Requesting Organization: Clean Water Services (CWS)

Course Title: Making Great Things Happen: Fall 2026 Employee Innovation Showcase

Date: September 2, 2026

Time: 8:30 – 11:30 am

Location: CWS Field Operations, 2025 SW Merlo Ct, Beaverton, OR 97003-5050

Instructors: Various (see below)

Course Outline: This is a half-day science fair style showcase highlighting what innovation looks like at CWS. Employees will share practical innovations, process improvements, new tools, field insights, and smarter ways of working in delivery of the CWS mission. There are 16 interactive poster and/or demonstration sessions total. Attendees will interact with the presenters one-on-one and in small groups. They will learn how the projects relate to, support and benefit NPDES permit compliance, plant operations, field operations, business operations, and organizational goals. This showcase draws its title from, and brings to life, the CWS values:

- Dedicated to the river, our communities, and each other.
- Guided by science.
- Making great things happen by working and solving problems together.

Overall Course Training Goals:

- Learning in an environment of recognition, celebration, and connection.
- Knowledge of the practical and applicable research and innovative practices conducted by CWS employees.
- Pride in the innovative approach that characterizes teams and processes across CWS, all in the service of permit compliance and watershed enhancement and protection.
- Employee confidence in their ability to work together to identify and address opportunities for improvement.

CEU Summary (relevancy to Wastewater Operator Certification): Total time possible in sessions 95 – 165 minutes (rounded down to the nearest hour for CEU calculation)**.**

Minimum CEUs = .1, Maximum CEUs = .2

Attendance Tracking Method:

1. Participants receive an event card at check-in. Participant provides name, certification number, our event OESAC number, and stations and length of visit.
2. Check-in and check-out times will be documented and monitored.
3. As participants visit stations, presenters at each station will **initial their section** of the card.
4. Participants submit their completed card at the exit.
5. The Learning Coordinator reviews the card, calculates total CEUs earned based on stations attended, and signs card as final verification.

Instructor Information

Name	Presentation Title	Instructor Background	Brief Session Description
Julia Crown	Collaborations in Publicizing Research Results of Community Interest	Julia Crown works for Clean Water Services in Washington County, Oregon, on wastewater regulations. She is an alumna of Portland Community College, Simmons University, and Oregon State University and holds degrees in biology and bioresource engineering. She previously worked for the City of Gresham in the Industrial Pretreatment Program and at Oregon DEQ developing TMDLs and analyzing data for the Pesticide Stewardship Partnerships Program. Julia is the ACWA Water Quality Committee co-chair. Ellen Gordon is a Public Affairs Specialist with Clean Water Services. She graduated from Washington State University with a degree in Communications & Broadcast Production and spent the beginning of her career in television news. At CWS, Ellen works with Communications & Community Engagement on community outreach, education, internal communications, and digital storytelling. She represents CWS in the Regional Coalition for Clean Rivers and Streams (RCCRS). In her free time, Ellen enjoys watching competitive cooking shows and collecting fossils.	CWS has a long-standing relationship with USGS to help us answer watershed questions. These studies are funded by ratepayers and the public. This presentation examines the responsibilities and methods to ensure transparent and collaborative communication and promote accessibility to scientific inquiry.
Jessica Arino	Digital Communications Accessibility Tools and Processes	Jess Arino holds a BS in Journalism with emphasis in advertising from UO, and has 10 years of graphic design experience.	New guidelines and regulations are causing CCE and other areas of CWS to change how they work and produce material in order to

			stay in compliance with the federal regulations on ADA accessibility. CCE is looking into new tech that can help us stay in compliance and limit the amount of time that we have to spend on each piece of the process. CCE is working with external consultants, CWS departments, and partners to ensure that we stay in compliance and are completing the work in the most efficient way.
Kaelen Stow	Digital Operations Ecosystem	Combined operations experience of over 10 years with both presenters. Kaelen Stow possesses an education degree, and our showcase is modeled around education.	A new digital ecosystem that redesigns operator training, document libraries, and management scheduling/ planning. Allows operators to do their job on the go and out in the plant without having to go back to computers for resources.
Andrew Neuman	From Insight to Impact: Spatial Thinking Across CWS	Andrew Neuman has over 25 years of professional GIS experience and a Master Degree and the rest of the team also has at least 10 years of professional GIS experience and Masters degrees.	This session highlights how Geographic Information Systems support Clean Water Services' mission through creative problem-solving, data-driven decision making, and modern technology. The presentation showcases innovative projects, tools, and workflows that improve operational efficiency, enhance asset management, and provide valuable insights for staff and stakeholders. Attendees will see examples of how spatial data and GIS applications are being used

			to streamline business processes, support field operations, and advance organizational goals.
Bryan Thistle/Brent Barton	Keeping Streets Clean, One Sweep at a Time	Brent Barton has been the Lead of the Sweeper Department for 10 years.	Explain how the sweeper works. Talk about how sweeping contributes to water quality. Talk about what we hope the benefits of our first all-gas sweeper will be. Talk about how we track our work. Explain the impact our sweepers have on potential flooding during the leaf season.
Rachel Golda	Microplastic Detection in Wastewater	Ph.D. Environmental Science and Engineering, Emerging Contaminants research lead, 8+ years experience at CWS, member of PNCWA, WEF. Presented this work at PNCWA 2025 in Portland.	Microplastics are ubiquitous in wastewater, but there are no standard methods for measuring them in sludge. We developed a new method for detecting microplastics in wastewater. This presentation provide information on this process and how it works. There will be a hands-on component where wastewater microplastics from our own facilities can be viewed through a microscope.
Ara Vickers/Jason Mayfield	Mitigating Pollutants Through A Collaborative Response	Ara Vickers has IDDE Training, 2.5 years responding to IDDEs and leading the development of subsequent IDDE policy, policy development at former roles at the World Wildlife Fund (WWF) and the Pollution Prevention Resource Center (PPRC), presented externally at conferences on PFAS and the 1200-Z Permit	Field Operations (FO) and Environmental Services (ES) are responsible for mitigating pollutants that enter the stormwater conveyance system. FO is responsible for removing pollutants and maintaining CWS infrastructure, while ES is responsible for identifying a mitigation strategy for pollutants

			and reporting incidents of pollution to Oregon DEQ. FO and ES have co-created a strategy to collaborate in order to ensure efficiency in identifying, responding to, and mitigating pollution in CWS' stormwater conveyance system.
Jill Roman	New Ways to View Old Data	Together, Jill Roman and her copresenters have been working with data in technical positions for >40 years, including >20 working w/ GIS data, we have 2 PMPs, and 2 master's degrees.	This presentation showcases how existing data from multiple systems can be transformed into dashboards and reports that tell a meaningful story and help make better decisions. By combining operational, financial, environmental, and geographic data, we're improving visibility into performance, trends, budgets, project outcomes, and organizational goals. The impact is better decision-making through improved insight, enabling teams to identify issues sooner, allocate resources more effectively, reduce manual effort, and confidently waddle forward—without having to quack for help finding the information they need.
Theresa Passe	Our Next Attempt: Can Carbon Storage Measurements Predict BPR Performance?	Masters degree in Environmental Engineering, PE Civil Water Resources, member of Pacific Northwest Clean Water Association (WEF), 2 years consulting experience, 1.5 years at Clean Water Services.	We have looked at many ways to try to predict the biological phosphorous removal performance in our aeration basins, with mixed results. The latest improvement attempt was measuring the carbon levels in the organisms. We looked at the

			carbon levels at various part of the basin against a range of known performance metrics - and got some intriguing results.
Rita Cooper	Permit Cycle and Long-Term Regulatory Compliance Roadmap	I am a Water Resources Analyst with CWS's Regulatory Affairs Department. I have more than 14 years of experience in environmental engineering, regulatory compliance, and water quality. My work focuses on implementing NPDES permit requirements, managing regulatory projects, and coordinating permit renewal efforts. For this presentation, I am leading the Permit Renewal portion alongside our two newest Water Resources Analysts. Together, we work with the permit every day, coordinating with teams across the District to develop permit renewal documents and demonstrate compliance. Our goal is to provide colleagues with a better understanding of the permit renewal process, how different departments contribute, and how their work supports our collective regulatory commitments. I hold a Master of Engineering in Civil and Environmental Engineering, am a licensed Professional Engineer (Oregon), and am a certified Project Management Professional (PMP). I have experience presenting technical and regulatory topics to internal staff, leadership, and external stakeholders and have contributed to numerous regulatory reports, technical documents, and permit-related deliverables.	Permit renewal is a regular part of our regulatory responsibilities, but this cycle brings a fresh approach. Join the Regulatory Affairs team for a "Permit 101" overview, an update on where we are in the renewal process, and a look at how new staff, cross-department collaboration, and improved planning tools are helping us build a more connected and strategic approach to compliance. Learn how departments across the District contribute to permit success and how this work supports our long-term regulatory strategy and mission.

Hannah Ferguson	Tracking Salmonid Migration in the Tualatin Watershed using Environmental DNA	BS and MS in Biology, 5.5 years of experience with molecular biology, 8 years of field sampling. Been in my current role for 5 years. Many presentations on eDNA, and an organizer for eDNA cooperative in Oregon.	CWS's treated effluent is typically warmer than the water in the Tualatin River leading to on-going questions from DEQ about whether discharge from our WRRFs create passage barriers for migrating Coho. To address this, we[SM3.1] designed a multiyear environmental DNA study with the goals of better understanding migration timing, environmental cues, and the potential for thermal discharge from the Rock Creek (RC) WRRF to impede upstream migration. After three years of sample collection, we've found that Coho DNA concentrations are generally low throughout the year, with large increases during migration and spawning activity in the fall and winter, respectively. Results from two years of monitoring showed similar DNA concentrations above and below the outfall, supporting the hypothesis that Coho are navigating the thermal plume at RC in the years studied.
Amin Mahdipour	Improving Sewer Flow Data with Physics-Informed Machine Learning	I am a Professional Engineer in the US and internationally, I have 17+ years of experience, with a BS in civil engineering, an MS in environmental engineering, and another MS in water resources engineering. I have extensive experience presenting at national and	This presentation walks the audience through the process of using field collected data in decision making, and how to improve the quality of the collected data to improve the accuracy of overall decision

		international conferences, as well as teaching at university.	making using advanced mathematical methods.
Jill Erickson/Rich Hunter	Ash to Action: Outpacing the Outbreak with New Tools for Riparian Resilience	Team combined: 11 years performing ecological enhancement and integrity monitoring, 7 years working with remotely sensed spatial data for modeling and analysis, Secretary & member of the Executive Committee of the Board of Directors for Society of Conservation GIS, Botanist: 38 years of experience in the field Project management: 25 years of experience Stream ecology: 32+ years of experience Water quality monitoring: 26 years of experience Education, community engagement and public outreach: 23 years of experience Tree health and arboriculture consultation: 9 years of experience	The team will develop a poster highlighting key innovations developed and piloted to manage and mitigate invasive emerald ash borer.
Jason Love/Andrew Heritage	Confined Space Rescue Team Demonstration	8 years of experience in industrial confined space rescue. Certified in industrial confined space rescue in 2012.	In our presentation there will be equipment that is used for confined space rescue.
Chris Maher	CREW Carbon: Ground Calcium Carbonate Provides Business and Process Benefits	Graduate and undergraduate degrees in Chemistry and Environmental Engineering and Science with 26 years of experience in treatment plant operations and maintenance, process control, and optimization as well as research and pilot project execution. WEF member, PNCWA member. Previous presentations approved by OESAC internally at Clean Water Services, ORWEF Short School, Albany Short School.	A pilot study is underway at Rock Creek to replace hydrated lime addition with ground calcium carbonate (GCC) addition. GCC has a 9 times smaller carbon footprint than hydrated lime on the production side and also results in carbon sequestration in the biological treatment system. The carbon sequestration is analyzed and verified through sampling and laboratory analysis, and those carbon credits are sold on the Voluntary Carbon Market

			to offset the cost of the chemical. Process benefits have already been realized in sludge settleability and improved biosolids production. At Rock Creek alone the cost savings could reach to $800K annually while permanently sequestering up to 3,000 tons CO2e per year.
Kaelen Stow	Digital Operations Ecosystem	Combined operations experience of over 10 years with both presenters. Kaelen Stow possesses an education degree, and our show case is modeled around education.	a new digital ecosystem that redesigns operator training, document libraries, and management scheduling/ planning. allows operators to do their job on the go and out in the plant without having to go back to computers for resources.
Blythe Layton	Impact of Irrigation with Recycled Water on Biodiversity and Soil Ecology	Environmental microbiologist. Stanford PhD, Environmental Engineering and Science. Six years at CWS. Runs Molecular Biology Lab in Research & Innovation. Extensive conference presentation experience.	As part of an extensive reuse pilot project at the Thomas Dairy field site adjacent to Durham, we used environmental DNA to assess the impact of irrigation on the site biome. Three seasons of soil samples were analyzed using a technique called metabarcoding which gives species information from across the tree of life. With these data we determined that reuse water does not significantly shift the biodiversity profile, and may offer some ecological benefit.

Detailed Time Schedule

All sessions are available from 8:30 am – 11:30 am. There are no breaks or mealtimes. Participants attend as many sessions as they would like. Session attendance is tracked.

Presenters	Title	Length in Minutes *all sessions available for duration of event	Learning Outcomes	Detailed Description
Julia Crown	Collaborations in Publicizing Research Results of Community Interest	10	Understand our responsibilities to our ratepayers and the public to use and share what we are learning from studies they funded. Understand ethical responsibilities and guidelines in publicly funded research includes communication in non-academic modes. We have the opportunity to create methods to communicate scientific and technical studies in accessible ways. Learn how to connect with CCE early in the process – think ahead and plan from the project's beginning how you will share information	CWS has a long-standing relationship with USGS to help us answer watershed questions. These studies are funded by ratepayers and the public. This presentation examines the responsibilities and methods to ensure transparent and collaborative communication and promote accessibility to scientific inquiry.

			with funders in accessible ways and how you will include CCE resources.	
Jessica Arino	Digital Communications Accessibility Tools and Processes	10	Understand that are the WCAG Title II regulations and how they affect the work that we produce. Understand how the regulations change the work that CCE has to do. Potentially bring any work that the audience may be involved in into the conversation of compliance, even if they didn't know of the new regulations.	New guidelines and regulations are causing CCE and other areas of CWS to change how they work and produce material in order to stay in compliance with the federal regulations on ADA accessibility. CCE is looking into new tech that can help us stay in compliance and limit the amount of time that we have to spend on each piece of the process. CCE is working with external consultants, CWS departments, and partners to ensure that we stay in compliance and are completing the work in the most efficient way.
Kaelen Stow	Digital Operations Ecosystem	10	Understand the power and utility for teams/onedrive/sharepoint. small boost in understanding of how to build a proper curriculum.	a new digital ecosystem that redesigns operator training, document libraries, and management scheduling/ planning. allows operators to do their job on the go and out in the plant without having to go back to computers for resources.
Andrew Neuman	From Insight to Impact: Spatial Thinking Across CWS	10	Learn that spatial data provides unique insights that aren't visible in traditional reports. Explore seeing information geographically helps identify patterns, prioritize work, and make more informed decisions. Collaboration drives successful innovation. Many of the showcased solutions are	The GIS Team Innovation Showcase highlights how Geographic Information Systems support Clean Water Services' mission through creative problem-solving, data-driven decision making, and modern technology. The presentation showcases innovative projects, tools, and workflows that improve operational efficiency, enhance asset management, and provide valuable insights for staff and stakeholders. Attendees will see examples of how spatial data and GIS applications are being used to streamline

			the result of partnerships between GIS, operations, engineering, environmental services, and other teams throughout Clean Water Services. GIS is a strategic business tool, not just a mapping technology. Attendees will learn how GIS supports decision-making, improves operational efficiency, and helps connect data across the organization.	business processes, support field operations, and advance organizational goals.
Bryan Thistle/Brent Barton	Keeping Streets Clean, One Sweep at a Time	10	Explore the sweeper operates. Understand why sweeping matters.	Explain how the sweeper works. Talk about how sweeping contributes to water quality. Talk about what we hope the benefits of our first all gas sweeper will be. Talk about how we track our work. Explain the impact our sweepers have on potential flooding during the leaf season.
Rachel Golda	Microplastic Detection in Wastewater	10	Gain a better understanding of microplastics in wastewater, and what is happening in the District related to microplastics.	Microplastics are ubiquitous in wastewater, but there are no standard methods for measuring them in sludge. We developed a new method for detecting microplastics in wastewater. This presentation provide information on this process and how it works. There will be a hands-on component where wastewater microplastics from our own facilities can be viewed through a microscope.
Ara Vickers/Jason Mayfield	Mitigating Pollutants Through A	10	Explore effective tools for collaborating across different stakeholders and	Field Operations (FO) and Environmental Services (ES) are responsible for mitigating pollutants that enter the stormwater conveyance system. FO is

	Collaborative Response		Explore pollution mitigation methods	responsible for removing pollutants and maintaining CWS infrastructure, while ES is responsible for identifying a mitigation strategy for pollutants and reporting incidents of pollution to Oregon DEQ. FO and ES have co-created a strategy to collaborate in order to ensure efficiency in identifying, responding to, and mitigating pollution in CWS' stormwater conveyance system.
Jill Roman	New Ways to View Old Data	10	Understand that reporting can drive efficiency and transparency. Modern reporting solutions replace manual spreadsheets, repetitive data gathering, and disconnected reports with a single source of truth. This reduces administrative effort, improves visibility for stakeholders, and enables teams to proactively manage budgets, projects, goals, and environmental outcomes. Visualize transforming data into action. Well-designed dashboards make trends, risks, opportunities, and exceptions immediately visible. Instead of spending time gathering and interpreting information, users can quickly understand what is	This presentation showcases how existing data from multiple systems can be transformed into dashboards and reports that tell a meaningful story and help make better decisions. By combining operational, financial, environmental, and geographic data, we're improving visibility into performance, trends, budgets, project outcomes, and organizational goals. The impact is better decision-making through improved insight, enabling teams to identify issues sooner, allocate resources more effectively, reduce manual effort, and confidently waddle forward—without having to quack for help finding the information they need.

			happening and focus on making informed decisions. Understand that data becomes more valuable when it is connected. Many of the dashboards combine information from multiple systems that were never designed to work together. By linking operational, financial, environmental, and geographic data, organizations can uncover insights and answer questions that would be difficult—or impossible—to see from a single source. Takeaway: Our goal isn't simply to create reports—it's to turn existing data into meaningful information that helps people make better decisions, faster.	
Theresa Passe	Our Next Attempt: Can Carbon Storage Measurements Predict BPR Performance?	10	Learn about what variables impact biological phosphorous removal, how to measure these variables, and how to interpret levels to predict performance.	We have looked at many ways to try to predict the biological phosphorous removal performance in our aeration basins, with mixed results. The latest improvement attempt was measuring the carbon levels in the organisms. We looked at the carbon levels at various part of the basin against a range of known performance metrics - and got some intriguing results.
Rita Cooper	Permit Cycle and Long-Term	10	1. Regulatory compliance is a shared responsibility.	Permit renewal is a regular part of our regulatory responsibilities, but this cycle

	Regulatory Compliance Roadmap		Every department plays a role in meeting our permit requirements, even if permits aren't part of their day-to-day work. 2. **Permit renewal is more than updating a document.** It is an opportunity to strengthen collaboration, improve processes, and build a long-term strategy that supports the District's mission. 3. **Innovation can come from rethinking how we work together.** By bringing fresh perspectives, new staff, and better coordination across departments, we can create a more connected and effective approach to regulatory compliance.	brings a fresh approach. Join the Regulatory Affairs team for a "Permit 101" overview, an update on where we are in the renewal process, and a look at how new staff, cross-department collaboration, and improved planning tools are helping us build a more connected and strategic approach to compliance. Learn how departments across the District contribute to permit success and how this work supports our long-term regulatory strategy and mission.
Hannah Ferguson	Tracking Salmonid Migration in the Tualatin Watershed using Environmental DNA	10	Learn how eDNA is an innovative way to understand fish migration Gain a sense of how we take an eDNA sample Know why we are doing this study on coho migration.	CWS's treated effluent is typically warmer than the water in the Tualatin River leading to on-going questions from DEQ about whether discharge from our WRRFs create passage barriers for migrating Coho. To address this, we[SM3.1] designed a multiyear environmental DNA study with the goals of better understanding migration timing, environmental cues, and the potential for thermal discharge from the Rock Creek (RC) WRRF to impede upstream migration. After three years of sample collection, we've found that Coho DNA

				concentrations are generally low throughout the year, with large increases during migration and spawning activity in the fall and winter, respectively. Results from two years of monitoring showed similar DNA concentrations above and below the outfall, supporting the hypothesis that Coho are navigating the thermal plume at RC in the years studied.
Amin Mahdipour	Improving Sewer Flow Data with Physics-Informed Machine Learning	15	See the tradeoff between data collection cost and accuracy, the impact of field collected data on overall decision making, and the importance of improving the data we already have.	This presentation walks the audience through the process of using field collected data in decision making, and how to improve the quality of the collected data to improve the accuracy of overall decision making using advanced mathematical methods.
Jill Erickson/Rich Hunter	Ash to Action: Outpacing the Outbreak with New Tools for Riparian Resilience	15	Employees will learn how adaptive management of natural systems works, how to harness the power of strong partnerships, an overview of the stressors CWS faces in protecting the Tualatin River.	The team will develop a poster highlighting key innovations developed and piloted to manage and mitigate invasive emerald ash borer.
Jason Love/Andrew Heritage	Confined Space Rescue Team Demonstration	10	Learn the importance of having a confined space rescue team and the equipment that is used.	In our presentation there will be equipment that is used for confined space rescue.
Kaelen Stow	Digital Operations Ecosystem	10	Show operators how the can access training, schedules, and documents anywhere in the plant. Demonstrate a centralized digital hub reduces time	Demonstrating a new digital ecosystem that redesigns operator training, document libraries, and management scheduling/ planning. allows operators to do their job on the go and out in the plant without having to go back to computers for resources.

			spent searching for resources. See streamlined scheduling, planning, and workflows help teams work smarter and stay coordinated.	
Blythe Layton	Impact of Irrigation with Recycled Water on Biodiversity and Soil Ecology	10		As part of an extensive reuse pilot project at the Thomas Dairy field site adjacent to Durham, we used environmental DNA to assess the impact of irrigation on the site biome. Three seasons of soil samples were analyzed using a technique called metabarcoding which gives species information from across the tree of life. With these data we determined that reuse water does not significantly shift the biodiversity profile, and may offer some ecological benefit.
Chris Maher	CREW Carbon: Ground Calcium Carbonate Provides Business and Process Benefits	10	Graduate and undergraduate degrees in Chemistry and Environmental Engineering and Science with 26 years of experience in treatment plant operations and maintenance, process control, and optimization as well as research and pilot project execution. WEF memeber, PNCWA member. Previous presentations approved by OESAC internally at Clean Water Services, ORWEF	A pilot study is underway at Rock Creek to replace hydrated lime addition with ground calcium carbonate (GCC) addition. GCC has a 9 times smaller carbon footprint than hydrated lime on the production side and also results in carbon sequestration in the biological treatment system. The carbon sequestration is analyzed and verified through sampling and laboratory analysis, and those carbon credits are sold on the Voluntary Carbon Market to offset the cost of the chemical. Process benefits have already been realized in sludge settleability and improved biosolids production. At Rock Creek alone the cost savings could reach to $800K annually while permantely sequestering up to 3,000 tons CO_2e per year.

			Short School, Albany Short School.	

Total 180 minutes