during lunch.

3 AWARD SHEET

In this packet, you will see you award sheet. After each instruction session, you will receive a stamp for your attendance. Please keep track of this Award Sheet.

This sheet will be proof of your in-person participation to be eligible to receive CEUs. After each school day, you will need to turn in this sheet and pick it back up at the registration desk (where you got this packet!).

THANKS TO OUR SPEAKERS

Adam Crafts, PE
Alden Meade
Austin Wong
Bhargavi Subramanian
Blake Rains
Bob Sanguinetti
Brett Laney
Brittany Downing
Charles Scott
Chris Maher
Chris Walters
Colin Wilson Root
Dan Strong
Daniel Buonadonna, PE
Daniel Dogar, EI
Daryll Dorman
DEQ/Video
Donald Jones
Sean Fitzgerald, PE
Frank Dick
Freddy Armijo,
Gail Shalum
Guillermo Regalado, PE
Hannah Thomascall
Jen Murphy, P.E.
Jessica Rinner, PE
Jill Hoyenga
John Koch
John Peterson
Jonathan Gordon
Kathryn Thomason
Kelson Redding
Kevin Wegner
Ornella Sosa-Hernandez, CWS
Lauren Takitch
Leila Barker, M.S., P.E.
Marion Barnes
Mark Johnson
Mark Poling
Michelle Beason, PE
Mike Eastman
Nandita Ahuja, PE
Natalie Reilly
Nate Janega
Patrick Leach
Randall Westmoreland
Rick Allen
Russ Reasoner
Sarah Burch
Scott Cowden
Simon Cartwright
Skye Franyutti
Steven Garner
Terrance Romane
Tom Geise

AND TO OUR VENDORS

2024 WATER ENVIRONMENT SCHOOL LEADERSHIP

Matt Zak

ORWEF President/Sanitary and Stormwater Sewer Technician

This is Matt's second year as president of Oregon Water Education Foundation (ORWEF) and a vital part of the committee for over 10 years. He is a sanitary and stormwater sewer technician, and clean water defender for Clackamas County's Water Environment Services.

Our organization is always looking for speakers and people to volunteer their time to be a part of our committee. Please contact us to help develop next year's program.

Molly Nause McCord

ORWEF Vice-President/Wastewater Collections Systems Maintenance Engineer

Molly has been attending the ORWEF Short School since 2015, participated in the planning committee for the 2024 school, and just served her first year as the ORWEF Vice President. Molly is a Wastewater Collections Systems Maintenance Engineer for the City of Portland's Bureau of Environmental Services, where she maintains and repairs existing sewer infrastructure as well as coordinating wastewater pressure pipe condition assessment and field operations citywide. She says that her job is to be a professional problem solver, and is an overall science enthusiast with a passion for STEM, trades and education of all types.

2024 PLANNING COMMITTEE

Our team below has worked tirelessly in making a robust, relevant training program keeping up with industry standards and emerging issues. When developing the program, these committee members strive to provide training that uphold the school's high standard for quality training while meeting the needs and interest of the attendees. These names below have volunteered their time to make this school a success. Thank you!

Kasie Auger
Hunter Bennett-Daggett
Brent Carrar
Erin Duffy
Galen Hoshovsky
Akiko Gates
Kimi Grzyb
Michael Hawkins
Kaleb Kercher
Stephanie Kerns
Matthew LaForce
Victoria Mendez
Molly Nause-McCord
Amber Steele
Monica Stone
Matt Zak
Greg Castaneda
Max Springer

WANT TO JOIN OUR TEAM?
Reach out to Matt Zak at MZak@clackamas.us or Molly Nause McCord at Molly.Nause-McCord@portlandoregon.gov

BUILDINGS and SERVICES

Art Center

Barlow Hall
- Human Resources

Clairmont Hall

DeJardin Hall

Dye Learning Resource Center
- Academic Computer Lab
- Library
- Moodle Help
- Tutoring

Environmental Learning Center

Family Resource Center
- Child Development Center

Gregory Forum

Holden Industrial Technology Center

Lewelling
- Campus Services
- Shipping & Receiving

McLoughlin Hall
- Bookstore
- College Safety

Niemeyer Center
- Alexander Art Gallery
- Osterman Theatre

Pauling Center
- Connections with Business and Industry
- Workforce Services

Randall Hall
- Athletics Center

Roger Rook Hall
- Foundation
- President's Office

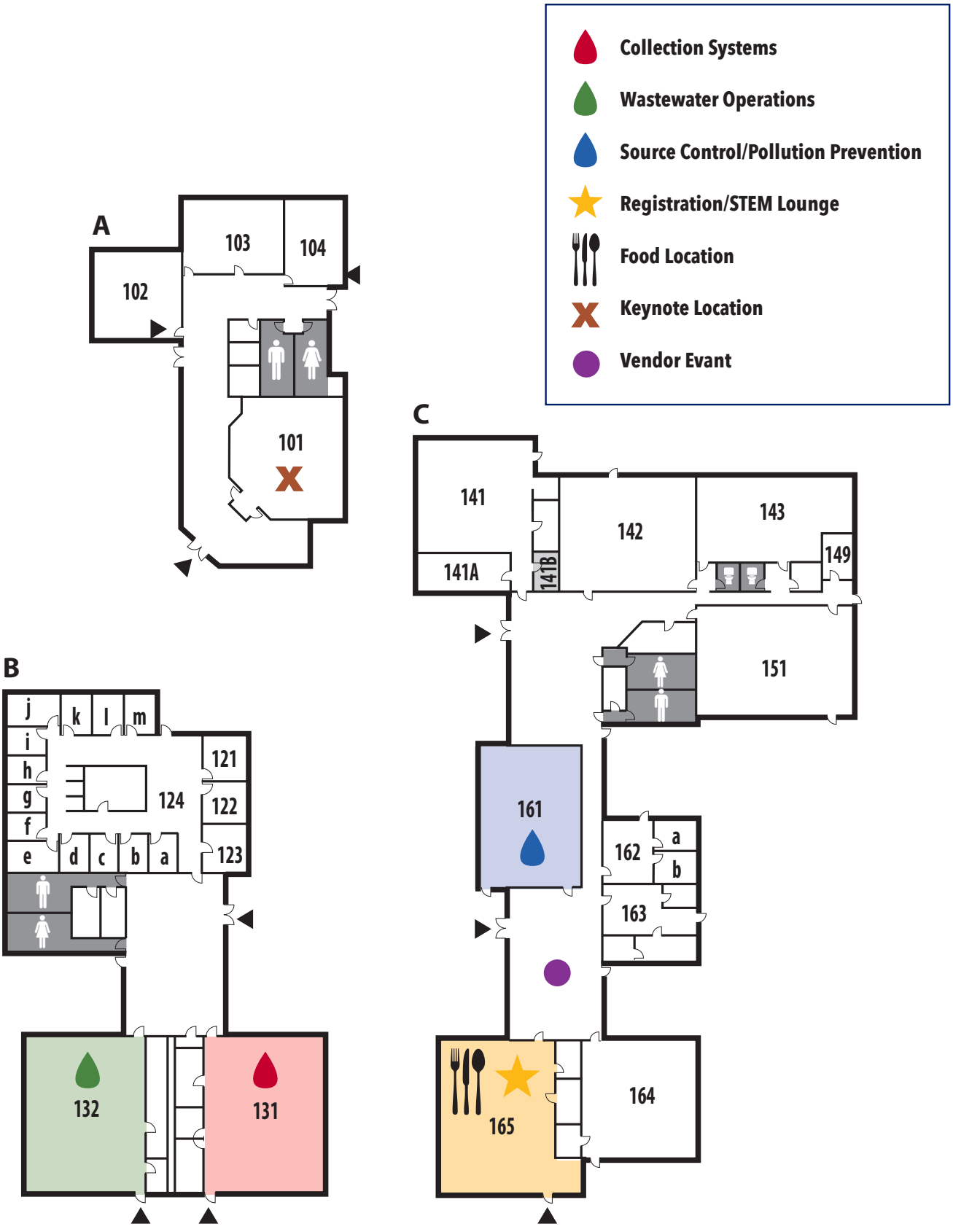
Streeter Hall
- Online Learning & Educational Technology

Training Center

Wacheno Welcome Center
- Admissions Center
- Advising
- Career Services
- Cougar Café
- Disability Resource Center
- Education Partnerships
- Financial Aid
- Multicultural Center
- Registration/Records
- Student Accounts
- Student Government
- Testing Center
- VET Center

WHAT YOU NEED TO KNOW:

Lunch will be taking place in **PAULING CENTER** on **Wednesday and Thursday.**



PAULING CENTER

DAY ONE: TUESDAY JUNE 25, 2024

	7:00 am	**Zoom opens, tech checks, change your names**		
	7:30 am	**Welcome and introductions** – Matt Zak **Housekeeping what to expect, certifications process and more** – Molly Nause-McCord		
1	**TIME** 8:00-9:00 am	**Does AI Make a Difference? Case Studies of AI's Impact on Sewer Assessment, Asset Management, and System Planning** Daniel Buonadonna, PE *Jacobs*		
		TRACK A COLLECTION SYSTEMS	**TRACK B WASTEWATER OPERATIONS**	**TRACK C SOURCE CONTROL/ POLLUTION PREVENTION**
2	9:10-10:10 am	**Odor Control in the Context of Odor Impact** Jonathan Gordon *Parametrix*	**Wipes Update: Unraveling the Fibers of Wastewater Regulations** Frank Dick *City of Vancouver*	**Ground Penetrating Radar for Pipe Inspection, Locating, Investigations, Damage Mitigation, and More** Mark Johnson *GPRS, Inc.*
3	10:20-11:20 am	**Where are the PIGs at? Wastewater Pressure Pipe Condition Assessment and an Update on BES's City Wide Efforts** Molly Nause-McCord, PE City of Portland	**Case Studies of Three Leading Filter Types in Wastewater Applications** Tom Geise *BHC Consulting*	**Bio Solids or Resource Recovery** Terrance Romane *WES Environmental Service Manager*
4	11:30-12:30 pm	**No flow meter? No Problem – Quantifying Benefits and Return on Investment for I&I Repairs** Nandita Ahuja, PE; Guillermo Regalado, PE; and Sean Fitzgerald, PE *Hazen and Sawyer*	**Compressed Gas Mixing Technology in Wastewater Treatment Facilities** Taylor Jordan *Enviro-mix*	**Novel Food Waste Pre-Processing and Systematic Co-Digestion to Enhance Biogas Production and Improve Solids Treatment** Bhargavi Subramanian *Kennedy and Jenks*
		LUNCH ON-YOUR-OWN 12:25-1:10		
5	1:00-2:00 pm	**Advancing Sewer Management with Artificial Intelligence: Results from Pilot Testing AI Tools for Sewer Condition Assessments** Austin Wong and Natalie Reilly *Carollo Engineers*	**The Cost of Being a Good Neighbor** Scott Cowden *Jacobs*	**Veterans in the Water Workforce: Tapping one of our most valuable wastewater resources** Freddy Armijo, Steven Garner, Donald Jones *City of Riverside Public Utilities, CA-NV Section AWWA, Warriors2WaterWorks Campaign and Cuyamaca College*
6	2:10-3:10 pm	**Emergency Repair Catalyzes Fast-Tracked Improvements: the Bolton Pump Station Story** Jessica Rinner, PE and Adam Crafts, PE *Clackamas WES; Consor*	**Wastewater MBR Basics** Blake Rains *Clackamas Water Environment Services*	**Screenless IFAS System Eliminates Media Loss and Reduces O&M Costs for the City of Peterborough WWTP** Wayne Flournoy *Entex Enterprises*
7	3:20-4:20 pm	**Alternative Procurement Methods** Chris Walters *Dunn Carney LLP*	**Case Studies of Three Leading Filter Types in Wastewater Applications** Tom Geise *BHC Consulting*	**Wipes Update: Unraveling the Fibers of Wastewater Regulations** Frank Dick *City of Vancouver*

DAY TWO: WEDNESDAY JUNE 26, 2024

	7:00 am	**Registration opens, Pauling Rm 165**		
	7:30 am	**Welcome and announcements** – Matt Zak, Pauling Rm 101 **Zoom Presentations open to virtual attendance**		
8	**TIME** 8:00-9:00 am **Pauling Rm 101**	**Discovery Clean Water Alliance - Columbia River Outfall and Effluent Pipeline Integrated Project Delivery In A Complex Operational and Construction Environment** John Peterson and Bob Sanguinetti *Discovery Clean Water Alliance*		
		TRACK A COLLECTION SYSTEMS Pauling Rm 131	**TRACK B WASTEWATER OPERATIONS Pauling Rm 132**	**TRACK C SOURCE CONTROL/ POLLUTION PREVENTION Pauling Rm 161**
9	9:10-10:10 am	**Deep Dive into Deep Infiltration** Kathryn Thomason *Oldcastle Infrastructure*	**Wastewater Plant Startup and Restart** Rick Allen *BioLynceus*	**Environmental Engineering in Action in the WRRF** Chris Maher *Clean Water Services*
10	10:20-11:20 am	**Managing Your Grease and Septic Haulers** Rick Allen *BioLynceus*	**Flexible WWTP mixing for process optimization with energy savings** Alden Meade *Xylem*	**Environmental Engineering in Action in the WRRF** Chris Maher *Clean Water Services*
11	11:30-12:30 pm	**Intelligent Wastewater Pumping - Station, pump, and control considerations for your next RFP** Simon Cartwright *Xylem*	**Safety Concerns From the Influent to the Effluent of a Wastewater Treatment Plant** Russ Reasoner and Randall Westmoreland *Oregon OSHA*	**The Changing World of Pretreatment** Rick Allen *BioLynceus*
		LUNCH 12:25-1:10 *Angelina's Box Lunch Catering (In-Person participants only)*		
12	1:30-2:30pm	**Empowering your staff – what does it really mean?** Mark Poling and Hannah Thomascall *Clean Water Management; Spokane County*	**CMMS Data Management & Decision Making** Daryll Dorman *AllMax Software, JDM Company*	**Oregon Association of Clean Water Agencies Model FOG Ordinance** Jill Hoyenga *Regulatory Compliance Manager City of The Dalles*
13	2:40-3:40 pm	**Excavation Safety Part I** Eric Fullan *Carollo Engineers*	**Wastewater Treatment Systems 101** Hannah Thomascall *Spokane County Regional Water Reclamation Facility*	**Collaborative FOG Enforcement** Jill Hoyenga *Regulatory Compliance Manager City of The Dalles*
14	3:50-4:50 pm	**FILM: *Blue Gold World Water Wars*** directed by Sam Bozzo based on the book *Blue Gold: The Fight to Stop The Corporate Theft Of The World's Water* by Maude Barlow and Tony Clark.	**Register/set up a "Your DEQ online" account and Renewal videos for Wastewater certifications** DEQ/Video *DEQ*	**Mobile Food Units – Mouthwatering or Miasma** Jill Hoyenga *Regulatory Compliance Manager City of The Dalles*

DAY THREE: THURSDAY JUNE 27, 2024

	7:00 am	**Registration opens, Pauling Rm 165**		
	7:30 am	**Welcome and announcements** – Matt Zak, Pauling Rm 101 **Zoom Presentations open to virtual attendance**		
15	**TIME** 8:00-9:00 am **Pauling Rm 101**	**All Eyes on You: How to Get Comfortable with Attention** Marion Barnes *City of Eugene*		
		TRACK A **COLLECTION SYSTEMS** **Pauling Rm 131**	**TRACK B** **WASTEWATER OPERATIONS** **Pauling Rm 132**	**TRACK B** **SOURCE CONTROL/ POLLUTION PREVENTION** **Pauling Rm 161**
16	9:10-10:10 am	**Inspecting and Maintaining Pipe Assets** Brittany Downing and Sarah Burch *Portland Bureau of Environmental Services; Kennedy Jenks*	**Energy Efficiency Optimization for Wastewater Systems** Kelson Redding *Energy 350*	**Surface Water Management at WES-Preventing Non-Point Source Wastewater Pollution** Gail Shalum *Clackamas Water Environment Services; Natural Resources Scientist*
17	10:20-11:20 am	Multi-Sensor Inspection Case Study in Gresham Michelle Beason, PE and Daniel Dogar, EIT *National Plant Services; City of Gresham*	**Wastewater Polymer Who, What, When, Where and Why** Charles Scott *Polydyne Inc*	**Laboratory Testing for Wastewater Treatment** Patrick Leach *Clackamas Water Environment Services Analytical Lab*
18	11:30-12:30 pm	**Work Zone Traffic Control Safety** Mike Eastman *ODOT Technology Transfer Center*	**Wastewater Jar Testing** Charles Scott *Polydyne Inc*	**Nailing the Job Interview for Wastewater Operation** Marion Barnes *City of Eugene Public Works, Oregon*
		LUNCH 12:30-1:30 *Ingallina's Box Lunch Catering (In-Person participants only)*		
19	1:30-2:30 pm	**Work Zone Traffic Control Safety** Mike Eastman *ODOT Technology Transfer Center*	**Blowing Bubbles Better: Aeration Control for Practitioners** Jen Murphy, P.E. Parametrix	**Lessons Learned from a Decade of Phosphorus Recovery at Clean Water Services' WRRF** Brett Laney Clean Water Services
20	2:40-3:40 pm	**Work Zone Traffic Control Safety** Mike Eastman *ODOT Technology Transfer Center*	**Micro Biology** Dan Strong *Water Environment Services, Water Quality Specialist*	**Phosphorus Flux Dynamics in the Forest Grove Natural Wastewater Treatment System** Colin Wilson Root, M.S., E.I.T. and Leila Barker, M.S., P.E. *Clean Water Services*
21	3:50-4:50 pm	**Work Zone Traffic Control Safety** Mike Eastman *ODOT Technology Transfer Center*	**Strengthening Partnerships with Local Industries through a Co-digestion Program.** Kevin Wegner and Ornella Sosa- Hernandez Clean Water Services	**FILM: *Frontline: Poisoned Waters*** *PBS Documentary 2009*

2024 WATER ENVIRONMENT SCHOOL SESSION DESCRIPTIONS

DAY ONE: TUESDAY JUNE 25, 2024 | Collection Systems: Session Descriptions		
1	**TIME** 8:00-9:00 am	**Does AI Make a Difference? Case Studies of AI's Impact on Sewer Assessment, Asset Management, and System Planning** Daniel Buonadonna, PE *Jacobs* This presentation will present different case studies of Jacobs' AI solution performance and impact on lifecycle ownership costs for sewer utilities.
2	9:10-10:10 am	**Odor Control in the Context of Odor Impact** Jonathan Gordon *Parametrix* Characterizing exposure and odor impacts is challenging; odor control system design and operation to meet regulatory standards will be presented.
3	10:20-11:20 am	**Where are the PIGs at? Wastewater Pressure Pipe Condition Assessment and an Update on BES's City Wide Efforts** Molly Nause-McCord, PE *City of Portland* Last year we talked about how to start looking at your wastewater pressure pipes for condition assessment and inspection. Well, the team of engineers, millwrights, consultants, and inspection tool vendors have been working on this since 2017 in the BES system. Now, let's hear where they are at! Fun field photos, gross stories, data, and more!
4	11:30-12:30 pm	**No flow meter? No Problem – Quantifying Benefits and Return on Investment for I&I Repairs** Nandita Ahuja, PE; Guillermo Regalado, PE; and Sean Fitzgerald, PE *Hazen and Sawyer* This study investigates an alternate methodology of using pump station energy consumption data in lieu of flow measurements for quantifying the benefits for approximately $20 million in investments made by a utility1 for rehabilitation of 210,000 linear feet of sewer pipe across six sewersheds.
LUNCH 12:30-1:30 PM		
5	1:00-2:00 pm	**Advancing Sewer Management with Artificial Intelligence: Results from Pilot Testing AI Tools for Sewer Condition Assessments** Austin Wong and Natalie Reilly *Carollo Engineers* Condition assessment of sewer systems is critical to maintaining system structural integrity and functionality and to identifying pipes. Recent development of artificial intelligence (AI) tools have the potential to advance sewer condition assessments. AI algorithms are being developed to automatically identify defects from inspection footage. AI can also be used to identify poor quality videos so that the pipes can be re inspected.
6	2:10-3:10 pm	**Emergency Repair Catalyzes Fast-Tracked Improvements: the Bolton Pump Station Story** Jessica Rinner, PE and Adam Crafts, PE *Clackamas WES; Consor* This presentation will tell the story of the force main repairs and the follow up evaluation and improvements to increase the pump head limits, increase firm pumping capacity, and replace additional sections of the force main that had significant corrosion.
7	3:20-4:20 pm	**Alternative Procurement Methods** Chris Walters *Dunn Carney LLP* Learn about the difference between traditional design-bid-build, construction manager/general contractor (CM/GC), design-build, and emergency and sole-source procurement methods in Oregon.

DAY TWO: WEDNESDAY JUNE 26, 2024 | Collection Systems: Session Descriptions		
8	8:00-9:00 am	**Discovery Clean Water Alliance - Columbia River Outfall and Effluent Pipeline Integrated Project Delivery In A Complex Operational and Construction Environment** John Peterson *Discovery Clean Water Alliance* The presentation will provide insights and lessons learned from the effort to plan, design, permit, and construct a new Columbia River outfall for the Salmon Creek Treatment Plant in Vancouver, WA.
9	9:10-10:10 am	**Deep Dive into Deep Infiltration** Kathryn Thomason *Oldcastle Infrastructure* This presentation will dive into a case study from Gresham, OR where deep infiltration was used to reduce the strain on an overwhelmed MS4 system.
10	10:20-11:20 am	**Managing Your Grease and Septic Haulers** Rick Allen *BioLynceus* During this program, we will be covering some of the important things you need to know when it comes to taking discharges from Septic Haulers, Chemical Toilets and Grease Pumpers. It will cover many of the issues these contaminants can bring to your facility.
11	11:30-12:30 pm	**Intelligent Wastewater Pumping – Station, pump, and control considerations for your next RFP** Simon Cartwright *Xylem* We will explore the newer wastewater lift station controls which if used correctly can reduce operational costs significantly. We will also cover the optimal station design and pump considerations that are needed to implement these controls culminating in a look at the next generation of combined systems.
LUNCH 12:30-1:30 PM		
12	1:30-2:30 pm	**Empowering your staff – what does it really mean?** Mark Poling and Hannah Thomascall *Clean Water Management; Spokane County* We'll explore enabling your team to act through fostering collaboration, creating a climate of trust, facilitating relationships, strengthening others, enhancing self-determination, developing competence and confidence, and organizing work to build competence and ownership.
13	2:40-3:40 pm	**Smoke Testing to Identify Wastewater System Cross Connections, Defects, and Many Other System O&M Topics** Michelle Beason, PE *National Plant Services* This presentation will cover smoke testing in wastewater and how a recent smoke testing pilot using drones to locate smoke defects in easements and wooded areas was conducted.
14	3:50-4:50 pm	**FILM: *Blue Gold World Water Wars*** directed by Sam Bozzo based on the book *Blue Gold: The Fight to Stop the Corporate Theft of The World's Water* by Maude Barlow and Tony Clark. *Blue Gold: World Water Wars* examines the environmental and political implications of the planet's dwindling water supply, and posits that wars in the future will be fought over water. The film also highlights some success stories of water activists around the world.

DAY THREE: THURSDAY JUNE 27, 2024 | Collection Systems: Session Descriptions		
15	8:00-9:00.am	**All Eyes on You: How to Get Comfortable with Attention** Marion Barnes *City of Eugene* Learn how to get used to attention–from media, from the public and from coworkers–and use it to your advantage!
16	9:10-10:10 am	**Inspecting and Maintaining Pipe Assets** Brittany Downing and Sarah Burch *Portland Bureau of Environmental Services; Kennedy Jenks* BES condition assessment program has engaged with Kennedy Jenks consultants to prioritize, inspect, and assess plant process piping to move BES towards proactive management of its pipe assets. This presentation will outline the vision and catalysts for this project, along with sharing success stories and how other utilities can adopt similar programs.
17	10:20-11:20 am	**Multi-Sensor Inspection Case Study in Gresham** Michelle Beason, PE and Daniel Dogar, EIT *National Plant Services; City of Gresham* This presentation will demonstrate the value of using multi-sensor inspection (MSI) robots to get measurable data on our most critical large-diameter pipelines.
18	11:30-12:30 pm	**Work Zone Traffic Control Safety** *(4 hours, Hour 1 of 4)* Mike Eastman *ODOT Technology Transfer Center* This certification class will cover state regulations and minimum requirements for setting short term flagging operations on state and city right of way.
LUNCH 12:30-1:30 PM		
19	1:30-2:30 pm	**Work Zone Traffic Control Safety** *(4 hours, Hour 2 of 4)* Mike Eastman *ODOT Technology Transfer Center* This certification class will cover state regulations and minimum requirements for setting short term flagging operations on state and city right of way.
20	2:40-3:40 pm	**Work Zone Traffic Control Safety** *(4 hours, Hour 3 of 4)* Mike Eastman *ODOT Technology Transfer Center* This certification class will cover state regulations and minimum requirements for setting short term flagging operations on state and city right of way.
21	3:50-4:50 pm	**Work Zone Traffic Control Safety** *(4 hours, Hour 4 of 4)* Mike Eastman *ODOT Technology Transfer Center* This certification class will cover state regulations and minimum requirements for setting short term flagging operations on state and city right of way.

DAY ONE: TUESDAY JUNE 25, 2024 | Wastewater Operations: Session Descriptions		
1	8:00-9:00 am	**Does AI Make a Difference? Case Studies of AI's Impact on Sewer Assessment, Asset Management, and System Planning** Daniel Buonadonna, PE *Jacobs* This presentation will present different case studies of Jacobs' AI solution performance and impact on lifecycle ownership costs for sewer utilities.
2	9:10-10:10 am	**Anaerobic Digester Restart Protocols** Nate Janega *Carollo* This presentation will cover best engineering practices for taking a digester out of service and restarting the process safely and efficiently.
3	10:20-11:20 am	**PLC Basics, from an Operator's Point of View** Skye Franyutti *Clackamas Water Environment Services* In the most basic of terms, a PLC is a computer that one can fully program to execute whatever task is needed to accomplish an automated process that meets the customer's demands. We will discuss how PLC's are used in the field of wastewater operations.
4	11:30-12:30 pm	**Compressed Gas Mixing Technology in Wastewater Treatment Facilities** Taylor Jordan *Enviro-mix* This presentation will introduce compressed gas mixing technology and how it is applied in a variety of applications throughout wastewater treatment facilities.
LUNCH 12:30-1:30 PM		
5	1:00-2:00 pm	**The Cost of Being a Good Neighbor** Scott Cowden *Jacobs* As population densities increase and expanding residential areas encroach closer to water resource recovery facility (WRRF) property boundaries, less tolerant communities are steadily placing more pressure on facilities to implement "good neighbor" policies. Odor and toxic emissions control measures will be discussed.
6	2:10-3:10 pm	**Waste Water Membrane Bio-Reactors Basics** Blake Rains *Clackamas Water Environment Services* Basics of wastewater membrane bioreactors: including what they are made of, how they function and important plant design ideas. Challenges and benefits of operating a wastewater MBR plant and lessons learned will be presented.
7	3:20-4:20 pm	**Case Studies of Three Leading Filter Types in Wastewater Applications** Tom Geise *BHC Consulting* This presentation will examine the use of disc filters, continuous backwash granular media filters, and compressible media filters at three different treatment facilities.

DAY TWO: WEDNESDAY JUNE 26, 2024 | Wastewater Operations: Session Descriptions		
8	8:00-9:00 am	**Discovery Clean Water Alliance - Columbia River Outfall and Effluent Pipeline Integrated Project Delivery In A Complex Operational and Construction Environment** John Peterson *Discovery Clean Water Alliance* The presentation will provide insights and lessons learned from the effort to plan, design, permit, and construct a new Columbia River outfall for the Salmon Creek Treatment Plant in Vancouver, WA.
9	9:10-10:10 am	**Wastewater Plant Startup and Restart** Rick Allen *BioLynceus* Join us in an interactive discussion on the topics of how your plant gets killed or significantly impacted to cause out of compliance issues.
10	10:20-11:20 am	**Flexible WWTP mixing for process optimization with energy savings** Alden Meade *Xylem* The basics on mixing will be presented. We will discuss mixing applications, the measurement and importance of thrust, and the energy requirements for mixing.Pilot studies to determine actual energy needed to provide mixing and the amount of energy savings that can be seen when mixers are "turned down".
11	11:30-12:30 pm	**Safety Concerns from the Influent to the Effluent of a Wastewater Treatment Plant** Russ Reasoner and Randall Westmoreland *Oregon OSHA* This presentation will cover a standard way to identify, document, track and improve safety, health and ergonomics hazards.
LUNCH 12:30-1:30 PM		
12	1:30-2:30pm	**CMMS Data Management & Decision Making** Daryll Dorman *AllMax Software, JDM Company* Computerized Maintenance Management Software, or CMMS, has a pivotal role in modern maintenance operations of wastewater treatment systems. The benefits of CMMS are substantial. By leveraging CMMS, organizations can improve maintenance efficiency, achieve significant cost savings, increase equipment uptime, and ensure regulatory compliance.
13	2:40-3:40 pm	**Wastewater Treatment Systems 101** Hannah Thomascall *Spokane County Regional Water Reclamation Facility* Learning about different treatment systems is a great way to ease into wastewater (not literally) and to understand which technologies could be added to your facility efficiently and economically.
14	3:50-4:50 pm	**Register/set up a "Your DEQ online" account and Renewal videos for Wastewater certifications** DEQ/Video *DEQ* The first tutorial video provides a demonstration of how to register and set up an account in Your DEQ Online. The 2nd tutorial provides a demonstration of how to renew or reinstate a wastewater operator certificate in Your DEQ Online. Operators will see an overview of the renewal and reinstatement application features, and there will be a walkthrough of process for adding required CEU documents, making a payment, and certifying and submitting to DEQ.

DAY THREE: THURSDAY JUNE 27, 2024 | Wastewater Operations: Session Descriptions		
15	8:00-9:00 am	**All Eyes on You: How to Get Comfortable with Attention** Marion Barnes *City of Eugene* Learn how to get used to attention–from media, from the public and from coworkers–and use it to your advantage!
16	9:10-10:10 am	**Energy Efficiency Optimization for Wastewater Systems** Kelson Redding *Energy 350* This presentation, brought to you by Energy Trust of Oregon, will consider the most common opportunities to optimize wastewater facility energy use with both operations and maintenance practices and capital equipment upgrades.
17	10:20-11:20 am	**Wastewater Polymer Who, What, When, Where and Why** Charles Scott *Polydyne Inc* The training is designed to give an overview of polymer basics and will discuss what polymers are and how they work. It will also cover where polymers are used and some key process optimization items.
LUNCH 12:30-1:30 PM		
18	11:30-12:30 pm	**Wastewater Jar Testing** Charles Scott *Polydyne Inc* This class will cover Jar testing to determine the best polymer for the Plant, Sludge and Equipment. From making down solutions, initial polymer selection, dose curve, conditioning, floc formation, floc shear and dewatering performance. This is a hands on class where the attendants will be able to actually be able to perform some of the testing.
19	1:30-2:30 pm	**Blowing Bubbles Better: Aeration Control for Practitioners** Jen Murphy, P.E. *Parametrix* This presentation will allow participants to develop a fundamental understanding of basic aeration control systems, system components, and how these components operate together to achieve high levels of functionality and energy efficiency. This included exploring and analyzing simple aeration control logics (e.g., DO setpoint control, Most Open Valve control).
20	2:40-3:40 pm	**Micro Biology** Dan Strong *Water Environment Services, Water Quality Specialist* Wastewater Microbiology: Review of basic microbiology such as growth curves, favorable environmental conditions, and characterizing microbes. Examine some common microbiological processes in wastewater. Discuss helpful process control laboratory tests such as nutrients, pH, alkalinity, and dissolved oxygen, and routine microscopic examination of activated sludge for process checks.
21	3:50-4:50 pm	**Strengthening Partnerships with Local Industries through a Co-digestion Program.** Kevin Wegner Ornella Sosa- Hernandez CWS Clean Water Services Clean Water Services (CWS) is developing a Co-digestion Program to utilize available digestion capacity at the Rock Creek Water Resources Recovery Facility (WRRF) and increase biogas generation. Clean Water Services has strengthened relationships with surrounding industries that can provide High Strength Wastes (HSW)

DAY ONE: TUESDAY JUNE 25, 2024 | Source Control/Pollution Prevention Session Descriptions		
1	8:00-9:00 pm	**Does AI Make a Difference? Case Studies of AI's Impact on Sewer Assessment, Asset Management, and System Planning** Daniel Buonadonna, PE *Jacobs* This presentation will present different case studies of Jacobs' AI solution performance and impact on lifecycle ownership costs for sewer utilities.
2	9:10-10:10 pm	**Ground Penetrating Radar for Pipe Inspection, Locating, Investigations, Damage Mitigation, and More** Mark Johnson *GPRS, Inc.* Finding your wastewater infrastructure once it leaves the confines of your pump stations and plants is difficult. This presentation will discuss new technology for finding, mapping, locating, and inspecting your wastewater infrastructure.
3	10:20-11:20 pm	**Bio Solids or Resource Recovery** Terrance Romane, *WES* Environmental Service Manager *Climate Resiliency Through a Water Resource Recovery Facility Lens* Learn what WES is doing to build a resilient, clean water future where people and businesses benefit, and our rivers thrive.
4	11:30-12:00 pm	**Novel Food Waste Pre-Processing and Systematic Co-Digestion to Enhance Biogas Production and Improve Solids Treatment** Bhargavi Subramanian *Kennedy and Jenks* Several major challenges exist for implementing co-digestion in WRRFs including the cost of food waste (FW) pre-processing, digester stability and capacity, undesirable consequences to digester operations, downstream impacts to biosolids generation and treatment as well as the lack of operational experience. The presentation will discuss a 3-year long project performed at Silicon Valley Clean Water (SVCW), Redwood City, CA
LUNCH 12:30-1:30 PM		
5	1:00-2:00pm	**Veterans in the Water Workforce: Tapping one of our most valuable wastewater resources** Freddy Armijo, Steven Garner, Donald Jones *City of Riverside Public Utilities, CA-NV Section AWWA, Warriors2WaterWorks Campaign and Cuyamaca College* The learning objectives for this presentation about the water industry's nexus with the military veteran community to discover personal application of the truths presented.
6	2:10-3:10 pm VIRTUALLY	**Screenless IFAS System Eliminates Media Loss and Reduces O&M Costs for the City of Peterborough WWTP** Wayne Fournoy *Entex Enterprises, Inc.* MBBR system at the City of Peterborough Wastewater Treatment Plant was replaced with Entex's WavTex fixed-media system to eliminate O&M issues. This presentation will detail the WavTex selection process results from the process verification period, as well as discuss the recent performance lessons learned.
7	3:20-4:20 pm	**Wipes Update: Unraveling the Fibers of Wastewater Regulations** Frank Dick *City of Vancouver* Developments in the roll out of legislative requirements in WA, OR, CA, IL and other states for labeling of specific unflushable products, as well as development in both "flushable" test standards for wipes products.

DAY TWO: WED. JUNE 26, 2024 | Source Control/Pollution Prevention Session Descriptions		
8	8:00-9:00	**Discovery Clean Water Alliance – Columbia River Outfall and Effluent Pipeline** John Peterson *Discovery Clean Water Alliance* The presentation will provide insights and lessons learned from the effort to plan, design, permit, and construct a new Columbia River outfall for the Salmon Creek Treatment Plant in Vancouver, WA.
9	9:10-10:10 am	**Environmental Engineering in Action in the WRRF** Chris Maher *Clean Water Services* In this session the scientific engineering principles employed in a WRRF are·explained in reference to units processes, following the flow through a WRRF.
10	10:20-11:20	**Environmental Engineering in Action in the WRRF** Chris Maher *Clean Water Services* In this session the scientific engineering principles employed in a WRRF are·explained in reference to units processes, following the flow through a WRRF.
11	11:30-12:30 pm	**Changing World of Pretreatment** Rick Allen *BioLynceus* In The Changing World of Pretreatment, professionals will learn the importance of managing and utilizing pre-treatment to enhance collection systems and plant operations.
LUNCH 12:30-1:30 PM		
12	1:30-2:30 pm	**Oregon Association of Clean Water Agencies Model FOG Ordinance** Jill Hoyenga *Regulatory Compliance Manager* An ordinance to abate fats, oils and grease (FOG) is part of a comprehensive approach to Capacity, Management, Operations and Maintenance (CMOM). FOG abatement is a pretreatment requirement. Pretreatment program coordinators and wastewater collection operator can work together on FOG abatement efforts. But such efforts must have a strong ordinance that leverages the full authority of the utility's jurisdiction. This presentation offers a model for building a strong FOG abatement ordinance.
13	2:40-3:40 pm	**Collaborative FOG Enforcement** Jill Hoyenga *Regulatory Compliance Manager* This presentation offers several case studies that show how a collaborative approach can streamline efforts to keep FOG out of sanitary sewers.
14	3:50-4:50 pm	**Mobile Food Units – Mouthwatering or Miasma** Jill Hoyenga *Regulatory Compliance Manager* Mobile Food Units (MFU) are a booming food service establishment segment. The purpose of this presentation is to make wastewater and stormwater operators aware of the issues and the authorities having jurisdiction when violations occur.

DAY THREE: THURS. JUNE 27, 2024 | Source Control/Pollution Prevention Session Descriptions		
15	8:00-9:00 am	**All Eyes on You: How to Get Comfortable with Attention** Marion Barnes *City of Eugene* Learn how to get used to attention–from media, from the public and from coworkers–and use it to your advantage!
16	9:10-10:10 am	**Surface Water Management at WES-Preventing Non-Point Source Wastewater Pollution** **Gail Shalum** *Clackamas Water Environment Services; Natural Resources Scientist* This presentation will discuss how WES works to prevent non-point source wastewater pollution through eight control measures: Public education, Public involvement, Illicit discharge detection and elimination, Construction site runoff controls, Post-construction runoff controls, Pollution prevention/good housekeeping, Commercial/industrial inspections, and Stormwater/Collection facility O&M.
17	10:20-11:20 am	**Laboratory Testing for Wastewater Treatment** Patrick Leach *WES Analytical Lab* This session will describe the categories of laboratory testing that are performed to support and inform wastewater treatment facilities.
18	11:30-12:30 pm	**Nailing the Job Interview for Wastewater Operation** Marion Barnes *City of Eugene Public Works, Oregon* In this session we will talk about how to be more comfortable in job interview situations, how to respond to tricky questions, and how to create a resume that shines.
LUNCH 12:30-1:30 PM		
19	1:30-2:30 pm	**Lessons Learned From A Decade Of Phosphorus Recovery At Clean Water Services' WRRF** Brett Laney *Clean Water Services* This session will cover initial assumptions about Ostara's technology vs 10 years of operating performance, the unexpected challenges, and how we've addressed them.
20	2:40-3:40 pm	**Phosphorus Flux Dynamics in the Forest Grove Natural Wastewater Treatment System** Colin Wilson Root, M.S., E.I.T. AND Leila Barker, M.S., P.E. *Clean Water Services, OR* The Forest Grove Water Resource Recovery Facility (WRRF) uses the 90-acre Fernhill Natural Treatment System (NTS) for temperature reduction and dissolved oxygen amelioration of its secondary effluent polishing prior to discharge.
21	3:50-4:50 pm	**FILM: *Frontline: Poisoned Waters*** PBS Documentary 2009 *FRONTLINE* correspondent Hedrick Smith takes an in-depth look at Puget Sound and the Chesapeake Bay, and examines the growing number of hazards to human health and our nation's waterways.

NEXT STEPS

Thank you!

Remember to turn in your Award Sheet to the registration desk or to any of the incredible committee members.

After the last day of sessions, you will receive the certificate via e-mail from *orwef.wes@gmail.com*.

Please contact Amber Steele if you do not receive your certificate by 6/29.

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