Service Line Inventory Requirements of the LCRR

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Oregon Health Authority
Drinking Water Services
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Oregon Health Authority

Presentation Overview

- Background
- Regulatory framework, history
- Methodologies
- Getting started, resources
- Reporting, Oregon spreadsheet format
- Q&A

Goal:

To identify and remove ALL lead service lines as quickly as possible.

Lead health effects

- Lead is a highly toxic pollutant that can damage neurological, cardiovascular, immunological, developmental, and other major body systems.
- **No safe level of lead exposure** has been identified, and it is especially harmful to children and pregnant women.
- Bans:
  - Gasoline for passenger cars: 1975
  - Paint for residential use: 1978
  - Components of an OR public water system: 1985
  - Gas for commercial vehicles: 1996

History: Lead & Copper Drinking Water regulations

- Rule published in 1991
- Minor revisions in 2000 & 2007
- Long-term revisions (LCRR) January 15, 2021
- Upcoming: LCRI (improvements) ~2024
- Applies to 900 CWS, 300 NT systems in Oregon

LCR Revisions (LCRR)

- Finalized Dec. 17, 2021
- Includes
  - Service line inventory requirements,
  - Modified tap sampling requirements,
  - Trigger level,
  - Corrective action steps for individual homes

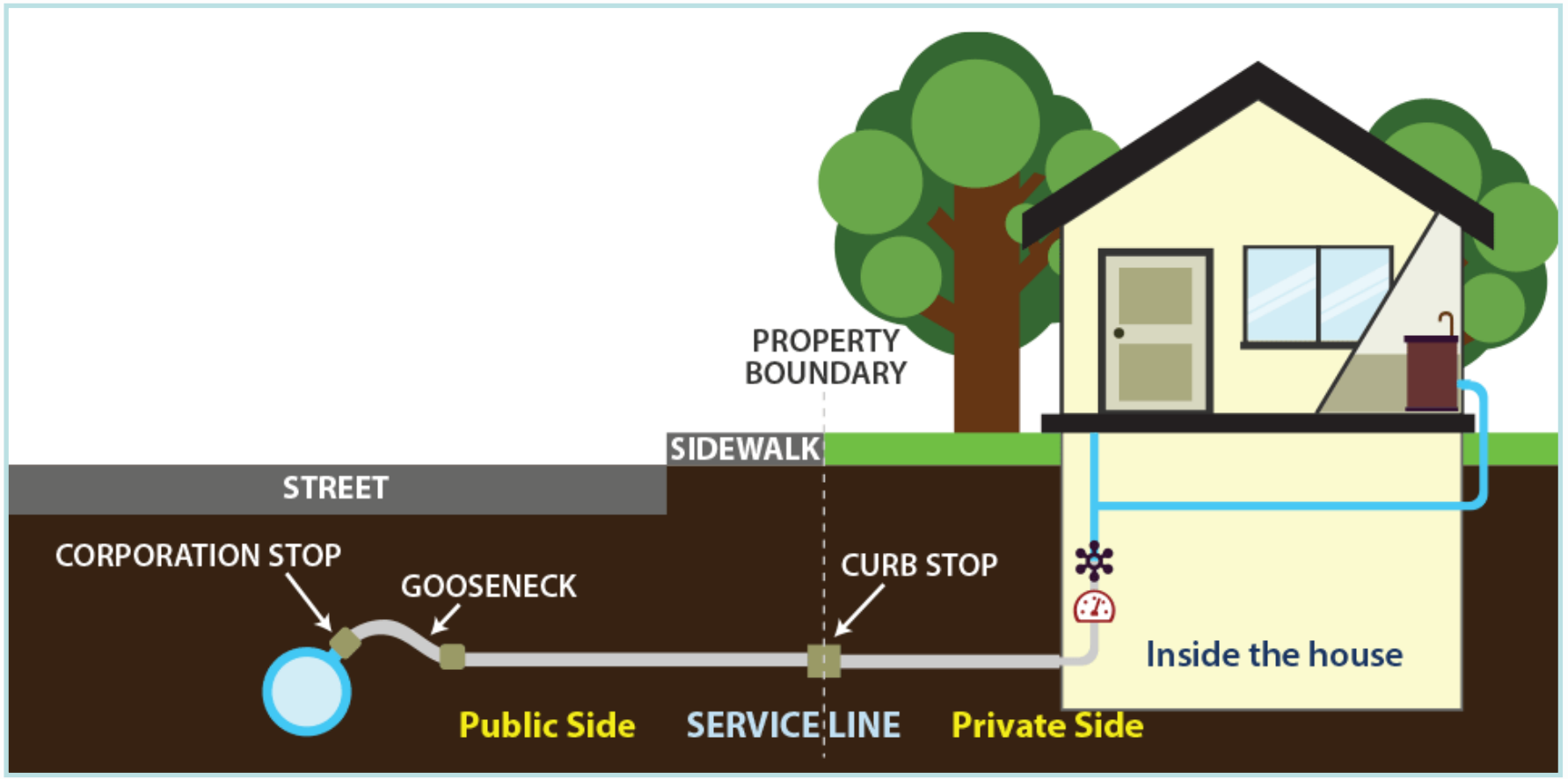
LCR Improvements (LCRI)

- EPA announced it will take steps to strengthen the regulatory framework regarding lead, in a way that may be different from the LCRR
- Will maintain Inventory requirements of the LCRR
- Anticipated prior to October 16, 2024
  - Strengthen compliance tap sampling
  - Revisit action and trigger levels (reduce complexity?)
  - Prioritize historically underserved communities, those disproportionately impacted

Oregon Rule-making

- DWS has added language from CFR to Oregon Administrative Rules
- OAR 333-061-0036(10)(h) – page 165
  - Service line inventory
  - LSL replacement plan
  - Effective January 1, 2023
- Provides regulatory basis for inventory work needed to be done now
- Remainder of LCRR will not be adopted
- Oregon will apply for EPA primacy after LCRI is published

Service lines



Oregon's Lead Ban

- In July 1985, Oregon banned all past and future use of lead components in public water systems
- There *should not* be any known lead components in a PWS (public side)
- Service connections installed in 1986 or later will be considered non-lead.

Previous efforts to certify no lead

- In 1985, PWSs had to certify that they did not have any lead in the public system, or be on a schedule to remove all lead components
- This certification is not adequate for the LCRR for the public service lines, because non-evidence-based methods were allowed
- Thus, the public service lines still need to be included in the inventory, though we don't expect to find many.

Operator statement?

- Oregon will not allow an operator to simply state or certify that no lead was used in their system based on historical knowledge.
- Studies have shown that:
  - Some operators are willing to certify something even in the absence of supporting evidence
  - Some operators are reluctant to certify something even with solid supporting data

LCRR: Lead Service Line Inventory

- Water systems must prepare

an initial Lead Service Line Inventory by October 16, 2024 that identifies:

  - Lead Service lines (LSL)
  - Lead Status Unknown Service Lines (Unknown)
  - Galvanized lines requiring replacement (GRR)
    - A galvanized service line downstream of a service line that is now or ever was lead (gooseneck not included)
  - Non-lead Service lines

LCRR: Lead Service Line Inventory

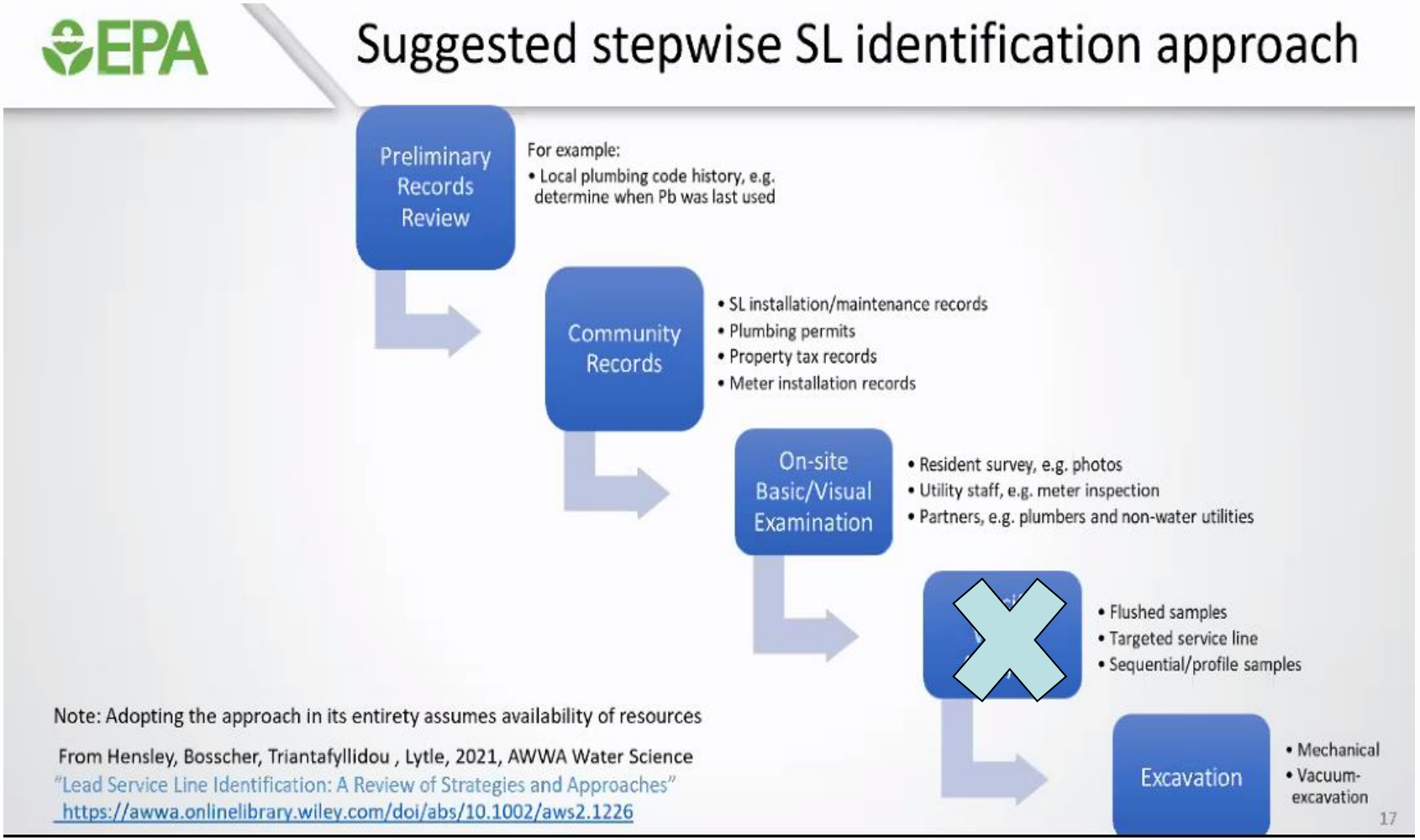
- Lead connectors (i.e., goosenecks or pigtails) are not required to be included in the inventory
  - EPA recommends including lead connectors where records exist
  - Water systems must replace lead connectors when encountered (existing Oregon law)

LCRR: Lead Service Line Inventory

- Location Identifier for LSL and GRR
- Will need to be made available to the public if have LSLs, GRRs, or unknowns
- Systems must update the inventory annually (or tri-annually if the system is on reduced monitoring)
- Must include ALL service connections: residential, commercial, fire, irrigation, etc

  (does not include fire hydrants)

LCRR: Lead Service Line Inventory



Tools: Overview

- Records review
- Installation date & diameter
- Basic / visual inspection
- Statistical sampling
- Physical inspection

Tools: Records review

- Service line installation records
- Tap cards
- Plumbing permits
- Maintenance records
- Meter installation records
- Property tax records
- Drawings or maps
- Issues: may not be legible, complete, or accurate

Installation date & Diameter

- Any service lines installed after January 1, 1986 can be categorized as Non-lead
- If a PWS had a written standard regarding pipe materials allowed, that date can also be used. Must have documentation.
- Any service lines 2” or greater can be categorized as Non-lead since lead was not strong enough for this size.

Tools: Basic / Visual

- Scratch test: PWS staff or residents scratch the pipe using a coin or key
- Magnet test: lead is not magnetic but iron pipe is
- Resident survey, photos
- Plumbers, other utilities

Tools: Statistical Analysis

- If no LSLs are known, can statistically verify that no lead service lines are present within a group of unknowns:
  - Use 95% confidence interval
- Physical inspection of the number necessary for 95% confidence
  - Excavation (pot-holing or vacuum)
  - PWS inspection at building inlet
- **If any lead is found, cannot categorize unknowns as Non-lead.**

Tools: Statistical Analysis: example

- Note: Oregon protocol is finalized and posted
  - www.oregon.gov/lcrr
- Approx number of unknowns to verify for statistical method
  - Less than 1500 unknowns – excavate 20%
  - 1,500 unknowns – excavate 306 for 95% confidence
  - 3,000 unknowns – excavate 341
  - 5,000 unknowns – excavate 357
  - 10,000 unknowns – excavate 370
- Sites to excavate need to be randomly chosen

Tools: Physical inspection / excavation

- Mechanical:
  - Gold standard
  - Reliable, high accuracy
  - Expensive, time-consuming
- Vacuum:
  - Hydro vacuum loosens the soil, exposes smaller section of service line
- One location is adequate, outside of meter box
- CCTV: inspect from the inside

Getting started

- Develop a plan
  - DWS does NOT need to approve your plan
- Staff time
  - Consider an intern?
- Train all distribution staff
- Develop data collection method for work done in next year and ½.
- Evaluate available methods by cost, disturbance, impact to homeowner, skills required, time, and accuracy

Assistance

- Free to systems (data portal will be created for each CWS/NTNC system). Initial focus on systems serving under 500 population or disadvantaged. www.oregon.gov/lcrr
- Training and outreach on service line inventory, methodologies, and reporting requirements
- Individual assistance to public water systems
- May also help with mapping of PWS facilities
- Receiving assistance is voluntary

Assistance, cont'd

- Records review
- Records compilation
- Use of spreadsheet and/or data portal to enter data
- Develop a strategy for identifying unknowns
- Assistance with reporting
- Will not conduct physical excavation

- Hope to have contracts in place very soon

What about the unknowns?

- A system can list service lines without documentation as “lead status unknown” in the initial inventory
- Unknowns must eventually be determined
- Until material type is identified, service lines will be assumed to be lead for purposes of lead service line replacement plan

Lead Service Line Replacement (LSLR) Plan

- Water systems with LSLs or unknowns must prepare an LSLR plan by October 16, 2024 that includes:
  - Strategy for determining the composition of lead status unknown lines
  - LSLR replacement prioritization strategy
    - disadvantaged consumers
    - populations most sensitive to the effects of lead
    - Percentage to replace each year
  - Funding strategy to accommodate customers unable to pay
- LCR Improvements (LCRI) may refine reporting requirements

Making the inventory publicly available

- These rules may change with LCRI
- The service line materials inventory must be publicly accessible if unknowns, LSLs, or GRRs
- For LSL and GRR: The inventory must include an associated location identifier, such as a street address, block, intersection, landmark or GPS

Bipartisan Infrastructure Law (BIL)

- Money is coming to states to fund lead service line replacements (loan program, 49% grants to disadvantaged communities).
- Can be used for inventory work
- If lead service lines are found, BIL funding will be available to fund replacement

Inventory Reporting

- Entire inventory must be submitted (not summary data)
- Due October 16, 2024
- Use Oregon template/spreadsheet or data portal
- Required elements must be filled out
- Optional elements – info for tap sample siting, others “while you’re there”
- Electronic submittal process – submit via email

  dwp.dmce@odhsoha.oregon.gov

Next steps

- Start developing a plan now
- Find out what records are available
- Who is going to do this work?
- What assistance will you need?

Updating the inventory

- A system does not need to do anything else if:
  - No lead service lines are found;
  - No galvanized downstream of former lead lines are found; AND
  - There are NO unknowns
- If not the case, the inventory needs to be updated on the same schedule as lead/copper tap sampling (annually or every 3 years)
- Will show progress of LSL replacement plan
- More details with LCRI

Resources:
Drinking water website

Oregon Drinking Water Services

Working to keep drinking water safe for Oregonians

Access to safe drinking water is essential to human health. Each person on Earth requires at least 20 to 50 liters of clean, safe water a day for drinking, cooking and simply keeping themselves clean. Oregon Drinking Water Services works to help keep drinking water safe for Oregonians.

Oregon Drinking Water Services (DWS) administers and enforces drinking water quality standards for public water systems in the state of Oregon. DWS focuses resources in the areas of highest public health benefit and promotes voluntary compliance with state and federal drinking water standards. DWS also emphasizes prevention of contamination through source water protection, provides technical assistance to water systems and provides water system operator training.

Contact Us | Sign up for DWS Alerts | Water Advisories Map | Data Online

Guidance for Reopening Building Water Systems After Prolonged Shut Down - *Updated October 7, 2020*

Public Water Systems and Novel Coronavirus 2019 (COVID-19) Frequently Asked Questions - *Updated May 1, 2020*

Services

- Cross Connection & Backflow Prevention
- Emergency Planning and Response
- Groundwater & Source Water Protection
- Monitoring & Reporting
- Operator Certification
- Plan Review
- State Revolving Fund (SRF)
- Water System Operations

Resources

- County & Department of Agriculture Resources
- Data Online
- Domestic Well Safety Program
- Drinking Water Advisory Committee (DWAC)
- For Consumers
- Rules & Implementation Guidance
- Training Opportunities
- Site Map
- Contact Us

News and Hot Topics

Link
Wildfire information for water systems
Drinking Water Source Protection Funding Available - LOI Due March 24, 2021
NEW - Annual Water System Fee Info
SRF PPL Public Notices
Rulemaking: Adoption of Annual Fees
Cyanotoxin Resources for Water System Operators
Shutdown tips for seasonal groundwater systems

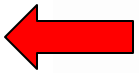
Resources:
Drinking water website (cont.)

Rule Implementation Guidance

Oregon Very Small Systems

Effective January 1, 2022, water systems serving 4 to 14 service connections and commercial or public premises used by 10 to 24 people at least 60 days per year have been renamed Oregon Very Small (OVS) from State Regulated. New rules are now implemented for Oregon Very Small (OVS) systems that retain important public health protections and are more achievable for water suppliers with limited resources.

Service Line Inventory requirements in the Lead and Copper Rule Revisions (LCRR)



The Lead and Copper Rule applies to all community (CWS) and non-transient (NTNC) public water systems. EPA adopted revisions to the Lead and Copper Rule in 2021 that include a requirement for public water systems to conduct inventories of service lines and to identify service line material type. The intent of the service line inventory requirement is to identify those service lines made of lead so that they can be scheduled for removal and replacement.

Public water systems must conduct an inventory of all service lines, on both the water system side and the homeowner side of the meter, and to submit the results to OHA–Drinking Water Services (DWS) by October 16, 2024.

Groundwater Rule

The Groundwater Rule (GWR) applies to all public water systems that use groundwater sources or purchase groundwater. The primary purpose of the rule is to protect public health from bacterial and viral pathogens in public groundwater systems.

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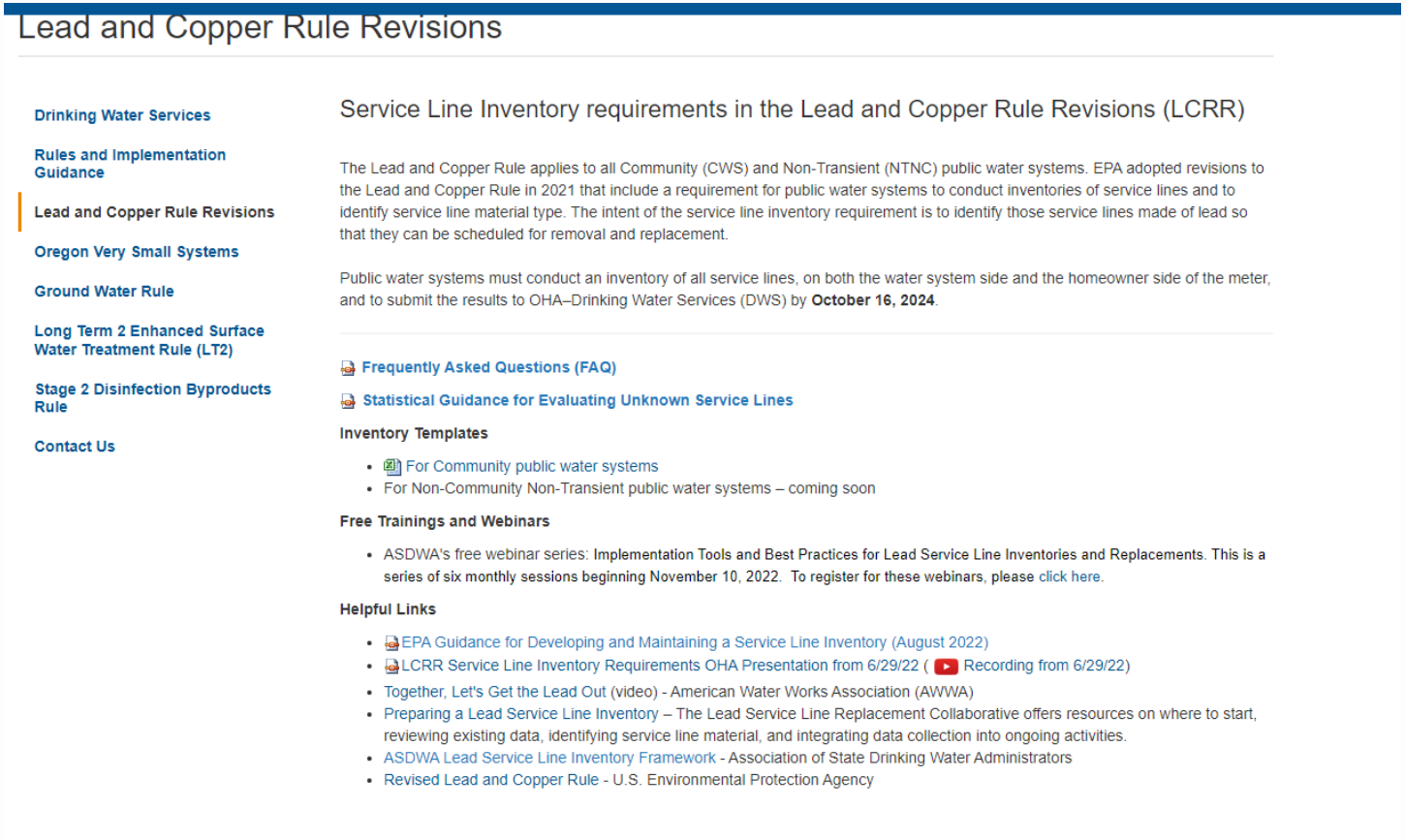
Resources:
Drinking water website (cont.)



Lead and Copper Rule Revisions

Drinking Water Services

Rules and Implementation Guidance

Lead and Copper Rule Revisions

Oregon Very Small Systems

Ground Water Rule

Long Term 2 Enhanced Surface Water Treatment Rule (LT2)

Stage 2 Disinfection Byproducts Rule

Contact Us

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Frequently Asked Questions (FAQ)

Statistical Guidance for Evaluating Unknown Service Lines

Inventory Templates

- For Community public water systems
- For Non-Community Non-Transient public water systems – coming soon

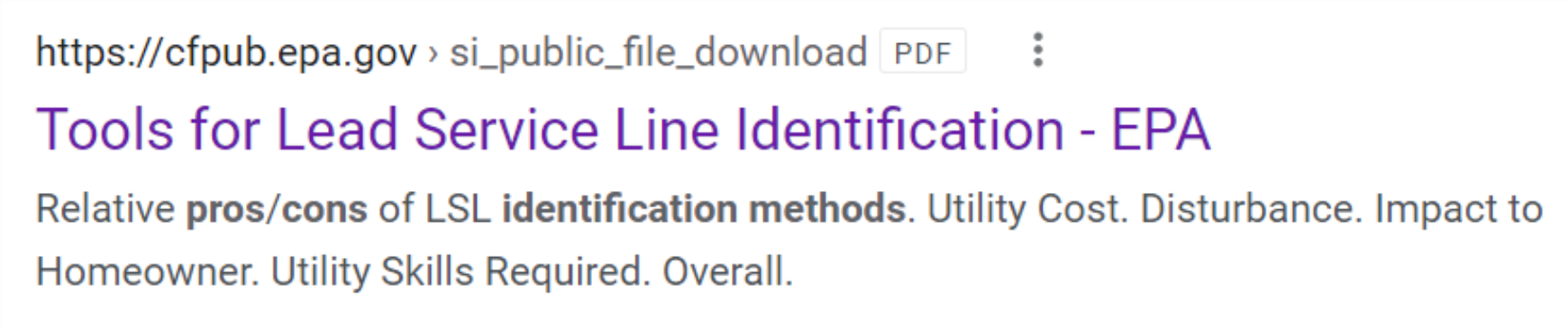
Free Trainings and Webinars

- ASDWA's free webinar series: Implementation Tools and Best Practices for Lead Service Line Inventories and Replacements. This is a series of six monthly sessions beginning November 10, 2022. To register for these webinars, please click here.

Helpful Links

- EPA Guidance for Developing and Maintaining a Service Line Inventory (August 2022)
- LCRR Service Line Inventory Requirements OHA Presentation from 6/29/22 (Recording from 6/29/22)
- Together, Let's Get the Lead Out (video) - American Water Works Association (AWWA)
- Preparing a Lead Service Line Inventory – The Lead Service Line Replacement Collaborative offers resources on where to start, reviewing existing data, identifying service line material, and integrating data collection into ongoing activities.
- ASDWA Lead Service Line Inventory Framework - Association of State Drinking Water Administrators
- Revised Lead and Copper Rule - U.S. Environmental Protection Agency

Resources, cont'd



- AWWA article on LSL ID strategies: https://awwa.onlinelibrary.wiley.com/doi/abs/10.1002/aws2.1226.

- ASDWA 2019. Developing lead service line inventories. https://www.asdwa.org/wp-content/uploads/2019/08/ASDWA_Developing-LeadService-Line-Inventories.pdf

Resources, cont'd

Lead Service Line Replacement Collaborative

Preparing a Lead Service Line Inventory

This section addresses resources and techniques for identifying which of the buildings in the community are likely to have lead service lines (LSLs). Lead lines were installed before 1986, although in some cases they were banned decades earlier. Since installation, some LSLs have failed and been replaced or repaired, some have been partially replaced, and still others remain in service. When preparing an inventory, it is important to understand if lead pipe is still in use both in the portion of the service line owned by the water system and the portion on private property. To provide the most benefit, the inventory should include the pipe material on both public and private property.

One aspect in describing service lines is the short piece of lead pipe sometimes used to connect the water main to customers' service lines called goosenecks or pigtails. Preparing an inventory is also an opportunity to identify other service line materials relevant to lead levels, including brass, lead alloy, and tube alloy. Recognizing materials that do not contain lead, like copper, PVC, and galvanized pipe, will also improve planning for subsequent removal of lead piping.

In amending the Safe Drinking Water Act in 1986, Congress incorporated a ban on the use of lead pipe. The ban went into effect June 19, 1986. It was applicable nationwide. As of that date, installation of lead pipe, including LSLs, was prohibited. Following the law, states had two years to incorporate the ban into State law and regulations. Where lead pipe was installed until the Lead Ban, it is likely wise to look to the actual state implementation date of the ban (e.g., 1 – 2 years after federal law passed).

Lead gooseneck

Resources

https://www.asdwa.org/wp-content/uploads/2019/08/ASDWA_Developing-Lead-Service-Line-Inventories.pdf

Developing Lead Service Line Inventories
Presented by the Association of State Drinking Water Administrators

Summary: Many state drinking water administrators are considering developing inventories of the materials used in service lines that are part of the distribution systems of community water systems (CWSs) they regulate. Some states have already conducted voluntary or mandatory surveys of CWSs whether on their own or in response to state legislation. Others are preparing to use the information in the next round of Drinking Water Infrastructure Needs Survey and Assessments (DWINSA) that the Environmental Protection Agency (EPA) is developing pursuant to Section 2015 of the America's Water Infrastructure Act of 2018. The 2020 DWINSA will include an estimate of the number of public and

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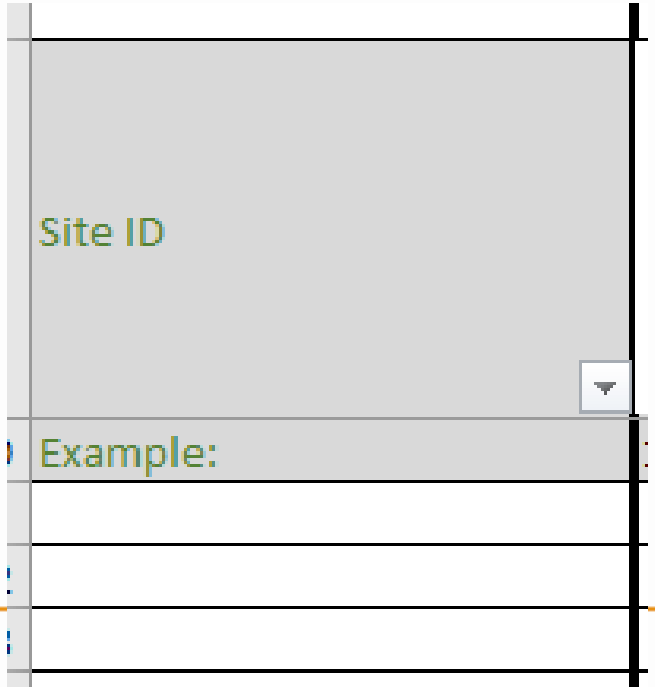
Resources, cont'd

https://www.epa.gov/ground-water-and-drinking-water/review-national-primary-drinking-water-regulation-lead-and-copper

Oregon Template: Beginning: header and 1st column

Lead Service Line (LSL) Inventory	
PWS ID (OR41######)	
PWS name	
Operator submitting report	
Date completed	



Oregon Template:
Black font – Required information

	Required for Lead service line inventory					
	Location Identifier (Required for Lead and GRR status only - optional for other service lines)	Water system owned service line current material	Water System service line material identification method	Customer owned service line current material	If customer service line is galvanized, was upstream service line material ever lead?	Customer service line material identification method
	123 Example Way	Non-lead - UNK - post 1985	On site inspection only	Non-lead - unk - post 1985	No	Records only

Oregon Template:
Blue font – Sample location determination

Useful for tap monitoring location determination - OPTIONAL			
Service type of connection	Connector material to water main (i.e. goosenecks)	Interior plumbing	POE/POU treatment
Single family	Non-lead	Copper	No
single family	Lead	Lead	Yes
multi-family	Previously Lead	Copper	No
school/daycare	Non-lead	CPVC	Unknown
other/non-residential	unknown	Pex	
non-potable		other	
		unknown	

Oregon Template:
Green font – water system info

Good to know - OPTIONAL					
Water system main material & size	Water system service line size	Year (or range) water system owned service line installed	Customer service line size	Year (or range) customer owned service line installed	Water system Notes
		1988-1990		1990	

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Oregon Template:
Purple font – calculations – do not edit

Calculated by spreadsheet - do not edit	
LSL status	testing site tier level (TBD)
Example - not included in count	
Lead	
GRR	
Non-Lead	
unknown	
Error - no ownership	
Error-Location required	

Note: correct all errors before submission

Summary					
Lead	GRR	Unknown	Non-Lead	Error*	Total
1	1	1	1	2	6
	GRR=Galvanized requiring replacement				

Oregon Template: Other tabs

- Expanded descriptions for each field and some of the drop down choices.
- Inventory – what we just went over.
- Replacement plan – requirements per rule. Format TBD

Replacement plan format TBD

Note: not needed if 100% of service lines are non-lead

The following requirements (found in the OAR) will need to be answered regarding Lead, GRR and unknown service lines:

1	A strategy for determining the composition of lead status unknown service lines in its inventory
2	A procedure for conducting full lead service line replacement
3	A strategy for informing customers before a full or partial lead service line replacement
4	A procedure for customers to flush service lines and premise plumbing of particulate lead
5	A lead service line replacement prioritization strategy based on factors including but not limited to the targeting of known lead service lines, lead service line replacement for disadvantaged consumers and populations most sensitive to the effects of lead
6	A funding strategy for replacing lead service lines which considers ways to accommodate customers that are unable to pay to replace the portion they own
7	For systems that serve more than 10,000 people, a lead service line replacement goal rate as approved by OHA

Methodology verification

Part 1: Historical Records Review	
Type of Record	**Describe the Records Reviewed for Your Inventory and Indicate Your Level of Confidence (*e.g.*, Low, Medium, or High)**
1. Previous Materials Evaluation *Example: Locations of Tier 1 lead tap sampling locations that are served by a lead service line.*	
2. Construction Records and Plumbing Codes *Examples: Local ordinance adopting an international plumbing code. Permits for replacing lead service lines.*	
3. Water System Records *Examples: Capital improvement plans. Standard operating procedures. Engineering standards.*	
4. Distribution System Inspections and Records Examples: *Distribution system maps. Tap cards. Service line repair/replacement records. Inspection records. Meter installation records.*	
5. Other Records	

- DWS will need to verify that appropriate methods were used – this is the easiest way to do that.

Methodology verification

Part 2: Identifying Service Line Material During Normal Operations	
1. During which normal operating activities are you collecting information on service line material? Check all that apply.	
☐ Water meter reading ☐ Water meter repair or replacement ☐ Service line repair or replacement	☐ Water main repair or replacement ☐ Backflow prevention device inspection ☐ Other
If "Other", please explain:	
2. Did you develop or revise standard operating procedures to collect service line material information during normal operation? If "Yes", please describe:	*Select "Yes" or "No"*

Methodology verification

Part 3: Service Line Investigations

1. Identify the service line investigation methods your system used to prepare the inventory (check all that apply). If a water system chooses an investigation method not specified by the state under 40 CFR §141.84(a)(3)(iv), state approval is required. ***Note that investigations are not required by the LCRR but can be used by systems to assess accuracy of historical records and gather information when service line material is unknown.***

- ☐ Visual Inspection at the Meter Pit
- ☐ Customer Self-Identification
- ☐ CCTV Inspection at Curb Box - External
- ☐ CCTV Inspection at Curb Box - Internal
- ☐ Water Quality Sampling - Targeted
- ☐ Water Quality Sampling - Flushed
- ☐ Water Quality sampling - Sequential
- ☐ Water Quality Sampling - Other
- ☐ Mechanical Excavation
- ☐ Vacuum Excavation
- ☐ Statistical/Predictive Modeling
- ☐ Other

If "Other", please explain:

2. If "Statistical/Predictive Modeling", please briefly describe the model and inputs used:

3. How did you prioritize locations for service line materials investigations? For example, did you consider environmental justice and/or sensitive populations, did you use predictive modeling, and/or did you target areas with high number of unknowns?

Got our 1st inventory submission!

color key — *revision Oct 2022*

Black - required
g location determinations
Green: good to know
y spreadsheet - do not edit

Summary					
Lead	GRR	Unknown	Non-Lead	Error*	Total
0	0	0	696	0	696

GRR=Galvanized requiring replacement

* resolve all errors prior to submission

			Useful for tap monitoring location determination - OPTIONAL				
stomer owned service line rrent material	If customer service line is galvanized, was upstream service line material ever lead?	Customer service line material identification method	Service type of connection	Connector material to water main (i.e. goosenecks)	Interior plumbing material	Is there POE/POU treatment?	Wate mate
n-lead - Copper	NA - not galvanized	On site inspection only					
n-lead - Copper	NA - not galvanized	On site inspection only					
n-lead - Copper	NA - not galvanized	On site inspection only					
n-lead - Copper	NA - not galvanized	On site inspection only					
n-lead - Plastic	NA - not galvanized	On site inspection only					
n-lead - Plastic	NA - not galvanized	On site inspection only					
n-lead - Plastic	NA - not galvanized	On site inspection only					
n-lead - Plastic	NA - not galvanized	On site inspection only					
n-lead - Copper	NA - not galvanized	On site inspection only					
n-lead - Plastic	NA - not galvanized	On site inspection only					
n-lead - Plastic	NA - not galvanized	On site inspection only					
n-lead - Plastic	NA - not galvanized	On site inspection only					
n-lead - Plastic	NA - not galvanized	On site inspection only					
n-lead - Copper	NA - not galvanized	On site inspection only					

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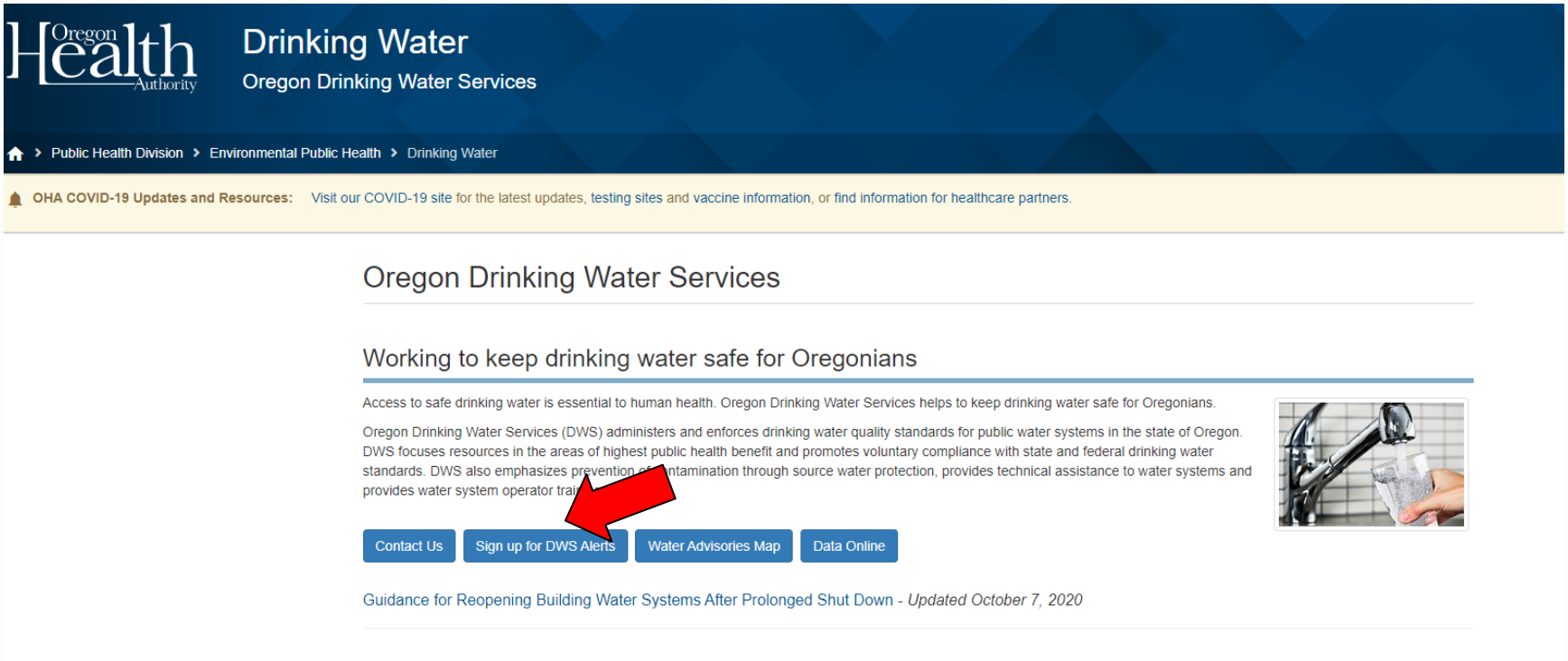
Stay informed



Questions??

- Contact your regulator with specific questions
- Amy Word, REHS, Technical Services, Pendleton
- amelia.a.word@oha.oregon.gov