

**Lead and Copper Rule: What’s New and Improving**

Workshop Type: Hybrid in-person or virtual, offered to PNWS section including OR, WA, and ID

January 23, 2024 – 9:00AM to 2:00PM

CEU Relevancy: DW

CEUs Requested: **0.4 OR, WA, and ID**

Location: Option for remote (Zoom) or in-person. We encourage you to join us at the primary in-person location in Vancouver WA where our speakers will present. For accessibility, the workshop will also be available virtually (via Zoom) or can be viewed at a “watch party” location in Meridian ID. Please select from the following:

Primary Location (lunch provided, presentations in-person):

City of Vancouver Water Resources Education Center  
4600 SE Columbia Way  
Vancouver, WA 98661

Secondary Location (lunch provided):

City of Meridian  
Wastewater Facility  
3401 N Ten Mile Rd  
Meridian ID 83642

Remote Option (Zoom)

**Workshop Description:**

In recent years, the EPA has initiated revisions to the Lead and Copper Rule (LCR) intended to identify and remove lead service lines and ultimately reduce lead in drinking water, as well as other requirements. This workshop will provide guidance and case studies related to the Revised LCR (LCRR) and soon-to-be-proposed LCR Improvements (LCRI) in a program that is tailored to Pacific Northwest drinking water systems. The workshop will feature presentations on current and proposed regulatory requirements, bench and pilot testing guidance, and case studies from Pacific Northwest industry experts, utilities, and regulators.

Cost:

Select option:

Member: \$80

Non-Member: \$160

Small System Operator: Free (up to 15 free registration slots available for certified operators from systems with <1,000 connections)

Sponsor: (name, enter sponsorship amount or use increments of \$150, \$200, \$250)

Info to request:

Name

Organization

Phone

Email

Address

Operator number and State, if applicable

If in person, any special requests (e.g., dietary restrictions):

**Learning Outcome and Workshop Topics:**

Attendees will gain new familiarity and insight with respect to recent revisions to the Federal Lead and Copper Rule, as well as newly emerging proposed changes (Lead and Copper Rule Improvements). Utility and consultant practitioners will provide case study examples of developing lead service line inventories, and national experts in the areas of corrosion control technologies will provide information related to testing and treatment implementation. Guidance on effective customer communication related to the Lead and Copper Rule Revisions will be provided.

**Registration Site:** [The Lead and Copper Rule: What's New and Improving \(constantcontact.com\)](http://constantcontact.com)

**Workshop Schedule:**

Time	Presentation/Activity
8:30-9:00	<b>Sign-In, Networking</b>
9:00-10:00	<b>Overview of Current and Proposed LCR Revisions in the Pacific Northwest</b> Damon Roth, National Specialty Leader, Brown and Caldwell Virpi Salo-Zieman, Project Engineer, Confluence Engineering Group, LLC
10:00-10:30	<b>Q&amp;A with Regulatory Agencies</b> Moderator: Chris McMeen, Senior Project Manager, Confluence Engineering Group, LLC Panelists: Caitlin Bates, Environmental Engineer, EPA Region 10 Kari Salis, Technical Unit Manager, OHA Drinking Water Services Cassandra Lemmons, Drinking Water Compliance and Enforcement Supervisor, Idaho DEQ Sheri Miller, Regional Engineer, WA Dept. of Health
10:30-10:45	<b>15-minute Break</b>
10:45-11:15	<b>Building a Lead Service Line Inventory: Challenges and Solutions from Lakewood Water District</b> Kevin Wyckoff, GIS Coordinator, Lakewood Water District
11:15-11:45	<b>One Inventory to Rule them All: Hillsboro Water's Quest for LCRR Lead Service Line Inventory Compliance</b> Alyssa MacDonald, Water Quality Project Specialist, City of Hillsboro Water Department Symon Powlison, GIS Analyst, City of Hillsboro Water Department
11:45-12:30	<b>45-minute Lunch Break</b>
12:30-1:00	<b>LCR Customer Communication Guidance</b> Dennis Sandstrom, West Region Strategic Communications Lead, HDR
1:00-1:30	<b>Research Updates: Overview of Bench and Pilot Testing Approaches</b> Melinda Friedman, President, Confluence Engineering Group, LLC
1:30-2:00	<b>Pacific Northwest Copper Corrosion Case Study</b> Pierre Kwan, Water Treatment Technical Leader, HDR

**Workshop Schedule, Presentation Titles and Speaker names, contact information, and qualifications**

Time & Presentation	Contact Info	Biography/Qualifications Statement
<p><b>9:00-10:00</b>  <b>Overview of Current and Proposed LCR Revisions in the Pacific Northwest</b></p>	<p><b>Damon Roth</b>, National Specialty Leader                      Brown and Caldwell                      1249 E Sackman Rd                      Ritzville, WA 99169                      Phone: (509) 770-4322  <a href="mailto:droth1@brwnald.com">droth1@brwnald.com</a></p>	<ul style="list-style-type: none"> <li>• MSCE, 2005, University of Washington</li> <li>• BSCE, 2001, University of Washington</li> <li>• Over the past 20+ years, Damon has managed or served as project engineer on treatment studies, designs, and construction projects for drinking water, wastewater, and stormwater treatment projects through the United States. In addition to engineering design services, he specializes in water treatment optimization evaluations, treatment feasibility studies, and corrosion control treatment.</li> <li>• Licenses/Certifications: PE (WA, CA, OH, VA); BCEE</li> </ul>
	<p><b>Virpi Salo-Zieman</b>, Project Engineer                      Confluence Engineering Group LLC                      517 NE 92<sup>nd</sup> St                      Seattle, WA 98115                      Phone: 425-208-1921  <a href="mailto:virpi@confluence-engineering.com">virpi@confluence-engineering.com</a></p>	<ul style="list-style-type: none"> <li>• MSCE, 2006, University of Washington</li> <li>• Lic Tech, 2006, University of Technology, Tampere, Finland</li> <li>• Virpi has been a project engineer for Confluence for six years. Her project work has concentrated on regulatory assessments, corrosion control, supply integration, distribution system water quality assessments, and different levels of planning. Prior to joining Confluence, Virpi worked at the Washington State Department of Health as a regional engineer for 11 years.</li> <li>• Licenses/Certifications: PE (Washington)</li> </ul>
<p><b>10:00-10:30</b>  <b>Q&amp;A with Regulatory Agencies</b></p>	<p><b>Caitlin Bates</b>, Environmental Engineer                      Environmental Protection Agency,                      Region 10                      805 SW Broadway #500                      Portland, Oregon 97205                      Phone: 503-326-2653  <a href="mailto:Bates.caitlin@epa.gov">Bates.caitlin@epa.gov</a></p>	<ul style="list-style-type: none"> <li>• Caitlin is an environmental engineer covering EPA Region 10, which includes Alaska, Idaho, Oregon, and Washington. She works primarily on lead service line inventories and sanitary surveys. Prior to joining EPA, she was an engineer for the State of Michigan drinking water program. Caitlin has a B.S. in chemical engineering from Oregon State University.</li> <li>• Licenses/Certifications: PE (Michigan)</li> </ul>
	<p><b>Kari Salis</b>, Technical Unit Manager                      OHA Drinking Water Services                      PO box 14450                      Portland, OR 97293                      Phone: 503-385-7158  <a href="mailto:Karyl.l.salis@oha.oregon.gov">Karyl.l.salis@oha.oregon.gov</a></p>	<ul style="list-style-type: none"> <li>• Kari has a BS in Environmental Engineering from Northwestern University. She worked on water systems in Nepal with the Peace Corps for two years. Kari worked at OHA-DWS for 28 years. She inspected water systems and reviewed plans, responded to water quality issues, provided technical and regulatory assistance. Has worked on adopting many rules, including LT2, RTRC, cyanotoxins, and lead in schools. Kari manages a group of 20 staff that implement safe drinking water regulations.</li> <li>• Licenses/Certifications: PE (OR)</li> </ul>
	<p><b>Cassandra Lemmons</b>, Drinking Water Compliance and Enforcement Supervisor                      Idaho Department of Environmental Quality                      650 Addison Ave East                      Twin Falls, ID 83301                      Office: 208-737-3871</p>	<p>Cassandra Lemmons is a drinking water enthusiast for the Department of Environmental Quality. She currently serves as the Compliance and Enforcement Supervisor for the Drinking Water Bureau. She is responsible for state implementation and oversight of compliance and enforcement activities, including guiding Idaho’s team of drinking water rule managers. Cassandra dedicates herself to assisting regulated public water facilities in navigating the drinking water rules through outreach and education. Prior to her tenure at DEQ, she was the Environmental Health Program Manager for South Central Public Health District where she was responsible for the Land Development, Onsite Subsurface Sewage Disposal and Public Drinking Water programs. Cassandra</p>

Time & Presentation	Contact Info	Biography/Qualifications Statement
	Mobile: 208-420-2057 <a href="mailto:Cassandra.lemmons@deq.idaho.gov">Cassandra.lemmons@deq.idaho.gov</a>	has a diverse background including crop seed genetic research, studying the impacts of changing climate on the sagebrush steppe and invasive species, and teaching Biology and Chemistry to the next generation. She spent more than a decade as a maintenance mechanic for a Southern Idaho processing facility, where she learned troubleshooting and repair of mechanical equipment, welding, metal fabrication and much more. Cassandra is a Certified Public Manager®, a Registered Environmental Health Specialist, a certified laboratory assistant, holds associate degrees in criminal justice and biology, a Bachelor of Science in Ecology, and a Master of Business Administration. <ul style="list-style-type: none"> <li>• Licenses/Certifications: REHS, CPM</li> </ul>
	<b>Sheri Miller</b> , Regional Engineer WA Dept. of Health Phone: 509-407-7160 <a href="mailto:Sheri.miller@doh.wa.gov">Sheri.miller@doh.wa.gov</a>	<ul style="list-style-type: none"> <li>• Sheri Miller is a regional engineer in Washington Department of Health’s Office of Drinking Water Eastern Region. She has over twenty years of experience working in drinking water regulation, working for all three regions in WA and a field office for CA. She is also a registered professional civil engineer in WA. Sheri participates in the Department’s internal LCRR workgroup, working with others across the state to determine policies and regulations needed for state primacy of the federal Lead and Copper Rule Revisions (LCRR) and anticipated Lead and Copper Rule Improvements (LCRI).</li> <li>• Licenses/Certifications: PE (Civil, WA)</li> </ul>
<b>10:30-10:45</b>	<b>15-minute Break</b>	
<b>10:45-11:15</b> <b><i>Building a Lead Service Line Inventory: Challenges and Solutions from Lakewood Water District</i></b>	<b>Kevin Wyckoff</b> , GIS Coordinator Lakewood Water District 11900 Gravelly Lake Dr SW Lakewood, WA 98499 Phone: 253-300-6693 <a href="mailto:kwyckoff@lakewoodwater.org">kwyckoff@lakewoodwater.org</a>	<ul style="list-style-type: none"> <li>• Kevin has been the GIS Coordinator at Lakewood Water District since 2016. In this role, he manages the utility’s operations knowledge repository and supports the flow of information between field and office staff. Kevin got his start in water with an Associate’s Degree in Water Conservation from Lane Community College in 2015. He followed up that education with a BA in Communication and Statistics from Evergreen State College in 2020, and a Master of Science in Water Resource Management from Fresno State in 2023. Kevin currently serves as the Chair of the Water Information Technology Committee of the PNWS-AWWA.</li> <li>• Licenses/Certifications: GISP</li> </ul>
<b>11:15-11:45</b> <b><i>One Inventory to Rule them All: Hillsboro Water’s Quest for LCRR Lead Service Line Inventory Compliance</i></b>	<b>Alyssa MacDonald</b> , Water Quality Project Specialist City of Hillsboro Water Department 150 E Main St Third Floor Hillsboro, OR 97123 Phone: 971-412-5958 <a href="mailto:Alyssa.macdonald@hillsboro-oregon.gov">Alyssa.macdonald@hillsboro-oregon.gov</a>	Alyssa works in the Water Quality Section at the City of Hillsboro Water Department where she supports the group through data management and analysis, reporting, and (ever welcome) mapping projects. She studied Geography, GIS, and Spanish at Western Washington University in Bellingham, WA. Prior to working with the Water Department, she held positions at various tech companies working as a Geographer and GIS Technician.
	<b>Symon Powlison</b> , GIS Analyst City of Hillsboro Water Department 150 E Main St Third Floor Hillsboro, OR 97123 Phone: 971-412-5958	Symon’s primary responsibilities with the City of Hillsboro Water Department are editing Spatial Database Engine (SDE) data, maintaining critical databases that provide GIS data to customers and partner agencies, creating maps, and completing information requests. Serving as the lead SDE editor has given him a deep understanding of the intricacies and nuances that come with water pipeline infrastructure and development. Prior to working with City of Hillsboro Water Department as their

Time & Presentation	Contact Info	Biography/Qualifications Statement
	<a href="mailto:symon.powlison@hillsboro-oregon.gov">symon.powlison@hillsboro-oregon.gov</a>	GIS analyst, Symon worked as a GIS analyst for Mission Command Korea, in Seoul, South Korea where he provided web-based GIS support to the Republic of Korea and the United States Airforce partnership.
<b>11:45-12:30</b> <b>45-minute Lunch Break</b>		
<b>12:30-1:00</b> <b>LCR Customer</b> <b>Communication Guidance</b>	<b>Dennis Sandstrom</b> , West Region Strategic Communications Lead HDR 600 University Street, Suite 500 Seattle, WA 98101 Phone: 206-399-7052 <a href="mailto:Dennis.Sandstrom@hdrinc.com">Dennis.Sandstrom@hdrinc.com</a>	<ul style="list-style-type: none"> <li>• Dennis Sandstrom is HDR’s West Region Lead for Strategic Communications. In his 15 year career he has helped organizations throughout Washington and Oregon navigate their thorniest public policy and environmental issues through sound communications strategy, outreach campaigns, and group facilitation. He has extensive experience managing multidisciplinary teams, engaging property owners during right-of-way conversations, and is a natural at identifying stakeholders, developing outreach plans to communicate risk, and obtaining stakeholder buy-in. Dennis has worked on projects of all types, including PFAS, water resource management, stormwater, wetlands and more.</li> <li>• Licenses/Certifications: IAP2 Certificates</li> </ul>
<b>1:00-1:30</b> <b>Research Updates:</b> <b>Overview of Bench and</b> <b>Pilot Testing Approaches</b>	<b>Melinda Friedman</b> , President Confluence Engineering Group, LLC 517 NE 92 <sup>nd</sup> Street Seattle, WA, 98115 Phone: 206-527-6832 <a href="mailto:melinda@confluence-engineering.com">melinda@confluence-engineering.com</a>	<ul style="list-style-type: none"> <li>• Melinda has over 30 years of experience conducting source water and distribution system water quality evaluations, regulatory compliance, and optimal corrosion control treatment studies. In 2017 she was the recipient of the Pacific Northwest Section AWWA George Warren Fuller Award and was the 2022 recipient of the AP Black Research Award for the many years she has worked alongside utility partners and colleagues to better understand and mitigate distribution system water quality issues.</li> <li>• Licenses/Certifications: PE (WA)</li> </ul>
<b>1:30-2:00</b> <b>Pacific Northwest Copper</b> <b>Corrosion Case Study</b>	<b>Pierre Kwan</b> , Water Treatment Technical Leader HDR 600 University Street, Suite 500 Seattle, WA 98101 Phone: 206-826-4735 <a href="mailto:pierre.kwan@hdrinc.com">pierre.kwan@hdrinc.com</a>	<ul style="list-style-type: none"> <li>• B.S. in Civil Engineering, Ohio State University</li> <li>• M.S. in Civil Engineering, U. of Washington</li> <li>• Licenses/Certifications: PE (WA, OR)</li> </ul>

## Presentation Information

### **Overview of Current and Proposed LCR Revisions in the Pacific Northwest**

**Virpi Salo-Zieman (Confluence Engineering Group, LLC) and Damon Roth (Brown and Caldwell)**

**Abstract:** We will go over the revised lead and copper rule requirements with special emphasis on anticipated impacts on the water systems in the Pacific Northwest. The presentation will cover service line inventories, new site tiering criteria, changes to the monitoring requirements, public notification, school and daycare sampling, and find and fix assessments. Additionally, we will discuss the specific differences between the states and anticipated impacts from the rule revisions that then leads to the panel discussion with representatives from the regulatory agencies of Washington, Oregon, and Idaho.

### **Q&A with Regulatory Agencies**

**Panelists:** Caitlin Bates (Region 10 EPA), Kari Salis (Oregon Health Authority), Sheri Miller (Washington State DOH), and Cassandra Lemons (Idaho DEQ)

**Abstract:** Following the Overview of Current and Proposed Revisions to the LCR presentation, the workshop will facilitate a Q&A session between the attendees and representatives from Region 10 EPA and each state SDWA primacy agency in the Pacific Northwest Section. This session will provide the opportunity for attendees to learn about how each state and the EPA is approaching implementation of the current and proposed revisions to the LCR. In addition to audience questions, the workshop moderator will draw from a series of questions prepared by the workshop planning committee in coordination with the panelists.

### **Building a Lead Service Line Inventory: Challenges and Solutions from Lakewood Water District**

**Presenter: Kevin Wyckoff (Lakewood Water District)**

**Abstract:** How Lakewood Water District built a Lead Service Line Inventory in the absence of reliable primary source documentation. Will discuss how the utility deployed the ESRI Lead Service Line Inventory Solution, and how data was gathered to populate that data set. Additionally, will discuss the utility's partnership with Trinnex to develop a list of sites to perform field visual inspections to eliminate areas of incomplete data.

### **One Inventory to Rule them All: Hillsboro Water's Quest for LCRR Lead Service Line Inventory Compliance**

**Presenters: Alyssa MacDonald and Symon Powlison (City of Hillsboro Water Department)**

**Abstract:** In response to the EPA's Lead and Copper Rule Revision's (LCRR) Lead Service Line Inventory requirements, Hillsboro Water began its long and winding journey toward compliance. From digging through old ArcGIS Model Builder outputs to mining data from our own records, and even enlisting customer's help along the way, Hillsboro Water has created an inventory of service lines compliant with the EPA's LCRR. With efforts made possible by inter-departmental alliances, this fellowship completed its quest to identify and compile all utility-owned and customer-owned service line materials into one public-facing inventory, to rule them all.

### **LCR Customer Communication Guidance**

**Presenter: Dennis Sandstrom (HDR)**

**Abstract:** This presentation will review current and proposed LCR revision requirements and national guidance on water utility customer communications. The presentation will also provide recommendations related to advancing equity in LCR outreach activities.

**Research Updates: Overview of Bench and Pilot Testing Approaches**

**Presenter: Melinda Friedman (Confluence Engineering Group, LLC)**

**Abstract:** There are a variety of bench- and pilot-scale testing approaches that can be used to measure metals release as a function of corrosion control treatment conditions. This presentation will provide background on the different approaches and case studies addressing their relative pros, cons, benefits, and limitations, especially when focusing on copper with lead solder materials. Data collection and interpretation including important caveats when applying study results to full-scale systems will also be covered.

**Pacific Northwest Copper Corrosion Case Study**

**Presenter: Pierre Kwan (HDR)**

**Abstract:** Corrosion of copper plumbing and services is a major problem for Northwest utilities. This presentation presents the factors that increase or decrease copper corrosion along with a case study of how one utility addressed this issue.